APPENDIX K
FINAL STREAM ASSESSMENT REPORT

I-69 CORRIDOR TIER 2 STUDIES

Evansville to Indianapolis

Stream Assessment Report

Section 2, SR 64 to US 50

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Prepared for

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SECTION 2 STREAM ASSESSMENT REPORT

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I-69 Section 2 Stream Assessment Report

1.0 Introduction

In March of 2004 the Tier 1 Record of Decision for I-69 was issued identifying Alternative 3C as the preferred corridor for I-69 paving the way for the initiation of Tier 2 Studies. The 142-mile I-69 project corridor (approximately 2,000 feet wide) from Evansville to Indianapolis was divided into six sections for these studies. Each of the six Tier 2 section study teams will determine the final alignment of the interstate within the approved corridor. Environmental studies and engineering assessments by the Tier 2 studies team in Section 2 will culminate in a recommendation of a preferred interstate alignment within Section 2 of the approved Alternative 3C corridor. Section 2 of this project is located in Gibson, Pike, and Daviess counties in southwestern Indiana. The Section 2 corridor begins at State Road 64, west of Oakland City, extends northeast and crosses the Patoka River, passes east of Petersburg and crosses the East Fork of the White River, and ends at U.S. 50, east of Washington. The Section 2 corridor is approximately 29 miles long. Figures 1and 2 contain maps showing the alternatives carried forward for detailed analysis and the stream impact sites.

This stream assessment report identifies the streams that are impacted by the alternatives carried forward for detailed analysis (Alternative A and Alternative B) and the Refined Preferred Alternative within Section 2 of I-69. All streams with an ordinary high water mark that are crossed by Alternatives A, B, DEIS Preferred, and the Refined Preferred Alternative were surveyed.

The alternatives traverse portions of the drainage basins of the Patoka River and the Lower White River (both the East and West Forks). The Patoka River tributary subbasins crossed by the alternatives consist of Flat Creek, Hurricane Creek, East Fork Keg Creek, West Fork Keg Creek, and the South Fork Patoka River. The White River tributary subbasins crossed by the alternatives consist of Hurricane Branch, Veale Creek, Mud Creek, and Prides Creek. The intersections of each alternative with each perennial, intermittent, and ephemeral stream in each basin were surveyed in August and September of 2005 and March 2009.

A total of 245 stream impacts were identified and surveyed using the Qualitative Habitat Evaluation Index (QHEI) (Rankin, 1979) or the Headwater Habitat Evaluation Index (HHEI) depending on drainage area and maximum pool depth of each stream. Surveys were performed in accordance with the Indiana Department of Environmental Management's Standard Operating Procedure. Water chemistry and biological sampling were not performed in this survey.

1.0.1 Changes Made Since Release of the Revised DEIS

Since the release of the Section 2 Revised DEIS several changes have been made to this assessment report. These changes include (1) the addition of the DEIS Preferred Alternative impacts; (2) the addition of the Refined Preferred Alternative impacts; (3)

reevaluation of stream impacts caused by the addition of local access roads and other refinements made for the Refined Preferred Alternative; (4) review of the QHEI and HHEI data completed on the streams; and (5) review of the 2005 aerial photographs for stream alignment consistencies. Below is a comprehensive list of the changes that were made to the data that was previously included in the Draft Stream Assessment Report located in Appendix K of the Section 2 Revised Draft Environmental Impact Statement (DEIS).

- Figure 1 from the Draft Stream Assessment Report was removed because it did not provide any pertinent information in regards to the stream impacts in Section 2. Figures 2 and 3 in the Draft Stream Assessment Report were renumbers and are now Figures 1 and 2.

- Figures 1 and 2 were revised and only the information that was associated with stream impacts was included on the revised maps.

- The Stream Impact Summary Table in Appendix A was revised to include the DEIS Preferred Alternative and the Refined Preferred Alternative impacts. In addition, the location data that was previously included on this table has been removed. The location data is included in the Stream Impact Site forms in Appendix B.

- Stream Sec2 – S 11 the HHEI score in category 2. Maximum Pool Depth changed from 0 to 30 because a reevaluation of this stream in December 2009 showed a maximum pool depth of 27 cm. This changed the total HHEI score for this stream from 24 to 54. The stream impact length and stream impact acres for Alternative B were also modified based on modifications made to the end of the stream segment identified as Stream S11 and the beginning of the stream segment identified as S12. The stream impact length for Alternative B changed from 1,169 feet to 1,554 feet and the stream impact area changed from 0.16 acre to 0.25 acre. The stream impact acres calculated for Alternative A was also changed from 0.10 acre to 0.12 acre due to a rounding error.

- Stream Sec2 – S 12 the HHEI score in category 2. Maximum Pool Depth changed from 15 to 30 because a reevaluation of this stream in December 2009 showed a maximum pool depth of 27 cm versus the 7 cm as previously identified. This changed the total HHEI score for this stream from 39 to 54. The stream impact length and stream impact acres for Alternative B were also modified based on modifications made to the end of the stream segment identified as Stream S11 and the beginning of the stream segment identified as S12. The stream impact length for Alternative B changed from 479 feet to 94 feet and the stream impact area changed from 0.10 acre to 0.02 acre.

- Stream Sec2 – S18 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has

since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 26 to 22.

- Stream Sec2 – S23 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 32 to 30.

- Stream Sec2 – S38 the QHEI score was changed due to a miscalculation in category 4. Riparian Zone & Bank Erosion. The score was previously reported as 6.5 and has since been correctly calculated and is now 7. This changed the overall QHEI score for this stream from 54.5 to 55.

- Stream Sec2 – S57 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 4. There was also a miscalculation in category 4. Riparian Zone & Bank Erosion. The score was previously reported as 7 and has since been correctly calculated and is now 6.5. This changed the overall QHEI score for this stream from 46 to 42.5.

- Stream Sec2 – S58 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 8 and has since been correctly calculated and is now 5. This changed the overall QHEI score for this stream from 45 to 42.

- Stream Sec2 – S63 the HHEI score was revised based on the measurement of the Bank Full Width in category 3 being marked incorrectly. The bank full width was measured at 12.5 feet and should be marked in the 25 point box and not the 30 point box as previously marked. This changed the Bank Full Width score from 30 to 25 and changed the overall HHEI score from 62 to 57. The stream impact length and stream impact area for Alternative B was also revised to include the impact that was previously identified as stream S 65 due to the fact that the stream characteristics do not change in this area; therefore S 65 was eliminated and the impacts were included with S 63. As a result of the elimination of stream S 65, the Alternative B stream length impact changed from 0 feet to 589 feet and the stream impact area changed from 0 acre to 0.15 acre. The stream impact area for Alternative A was also revised based on the length of impact and the width of the ordinary high water mark. The Alternative A stream impact area changed from 0.13 acre to 0.11 acre.

- Stream Sec2 – S72 the stream impact length for Alternatives A and B were modified based on modifications made to the end of the stream segment identified as Stream S72 and the beginning of the stream segment identified as S73. The stream impact length for Alternative A changed from 88 feet to 84 feet and the stream impact length for Alternative B changed from 186 feet to 189 feet.

- Stream Sec2 – S73 the stream impact lengths for Alternative A and B were modified based on modifications made to the end of the stream segment identified as Stream S72 and the beginning of the stream segment identified as S73. The stream impact length for Alternative A changed from 87 feet to 91 feet and the stream impact lengths for Alternative B changed from 94 feet to 91 feet, In addition, the area of stream impact for Alternative B changed from 0.02 acre to 0.01 acre due to a rounding error.

- Stream Sec2 – S78 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 1 and has since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 45.5 to 47.5.

- Stream Sec2 – S81 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 9 and has since been correctly calculated and is now 11. There was also a miscalculation in category 2. Instream Cover. The Instream Cover score was previously reported as 12 and has since been correctly calculated and is now 13. This changed the overall QHEI score for this stream from 53.5 to 56.5. In addition, the stream impact length and stream impact acres for Alternative B were modified based on modifications made to the end of the stream segment identified as Stream S81 and the beginning of the stream segment identified as S82. The stream impact length for Alternative B changed from 361 feet to 367 feet.

- Stream Sec2 – S82 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 2. This changed the overall QHEI score for this stream from 48 to 44. In addition, the stream impact length for Alternative B was modified based on modifications made to the end of the stream segment identified as Stream S81 and the beginning of the stream segment identified as S82. The stream impact length for Alternative B changed from 851 feet to 845 feet.

- Stream Sec2 – S 83 the stream impact length for Alternative A was modified based on modifications made to the end of the stream segment identified as Stream S83 and the beginning of the stream segment identified as S84. The stream impact length for Alternative A changed from 474 feet to 470 feet.

- Stream Sec2 – S84 the HHEI score was revised based on the measurement of the Bank Full Width in category 3 being revised based on additional field work for the Refined Preferred Alternative. The bank full width was measured at 10 feet during the additional field work and changed the score of the bank full width from 15 to 25. This changed the overall HHEI score from 60 to 70. In addition, the stream impact length and stream impact area for Alternative A were modified based on modifications made to the end of the stream segment identified as Stream S83 and the beginning of the stream segment identified as S84. The

length of impact for Alternative A changed from 430 feet to 434 feet and the area of impact changed from 0.04 acre to 0.10 acre.

- Stream Sec2 – S85 the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S85 and the beginning of the stream segment identified as S86. This modification changed the length of the stream impact for Alternative B from 345 feet to 380 feet.

- Stream Sec2 – S86 the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S85 and the beginning of the stream segment identified as S86. This modification changed the length of the stream impact for Alternative B from 343 feet to 308 feet.

- Stream Sec2 – S87 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 8 and has since been correctly calculated and is now 5. This changed the overall QHEI score for this stream from 48 to 45.

- Stream Sec2 – S90 the QHEI score was changed due to a miscalculation in category 3. Channel Morphology. The channel morphology score was previously reported as 10 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 48 to 50.

- Stream Sec2 – S91 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 14. This changed the overall QHEI score for this stream from 50.5 to 57.5. In addition, the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S91 and the beginning of the stream segment identified as S92. This modification changed the length of the stream impact for Alternative B from 877 feet to 876 feet.

- Stream Sec2 – S92 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 9 and has since been correctly calculated and is now 16. In addition, the category 3. Channel Morphology score was changed from 8 to 13 due to a miscalculation that has been corrected. This changed the overall QHEI score for this stream from 48.5 to 60.5. In addition, the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S91 and the beginning of the stream segment identified as S92. This modification changed the length of the stream impact for Alternative B from 1,189 feet to 1,190 feet.

- Stream Sec2 – S120 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 14 and has since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 41 to 30.

- Stream Sec2 – S126 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 51 to 57. In addition, the stream impact length and stream impact area for Alternative A and stream impact length for Alternative B were changed base on modifications made to the end of the stream segment identified as Stream S126 and the beginning of the stream segment identified as S127. This modification changed the length of the stream impact for Alternative A from 960 feet to 990 feet and the area of impact changed from 0.29 acre to 0.30 acre. The modification changed the length of the stream impact for Alternative B from 792 feet to 818 feet.

- Stream Sec2 – S127 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall QHEI score for this stream from 51 to 57. In addition, the stream impact length and stream impact area for Alternatives A and B were changed base on modifications made to the end of the stream segment identified as Stream S126 and the beginning of the stream segment identified as S127. This modification changed the length of the stream impact for Alternative A from 1,192 feet to 1,162 feet and the area of impact changed from 0.33 acre to 0.32 acre. The modification changed the length of the stream impact from Alternative B from 1,289 feet to 1,263 feet and the area of impact changed from 0.36 acre to 0.35 acre.

- Stream Sec 2 – S128 the stream impact length and stream impact area for Alternative B were changed base on modifications made to the end of the stream segment identified as Stream S128 and the beginning of the stream segment identified as S129. This modification changed the length of the stream impact for Alternative B from 0 feet to 176 feet and the area of impact changed from 0 acre to 0.14 acre.

- Stream Sec2 – S129 the QHEI score was changed due to a miscalculation in category 5b. Riffle/Run Quality. The riffle/run quality score was previously reported as 3 and has since been correctly calculated and is now 4. This changed the overall QHEI score for this stream from 57.5 to 58.5. In addition, the stream impact length and stream impact area for Alternative B were changed base on modifications made to the end of the stream segment identified as Stream S128 and the beginning of the stream segment identified as S129 and a review of the 2005 aerial. This modification changed the length of the stream impact for Alternative B from 811 feet to 749 feet and the area of impact changed from 0.65 acre to 0.60 acre.

- Stream Sec2 – S130 the HHEI score was changed due to reevaluation of the stream channel impact area in December 2009. The bank full width was measured as 10 feet at the impact crossing location versus the previous 3 feet measurement taken upstream of the current impact crossing. The bank full width score was previously reported as 5 and has since been correctly scored and is now 25. This changed the overall HHEI score for this stream from 17 to 37. In addition, the stream impact length and stream impact area for Alternative A and the stream impact area for Alternative B were changed base on modifications made to the end of the stream segment identified as Stream S130 and the beginning of the stream segment identified as S131 and a review of the 2005 aerial. This modification changed the length of the stream impact for Alternative A from 0 feet to 93 feet and the area of impact changed from 0 acre to 0.01 acre. The modification changed the only changed the area of impact for Alternative B from 0.19 acre to 0.02 acre.

- Stream Sec2 – S131 was originally scored using QHEI, but during the December 2009 reevaluation, the stream did not contain the required parameters to be scored using the QHEI assessment method and was reevaluated using the HHEI assessment method. The QHEI score in the Draft Stream Assessment Report for this stream channel was 59 and the HHEI score used for this report is 61. In addition, the stream impact length and stream impact area for Alternative A were changed base on modifications made to the end of the stream segment identified as Stream S130 and the beginning of the stream segment identified as S131. This modification changed the length of the stream impact for Alternative A from 501 feet to 408 feet and the area of impact changed from 0.40 acre to 0.09 acre for Alternative A.

- Stream Sec2 – S132 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 35 to 31. In addition, the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S132 and the beginning of the stream segment identified as S134. This modification changed the length of the stream impact for Alternative B from 486 feet to 481 feet.

- Stream Sec2 – S134 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 3. This changed the overall QHEI score for this stream from 35 to 31. In addition, the stream impact length for Alternative B was changed base on modifications made to the end of the stream segment identified as Stream S132 and the beginning of the stream segment identified as S134. This modification changed the length of the stream impact for Alternative B from 1,457 feet to 1,462 feet.

- Stream Sec2 – S137 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 1 and has since been correctly calculated and is now 3. In addition, the category 4. Riparian Zone & Bank Erosion score was miscalculated and was originally scored as 4 and has since been corrected and is now scored as 3.5. This changed the overall QHEI score for this stream from 34 to 35.5.

- Stream Sec2 – S138 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 10 and has since been correctly calculated and is now 3. In addition, the category 4. Riparian Zone & Bank Erosion score was miscalculated and was originally scored as 4 and has since been corrected and is now scored as 5. This changed the overall QHEI score for this stream from 49 to 43. In addition, the stream impact area for Alternative B was changed because of a rounding error. The impact area was 4.96 acres and has been changed to 4.97 acres.

- Stream Sec 2 – S150 the stream impact length and stream impact area for Alternatives A and B were changed base on modifications made to the end of the stream segment identified as Stream S150 and the beginning of the stream segment identified as S152. This modification changed the length of the stream impact for Alternative A from 1,194 feet to 1,449 feet and the area of impact changed from 0.93 acre to 1.13 acre. The length of stream impact for Alternative B changed from 62 feet to 318 feet and the area of impact changed from 0.05 acre to 0.25 acre.

- Stream Sec2 – S152 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall QHEI score for this stream from 50 to 56. In addition, the stream impact length and stream impact area for Alternatives A and B were changed base on modifications made to the end of the stream segment identified as Stream S150 and the beginning of the stream segment identified as S152. This modification changed the length of the stream impact for Alternative A from 1,131 feet to 876 feet and the area of impact changed from 0.88 acre to 0.68 acre. The length of stream impact for Alternative B changed from 1,260 feet to 1,004 feet and the area of impact changed from 0.98 acre to 0.78 acre.

- Stream Sec2 – S154 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall QHEI score for this stream from 52.5 to 58.5.

- Stream Sec2 – S155 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 46 to 52.

- Stream Sec2 – S156 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall QHEI score for this stream from 62 to 68.

- Stream Sec2 – S162 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 11. This changed the overall QHEI score for this stream from 47 to 51.

- Stream Sec2 – S175 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5.5 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 32.5 to 39.

- Stream Sec2 – S176 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 33.5 to 40.5.

- Stream Sec2 – S185 the area of stream impact for Alternative B has been revised to correct a rounding error. The area of impact for Alternative B was 0.00 acre and has been changed to 0.01 acre.

- Stream Sec2 – S187 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 13 and has since been correctly calculated and is now 10. This changed the overall QHEI score for this stream from 49 to 46.

- Stream Sec2 – S197 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 11.5 and has since been correctly calculated and is now 11. In addition, the category 4. Riparian Zone & Bank Erosion score was miscalculated and was originally scored as 12 and has since been corrected and is now scored as 7.5. This changed the overall QHEI score for this stream from 64.5 to 59.5.

- Stream Sec2 – S200 the QHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall QHEI score for this stream from 39 to 45.

- Stream Sec2 – S306 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall HHEI score for this stream from 50 to 56.

- Stream Sec2 – S307 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S309 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S316 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S321 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 9 and has since been correctly calculated and is now 8. This changed the overall HHEI score for this stream from 19 to 18. In addition, the area of stream impact for Alternative A has been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S323 the HHEI score was changed due to a miscalculation in category 2. Maximum Pool Depth. The maximum pool depth measured as 25.4cm was previously scored as 20 and has since been correctly scored and is now 30. This changed the overall HHEI score for this stream from 45 to 55. In addition, the area of stream impact for Alternative B has been revised to correct a rounding error. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S336 the QHEI score was changed due to a miscalculation in category 2. Instream Cover. The instream cover score was previously reported as 7 and has since been correctly calculated and is now 8. In addition, the category 5. Pool/Glide and Riffle/Run Quality score of 0 was miscalculated and has since been correctly calculated as 2. This changed the overall QHEI score for this stream from 21.5 to 24.5.

- Stream Sec2 – S337 the HHEI score was changed due to a miscalculation in the overall score. The overall score was previously calculated as 46 and has since been correctly calculated and is now 34.

- Stream Sec2 – S339 the HHEI score was changed due to a miscalculation in the overall score. The overall score was previously calculated as 51 and has since been correctly calculated and is now 46.

- Stream Sec2 – S341 the HHEI score was changed due to a miscalculation in the overall score. The overall score was previously calculated as 49 and has since been correctly calculated and is now 51. In addition, the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S345 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall HHEI score for this stream from 25 to 31.

- Stream Sec2 – S348 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 5 and has since been correctly calculated and is now 11. This changed the overall HHEI score for this stream from 25 to 31.

- Stream Sec2 – S365 the HHEI score was changed due to a miscalculation in category 3. Bank Full Width. The bank full width was measured at 1.6m and was previously scored as 25 and has since been correctly scored and is now 20. This changed the overall HHEI score for this stream from 63 to 58. In addition, the area of stream impact for Alternatives B has been revised to correct a rounding error. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S366 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 11. This changed the overall HHEI score for this stream from 16 to 21.

- Stream Sec2 – S368 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S372 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S377 the area of stream impact for Alternative A has been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S378 the area of stream impact for Alternative B has been revised to correct a rounding error. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S385 the HHEI score was changed due to a miscalculation in category 2. Maximum Pool Depth. The maximum pool depth was measured at 10.2cm and was previously scored as 15 and has since been correctly scored and is now 25. This changed the overall HHEI score for this stream from 58 to 68.

- Stream Sec2 – S386 the area of stream impact for Alternative A has been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S388 the area of stream impact for Alternatives A has been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S393 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall HHEI score for this stream from 51 to 57.

- Stream Sec2 – S394 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall HHEI score for this stream from 46 to 52.

- Stream Sec2 – S398 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 15. This changed the overall HHEI score for this stream from 46 to 55. In addition, the length of impact for Alternative A was revised based on the 2005 aerial. The length of impact for Alternative A was 252 feet and has been changed to 274 feet.

- Stream Sec2 – S401 the HHEI score was changed due to a miscalculation in the overall score. The overall score was previously calculated as 24 and has since been correctly calculated and is now 44.

- Stream Sec2 – S409 the area of stream impact for Alternatives A and B have been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S410 the area of stream impact for Alternative A has been revised to correct a rounding error. The area of impact for Alternative A was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S412 the area of stream impact for Alternative B has been revised to correct a rounding error. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S413 the area of stream impact for Alternative B has been revised to correct a rounding error. The area of impact for Alternative B was 0 acre and has been changed to 0.01 acre.

- Stream Sec2 – S418 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 7 and has since been correctly calculated and is now 13. This changed the overall HHEI score for this stream from 42 to 48.

- Stream Sec2 – S421 the HHEI score was changed due to a miscalculation in the overall score. The overall score was previously calculated as 51 and has since been correctly calculated and is now 46.

- Stream Sec2 – S426 the HHEI score was changed due to a miscalculation in category 1. Substrate. The substrate score was previously reported as 6 and has since been correctly calculated and is now 12. This changed the overall HHEI score for this stream from 51 to 57.

1.1 Regulatory Definitions

To comply with the requirements of the National Environmental Policy Act (1969) the potential impacts on sensitive resources must be examined and considered for proposed Federal transportation facilities. These resources include, but are not limited to, floodplains, wetlands, endangered species, historic and archeological sites, parklands, air quality, wildlife habitat, “Waters of the U.S.” and others.

The term “Waters of the U.S.” is defined in the Clean Water Act (40 CFR 122.2) and means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands";

(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the United States.

“Waters of the State” means accumulations of waters that are within, partially within, or border on the State of Indiana. The term includes both surface and underground waters, natural and artificial waters, and public and private waters. However, the term does not include any private pond, or any pond, reservoir, or facility built for the reduction or control of pollution. Nor does it include ponds, reservoirs or facilities built for the cooling of water prior to discharge unless the discharge causes or threatens to cause water pollution.

“Waters of the State” are defined in Indiana Code 13-11-2-265 as meaning:

(a) "Waters", for purposes of water pollution control laws and environmental management laws, means:
  (1) the accumulations of water, surface and underground, natural and artificial, public and private; or
  (2) a part of the accumulations of water;
(a) that are wholly or partially within, flow through, or border upon Indiana.
(b) The term "waters" does not include:
  (1) an exempt isolated wetland;
  (2) a private pond; or
  (3) an off-stream pond, reservoir, wetland, or other facility built for reduction or control of pollution or cooling of water before discharge.
(c) The term includes all waters of the United States, as defined in Section 502(7) of the federal Clean Water Act (33 U.S.C. 1362(7)), that are located in Indiana.
(d) As added by P.L.1-1996, SEC.1. Amended by P.L.183-2002, SEC.1; P.L.282-2003, SEC.31; P.L.52-2004, SEC.4.

The Waters of the U.S. and the Waters of the State may include perennial, intermittent, and ephemeral streams.

Perennial Streams: Perennial streams are streams that flow throughout the majority of the year (greater than 90% of the time) and flow in a well-defined channel. However, perennial streams can "dry up", particularly during extended periods of drought. All streams that were identified on the USGS maps by a solid blue line were considered perennial streams for this report.

Intermittent Streams: An intermittent stream is a stream that only during wet periods of the year (30% to 90% of the time) and flows in a continuous well-defined channel. During dry periods, especially in summer months, intermittent streams may go down to a trickle of water and appear dry when, in fact, there is water flowing through the stream bottom or "substrate". All streams that were identified on the USGS maps by a broken blue line were considered intermittent streams for this report.

Ephemeral Streams: An ephemeral stream is a stream that flows only during and for short periods following precipitation (less than 30% of the time) and flows in low areas that may or may not have a well-defined channel. Some commonly used names for ephemeral streams include: stormwater channel, drain, swale, gully, hollow, or saddle. Since ephemeral streams are often headwater streams, it is typically recommended that roads, site-prep, and other soil disturbing activities be minimized in ephemeral streams to avoid erosion and sedimentation of stormwater runoff that will flow downstream to larger streams or waterbodies. All streams identified in the field that were not represented on the USGS maps were classified as ephemeral streams for this report.

1.2 Potential Habitat Quality Impacts

Gibson, Pike, and Daviess counties are heavily agriculturized. The primary agricultural uses in the corridor were observed to be row crops. Extensive coal mining has also occurred in the corridor. Former mined areas have been reclaimed as agricultural or forest. Expected habitat impacts to the streams in Section 2 include: channelization, relocation, removal of in-stream cover, removal or narrowing of riparian zones, sedimentation, nutrification, and acidic metal-rich drainage.

1.3 Methodology

1.3.1 Locate Survey Sites

Survey sites were located by finding the intersections of the alternatives and their associated connecting roads with each ephemeral, intermittent, and perennial stream crossed by Alternatives A, B, DEIS Preferred Alternative and the Refined Preferred Alternative.

The hydrography layer from the Tier 1 GIS was used to identify streams within the corridor. However, this layer did not differentiate between perennial and intermittent streams, nor did it identify ephemeral streams. The hydrography layer was overlaid on the U.S.G.S. 7.5 minute Digital Raster (DRG) Topographic maps crossed by the corridor.

The 7.5 minute map series identifies perennial streams by a continuous blue line and intermittent streams by a broken blue line. All other streams identified in the alternatives were considered ephemeral streams.

Ephemeral streams were identified using Soil Survey maps (U.S.D.A., 1974, 1987, and 1989) and by overlaying the hydrography layers on the 2004 high-resolution aerial photographs of the corridor and then visually inspecting each photo for drainages not delineated in the hydrography layers. Visible drainages were then digitized into a new ephemeral hydrography layer. During this process, the perennial and intermittent stream traces were also inspected and edited if they deviated from their visible channels. This was necessary because many of the drainages in the study area have been modified by coal mining and agriculture since the production of the hydrography layer.

Farm ditches and roadside ditches were not mapped or surveyed unless they replaced an historic natural stream channel, connected an upgradient wetland area to a jurisdictional water resource downstream, or were constructed in wetlands/bottomlands to drain wetlands. Grassed waterways in agricultural settings were not mapped or surveyed unless they were judged to have replaced a naturally occurring channel that could be identified as a Water of the U.S.

1.3.2 Delineate Watersheds

Watershed areas were delineated by overlaying the intersection of the alternatives on the stream network and the topographic contours and determining the upgradient boundaries for each stream. The watersheds were digitized as polygon areas and their individual areas were calculated in square miles. The watershed area of the East Fork White River was taken from published data (U.S.G.S., 2004). A total of 11,996 square miles of watersheds were delineated.

1.3.3 Field Surveys

Each site was located in the field using aerial photographs and a hand-held Global Positioning Satellite (GPS) receiver. Sites were examined to determine if a bed and bank were present. Grassy swales were not surveyed because they did not meet the definition of “Waters of the U.S.” or “Waters of the State”. Sites were flagged and a two-hundred foot reach was measured off with the site at the center of the reach. The reach was carefully examined and QHEI or HHEI metrics were measured and recorded on standard forms. Photographs upstream and downstream of each site were photographed using a digital camera. Alterations to drainage channels that deviated from the mapped channels were noted and the altered channels were traced on the aerial photograph field maps. Additional channels that did not appear on the aerial photo field maps were also traced on the aerial photo field maps and intersection coordinates were recorded and the site was surveyed using either the QHEI or HHEI standard forms.

After completing each week of field work, the field maps, photographs, and form data were entered into database tables. The project maps were updated from field maps and additional channel and intersection points were added to the GIS project.

Tabulated data included:

1. Site identification number
2. Universal Transverse Mercator (UTM) coordinates
3. Quarter-section, Section, Township, and Range
4. 7.5-minute Quadrangle name
5. County
6. Date of survey
7. Type of survey, QHEI or HHEI
8. Survey score
9. Watershed area
10. Map gradient
11. Stream flow (perennial, intermittent, or ephemeral)
12. Classification code (Cowarden, 1979)
13. Associated alignment

1.4 Analysis

A total of 245 sites were actually surveyed during the field survey. QHEI surveys were performed on 43 of the sites and HHEI surveys were performed on 202 of the sites. Figures 1 and 2 contain maps showing the survey sites.

The Ohio Environmental Protection Agency (Ohio EPA) developed the QHEI for streams and rivers in Ohio (Rankin 1989, 1995). The QHEI is a physical habitat index designed to provide an empirical, quantified evaluation of the general lotic macrohabitat (Ohio EPA, 1989). Although the Ohio EPA originally developed the QHEI to evaluate fish habitat in streams, IDEM utilizes the QHEI as a measure of general habitat quality. The QHEI is composed of six metrics including substrate composition, in-stream cover, channel morphology, riparian zone and bank erosion, pool/glide and riffle-run quality, and map gradient. Each metric is individually scored and then summed to provide the total QHEI score. The highest possible score is 100.

The QHEI evaluates the characteristics of a stream segment, as opposed to the characteristics of a single sampling site. Thus, the QHEI provides an averaged quality index over the length of a reach instead of a site score that may be influenced by a localized disturbance. QHEI scores from hundreds of stream segments in Ohio have indicated that values greater than 60 are generally conducive to the existence of warm water faunas. Scores greater than 75 typify habitat conditions that have the ability to support exceptional warm water faunas (Ohio EPA, 1999). Rankin (1995) had indicated that stream QHEI's scoring less than 33 were not meeting designated uses for aquatic life in Ohio.

QHEI scores are classified by the Ohio EPA as:

>75 Exceptional Warm water Habitat
60-75 Suitable for Warm water Habitat without use impairment

45-60 Warm water Habitat under some circumstance, but may show level of impairment that requires reclassification as Modified Warm water Habitat
32-45 Modified Warm water Habitat
<32 Modified Warm water Habitat if watershed area is greater than 3 mi^2, otherwise Limited Resource Water

The Ohio Environmental Protection Agency developed the Headwater Habitat Evaluation Index (HHEI) for the extreme headwater habitats of rivers and streams in Ohio (Primary Headwater Habitat, PHWH). Ohio defines these extreme headwaters as primary headwater habitat streams having a defined bed and bank, with either continuous or periodical flowing water, with watershed areas less than or equal to 1.0 square mile, and maximum depth of water pools equal to or less than 40 centimeters. The HHEI is based on three physical measurements that have been found to correlate well with biological measures of stream quality; substrate, maximum pool depth, and bank full width (Ohio EPA, 2002)

Ohio EPA (2002) classified headwater streams as Class I, II, or III habitats. The HHEI classifications were based on habitat scoring. In some instances the HHEI classification guidelines would require addition biological evaluations to verify the classification.

- Class I PHWH - A certain percentage of the primary headwater stream channels were observed to be normally dry, with little or no aquatic life present. This type of primary headwater waterway that is normally ephemeral, with water present for short periods of time due to infiltration from snow melt or rainwater runoff, is herein referred to as a Class I-PHWH stream (HHEI score 20 to 40). If a Class I-PHWH stream is no longer in its natural channel it considered a Modified Class I-PHWH stream (HHEI score 0 to 30).

- Class II – PHWH - streams found to have a moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis. The native fauna of these streams is characterized by species of vertebrates (fish or salamanders) and/or benthic macroinvertebrates that are pioneering, headwater, temporary, and/or temperature facultative. This type of PHWH stream is herein referred to as a Class II PHWH stream (HHEI scores 40 – 60). If a Class II-PHWH stream is no longer in its natural channel it considered a Modified Class II-PHWH stream (HHEI score 30 to 60).

- Class III – PHWH - streams found to have native fauna adapted to cool-cold perennial flowing water characterized by a community of vertebrates (either cold water adapted species of headwater fish and/or obligate aquatic species of salamanders from the lungless family Plethodontidae), and/or a diverse community of benthic macroinvertebrates including cool water taxa, with larval life stages resident in the stream continuously on an annual basis. This type of PHWH stream is herein referred to as a Class III-PHWH stream (HHEI scores >60). One of the criteria of a Class III-PHWH stream is that the stream is in its

natural channel; therefore, there cannot be any Modified Class III-PHWH streams.

1.4.1 Results

The number of stream crossings impacted by Alternatives A, B, the DEIS Preferred Alternative, and the Refined Preferred Alternative were similar, 151 streams for Alternative A, 163 streams for Alternative B, 152 streams for DEIS Preferred Alternative, and 139 streams for the Refined Preferred Alternative. The numbers of ephemeral, intermittent, and perennial streams are shown in Table 1. Appendix A contains the Stream Impact Site Summary Table and Appendix B contains Site Forms and the corresponding QHEI or HHEI stream assessment data filled out for each of the stream impact sites.

Table 1. Numbers of Ephemeral, Intermittent, and Perennial Streams

Alternative	Ephemeral	Intermittent	Perennial	Total
A	87	44	20	151
B	97	44	22	163
DP	86	45	21	152
RP	82	40	17	139

DP- DEIS Preferred Alternative RP – Refined Preferred

Most headwater habitat streams (<1.0 mi^2) in the study area contained little to no water or only isolated pools. As expected from the underlying bedrock formations, the predominant substrate materials were silt and sand. Ordinary High Water Mark (OHWM) widths varied from less than 1.0 foot to 390 feet. Most stream gradients ranged from flat to moderate, but a few were estimated as moderate to severe. HHEI scores ranged from 9 (Sec2S4) to 72 (Sec2S115) with an average score of 36.5 (See Appendix A – Summary Table).

Intermittent and perennial streams, for which QHEI surveys were performed, had silty and sandy substrates. Gravel, cobbles, and bedrock were found in most streams, but in insignificant amounts. Some streams, East Fork Keg Creek, Prides Creek, Hurricane Branch, Hurricane Creek, Flat Creek, Buck Creek, Patoka River, and the South Fork Patoka River have been channelized and relocated. QHEI scores ranged from 18.5 (Sec2S369) to 68.0 (Sec2S156) with an average score of 44.5 (See Appendix A – Summary Table).

Perennial Streams (south to north)

<u>East Fork Keg Creek, Sec2S6 and Sec2S7</u>

Two sample sites were completed on the East Fork of Keg Creek. East Fork Keg Creek exhibits minimal sinuosity and channelization at the two sites indicating recent relocation and bank modification. Both sites had bottom substrates predominated by silt with some gravel and sand in riffles. Instream cover was sparse. The riparian width at both locations was narrow, comprised largely of grasses and shrubs with a few widely spaced larger trees. Overall channel development was fair, with glide habitat most common.

QHEI scores were 41 and 45, reflective of fair stream habitat. The East Fork Keg Creek is listed in the 2008 303(d) List for Indiana. The parameter of concern is *E. coli.*

Hurricane Creek, Sec2S18

Due to the proximity and similarity of habitat for all of the Alternatives in this area, only one QHEI survey was performed on Hurricane Creek. The survey reach exhibited minimal sinuosity and channelization indicating recent relocation and bank modification. The site bottom substrate consisted predominately of silt. Instream cover was sparse. The riparian width of the surveyed reach was nonexistent. However, downstream of the site Hurricane Creek enters woodland with more abundant canopy, but similar channel morphology. Overall channel development was poor, with only glide habitat. The QHEI score was 22, reflective of poor stream habitat.

South Fork Patoka River, Sec2S22

Due to the proximity and similarity of habitat for all of the Alternatives in this area, only one QHEI survey was performed on the South Fork Patoka River.. The survey reach exhibited minimal sinuosity and channelization indicating recent relocation and bank modification. The site bottom substrate consisted predominately of silt, sand, and gravel with abundant detritus and woody debris. Deep pools were present (>1 m), but there were no riffles in the survey reach. Stream bank full width averaged 40 feet. Some aquatic macrophytes were present. Instream cover was sparse. However, canopy cover was approximately 40% open. The riparian width was greater than 100 feet at the survey site for both the left and right banks, but the left bank riparian zone narrows upstream. Overall channel development was poor, with only pool and glide habitat. Fish were observed. The QHEI score was 38, reflective of fair stream habitat. The South Fork Patoka River is listed in the 2008 303(d) List for Indiana. The parameter of concern is Total Dissolved Solids and Impaired Biotic Communities.

Patoka River, Sec2S23

Due to the proximity and similarity of habitat for all of the Alternatives in this area, only one QHEI survey was performed on the Patoka River. The survey reach exhibited minimal sinuosity and channelization indicating recent relocation and bank modification. The site bottom substrate consisted predominately of silt, sand, and gravel with abundant detritus and woody debris. Deep pools were present (>1 m), but there were no riffles in the survey reach. Stream bank full width averaged 90 feet. Some aquatic macrophytes were present. Instream cover was sparse. Canopy cover was approximately 80% open. The riparian width was greater than 100 feet at the survey site for both the left and right banks, but the left bank riparian zone narrows upstream. Overall channel development was poor, with only pool and glide habitat. Water was very turbid. Abundant numbers of fish were observed at, or just below, the surface. The QHEI score was 30, reflective of fair stream habitat. The Patoka River is listed in the 2008 303(d) List for Indiana. The parameters of concern are Fish Consumption Advisories for PCBs and mercury.

Flat Creek, Sec2S57 and Sec2S58

Two sample sites were completed on Flat Creek. The survey reaches exhibited low sinuosity and may have been relocated and dredged. The site bottom substrate consisted

predominately of silt and sand with detritus and woody debris. Deep pools were present (>1 m), but there were no riffles in the survey reaches. Stream bank full widths averaged 25 and 26 feet. Instream cover was sparse. Canopy cover was approximately 60% open at Sec2S57 but only 20% open at Sec2S58. The riparian width ranged from very narrow along the left bank at the Sec2S57 reach to wide at Sec2S58. Overall channel development was poor, with only pool and glide habitat. Water was very turbid. Abundant numbers of fish were observed at, or just below, the surface. The QHEI scores were 42.5 and 42 indicating fair stream habitat.

Prides Creek, Sec2S80, Sec2S81, Sec2S82, and Sec2S336

East of State Road 57 the alternatives bifurcate, resulting in four intersects with Prides Creek, three of which are within the perennial portion of Prides Creek as identified on the USGS Map (Sec2S80, Sec2S81, and Sec2S82). Sec2S336 is impacted by a local service road. These sections of Prides Creek have been relocated for coal mining operations or altered for agricultural purposes. The bottom substrates consisted predominately of silt and sand, with few boulders, detritus, and woody debris present. Pool depths varied from 0.5 to 3.5 feet. Stream bank full width averaged 6.5 feet. Instream cover was moderate to sparse. Canopy cover was approximately 60% to 80% open. The riparian zone width was generally wide and consists of scrub woods for sample sites Sec2S80, Sec2S81, and Sec2S82 and narrow to nonexistent at Sec2S336. Overall channel development was poor to fair, with mostly pool and glide habitat. The QHEI scores were 50 at Sec2S80, 56.5 at Sec2S81, 44 at Sec2S82, and 24.5 at Sec2S336 reflective of fair to poor stream habitat.

Mud Creek, Sec2S128 and Sec2S129

Two sample sites were completed on Mud Creek. The survey reaches exhibited moderate sinuosity and appear unmodified. The site bottom substrate consisted predominately of sand and silt with abundant woody debris. At reach S129, bedrock crops out within the stream bed forming a small waterfall. Instream cover was sparse. The riparian width of the surveyed reach was moderate to wide with canopy cover 30% open. Overall channel development was good, with riffle, run, glide, and pool habitat. The QHEI score was 54.5 and 58.5, reflective of fair stream habitat.

East Fork White River, Sec2S138 and Sec2S139

Two sample sites were completed on the East Fork White River. Although the QHEI was developed for smaller streams, an attempt to score the East Fork was made for comparison to smaller streams in the study area. This portion of the East Fork has minimal sinuosity. Although it was not possible to representatively sample the substrate materials in the study reaches, it is probable that substrate materials are similar to the shallow near bank materials. The near bank substrate consisted predominately of silt and sand. Stream bank full width averaged 390 feet. Instream cover was sparse. Canopy cover was approximately 100% open. The riparian width was narrow (15 – 30 feet) to moderate (30-165 feet). Overall channel development was poor, with only pool and glide habitat. Water turbidity was high. Fish, crayfish, and frogs were observed. The QHEI scores were 43 and 43, reflective of fair stream habitat.

Unnamed Tributary of Jackson Pond, Sec2S142 and Sec2S369.
This perennial stream is impacted by all of the alternatives. The site bottom substrate consisted predominately of silt, with abundant muck and detritus/woody debris. Instream cover was moderate at Sec2S142 and nonexistent at Sec2S369. The riparian width at Sec2S142 was greater than 100 feet at the survey site for both the left and right banks. Overall channel development was poor. The QHEI score was 34 at Sec2S142 and 18.5 at Sec2S369, reflective of poor to fair stream habitat.

Veale Creek, Sec2S150, Sec2S152, and Sec2S200.
Due to stream meanders, there were three intersections of Veale Creek with the alternatives. Due to the close proximity of these sites, the close proximity of the alternatives intersection, and the similarity in habitat, only two QHEI surveys were performed within the main line right-of-way of the alternatives (Sec2S150 and Sec2S152) and one additional survey was completed for a local service road impact (Sec2S200). The bottom substrates consisted predominately of sand, with detritus, woody debris, and some gravel was present. Maximum pool depths were 1 to 2.5 feet. Stream bank full width averaged 34 feet. Instream cover was sparse to moderate. Canopy cover was approximately 40% to 50% open. The left bank riparian zone width was moderately wide (30-165 feet) and consisted of forest. The right bank riparian zone was approximately 15 feet wide. Overall channel development was good, with pool and riffle habitat. The QHEI scores were 56 at Sec2S150, 56 at Sec2S152, and 45 at Sec2S200, reflective of fair to poor stream habitat. Veale Creek is listed in the 2008 303(d) List for Indiana. The parameter of concern is *E.coli.*

Hurricane Branch, Sec2S162 and Sec2S415
Due to the proximity and similarity of habitat for all of the Alternatives in this area, only one QHEI survey was performed on Hurricane Branch for the main line right-of-ways (Sec2S162) and one additional QHEI survey was completed for a local service road impact (Sec2S415). The site bottom substrates consisted predominately of sand and gravel with some silt present. Instream cover was moderate. The riparian width of the surveyed reaches were nonexistent to very narrow. Overall channel development was good, with both pool and riffle habitats present. The QHEI scores were 51 at Sec2S162 and 46.5 at Sec2S415, reflective of fair stream habitat. Hurricane Branch is listed as Veale Creek Slough in the 2008 303(d) List for Indiana. The parameter of concern is *E.coli*.

The former Wabash and Erie Canal is listed in the 2008 303(d) List for Indiana. However, no remnants of the canal were identified within the Section 2 corridor during field surveys.

The lineal distance and areas of perennial, intermittent, and ephemeral stream impacts are summarized in Table 2 for each alternative. The Refined Preferred alternative has the least total stream impact of the alternatives.

Table 2. Stream Impacts for each Alternative					
Alternative	**Units**	**Ephemeral**	**Intermittent**	**Perennial**	**Total**
A	feet	38,616	23,504	9,774	71,894
	acres	4	5	10	19
B	feet	39,346	27,147	9,352	75,845
	acres	4	5	10	19
DP	feet	37,790	22,953	8,808	69,551
	acres	10	4	4	18
RP	feet	35,883	21,907	7,391	65,181
	acres	3	4	8	15

DP-DEIS Preferred RP – Refined Preferred

1.4.2 Trends

QHEI and HHEI scores for the alternatives were very similar. The average QHEI scores for the alternatives were 45.6 for Alternative A, 44.9 for Alternative B, 45.6 for the DEIS Preferred Alternative, and 44.8 for the Refined Preferred Alternative. Average HHEI scores were 38.3 for Alternative A, 35.5 for Alternative B, 38.4 for the DEIS Preferred Alternative, and 37.3 for the Refined Preferred Alternative.

Physiography had little control on scores. Average QHEI and HHEI scores for the Booneville Hills physiographic province were 47.1 and 34.5. Average scores for the Wabash Lowlands were 44.1 and 37.0, respectively.

Glaciation proved to be a greater influence on both the QHEI and HHEI scores. In the glaciated region, that includes most of Pike County and all of Daviess County, the average QHEI and HHEI scores were 45.2 and 33.6. In the unglaciated region the average scores were 34.7 and 27.5.

1.5 Summary

The numbers of each type of stream crossed by the two alternatives is shown in Table 3.

Table 3. Numbers of Ephemeral, Intermittent, and Perennial Streams				
Alternative	**Ephemeral**	**Intermittent**	**Perennial**	**Total**
A	87	44	20	151
B	97	44	22	163
DP	86	45	21	152
RP	82	40	17	139

DP- DEIS Preferred RP – Refined Preferred

The Refined Preferred Alternative impacts fewer perennial streams than any other alternative.. The Refined Preferred Alternative impacts 4 fewer intermittent streams than

Alternative A or Alternative B and 5 fewer intermittent streams than the DEIS Preferred Alternative. Alternatives A, B, and the DEIS Preferred Alternatives impact 5, 15, and 4 more ephemeral streams, respectively than the Refined Preferred Alternative. The Refined Preferred Alternative impacts the least number of streams compared to all alternatives.

Most headwater habitat streams in the study area contained little to no water or only isolated pools due to the impermeability of the underlying bedrock and the consequent lack of groundwater discharge and have been modified by agricultural practices and coal mine operations. Most headwater streams have ephemeral to intermittent flow regimes. Predominant substrate materials are silt and sand. Headwater streams tend to be small with flat to moderate gradients. HHEI scores ranged from 9 (Sec2S4) to 72 (Sec2S115) with an average score of 36.5. Overall habitat quality of these streams may be considered fair.

Intermittent and perennial streams for which QHEI surveys were performed had silty and sandy substrates. Gravel, cobbles, and bedrock were found in many streams, but in insignificant amounts. QHEI scores ranged from 18.5 (Sec2S369) to 68 (Sec2S156) with an average score of 44.5. A QHEI score of 44.5 indicates a fair stream habitat quality. Overall, the Refined Preferred Alternative has the least amount of stream impacts.

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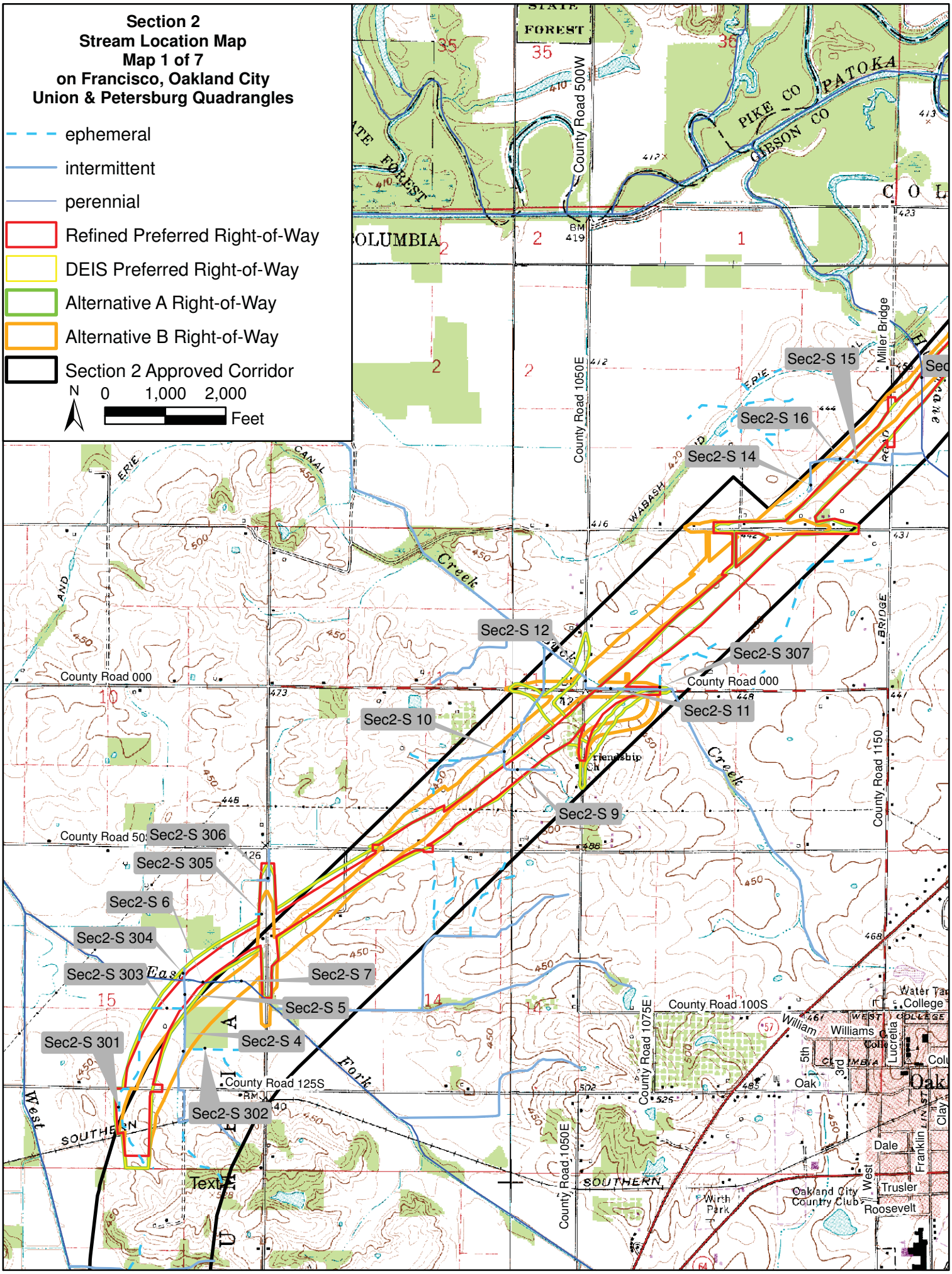
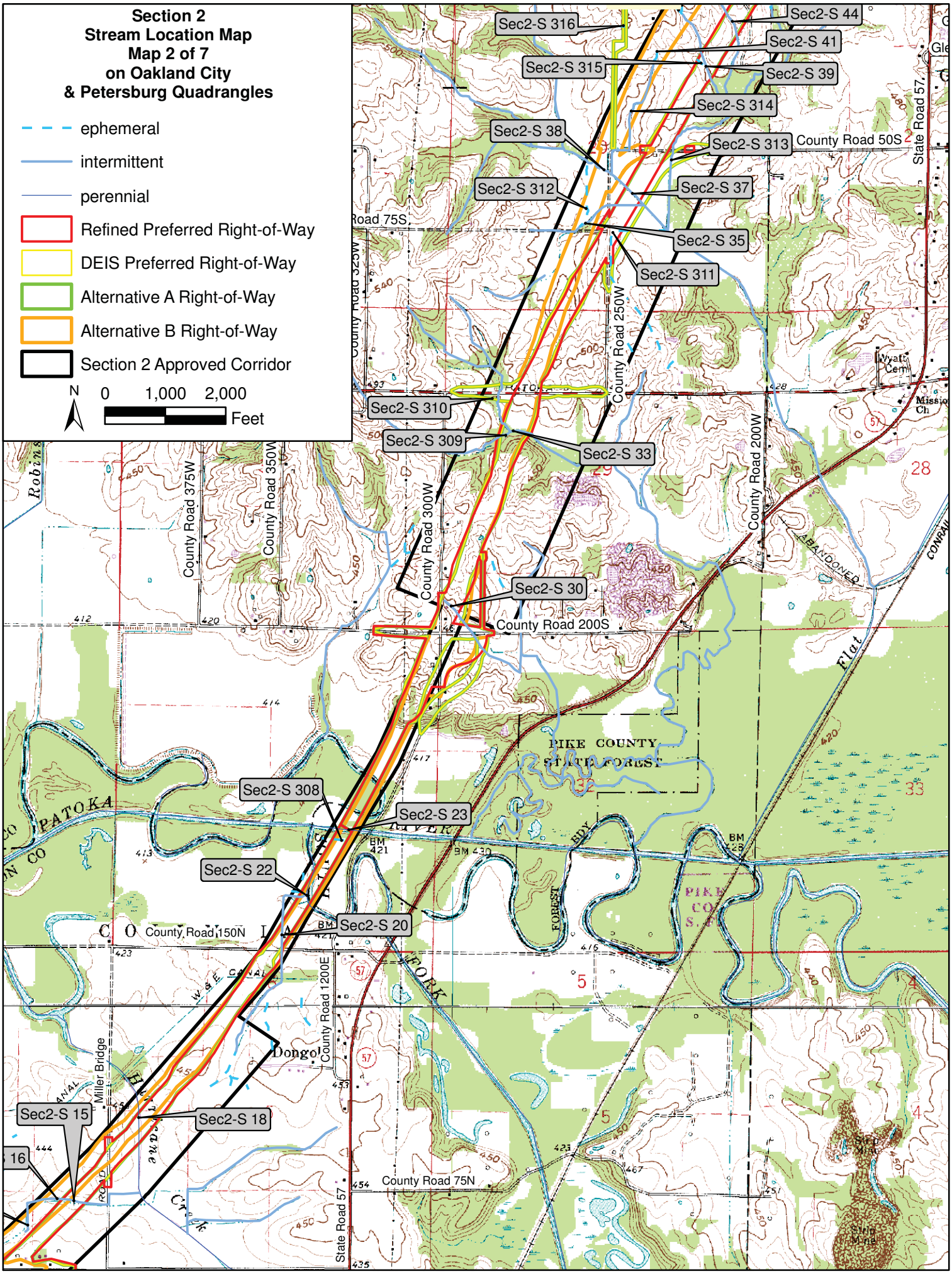
FIGURE 1

USGS Map Showing Section 2 Alternatives and Stream Impact Locations


Section 2
Stream Location Map
Map 1 of 7
on Francisco, Oakland City
Union & Petersburg Quadrangles
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 15
Sec2-S 16
Sec2-S 14
Sec2-S 12
Sec2-S 307
Sec2-S 11
Sec2-S 10
Sec2-S 9
Sec2-S 306
Sec2-S 305
Sec2-S 6
Sec2-S 304
Sec2-S 303
Sec2-S 7
Sec2-S 5
Sec2-S 4
Sec2-S 301
Sec2-S 302
County Road 000
County Road 500W
County Road 1050E
County Road 1150
County Road 100S
County Road 1075E
County Road 125S
Miller Bridge
Friendship Ch
Oakland City Country Club
Wirth Park
Williams College
Oak
Dale
Trusler
Roosevelt
SOUTHERN
WABASH
ERIE
CANAL
PIKE CO
GIBSON CO
PATOKA
COLUMBIA
STATE FOREST
Text


Section 2
Stream Location Map
Map 2 of 7
on Oakland City
& Petersburg Quadrangles
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 316
Sec2-S 44
Sec2-S 41
Sec2-S 315
Sec2-S 39
Sec2-S 314
Sec2-S 38
Sec2-S 313
County Road 50S
Sec2-S 312
Sec2-S 37
Road 75S
Sec2-S 35
Sec2-S 311
County Road 250W
Sec2-S 310
Sec2-S 309
Sec2-S 33
County Road 375W
County Road 350W
County Road 300W
County Road 200W
Sec2-S 30
County Road 200S
PIKE COUNTY
STATE FOREST
Sec2-S 308
Sec2-S 23
Sec2-S 22
Sec2-S 20
County Road 150N
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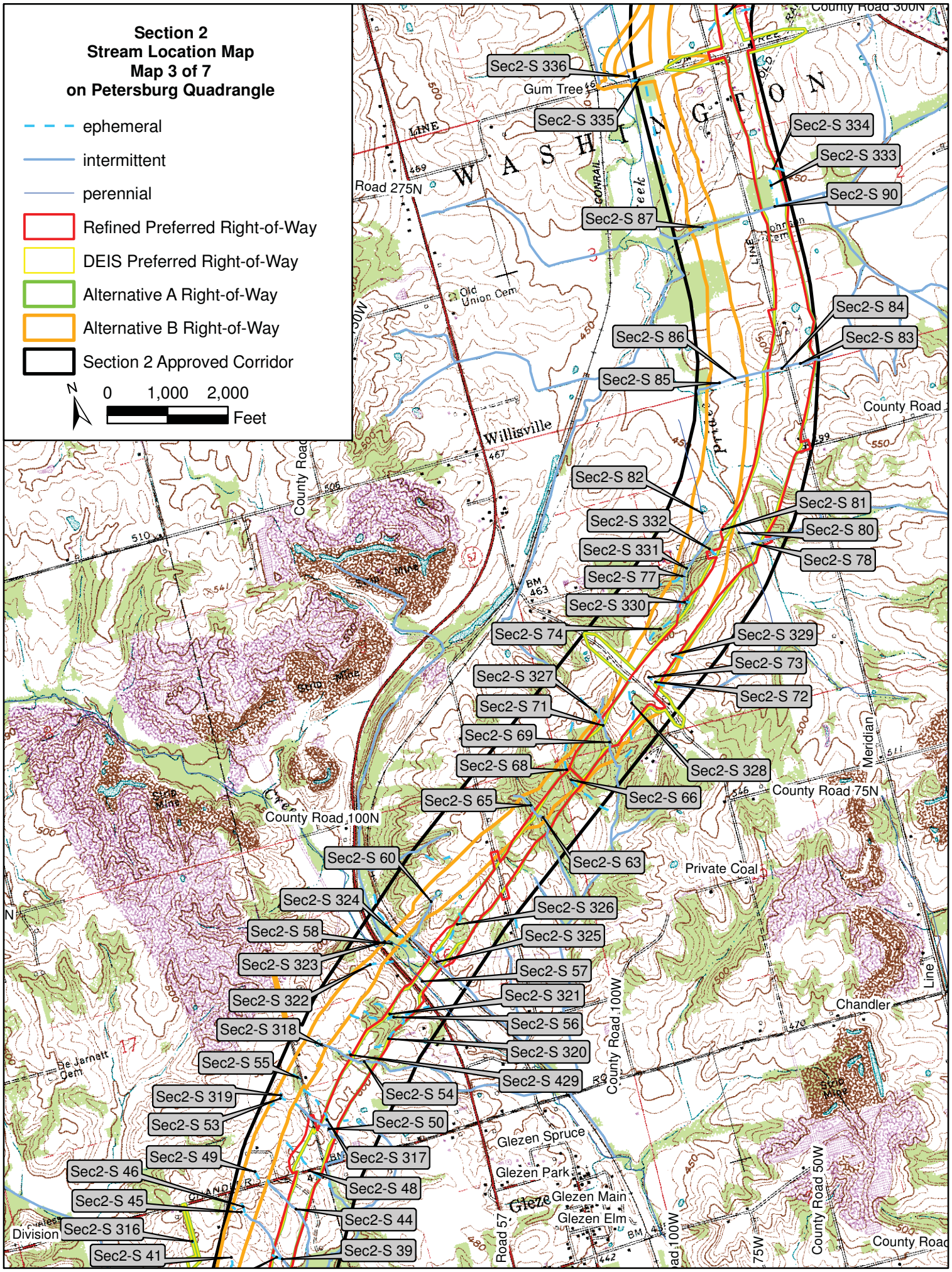
Miller Bridge
Sec2-S 15
Sec2-S 18
County Road 75N
State Road 57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Stream Location Map
Map 3 of 7
on Petersburg Quadrangle
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intermittent
perennial
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DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 336
Sec2-S 335
Sec2-S 334
Sec2-S 333
Sec2-S 90
Sec2-S 87
Sec2-S 84
Sec2-S 86
Sec2-S 83
Sec2-S 85
Sec2-S 82
Sec2-S 81
Sec2-S 332
Sec2-S 80
Sec2-S 331
Sec2-S 78
Sec2-S 77
Sec2-S 330
Sec2-S 74
Sec2-S 329
Sec2-S 73
Sec2-S 327
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Sec2-S 328
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Sec2-S 63
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Sec2-S 323
Sec2-S 57
Sec2-S 322
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Sec2-S 318
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Sec2-S 320
Sec2-S 55
Sec2-S 429
Sec2-S 319
Sec2-S 54
Sec2-S 53
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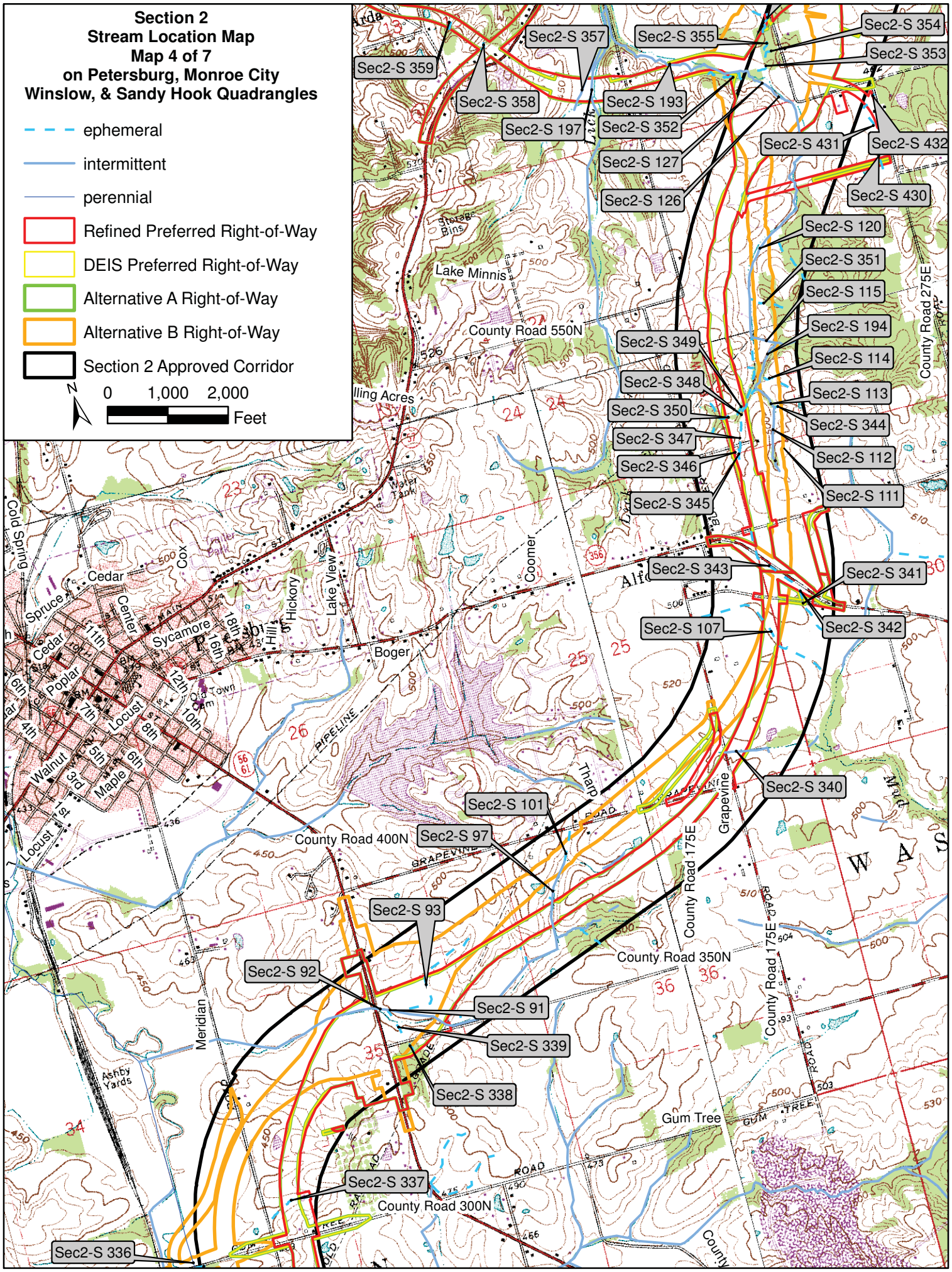
Sec2-S 317
Sec2-S 46
Sec2-S 48
Sec2-S 45
Sec2-S 44
Sec2-S 316
Sec2-S 39
Sec2-S 41
WASHINGTON
Gum Tree
Road 275N
Old Union Cem
Willisville
County Road 300N
County Road
County Road 100N
County Road 75N
Private Coal
Chandler
Glezen Spruce
Glezen Park
Glezen Main
Glezen Elm
Meridian
Line
County Road 100W
County Road 50W
Division
De Jarnett Cem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Map 4 of 7
on Petersburg, Monroe City
Winslow, & Sandy Hook Quadrangles
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 354
Sec2-S 357
Sec2-S 355
Sec2-S 353
Sec2-S 359
Sec2-S 358
Sec2-S 193
Sec2-S 197
Sec2-S 352
Sec2-S 431
Sec2-S 432
Sec2-S 127
Sec2-S 126
Sec2-S 430
Sec2-S 120
Sec2-S 351
Sec2-S 115
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Sec2-S 114
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Sec2-S 344
Sec2-S 347
Sec2-S 112
Sec2-S 346
Sec2-S 111
Sec2-S 345
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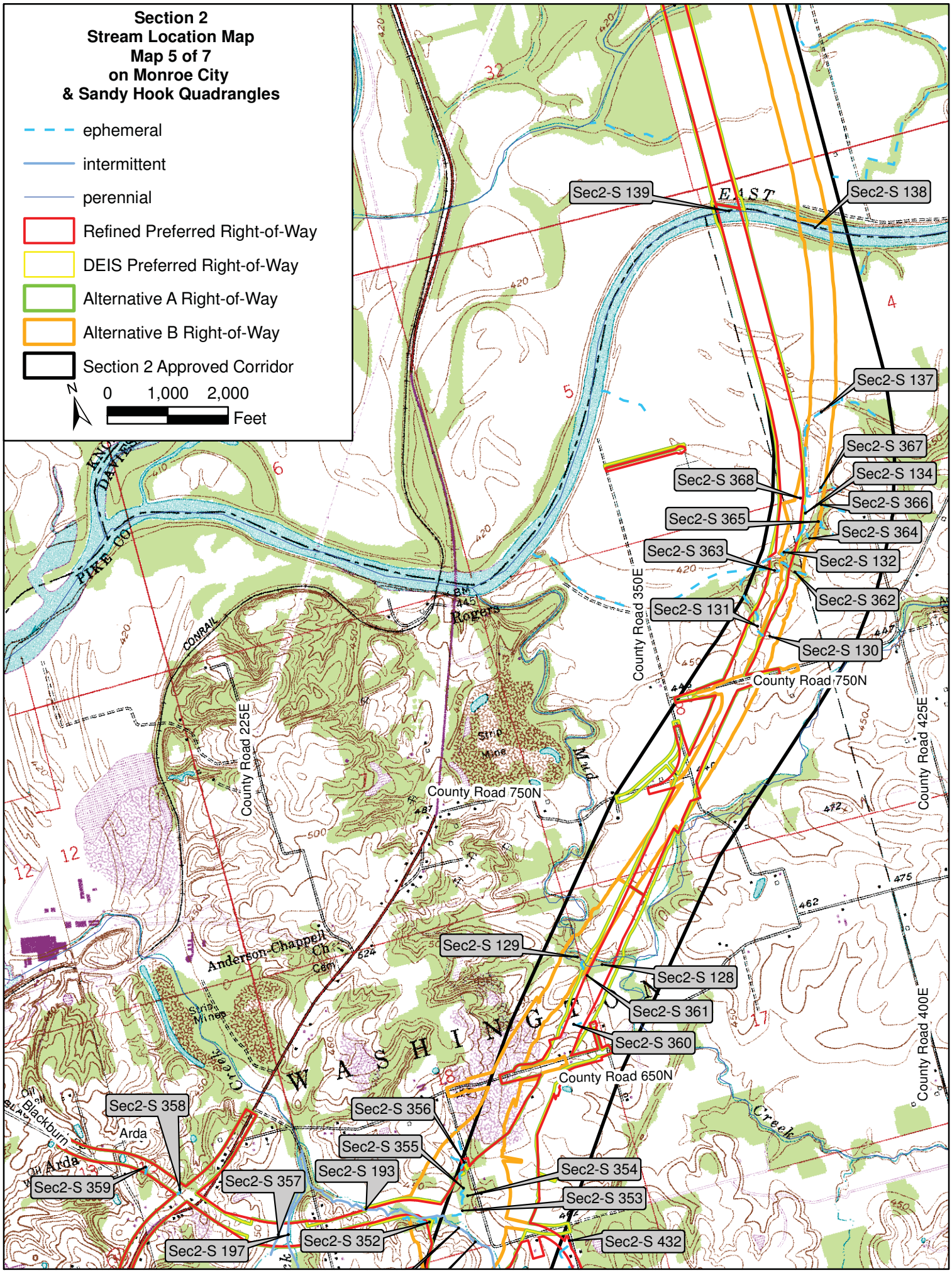
Sec2-S 341
Sec2-S 107
Sec2-S 342
Sec2-S 340
Sec2-S 101
Sec2-S 97
Sec2-S 93
Sec2-S 92
Sec2-S 91
Sec2-S 339
Sec2-S 338
Sec2-S 337
Sec2-S 336
Lake Minnis
County Road 550N
County Road 275E
County Road 400N
County Road 350N
County Road 300N
County Road 175E
Grapevine
Tharp
Coomer
Lake View
Hickory
Boger
Meridian
Gum Tree
Cedar
Spruce
Center
Sycamore
Cox
Cold Spring
Poplar
Locust
Walnut
Maple
Ashby Yards
Water Tank
PIPELINE


Section 2
Stream Location Map
Map 5 of 7
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& Sandy Hook Quadrangles
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intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 139
Sec2-S 138
Sec2-S 137
Sec2-S 367
Sec2-S 134
Sec2-S 368
Sec2-S 366
Sec2-S 365
Sec2-S 364
Sec2-S 363
Sec2-S 132
Sec2-S 362
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Sec2-S 360
Sec2-S 358
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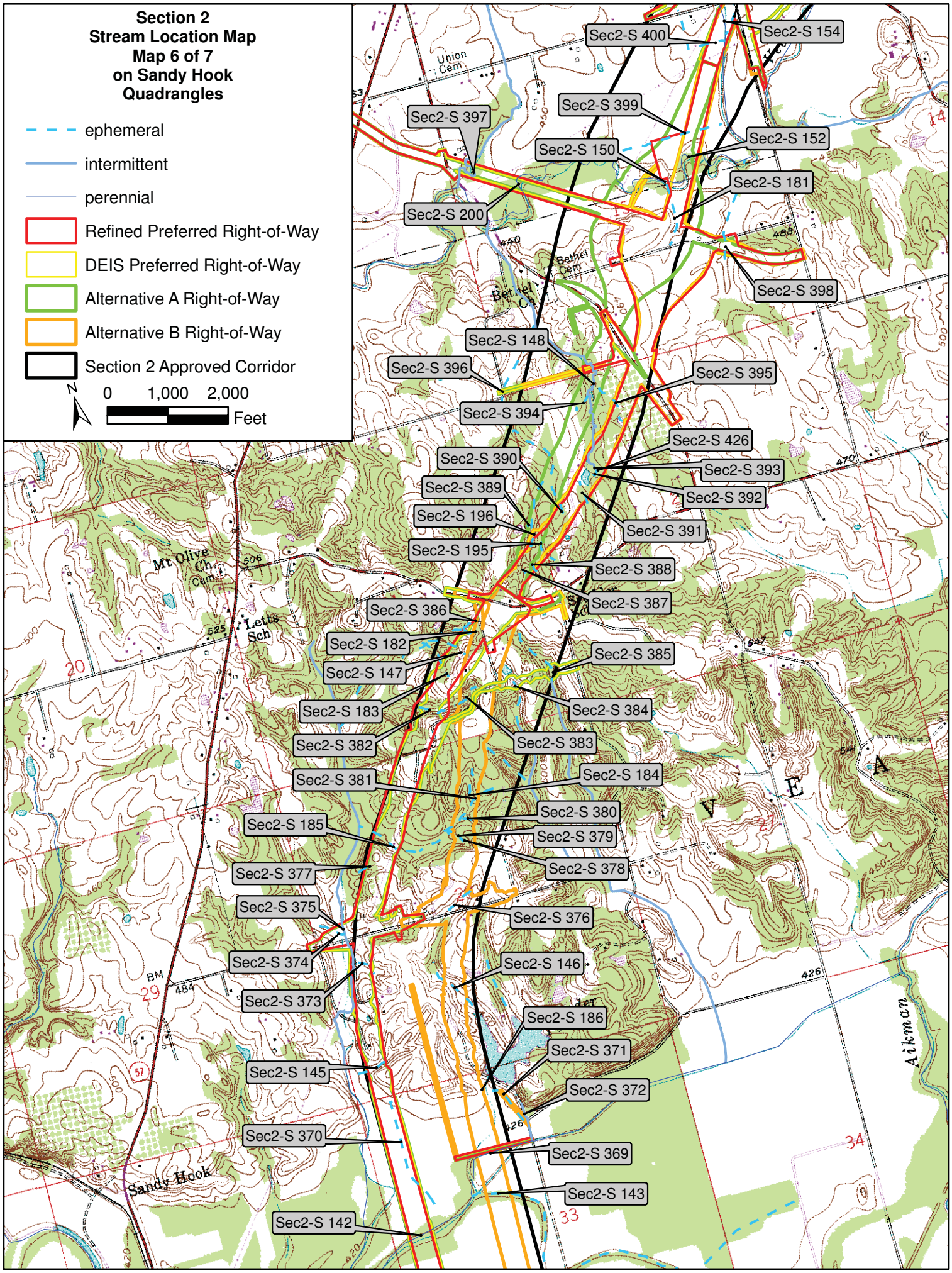
Sec2-S 354
Sec2-S 359
Sec2-S 357
Sec2-S 353
Sec2-S 197
Sec2-S 352
Sec2-S 432
EAST
PIKE CO
CONRAIL
Rogers
County Road 350E
County Road 750N
County Road 225E
County Road 425E
County Road 400E
County Road 650N
Strip Mine
Mud
Anderson-Chappell Ch
Cem
Creek
WASHINGTON
Arda
Blackburn


Section 2
Stream Location Map
Map 6 of 7
on Sandy Hook
Quadrangles
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 400
Sec2-S 154
Sec2-S 399
Sec2-S 397
Sec2-S 152
Sec2-S 150
Sec2-S 181
Sec2-S 200
Sec2-S 398
Sec2-S 148
Sec2-S 396
Sec2-S 395
Sec2-S 394
Sec2-S 426
Sec2-S 390
Sec2-S 393
Sec2-S 389
Sec2-S 392
Sec2-S 196
Sec2-S 391
Sec2-S 195
Sec2-S 388
Sec2-S 387
Sec2-S 386
Sec2-S 182
Sec2-S 385
Sec2-S 147
Sec2-S 183
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Sec2-S 379
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Sec2-S 377
Sec2-S 375
Sec2-S 376
Sec2-S 374
Sec2-S 146
Sec2-S 373
Sec2-S 186
Sec2-S 371
Sec2-S 145
Sec2-S 372
Sec2-S 370
Sec2-S 369
Sec2-S 143
Sec2-S 142
Union Cem
Bethel Cem
Mt Olive Ch Cem
Lettis Sch
Sandy Hook
Aikman

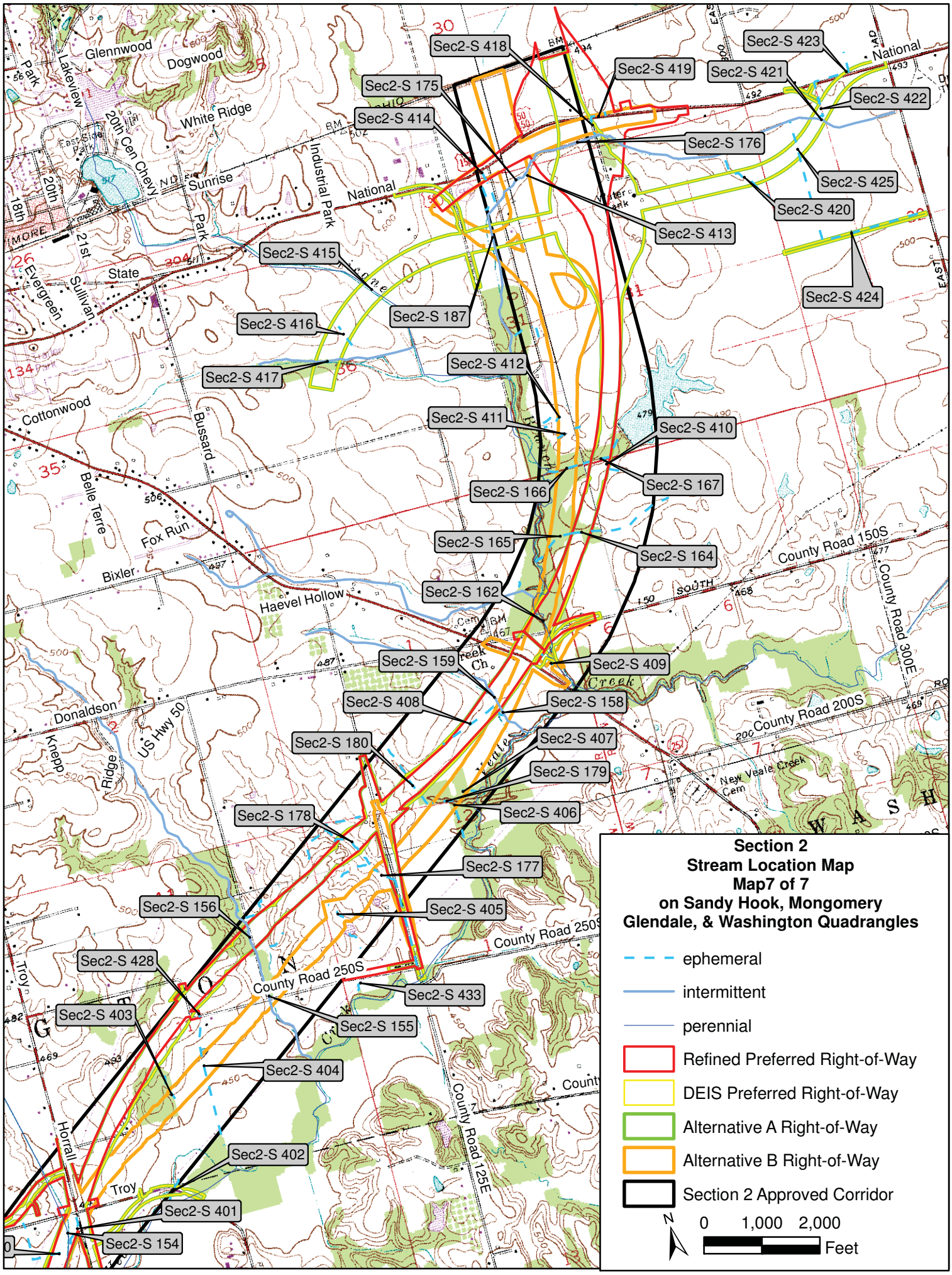
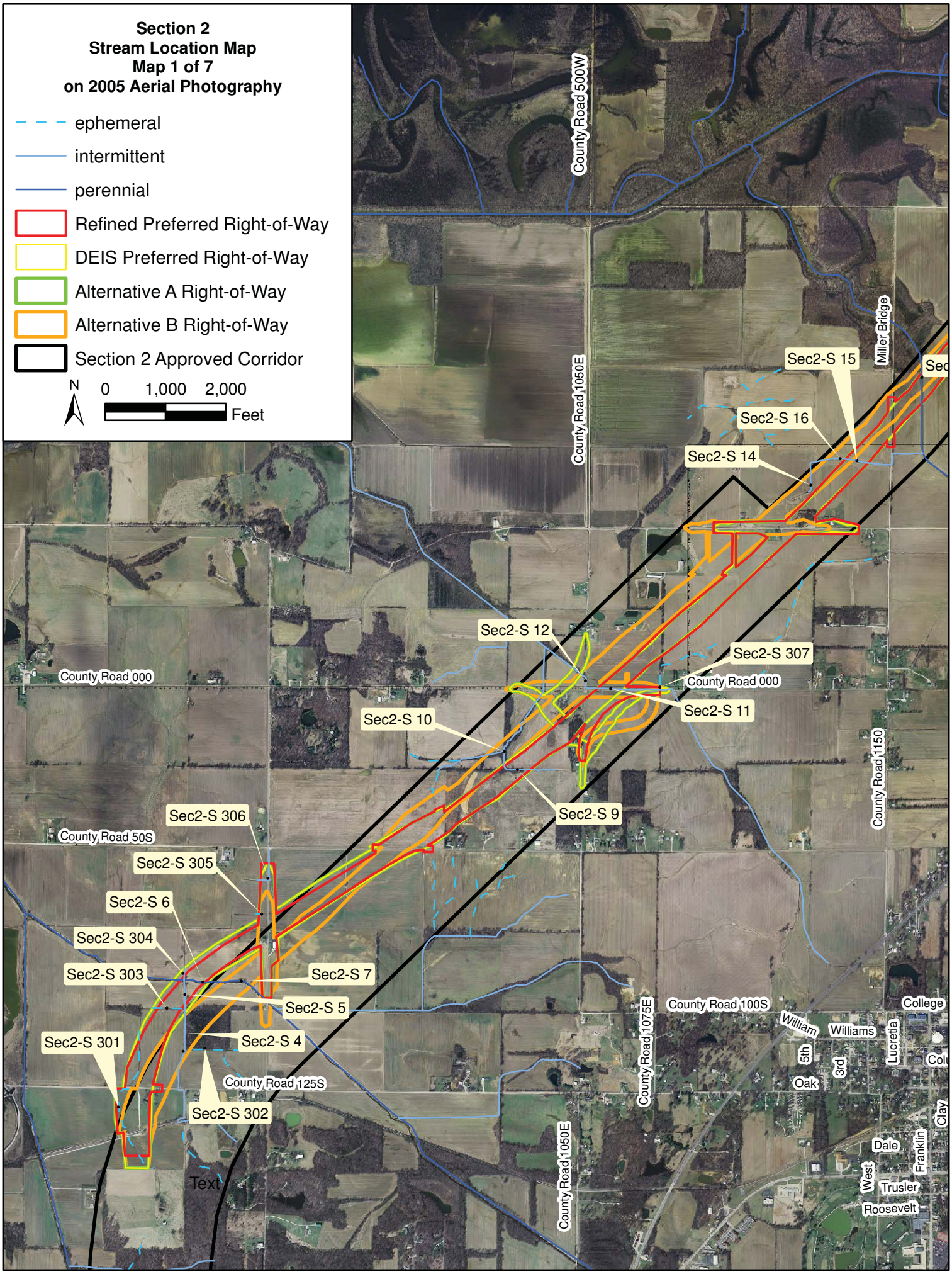

Section 2
Stream Location Map
Map7 of 7
on Sandy Hook, Mongomery
Glendale, & Washington Quadrangles
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 418
Sec2-S 423
Sec2-S 419
Sec2-S 421
Sec2-S 175
Sec2-S 422
Sec2-S 414
Sec2-S 176
Sec2-S 425
Sec2-S 420
Sec2-S 413
Sec2-S 415
Sec2-S 424
Sec2-S 187
Sec2-S 416
Sec2-S 412
Sec2-S 417
Sec2-S 411
Sec2-S 410
Sec2-S 167
Sec2-S 166
Sec2-S 165
Sec2-S 164
Sec2-S 162
Sec2-S 159
Sec2-S 409
Sec2-S 408
Sec2-S 158
Sec2-S 407
Sec2-S 180
Sec2-S 179
Sec2-S 406
Sec2-S 178
Sec2-S 177
Sec2-S 156
Sec2-S 405
Sec2-S 428
Sec2-S 433
Sec2-S 403
Sec2-S 155
Sec2-S 404
Sec2-S 402
Sec2-S 401
Sec2-S 154
Glennwood
Dogwood
Lakeview
Park
White Ridge
20th Cen Chevy
East Side Park
Sunrise
Industrial Park
National
18th
20th
21st
Evergreen
Sullivan
State
Park
Cottonwood
Bussard
Belle Terre
Fox Run
Bixler
Haevel Hollow
Donaldson
Knepp
Ridge
US Hwy 50
Troy
Horrall
County Road 150S
County Road 300E
County Road 200S
New Veale Creek
County Road 250S
County Road 125E
SOUTH
EAST
WASH

FIGURE 2

2005 Aerial Photographs Showing Section 2 Alternatives and Stream Impact Locations


Section 2
Stream Location Map
Map 1 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0
1,000
2,000
Feet
County Road 500W
County Road 1050E
Miller Bridge
Sec2-S 15
Sec2-S 16
Sec2-S 14
Sec2-S 12
Sec2-S 307
County Road 000
Sec2-S 11
Sec2-S 10
Sec2-S 9
County Road 1150
Sec2-S 306
County Road 50S
Sec2-S 305
Sec2-S 6
Sec2-S 304
Sec2-S 303
Sec2-S 7
Sec2-S 5
Sec2-S 4
Sec2-S 301
County Road 125S
Sec2-S 302
Text
County Road 100S
County Road 1075E
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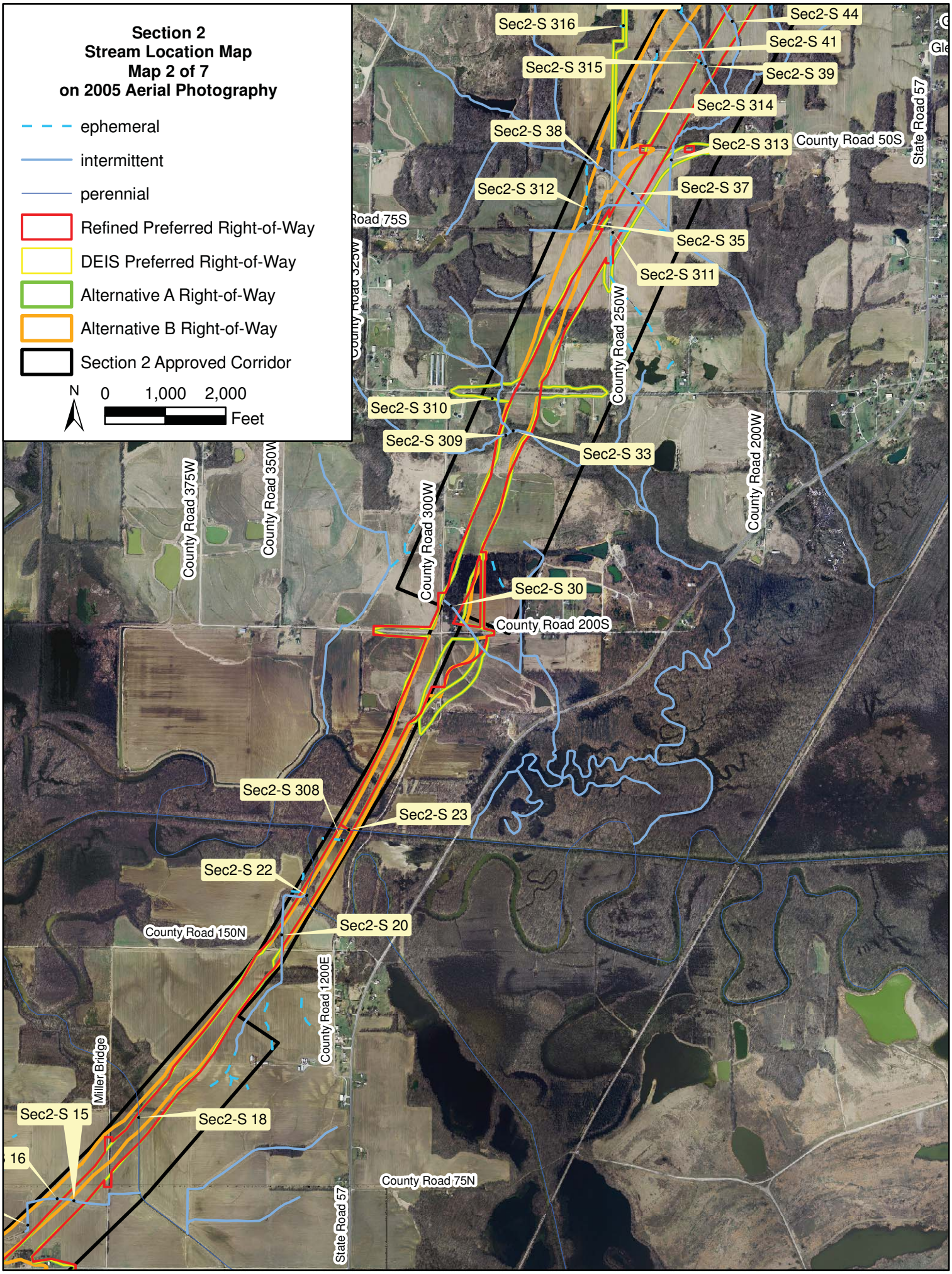
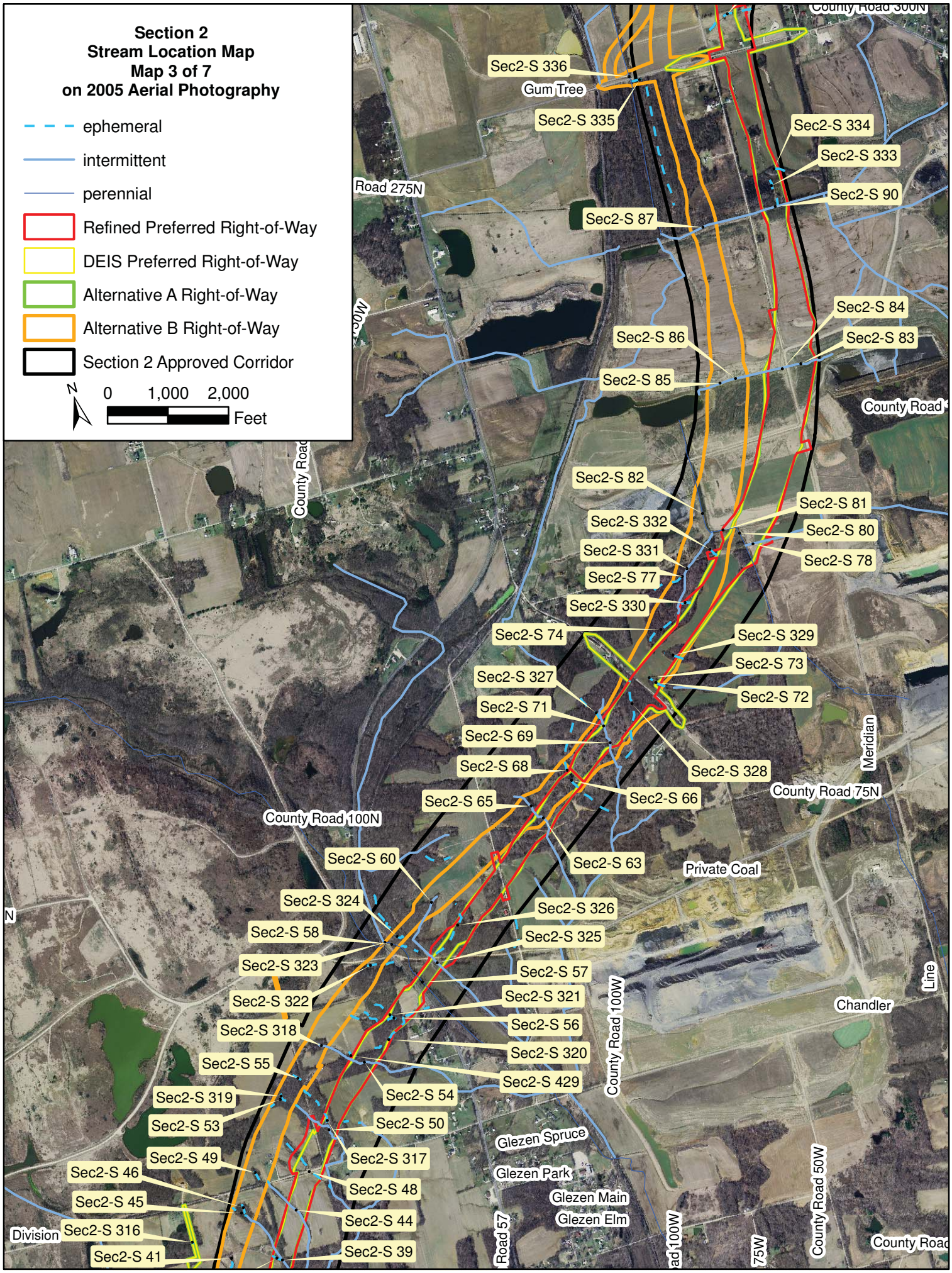
Williams
College
Lucretia
5th
3rd
Oak
Dale
Franklin
Clay
West
Trusler
Roosevelt


Section 2
Stream Location Map
Map 2 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 316
Sec2-S 44
Sec2-S 41
Sec2-S 315
Sec2-S 39
Sec2-S 314
Sec2-S 38
Sec2-S 313
County Road 50S
State Road 57
Sec2-S 312
Sec2-S 37
Road 75S
Sec2-S 35
Sec2-S 311
County Road 250W
Sec2-S 310
Sec2-S 309
Sec2-S 33
County Road 200W
County Road 375W
County Road 350W
County Road 300W
Sec2-S 30
County Road 200S
Sec2-S 308
Sec2-S 23
Sec2-S 22
County Road 150N
Sec2-S 20
County Road 1200E
Miller Bridge
Sec2-S 15
Sec2-S 18
16
County Road 75N
State Road 57


Section 2
Stream Location Map
Map 3 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
County Road 300N
Sec2-S 336
Gum Tree
Sec2-S 335
Sec2-S 334
Sec2-S 333
Road 275N
Sec2-S 90
Sec2-S 87
Sec2-S 84
Sec2-S 86
Sec2-S 83
Sec2-S 85
County Road
County Road
Sec2-S 82
Sec2-S 81
Sec2-S 332
Sec2-S 80
Sec2-S 331
Sec2-S 78
Sec2-S 77
Sec2-S 330
Sec2-S 74
Sec2-S 329
Sec2-S 73
Sec2-S 327
Sec2-S 72
Sec2-S 71
Sec2-S 69
Sec2-S 328
Meridian
Sec2-S 68
Sec2-S 66
County Road 75N
Sec2-S 65
County Road 100N
Sec2-S 60
Sec2-S 63
Private Coal
Sec2-S 324
Sec2-S 326
Sec2-S 58
Sec2-S 325
Sec2-S 323
Sec2-S 57
Sec2-S 322
Sec2-S 321
Line
Chandler
Sec2-S 318
Sec2-S 56
Sec2-S 320
Sec2-S 55
Sec2-S 429
County Road 100W
Sec2-S 319
Sec2-S 54
Sec2-S 53
Sec2-S 50
Glezen Spruce
Sec2-S 49
Sec2-S 317
Glezen Park
Sec2-S 46
Sec2-S 48
Glezen Main
Sec2-S 45
Sec2-S 44
Glezen Elm
Division
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Road 57
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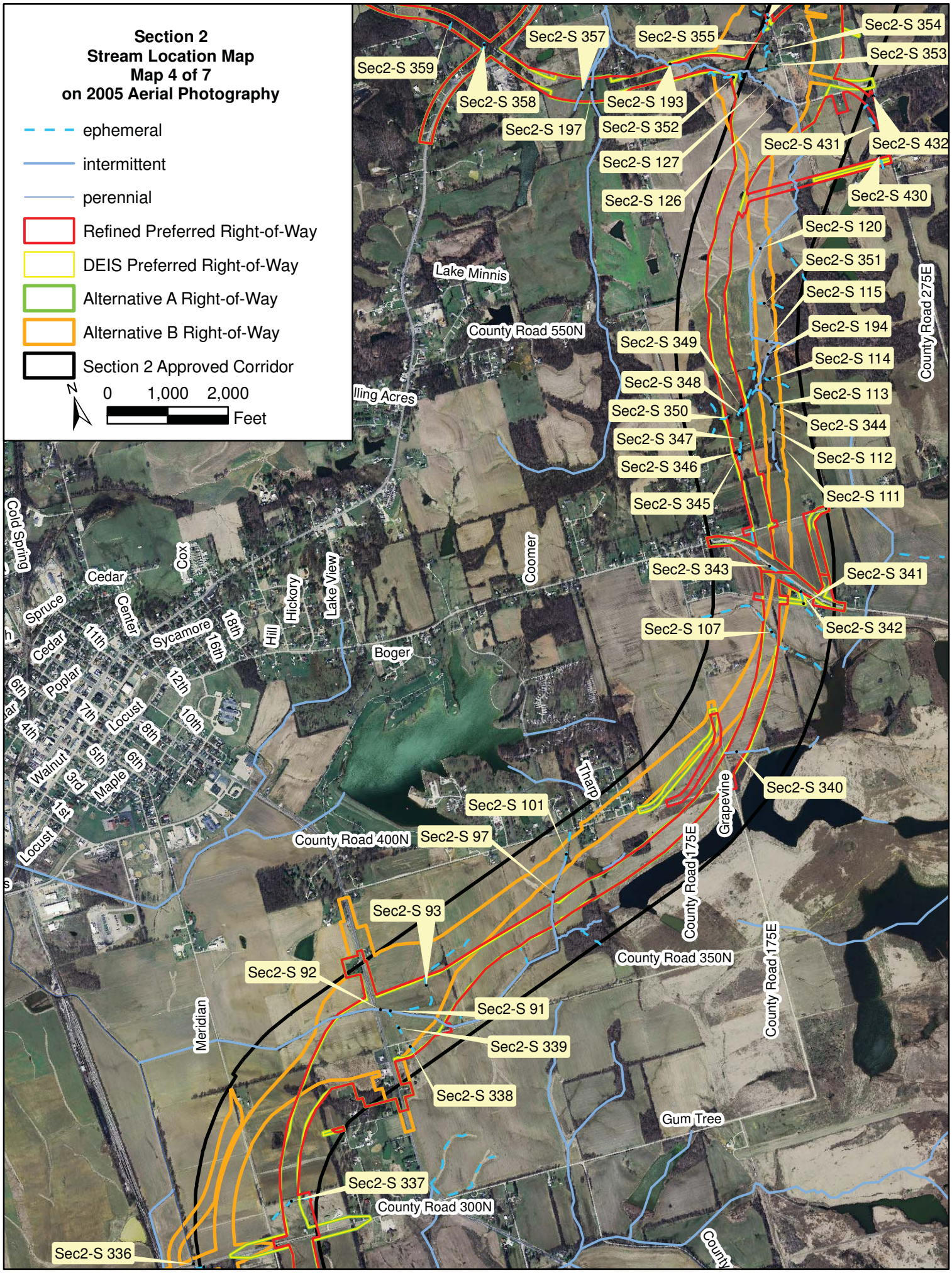
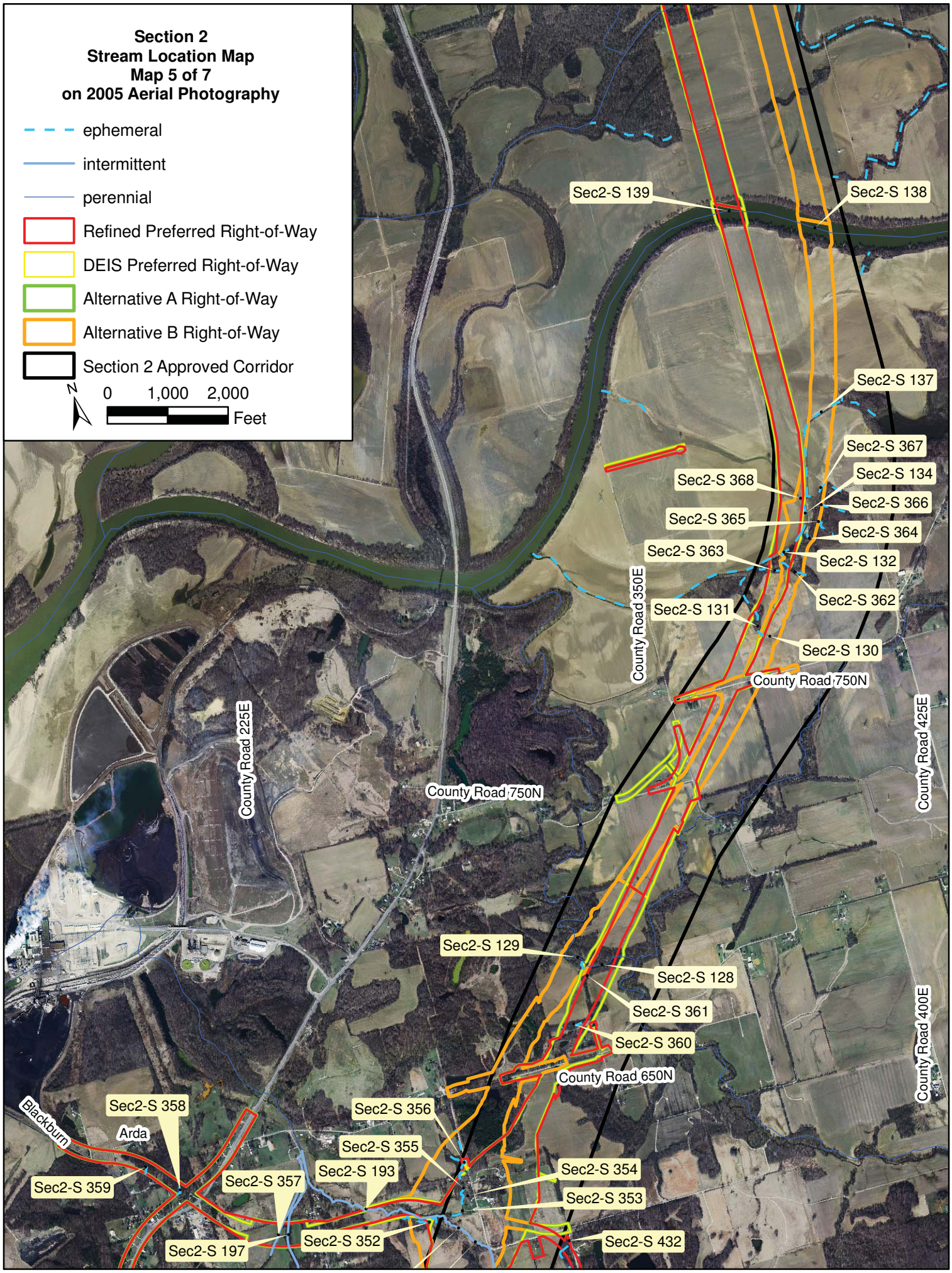
75W
County Road 50W
Sec2-S 41
Sec2-S 39
County Road


Section 2
Stream Location Map
Map 4 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 359
Sec2-S 357
Sec2-S 355
Sec2-S 354
Sec2-S 353
Sec2-S 358
Sec2-S 193
Sec2-S 197
Sec2-S 352
Sec2-S 431
Sec2-S 432
Sec2-S 127
Sec2-S 126
Sec2-S 430
Sec2-S 120
Sec2-S 351
Sec2-S 115
Sec2-S 194
Sec2-S 114
Sec2-S 113
Sec2-S 344
Sec2-S 112
Sec2-S 111
Sec2-S 349
Sec2-S 348
Sec2-S 350
Sec2-S 347
Sec2-S 346
Sec2-S 345
Sec2-S 343
Sec2-S 341
Sec2-S 342
Sec2-S 107
Sec2-S 340
Sec2-S 101
Sec2-S 97
Sec2-S 93
Sec2-S 92
Sec2-S 91
Sec2-S 339
Sec2-S 338
Sec2-S 337
Sec2-S 336
Lake Minnis
County Road 550N
County Road 275E
Coomer
Boger
Tharp
Grapevine
County Road 175E
County Road 400N
County Road 350N
County Road 300N
Gum Tree
Meridian
Cold Spring
Cedar
Cox
Spruce
Center
Sycamore
18th
16th
Hill
Hickory
Lake View
11th
12th
10th
8th
7th
6th
5th
4th
3rd
1st
Poplar
Locust
Walnut
Maple


Section 2
Stream Location Map
Map 5 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Sec2-S 139
Sec2-S 138
Sec2-S 137
Sec2-S 367
Sec2-S 134
Sec2-S 368
Sec2-S 366
Sec2-S 365
Sec2-S 364
Sec2-S 363
Sec2-S 132
Sec2-S 362
Sec2-S 131
Sec2-S 130
County Road 750N
County Road 350E
County Road 425E
County Road 225E
County Road 750N
Sec2-S 129
Sec2-S 128
Sec2-S 361
Sec2-S 360
County Road 650N
County Road 400E
Blackburn
Sec2-S 358
Arda
Sec2-S 356
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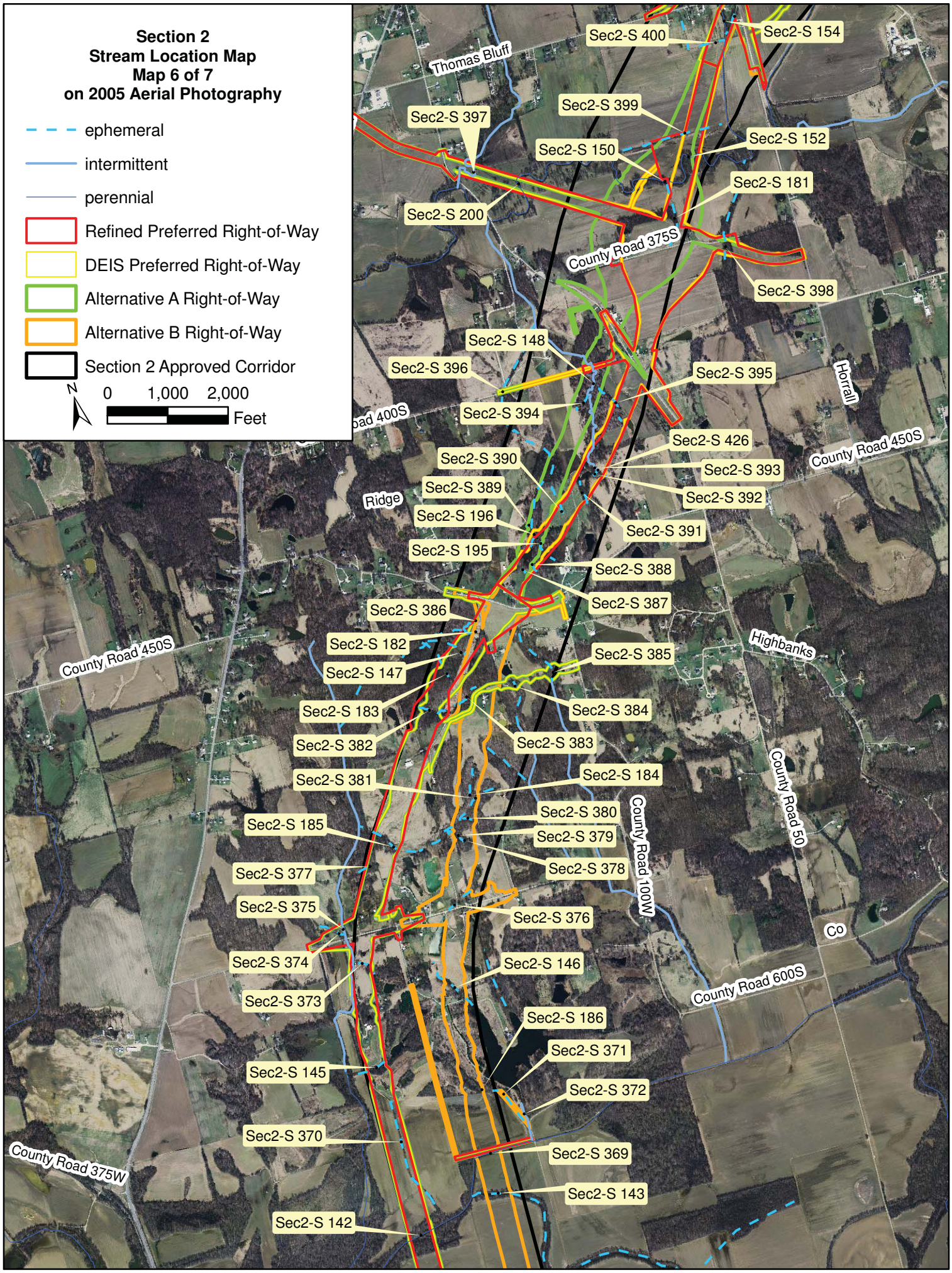
Section 2
Stream Location Map
Map 6 of 7
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ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
N
0 1,000 2,000
Feet
Thomas Bluff
Sec2-S 400
Sec2-S 154
Sec2-S 399
Sec2-S 397
Sec2-S 152
Sec2-S 150
Sec2-S 181
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Sec2-S 398
Sec2-S 148
Sec2-S 396
Sec2-S 395
Horrall
Sec2-S 394
Sec2-S 426
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Sec2-S 389
Sec2-S 392
Ridge
Sec2-S 196
Sec2-S 391
Sec2-S 195
Sec2-S 388
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Sec2-S 386
Sec2-S 182
Highbanks
Sec2-S 385
Sec2-S 147
Sec2-S 183
Sec2-S 384
Sec2-S 382
Sec2-S 383
Sec2-S 381
Sec2-S 184
County Road 50
Sec2-S 380
Sec2-S 185
Sec2-S 379
Sec2-S 378
Sec2-S 377
Sec2-S 375
Sec2-S 376
Co
Sec2-S 374
Sec2-S 146
Sec2-S 373
County Road 600S
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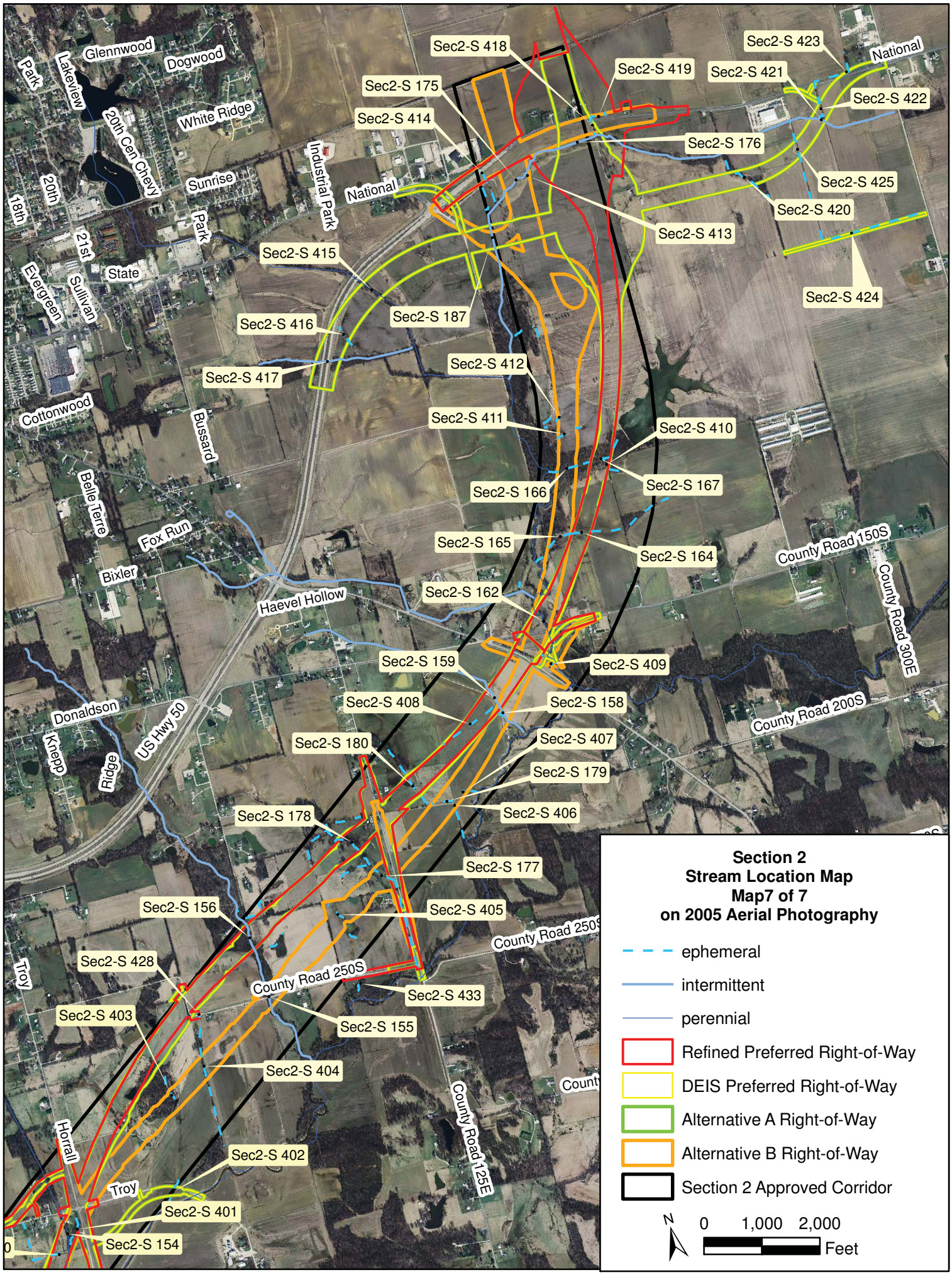
Sec2-S 142


Section 2
Stream Location Map
Map7 of 7
on 2005 Aerial Photography
ephemeral
intermittent
perennial
Refined Preferred Right-of-Way
DEIS Preferred Right-of-Way
Alternative A Right-of-Way
Alternative B Right-of-Way
Section 2 Approved Corridor
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0 1,000 2,000
Feet
Sec2-S 418
Sec2-S 419
Sec2-S 423
Sec2-S 421
Sec2-S 422
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Sec2-S 414
Sec2-S 176
Sec2-S 425
Sec2-S 420
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Sec2-S 415
Sec2-S 424
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Sec2-S 154
Glennwood
Dogwood
Park
Lakeview
20th Cen Chevy
White Ridge
Industrial Park
National
Sunrise
Park
20th
18th
21st
State
Evergreen
Sullivan
Cottonwood
Bussard
Belle Terre
Fox Run
Bixler
Haevel Hollow
County Road 150S
County Road 300E
County Road 200S
Donaldson
US Hwy 50
Knepp
Ridge
County Road 250S
Troy
Horrall
County Road 125E

APPENDIX A

Section 2 Stream Impact Summary Table

Appendix A: Summary Table Stream Survey Summary Table Section 2 Corridor													
Description of Streams						Alternative A		Alternative B		DEIS Preferred Alternative		Refined Preferred Alternative	
Stream ID	Stream Name	Drainage Area (Square Miles)	USGS Stream Type	Survey	Score	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*
Sec2-S 4	Wallace Lateral East Fork Keg Creek	0.10	intermittent	HHEI	9.0	0	0.00	916	0.06	0	0.00	0	0.00
Sec2-S 5	Wallace Lateral East Fork Keg Creek	0.29	intermittent	HHEI	39.0	552	0.07	0	0.00	552	0.07	413	0.05
Sec2-S 6	East Fork Keg Creek	10.85	perennial	QHEI	41.0	585	0.47	0	0.00	585	0.47	403	0.32
Sec2-S 7	East Fork Keg Creek	10.45	perennial	QHEI	45.0	0	0.00	717	0.38	0	0.00	37	0.02
Sec2-S 9	Unnamed Trib Buck Creek	0.06	intermittent	HHEI	26.0	517	0.07	254	0.03	517	0.07	464	0.06
Sec2-S 10	Unnamed Trib Buck Creek	0.06	intermittent	HHEI	30.0	164	0.04	1,131	0.27	164	0.04	0	0.00
Sec2-S 11	Buck Creek	0.90	intermittent	HHEI	54.0	731	0.12	1,554	0.25	731	0.12	1,038	0.17
Sec2-S 12	Buck Creek	1.00	intermittent	HHEI	54.0	166	0.03	94	0.02	166	0.03	0	0.00
Sec2-S 14	Unnamed Trib Hurricane Creek	0.04	intermittent	HHEI	24.0	0	0.00	327	0.03	0	0.00	0	0.00
Sec2-S 15	Unnamed Trib Hurricane Creek	0.09	intermittent	HHEI	24.0	390	0.04	0	0.00	390	0.04	384	0.04
Sec2-S 16	Unnamed Trib Hurricane Creek	0.08	intermittent	HHEI	24.0	0	0.00	448	0.05	0	0.00	0	0.00
Sec2-S 18	Hurricane Creek	2.27	perennial	QHEI	22.0	509	0.21	443	0.18	509	0.21	501	0.21
Sec2-S 20	Unnamed Trib South Fork Patoka River	0.17	intermittent	HHEI	20.0	554	0.04	489	0.04	554	0.04	693	0.06
Sec2-S 22	South Fork Patoka River	76.02	perennial	QHEI	38.0	569	0.52	381	0.35	569	0.52	571	0.52
Sec2-S 23	Patoka River	253.66	perennial	QHEI	30.0	240	0.50	240	0.50	240	0.50	240	0.50
Sec2-S 30	Unnamed Trib Patoka River	0.02	intermittent	HHEI	13.0	954	0.05	828	0.05	954	0.05	810	0.05
Sec2-S 33	Unnamed Trib Flat Creek	0.36	intermittent	HHEI	38.0	800	0.23	801	0.23	800	0.23	547	0.16
Sec2-S 35	Unnamed Trib Flat Creek	0.15	intermittent	HHEI	23.0	476	0.05	608	0.06	476	0.05	362	0.04
Sec2-S 37	Unnamed Trib Flat Creek	2.11	intermittent	QHEI	29.0	427	0.14	0	0.00	427	0.14	333	0.11
Sec2-S 38	Unnamed Trib Flat Creek	2.02	intermittent	QHEI	55.0	0	0.00	453	0.26	0	0.00	0	0.00
Sec2-S 39	Unnamed Trib Flat Creek	0.05	intermittent	HHEI	28.0	460	0.06	157	0.02	460	0.06	448	0.06
Sec2-S 41	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	13.0	0	0.00	338	0.02	0	0.00	0	0.00
Sec2-S 44	Unnamed Trib Flat Creek	0.02	intermittent	HHEI	23.0	419	0.04	0	0.00	419	0.04	447	0.04
Sec2-S 45	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	13.0	0	0.00	283	0.01	0	0.00	0	0.00
Sec2-S 46	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	13.0	0	0.00	253	0.01	0	0.00	0	0.00
Sec2-S 48	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	11.0	486	0.02	0	0.00	486	0.02	623	0.03
Sec2-S 49	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	28.0	0	0.00	375	0.05	0	0.00	0	0.00
Sec2-S 50	Unnamed Trib Flat Creek	0.04	intermittent	HHEI	28.0	393	0.07	0	0.00	393	0.07	536	0.10
Sec2-S 53	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	23.0	0	0.00	246	0.02	0	0.00	0	0.00
Sec2-S 54	Unnamed Trib Flat Creek	0.03	intermittent	HHEI	28.0	422	0.08	0	0.00	422	0.08	499	0.09
Sec2-S 55	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	23.0	0	0.00	386	0.04	0	0.00	0	0.00
Sec2-S 56	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	35.0	597	0.13	92	0.02	597	0.13	626	0.14
Sec2-S 57	Flat Creek	6.10	perennial	QHEI	42.5	225	0.13	0	0.00	225	0.13	260	0.16
Sec2-S 58	Flat Creek	6.05	perennial	QHEI	42.0	0	0.00	321	0.18	0	0.00	0	0.00

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Sec2-S 60	Unnamed Trib Flat Creek	0.01	intermittent	HHEI	43.0	0	0.00	476	0.06	0	0.00	0	0.00
Sec2-S 63	Unnamed Trib Flat Creek	0.06	intermittent	HHEI	57.0	434	0.11	589	0.15	434	0.11	486	0.12
Sec2-S 66	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	44.0	295	0.02	0	0.00	295	0.02	364	0.03
Sec2-S 68	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	34.0	0	0.00	603	0.06	0	0.00	0	0.00
Sec2-S 69	Unnamed Trib Flat Creek	0.03	intermittent	HHEI	29.0	404	0.06	0	0.00	404	0.06	517	0.08
Sec2-S 71	Unnamed Trib Flat Creek	0.02	intermittent	HHEI	47.0	0	0.00	830	0.15	0	0.00	0	0.00
Sec2-S 72	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	31.0	84	0.01	189	0.02	84	0.01	145	0.02
Sec2-S 73	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	40.0	91	0.01	91	0.01	91	0.01	91	0.01
Sec2-S 74	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	29.0	0	0.00	696	0.06	0	0.00	0	0.00
Sec2-S 77	Unnamed Trib Prides Creek	0.02	ephemeral	HHEI	34.0	0	0.00	260	0.04	0	0.00	0	0.00
Sec2-S 78	Prides Creek	0.93	intermittent	QHEI	47.5	269	0.03	0	0.00	269	0.03	434	0.05
Sec2-S 80	Prides Creek	0.94	perennial	QHEI	50.0	707	0.13	0	0.00	707	0.13	915	0.17
Sec2-S 81	Prides Creek	0.94	perennial	QHEI	56.5	0	0.00	367	0.04	0	0.00	0	0.00
Sec2-S 82	Prides Creek	1.02	perennial	QHEI	44.0	0	0.00	845	0.16	0	0.00	0	0.00
Sec2-S 83	Unnamed Trib Prides Creek	0.03	intermittent	HHEI	58.0	470	0.11	0	0.00	470	0.11	459	0.11
Sec2-S 84	Unnamed Trib Prides Creek	0.05	intermittent	HHEI	70.0	434	0.10	0	0.00	434	0.10	363	0.08
Sec2-S 85	Unnamed Trib Prides Creek	0.09	intermittent	HHEI	54.0	0	0.00	380	0.03	0	0.00	0	0.00
Sec2-S 86	Unnamed Trib Prides Creek	0.08	intermittent	HHEI	60.0	0	0.00	308	0.03	0	0.00	0	0.00
Sec2-S 87	Unnamed Trib Prides Creek	3.37	intermittent	QHEI	45.0	0	0.00	431	0.18	0	0.00	0	0.00
Sec2-S 90	Unnamed Trib Prides Creek	3.28	intermittent	QHEI	50.0	422	0.19	0	0.00	422	0.19	447	0.21
Sec2-S 91	Unnamed Trib Prides Creek	0.57	intermittent	QHEI	57.5	1,033	0.24	876	0.20	1,033	0.24	1,136	0.26
Sec2-S 92	Unnamed Trib Prides Creek	0.58	intermittent	QHEI	60.5	802	0.17	1,190	0.25	802	0.17	830	0.17
Sec2-S 93	Unnamed Trib Prides Creek	0.03	ephemeral	HHEI	13.0	1,010	0.05	2,094	0.10	1,010	0.05	1,049	0.05
Sec2-S 97	Unnamed Trib Prides Creek	0.09	intermittent	HHEI	39.0	397	0.05	220	0.03	397	0.05	381	0.04
Sec2-S 101	Unnamed Trib Prides Creek	0.03	ephemeral	HHEI	30.0	0	0.00	374	0.02	0	0.00	0	0.00
Sec2-S 107	Unnamed Trib Mud Creek	0.19	ephemeral	HHEI	11.0	460	0.02	459	0.02	460	0.02	476	0.02
Sec2-S 111	Unnamed Trib Lick Creek	0.01	intermittent	HHEI	18.0	0	0.00	464	0.03	0	0.00	0	0.00
Sec2-S 112	Unnamed Trib Lick Creek	0.03	intermittent	HHEI	11.0	0	0.00	479	0.03	0	0.00	0	0.00
Sec2-S 113	Unnamed Trib Lick Creek	0.05	intermittent	HHEI	19.0	0	0.00	526	0.04	0	0.00	0	0.00
Sec2-S 114	Unnamed Trib Lick Creek	0.01	ephemeral	HHEI	28.0	0	0.00	353	0.03	0	0.00	0	0.00
Sec2-S 115	Unnamed Trib Lick Creek	0.12	intermittent	HHEI	72.0	0	0.00	360	0.12	0	0.00	0	0.00
Sec2-S 120	Unnamed Trib Lick Creek	0.43	intermittent	QHEI	30.0	0	0.00	590	0.08	0	0.00	139	0.02
Sec2-S 126	Unnamed Trib Lick Creek	0.75	intermittent	QHEI	57.0	990	0.30	818	0.24	990	0.30	979	0.29
Sec2-S 127	Unnamed Trib Lick Creek	0.77	intermittent	QHEI	57.0	1,162	0.32	1,263	0.35	1,162	0.32	1,103	0.30

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Sec2-S 128	Mud Creek	16.13	perennial	QHEI	54.5	710	0.57	176	0.14	710	0.57	475	0.38
Sec2-S 129	Mud Creek	16.15	perennial	QHEI	58.5	0	0.00	749	0.60	0	0.00	0	0.00
Sec2-S 130	Unnamed Trib East Fork White River	0.04	ephemeral	HHEI	37.0	93	0.01	242	0.02	93	0.01	106	0.01
Sec2-S 131	Unnamed Trib East Fork White River	0.04	ephemeral	HHEI	61.0	408	0.09	0	0.00	408	0.09	372	0.09
Sec2-S 132	Unnamed Trib East Fork White River	0.85	ephemeral	QHEI	31.0	684	0.28	481	0.20	684	0.28	604	0.25
Sec2-S 134	Unnamed Trib East Fork White River	0.83	ephemeral	QHEI	31.0	106	0.04	1,462	0.60	106	0.04	18	0.01
Sec2-S 137	Unnamed Trib East Fork White River	0.58	ephemeral	QHEI	35.5	0	0.00	550	0.23	0	0.00	0	0.00
Sec2-S 138	East Fork White River	5746.00	perennial	QHEI	43.0	0	0.00	555	4.97	0	0.00	0	0.00
Sec2-S 139	East Fork White River	5746.00	perennial	QHEI	43.0	512	4.58	0	0.00	512	4.58	377	3.38
Sec2-S 142	Unnamed Trib Jackson Pond	2.48	perennial	QHEI	34.0	434	0.27	0	0.00	434	0.27	369	0.23
Sec2-S 143	Unnamed Trib Jackson Pond	0.80	ephemeral	QHEI	24.5	0	0.00	423	0.19	0	0.00	0	0.00
Sec2-S 145	Unnamed Trib Jackson Pond	0.04	ephemeral	HHEI	18.0	348	0.01	0	0.00	348	0.01	340	0.01
Sec2-S 146	Unnamed Trib Jackson Pond	0.06	ephemeral	HHEI	27.0	0	0.00	495	0.05	0	0.00	0	0.00
Sec2-S 147	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	33.0	236	0.01	0	0.00	236	0.01	285	0.01
Sec2-S 148	Unnamed Veale Creek	0.20	intermittent	HHEI	68.0	1,303	0.42	67	0.02	67	0.02	79	0.03
Sec2-S 150	Veale Creek	7.85	perennial	QHEI	56.0	1,449	1.13	318	0.25	318	0.25	310	0.24
Sec2-S 152	Veale Creek	7.79	perennial	QHEI	56.0	876	0.68	1,004	0.78	1,005	0.78	706	0.55
Sec2-S 154	Unnamed Trib Veale Creek	1.90	perennial	QHEI	58.5	868	0.36	887	0.37	868	0.36	991	0.41
Sec2-S 155	Unnamed Trib Veale Creek	0.96	intermittent	QHEI	52.0	0	0.00	359	0.13	0	0.00	0	0.00
Sec2-S 156	Unnamed Trib Veale Creek	0.89	intermittent	QHEI	68.0	441	0.16	0	0.00	441	0.16	445	0.16
Sec2-S 158	Unnamed Trib Veale Creek	0.30	intermittent	HHEI	28.0	0	0.00	353	0.03	0	0.00	0	0.00
Sec2-S 159	Unnamed Trib Veale Creek	0.29	intermittent	HHEI	28.0	441	0.04	0	0.00	441	0.04	405	0.04
Sec2-S 162	Hurricane Branch	0.26	perennial	QHEI	51.0	1,253	0.52	1,190	0.49	1,253	0.52	683	0.28
Sec2-S 164	Unnamed Trib Hurricane Branch	0.11	ephemeral	HHEI	20.0	336	0.03	0	0.00	336	0.03	331	0.03
Sec2-S 165	Unnamed Trib Hurricane Branch	0.12	ephemeral	HHEI	20.0	0	0.00	528	0.05	0	0.00	0	0.00
Sec2-S 166	Unnamed Trib Hurricane Branch	0.26	ephemeral	HHEI	24.0	0	0.00	345	0.06	0	0.00	0	0.00
Sec2-S 167	Unnamed Trib Hurricane Branch	0.23	ephemeral	HHEI	30.0	395	0.07	0	0.00	395	0.07	356	0.07
Sec2-S 175	Unnamed Trib Hurricane Branch	1.52	intermittent	QHEI	39.0	0	0.00	708	0.07	0	0.00	334	0.03
Sec2-S 176	Unnamed Trib Hurricane Branch	1.25	intermittent	QHEI	40.5	802	0.15	0	0.00	802	0.15	1,456	0.27
Sec2-S 177	Unnamed Trib Veale Creek	0.23	ephemeral	HHEI	41.0	1,170	0.11	2,158	0.20	1,170	0.11	1,691	0.16
Sec2-S 178	Unnamed Trib Veale Creek	0.20	ephemeral	HHEI	41.0	513	0.02	0	0.00	513	0.02	417	0.01
Sec2-S 179	Unnamed Trib Veale Creek	0.15	ephemeral	HHEI	31.0	0	0.00	367	0.03	0	0.00	0	0.00
Sec2-S 180	Unnamed Trib Veale Creek	0.12	ephemeral	HHEI	41.0	451	0.04	0	0.00	451	0.04	321	0.03
Sec2-S 181	Unnamed Trib Veale Creek	0.03	ephemeral	HHEI	27.0	1,119	0.10	940	0.09	940	0.09	877	0.08

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Sec2-S 182	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	23.0	220	0.01	141	0.01	220	0.01	333	0.02
Sec2-S 183	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	28.0	230	0.02	0	0.00	230	0.02	336	0.03
Sec2-S 184	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	50.0	0	0.00	593	0.11	0	0.00	0	0.00
Sec2-S 185	Unnamed Trib Jackson Pond	0.12	ephemeral	HHEI	71.0	490	0.08	0	0.00	490	0.08	500	0.09
Sec2-S 186	Unnamed Trib Jackson Pond	0.02	ephemeral	HHEI	32.0	0	0.00	39	0.01	0	0.00	0	0.00
Sec2-S 187	Unnamed Trib Hurricane Branch	1.93	intermittent	QHEI	46.0	424	0.04	527	0.05	424	0.04	0	0.00
Sec2-S 193	Unnamed Trib Lick Creek	0.97	intermittent	HHEI	56.0	703	0.12	703	0.12	703	0.12	709	0.12
Sec2-S 194	Unnamed Trib Lick Creek	0.01	intermittent	HHEI	29.0	0	0.00	744	0.15	0	0.00	0	0.00
Sec2-S 195	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	49.0	206	0.03	356	0.05	356	0.05	407	0.06
Sec2-S 196	Unnamed Trib Veale Creek	0.04	ephemeral	HHEI	43.0	1,403	0.26	279	0.05	279	0.05	140	0.03
Sec2-S 197	Lick Creek	0.87	intermittent	QHEI	59.5	404	0.16	404	0.16	404	0.16	384	0.15
Sec2-S 200	Veale Creek	8.25	perennial	QHEI	45.0	220	0.13	256	0.15	256	0.15	345	0.20
Sec2-S 301	Unnamed Trib East Fork Keg Creek	0.10	ephemeral	HHEI	25.0	2,547	0.26	941	0.10	2,547	0.26	2,193	0.22
Sec2-S 303	Unnamed Trib East Fork Keg Creek	0.06	ephemeral	HHEI	39.0	534	0.09	0	0.00	534	0.09	396	0.06
Sec2-S 302	Unnamed Trib East Fork Keg Creek	0.07	ephemeral	HHEI	44.0	0	0.00	89	0.01	0	0.00	0	0.00
Sec2-S 304	Unnamed Trib East Fork Keg Creek	0.04	intermittent	HHEI	25.0	178	0.01	0	0.00	178	0.01	55	0.01
Sec2-S 305	Unnamed Trib East Fork Keg Creek	0.01	ephemeral	HHEI	30.0	160	0.02	160	0.02	160	0.02	160	0.02
Sec2-S 306	Allen Lateral	0.06	intermittent	HHEI	56.0	431	0.05	0	0.00	431	0.05	431	0.05
Sec2-S 307	Unnamed Trib Buck Creek	0.03	ephemeral	HHEI	48.0	13	0.01	39	0.01	13	0.01	31	0.01
Sec2-S 308	Unnamed Trib South Fork Patoka River	0.01	ephemeral	HHEI	50.0	239	0.04	236	0.04	239	0.04	239	0.04
Sec2-S 309	Unnamed Trib Flat Creek	0.18	intermittent	HHEI	38.0	185	0.05	245	0.07	185	0.05	246	0.07
Sec2-S 310	Unnamed Trib Flat Creek	0.14	ephemeral	HHEI	18.0	11	0.01	11	0.01	11	0.01	0	0.00
Sec2-S 311	Unnamed Trib Flat Creek	0.04	ephemeral	HHEI	44.0	1,070	0.07	0	0.00	1,070	0.07	683	0.05
Sec2-S 312	Unnamed Trib Flat Creek	0.03	ephemeral	HHEI	47.0	0	0.00	618	0.10	0	0.00	0	0.00
Sec2-S 313	Unnamed Trib Flat Creek	0.45	intermittent	HHEI	67.0	253	0.06	0	0.00	253	0.06	0	0.00
Sec2-S 314	Unnamed Trib Flat Creek	0.05	intermittent	HHEI	52.0	0	0.00	1,628	0.15	0	0.00	0	0.00
Sec2-S 315	Unnamed Trib Flat Creek	0.04	ephemeral	HHEI	32.0	178	0.01	0	0.00	178	0.01	180	0.01
Sec2-S 316	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	69.0	30	0.01	30	0.01	30	0.01	0	0.00
Sec2-S 317	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	58.0	192	0.02	0	0.00	192	0.02	213	0.02
Sec2-S 318	Unnamed Trib Flat Creek	1.00	intermittent	HHEI	31.0	0	0.00	157	0.01	0	0.00	0	0.00
Sec2-S 319	Unnamed Trib to Flat Creek	0.01	ephemeral	HHEI	15.0	0	0.00	326	0.01	0	0.00	0	0.00
Sec2-S 320	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	57.0	700	0.10	0	0.00	700	0.10	706	0.10
Sec2-S 321	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	18.0	82	0.01	0	0.00	82	0.01	127	0.01
Sec2-S 322	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	39.0	0	0.00	352	0.02	0	0.00	0	0.00

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Sec2-S 323	Unnamed Trib Flat Creek	0.50	intermittent	HHEI	55.0	0	0.00	22	0.01	0	0.00	0	0.00
Sec2-S 324	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	25.0	0	0.00	270	0.01	0	0.00	0	0.00
Sec2-S 325	Unnamed Trib Flat Creek	0.03	intermittent	HHEI	44.0	223	0.02	0	0.00	223	0.02	310	0.03
Sec2-S 326	Unnamed Trib Flat Creek	0.02	ephemeral	HHEI	48.0	835	0.04	0	0.00	835	0.04	860	0.04
Sec2-S 328	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	55.0	852	0.08	970	0.09	852	0.08	809	0.07
Sec2-S 327	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	47.0	0	0.00	84	0.01	0	0.00	0	0.00
Sec2-S 329	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	15.0	239	0.01	288	0.01	239	0.01	226	0.01
Sec2-S 330	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	37.0	0	0.00	269	0.03	0	0.00	228	0.03
Sec2-S 331	Unnamed Trib Prides Creek	0.06	intermittent	HHEI	60.0	0	0.00	1,534	0.28	0	0.00	0	0.00
Sec2-S 332	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	39.0	0	0.00	276	0.03	0	0.00	112	0.01
Sec2-S 333	Unnamed Trib Prides Creek	0.02	ephemeral	HHEI	24.0	607	0.04	0	0.00	607	0.04	607	0.04
Sec2-S 334	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	34.0	205	0.01	0	0.00	205	0.01	224	0.01
Sec2-S 335	Unnamed Trib Prides Creek	0.06	ephemeral	HHEI	54.0	0	0.00	269	0.07	0	0.00	0	0.00
Sec2-S 336	Prides Creek	3.50	perennial	QHEI	24.5	0	0.00	487	0.22	0	0.00	0	0.00
Sec2-S 337	Unnamed Trib Prides Creek	0.02	ephemeral	HHEI	34.0	345	0.02	0	0.00	345	0.02	522	0.02
Sec2-S 338	Unnamed Trib Prides Creek	0.02	ephemeral	HHEI	31.0	254	0.01	139	0.01	254	0.01	257	0.01
Sec2-S 339	Unnamed Trib Prides Creek	0.01	ephemeral	HHEI	46.0	601	0.05	601	0.05	601	0.05	601	0.05
Sec2-S 340	Unnamed Trib Mud Creek	0.06	intermittent	HHEI	51.0	384	0.04	0	0.00	384	0.04	335	0.03
Sec2-S 341	Unnamed Trib Mud Creek	0.12	ephemeral	HHEI	51.0	24	0.01	24	0.01	24	0.01	0	0.00
Sec2-S 342	Unnamed Trib Mud Creek	0.11	ephemeral	HHEI	49.0	490	0.03	490	0.03	490	0.03	299	0.02
Sec2-S 343	Unnamed Trib Mud Creek	0.06	ephemeral	HHEI	31.0	838	0.06	838	0.06	838	0.06	869	0.07
Sec2-S 344	Unnamed Trib Lick Creek	0.01	ephemeral	HHEI	21.0	0	0.00	122	0.01	0	0.00	0	0.00
Sec2-S 345	Unnamed Trib Lick Creek	0.01	ephemeral	HHEI	31.0	200	0.02	0	0.00	200	0.02	200	0.02
Sec2-S 346	Unnamed Trib Lick Creek	0.01	ephemeral	HHEI	18.0	174	0.01	0	0.00	174	0.01	131	0.01
Sec2-S 347	Unnamed Trib Lick Creek	0.02	ephemeral	HHEI	31.0	461	0.03	0	0.00	461	0.03	461	0.03
Sec2-S 348	Unnamed Trib Lick Creek	0.03	ephemeral	HHEI	31.0	275	0.01	0	0.00	275	0.01	231	0.01
Sec2-S 349	Unnamed Trib Lick Creek	0.03	ephemeral	HHEI	31.0	347	0.03	0	0.00	347	0.03	306	0.02
Sec2-S 350	Unnamed Trib Lick Creek	0.03	ephemeral	HHEI	32.0	200	0.02	0	0.00	200	0.02	151	0.01
Sec2-S 351	Unnamed Trib Lick Creek	0.02	ephemeral	HHEI	29.0	0	0.00	326	0.01	0	0.00	0	0.00
Sec2-S 352	Unnamed Trib Lick Creek	0.02	ephemeral	HHEI	32.0	350	0.02	850	0.04	350	0.02	478	0.02
Sec2-S 353	Unnamed Trib Lick Creek	0.09	ephemeral	HHEI	42.0	585	0.05	585	0.05	585	0.05	585	0.05
Sec2-S 354	Unnamed Trib Lick Creek	0.01	ephemeral	HHEI	33.0	184	0.01	184	0.01	184	0.01	184	0.01
Sec2-S 355	Unnamed Trib Lick Creek	0.07	ephemeral	HHEI	42.0	428	0.02	1,019	0.05	428	0.02	481	0.02
Sec2-S 356	Unnamed Trib Lick Creek	0.04	ephemeral	HHEI	48.0	0	0.00	657	0.06	0	0.00	117	0.01

Appendix A: Summary Table Stream Survey Summary Table Section 2 Corridor													
Description of Streams						Alternative A		Alternative B		DEIS Preferred Alternative		Refined Preferred Alternative	
Stream ID	Stream Name	Drainage Area (Square Miles)	USGS Stream Type	Survey	Score	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*
Sec2-S 357	Unnamed Trib Lick Creek	0.24	intermittent	HHEI	52.0	426	0.05	426	0.05	426	0.05	405	0.04
Sec2-S 358	Unnamed Trib Lick Creek	0.02	ephemeral	HHEI	39.0	244	0.01	244	0.01	244	0.01	239	0.01
Sec2-S 359	Unnamed Trib Lick Creek	0.02	ephemeral	HHEI	22.0	205	0.01	205	0.01	205	0.01	209	0.01
Sec2-S 360	Unnamed Trib Mud Creek	0.03	ephemeral	HHEI	32.0	507	0.03	0	0.00	507	0.03	379	0.02
Sec2-S 361	Unnamed Trib Mud Creek	0.01	ephemeral	HHEI	32.0	188	0.01	245	0.01	188	0.01	62	0.01
Sec2-S 362	Unnamed Trib East Fork White River	0.03	ephemeral	HHEI	21.0	400	0.03	493	0.04	400	0.03	401	0.03
Sec2-S 363	Unnamed Trib East Fork White River	0.01	ephemeral	HHEI	26.0	178	0.01	0	0.00	178	0.01	181	0.01
Sec2-S 364	Unnamed Trib East Fork White River	0.01	ephemeral	HHEI	22.0	0	0.00	209	0.02	0	0.00	0	0.00
Sec2-S 365	Unnamed Trib East Fork White River	0.03	ephemeral	HHEI	58.0	0	0.00	28	0.01	0	0.00	0	0.00
Sec2-S 366	Unnamed Trib East Fork White River	0.02	ephemeral	HHEI	21.0	0	0.00	28	0.01	0	0.00	0	0.00
Sec2-S 367	Unnamed Trib East Fork White River	0.03	ephemeral	HHEI	22.0	0	0.00	415	0.03	0	0.00	0	0.00
Sec2-S 368	Unnamed Trib East Fork White River	0.01	ephemeral	HHEI	15.0	92	0.01	92	0.01	92	0.01	92	0.01
Sec2-S 369	Unnamed Trib Jackson Pond	28.25	perennial	QHEI	18.5	208	0.07	416	0.13	208	0.07	208	0.07
Sec2-S 370	Unnamed Trib Jackson Pond	0.09	ephemeral	HHEI	54.0	1,589	0.20	0	0.00	1,589	0.20	1,533	0.19
Sec2-S 371	Unnamed Trib Jackson Pond	0.03	ephemeral	HHEI	49.0	0	0.00	723	0.07	0	0.00	0	0.00
Sec2-S 372	Unnamed Trib Jackson Pond	0.01	intermittent	HHEI	58.0	43	0.01	74	0.01	43	0.01	55	0.01
Sec2-S 373	Unnamed Trib Jackson Pond	0.02	ephemeral	HHEI	27.0	369	0.01	0	0.00	369	0.01	300	0.01
Sec2-S 374	Unnamed Trib Jackson Pond	0.03	ephemeral	HHEI	41.0	266	0.02	0	0.00	266	0.02	281	0.02
Sec2-S 375	Unnamed Trib Jackson Pond	0.71	intermittent	HHEI	52.0	1,269	0.17	0	0.00	1,269	0.17	698	0.09
Sec2-S 376	Unnamed Trib Jackson Pond	0.03	ephemeral	HHEI	22.0	0	0.00	662	0.03	0	0.00	0	0.00
Sec2-S 377	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	32.0	164	0.01	0	0.00	164	0.01	180	0.01
Sec2-S 378	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	22.0	0	0.00	45	0.01	0	0.00	0	0.00
Sec2-S 379	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	32.0	0	0.00	259	0.02	0	0.00	0	0.00
Sec2-S 380	Unnamed Trib Jackson Pond	0.02	ephemeral	HHEI	37.0	0	0.00	339	0.03	0	0.00	0	0.00
Sec2-S 381	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	38.0	0	0.00	720	0.05	0	0.00	0	0.00
Sec2-S 382	Unnamed Trib Jackson Pond	0.02	ephemeral	HHEI	53.0	366	0.05	0	0.00	366	0.05	653	0.08
Sec2-S 383	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	48.0	0	0.00	431	0.05	0	0.00	0	0.00
Sec2-S 384	Unnamed Trib Jackson Pond	0.01	ephemeral	HHEI	53.0	145	0.02	0	0.00	145	0.02	0	0.00
Sec2-S 385	Unnamed Trib Jackson Pond	0.13	ephemeral	HHEI	68.0	286	0.08	0	0.00	286	0.08	0	0.00
Sec2-S 386	Unnamed Trib Jackson Pond	0.02	ephemeral	HHEI	48.0	56	0.01	0	0.00	56	0.01	90	0.01
Sec2-S 387	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	35.0	155	0.01	155	0.01	155	0.01	155	0.01
Sec2-S 388	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	31.0	96	0.01	221	0.01	221	0.01	232	0.01
Sec2-S 389	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	47.0	82	0.01	0	0.00	0	0.00	0	0.00
Sec2-S 390	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	57.0	427	0.03	285	0.02	285	0.02	228	0.02

Appendix A: Summary Table Stream Survey Summary Table Section 2 Corridor													
Description of Streams						Alternative A		Alternative B		DEIS Preferred Alternative		Refined Preferred Alternative	
Stream ID	Stream Name	Drainage Area (Square Miles)	USGS Stream Type	Survey	Score	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*
Sec2-S 391	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	42.0	0	0.00	357	0.02	357	0.02	350	0.02
Sec2-S 392	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	34.0	0	0.00	206	0.01	206	0.01	206	0.01
Sec2-S 393	Unnamed Trib Veale Creek	0.02	intermittent	HHEI	57.0	0	0.00	614	0.05	614	0.05	515	0.04
Sec2-S 394	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	52.0	356	0.02	0	0.00	0	0.00	0	0.00
Sec2-S 395	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	41.0	190	0.02	403	0.04	403	0.04	350	0.03
Sec2-S 396	Unnamed Trib Veale Creek	0.21	ephemeral	HHEI	56.0	53	0.01	53	0.01	53	0.01	0	0.00
Sec2-S 397	Unnamed Trib Veale Creek	0.50	intermittent	HHEI	49.0	651	0.10	722	0.12	722	0.12	797	0.13
Sec2-S 398	Unnamed Trib Veale Creek	0.15	ephemeral	HHEI	55.0	191	0.04	274	0.05	274	0.05	262	0.05
Sec2-S 399	Unnamed Trib Veale Creek	0.05	ephemeral	HHEI	44.0	606	0.08	351	0.05	351	0.05	903	0.12
Sec2-S 400	Unnamed Trib Veale Creek	0.05	ephemeral	HHEI	24.0	338	0.02	313	0.02	338	0.02	289	0.02
Sec2-S 401	Unnamed Trib Veale Creek	0.03	ephemeral	HHEI	44.0	682	0.05	682	0.05	682	0.05	682	0.05
Sec2-S 402	Unnamed Trib Veale Creek	0.04	ephemeral	HHEI	35.0	166	0.01	166	0.01	166	0.01	0	0.00
Sec2-S 403	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	24.0	0	0.00	180	0.01	0	0.00	0	0.00
Sec2-S 404	Unnamed Trib Veale Creek	0.02	ephemeral	HHEI	44.0	0	0.00	419	0.04	0	0.00	0	0.00
Sec2-S 405	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	14.0	0	0.00	462	0.01	0	0.00	0	0.00
Sec2-S 406	Unnamed Trib Veale Creek	0.14	ephemeral	HHEI	54.0	0	0.00	130	0.01	0	0.00	0	0.00
Sec2-S 407	Unnamed Trib Veale Creek	0.01	ephemeral	HHEI	24.0	0	0.00	112	0.01	0	0.00	0	0.00
Sec2-S 408	Unnamed Trib Veale Creek	0.03	ephemeral	HHEI	29.0	1,245	0.03	223	0.01	1,245	0.03	1,092	0.03
Sec2-S 409	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	34.0	87	0.01	82	0.01	87	0.01	23	0.01
Sec2-S 410	Unnamed Trib Hurricane Branch	0.05	ephemeral	HHEI	15.0	200	0.01	0	0.00	200	0.01	195	0.01
Sec2-S 411	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	15.0	0	0.00	350	0.01	0	0.00	0	0.00
Sec2-S 412	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	24.0	0	0.00	59	0.01	0	0.00	0	0.00
Sec2-S 413	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	10.0	0	0.00	87	0.01	0	0.00	0	0.00
Sec2-S 414	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	25.0	0	0.00	271	0.01	0	0.00	288	0.01
Sec2-S 415	Hurricane Branch	1.27	perennial	QHEI	46.5	409	0.09	0	0.00	409	0.09	0	0.00
Sec2-S 416	Unnamed Trib Hurricane Branch	0.03	ephemeral	HHEI	28.0	309	0.01	0	0.00	309	0.01	0	0.00
Sec2-S 417	Unnamed Trib Hurricane Branch	0.09	intermittent	HHEI	51.0	444	0.08	0	0.00	444	0.08	0	0.00
Sec2-S 418	Unnamed Trib Hurricane Branch	0.02	ephemeral	HHEI	48.0	291	0.03	281	0.03	291	0.03	329	0.04
Sec2-S 419	Unnamed Trib Hurricane Branch	0.02	ephemeral	HHEI	42.0	0	0.00	304	0.03	0	0.00	336	0.03
Sec2-S 420	Unnamed Trib Hurricane Branch	0.33	ephemeral	HHEI	25.0	479	0.03	0	0.00	479	0.03	0	0.00
Sec2-S 421	Unnamed Trib Hurricane Branch	0.30	intermittent	HHEI	46.0	257	0.05	0	0.00	257	0.05	0	0.00
Sec2-S 422	Unnamed Trib Hurricane Branch	0.01	ephemeral	HHEI	51.0	469	0.09	0	0.00	469	0.09	0	0.00
Sec2-S 423	Unnamed Trib Hurricane Branch	0.03	ephemeral	HHEI	25.0	91	0.01	0	0.00	91	0.01	0	0.00
Sec2-S 424	Unnamed Trib Hurricane Branch	0.10	ephemeral	HHEI	45.0	1,003	0.09	0	0.00	1,003	0.09	0	0.00

Appendix A: Summary Table Stream Survey Summary Table Section 2 Corridor													
Description of Streams						Alternative A		Alternative B		DEIS Preferred Alternative		Refined Preferred Alternative	
Stream ID	Stream Name	Drainage Area (Square Miles)	USGS Stream Type	Survey	Score	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*	LF Stream in ROW	Acres Stream in ROW*
Sec2-S 425	Unnamed Trib Hurricane Branch	0.30	ephemeral	HHEI	50.0	314	0.01	0	0.00	314	0.01	0	0.00
Sec2-S 426	Unnamed Trib Veale Creek	0.02	ephemeral	HHEI	57.0	0	0.00	178	0.01	178	0.01	159	0.01
Sec2-S 428	Unnamed Trib Veale Creek	0.09	ephemeral	HHEI	32.0	0	0.00	0	0.00	0	0.00	91	0.01
Sec2-S 429	Unnamed Trib Flat Creek	0.01	ephemeral	HHEI	18.0	0	0.00	0	0.00	0	0.00	50	0.01
Sec2-S 430	Unnamed Trib Lick Creek	0.03	ephemeral	HHEI	36.0	50	0.01	50	0.01	50	0.01	125	0.01
Sec2-S 432	Unnamed Trib Lick Creek	0.05	ephemeral	HHEI	29.0	0	0.00	0	0.00	0	0.00	209	0.01
Sec2-S 433	Unnamed Trib Veale Creek	0.05	ephemeral	HHEI	63.0	0	0.00	0	0.00	0	0.00	54	0.01
	Total LF of Streams in ROW,Total Acres of Streams in ROW												
		Perennial				9,774	10	9,352	10	8,808	10	7,391	8
		Intermittent				23,504	5	27,147	5	22,953	4	21,907	4
		Ephemeral				38,616	4	39,346	4	37,790	4	35,883	3
		Total				71,894	19	75,845	19	69,551	18	65,181	15

Abbreviations: LF=Linear feet
USGS=United States Geological Survey
ROW=Right-of-Way
A=Alternative A
B=Alternative B

*Acres of stream impacts were calculated by multiplying the width of the ordinary high water mark (OHWM) by the linear feet of impact and then dividing by 43,560

Preliminary design information has become available since the DEIS.

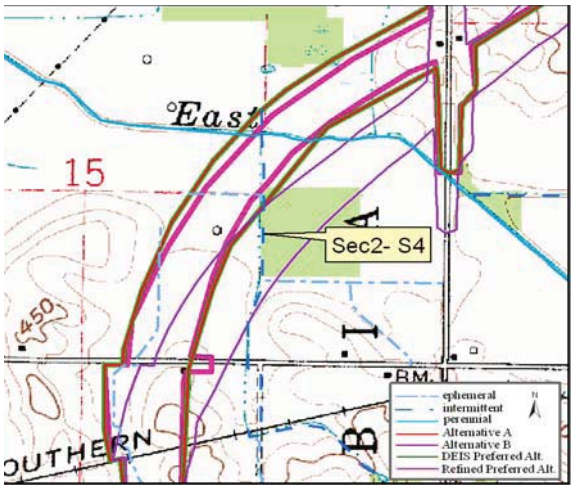
Streams 428, 429, 430, 432, & 433 have been added since the DEIS, due to impacts from the Refined Preferred Alternative.

Impacts to S 430 were added to Alternatives A, B, and DEIS preferred due to recent stream modifications.

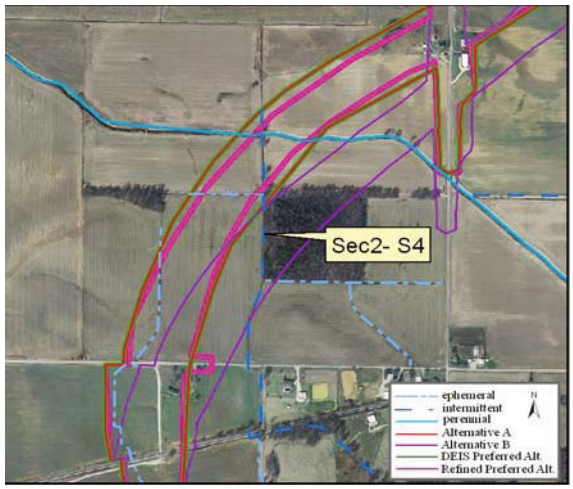
APPENDIX B

Section 2 Stream Impact Site Forms and QHEI / HHEI Data

Stream Id-Section 2 S 4



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Wallace Lateral E Fork Keg	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2S R9W	**OHWM Width ft:**	2.8
UTME:	465573	**OHWM Depth ft:**	0.8
UTMN:	4243530	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 4

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Wallace Lateral East Fork Keg Creek	0	0	A	HHEI 9 / Modified Class I
Wallace Lateral East Fork Keg Creek	916 feet	0.06 acres	B	HHEI 9 / Modified Class I
Wallace Lateral East Fork Keg Creek	0	0	DEIS Preferred	HHEI 9 / Modified Class I
Wallace Lateral East Fork Keg Creek	0	0	Refined Preferred	HHEI 9 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	9
Watershed Area (square miles):	0.10
Legal Drain:	Yes
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0 ac, B-1.63 ac, DP-0 ac RP-0 ac

Stream Sec2S 4

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 4

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 9

SITE NAME/LOCATION _____

Wallace Lateral SITE NUMBER Sec3-S4 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.10

LENGTH OF STREAM REACH (ft) 200' LAT 4243530 LONG 465573 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRD RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	100
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pts]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 7

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 1

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential. Park. New Field	☒	☒	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None
☐ 0 5
☐ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Fransico NRCS Soil Map Page: 35 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Center

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 77 UR 78 UL 79 UP 80 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

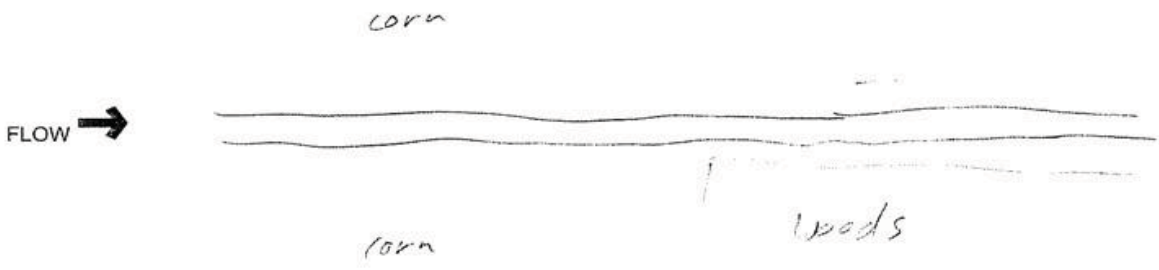
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

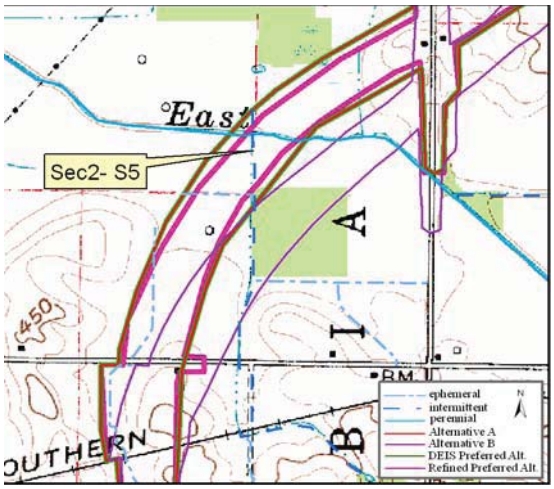
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

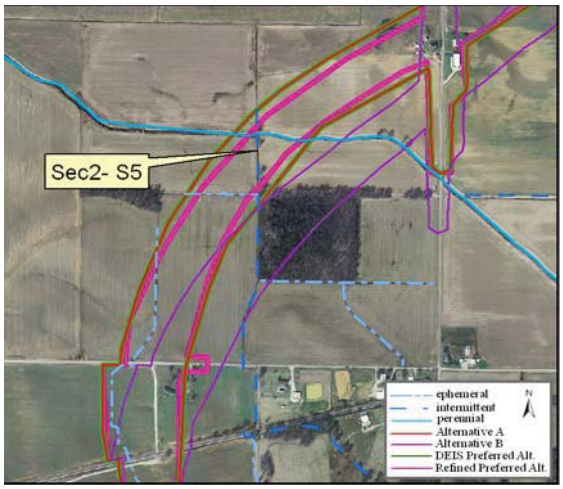
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 5



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Wallace Lateral E Fork Keg	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2S R9W	**OHWM Width ft:**	5.5
UTME:	465581	**OHWM Depth ft:**	1.5
UTMN:	4243816	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 5

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Wallace Lateral East Fork Keg Creek	552 feet	0.07 acres	A	HHEI 39 / Modified Class II
Wallace Lateral East Fork Keg Creek	0	0	B	HHEI 39 / Modified Class II
Wallace Lateral East Fork Keg Creek	552 feet	0.07 acres	DEIS Preferred	HHEI 39 / Modified Class II
Wallace Lateral East Fork Keg Creek	413 feet	0.05 acres	Refined Preferred	HHEI 39 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.29
Legal Drain:	Yes
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.10 ac, B-0, DP-0.10 ac, RP-0

Stream Sec2S 5

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 5

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION

Wallace Lateral SITE NUMBER Sec2-S5 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.29

LENGTH OF STREAM REACH (ft) 200' LAT 4243816 LONG 465581 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRD RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100%
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 5

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☒ ☒	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 revision

Stream Sec2S 5

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: 35 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Center

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 73 UR 74 UL 75 UP 76 DN

Elevated Turbidity? (Y/N): Y Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

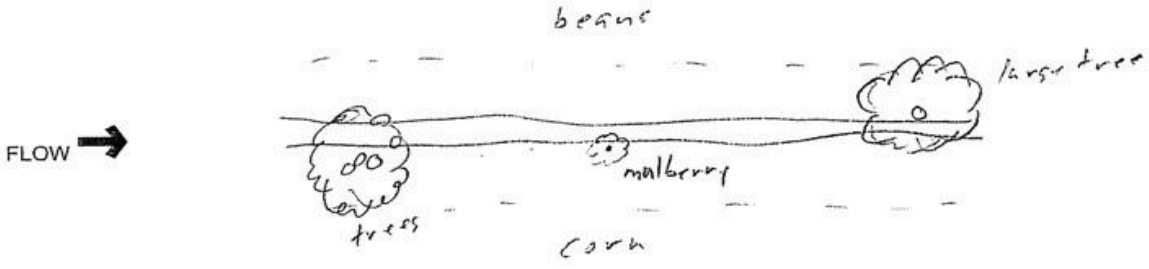
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

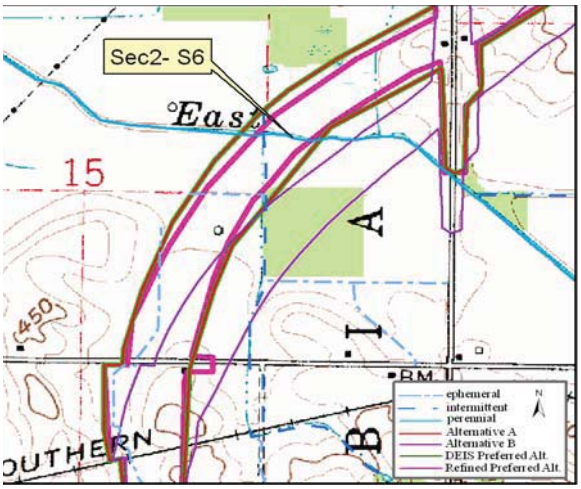
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

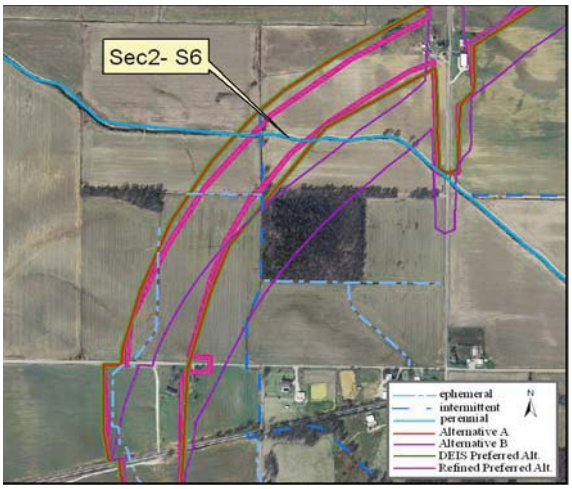
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 6



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	East Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 15 T2S R9W	**OHWM Width ft:**	35.0
UTME:	465673	**OHWM Depth ft:**	1.8
UTMN:	4243879	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 6

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
East Fork Keg Creek	585 feet	0.47 acres	A	QHEI 41 / Modified Warmwater Habitat
East Fork Keg Creek	0	0	B	QHEI 41 / Modified Warmwater Habitat
East Fork Keg Creek	585 feet	0.47 acres	DEIS Preferred	QHEI 41 / Modified Warmwater Habitat
East Fork Keg Creek	403 feet	0.32 acres	Refined Preferred	QHEI 41 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	41
Watershed Area (square miles):	10.85
Legal Drain:	Yes
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 6

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 6

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S6 | bioSample # | Stream Name East Fork Keg Creek | Location 465673 E 4243879 N

Surveyor Rush | Sample Date 9-15 | County Gibson | Macro SampleType | Habitat Complete | QHEI Score: 41

1-Substrate (20 points maximum)

Substrate Score: 9

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
X				Gravel(7)	X				Silt(2)
		X		Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); Rootwads(1); X Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
X Low (2)	X Fair (3)	X Recovering (3)	Low (1)	X Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		X Dredging	Bank shaping

Comments:

One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); Moderate 10-50m (3); X Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); X Open Pasture/Rowcrop (0)

Bank Erosion (per bank): X None or little (3); Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); X No riffle (0)

Comments: All slide

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 35 | Gradient: 1.29 (ft/mile) | Drainage Area: 10.8 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 6

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 41

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- None
- Industrial
- WWTP
- Agricultural
- Livestock
- Silviculture
- Construction
- Urban Runoff
- Suburban
- Channelization
- Riparian Removal
- Flow Alteration
- CSOs
- Mining
- Landfills
- Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): | % Riffle: | Is reach representative of stream?

Aesthetic rating (1-10): | % Run:

% Glide:

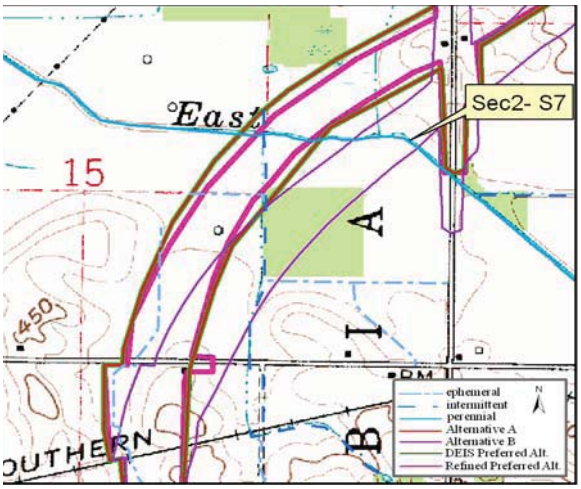
Canopy Cover (% Open): | % Pool:

General QHEI Notes:

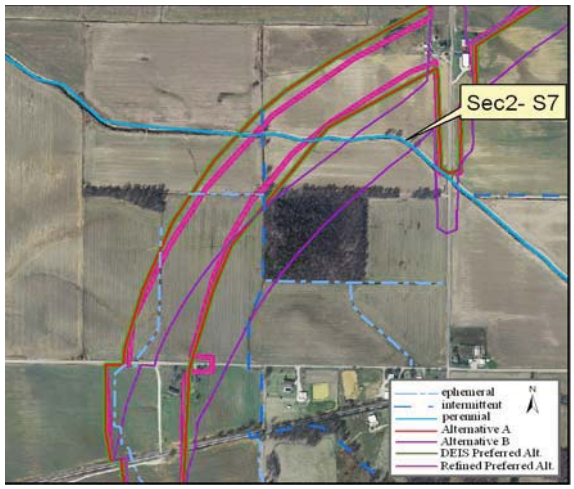
69 UR 70 UL 71 UP 72 DN

OWQ Biological Studies QHEI

Stream Id-Section 2 S 7



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	E Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 15 T2S R9W	**OHWM Width ft:**	23.0
UTME:	465867	**OHWM Depth ft:**	1.8
UTMN:	4243884	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 7

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
East Fork Keg Creek	0	0	A	QHEI 45 / Modified Warmwater Habitat
East Fork Keg Creek	717 feet	0.38 acres	B	QHEI 45 / Modified Warmwater Habitat
East Fork Keg Creek	0	0	DEIS Preferred	QHEI 45 / Modified Warmwater Habitat
East Fork Keg Creek	37 feet	0.02 acres	Refined Preferred	QHEI 45 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	45
Watershed Area (square miles):	10.45
Legal Drain:	Yes
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 7

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 7

Field Report

IDEM — QWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location	
Sec2-S7		Keg Creek East Fork	465867 E	4243884 N

Surveyor: RJ/JB | Sample Date: 9-15 | County: Gibson | Macro SampleType | Habitat Complete | **QHEI Score: 45**

1-Substrate (20 points maximum) — Substrate Score: 9

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
	X	X		Gravel(7)	X				Silt(2)
		X	X	Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); Rootwads(1); X Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
X Low (2)	X Fair (3)	X Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		X Dredging	X Bank shaping

Comments:

One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality L	Erosion/Runoff-Floodplain quality R	(most predominant per bank)	L	R		Bank Erosion L	Bank Erosion R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
X	X	Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 4

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); X Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum) — Gradient Score: 4

Average width: 23' Gradient: 2.9 (ft/mile) Drainage Area: 10.4 (square miles)

Comments:

QWQ Biological Studies QHEI

Stream Sec2S 7

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 45

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [x] Channelization
- [x] Riparian Removal
- [x] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 4 | % Riffle: 5 | Is reach representative of stream? [ ]

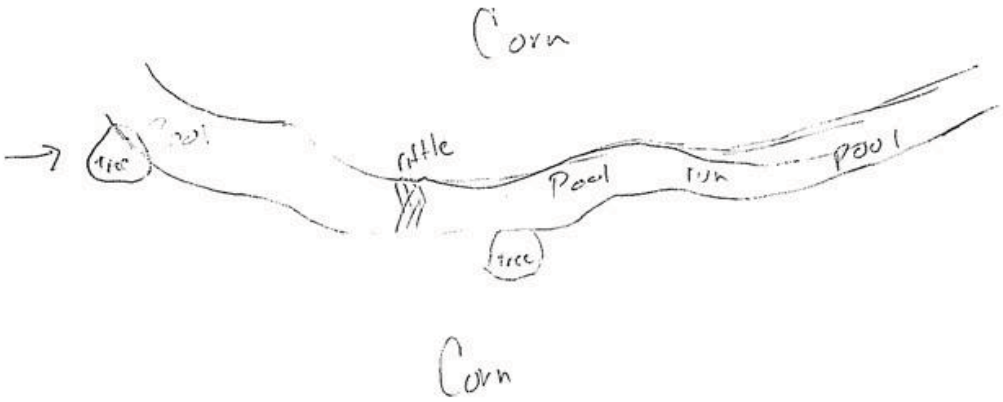
Aesthetic rating (1-10): 2 | % Run: 5

Canopy Cover (% Open): 100 | % Glide: 30 | % Pool: 60

General QHEI Notes:

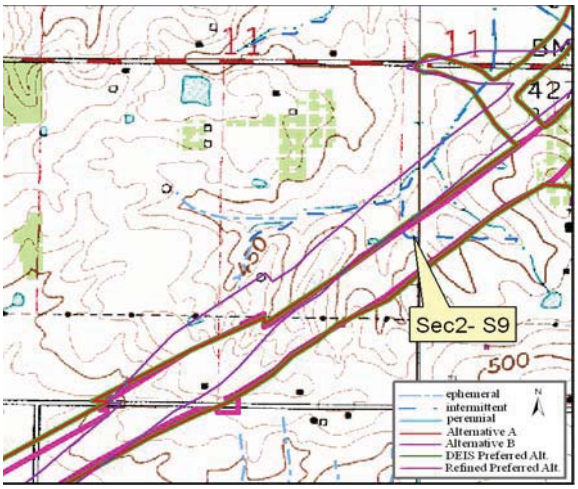
Fish, shells, aquat life, crayfish

Rec GS UR G GM G7 UP G C DL

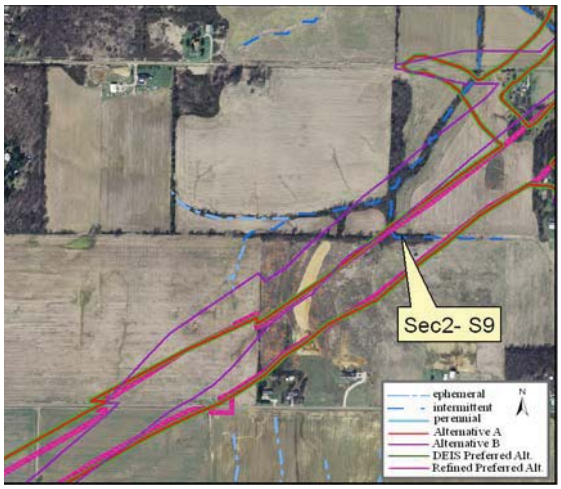


OWQ Biological Studies QHEI

Stream Id-Section 2 S 9



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Buck Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 11 T2S R9W	**OHWM Width ft:**	5.5
UTME:	467261	**OHWM Depth ft:**	0.7
UTMN:	4244947	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 9

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Buck Creek	517 feet	0.07 acres	A	HHEI 26 / Modified Class I
Unnamed Tributary Buck Creek	254 feet	0.03 acres	B	HHEI 26 / Modified Class I
Unnamed Tributary Buck Creek	517 feet	0.07 acres	DEIS Preferred	HHEI 26 / Modified Class I
Unnamed Tributary Buck Creek	464 feet	0.06 acres	Refined Preferred	HHEI 26 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	26
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.87 ac, B - 0.24 ac, DP-0.87 ac, RPA-0.81 ac

Stream Sec2S 9

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 9

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 26

SITE NAME/LOCATION Unnamed Trib Buck Ck SITE NUMBER Sec2-S9 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) ____ LAT 4244949 LONG 467257 RIVER CODE ____ RIVER MILE ____

DATE 9/15/05 SCORER JRD RJC COMMENTS ____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

original drainage modified

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☒ ☐	GRAVEL (2-64 mm) [9 pts]	5	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock ____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points — Substrate Max = 40: 6 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS 5.5 ft **AVERAGE BANKFULL WIDTH (meters)** 5.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☒ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☒	Narrow <5m	☐ ☐	Residential, Park. New Field	☐ ☒	Open Pasture. Row Crop
☐ ☐	None	☒ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS ____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS ____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Oakland City NRCS Soil Map Page: 28 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 61 U.R 62 U.L. 63 Up 64 Dn

Elevated Turbidity? (Y/N): N Canopy (% open): 30

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: 2 concrete block structures upstream as well as diversion directing runoff from field into creek

BIOTIC EVALUATION

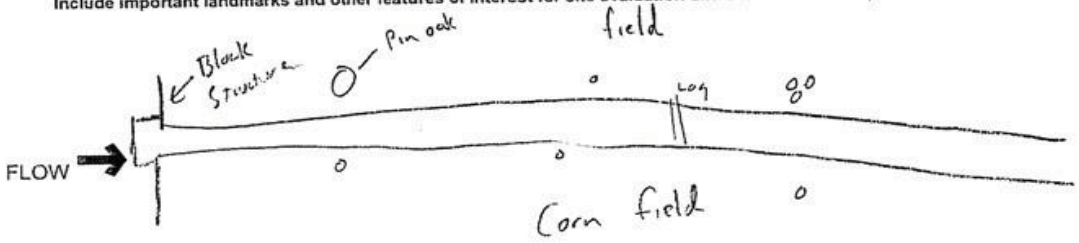
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

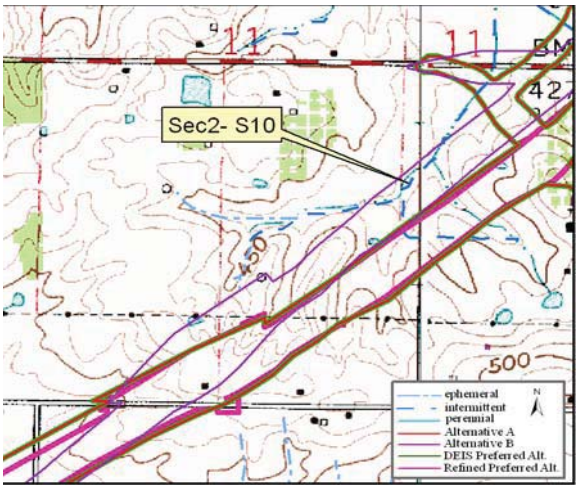
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



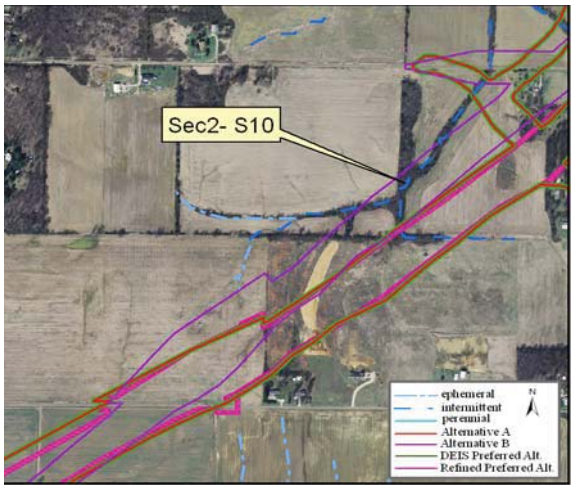
PHWH Form Page - 2

October 24 2002 Revision

Stream Id-Section 2 S 10



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Buck Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 11 T2S R9W	**OHWM Width ft:**	10.5
UTME:	467195	**OHWM Depth ft:**	1.0
UTMN:	4245038	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 10

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Buck Creek	164 feet	0.04 acres	A	HHEI 30 / Modified Class II
Unnamed Tributary Buck Creek	1,131 feet	0.27 acres	B	HHEI 30 / Modified Class II
Unnamed Tributary Buck Creek	164 feet	0.04 acres	DEIS Preferred	HHEI 30 / Modified Class II
Unnamed Tributary Buck Creek	0	0	Refined Preferred	HHEI 30 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	30
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.30 ac, B – 2.45 ac, DP-0.30 ac, RP – 0 ac

Stream Sec2S 10

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 10

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 30

SITE NAME/LOCATION Unnamed Trib Buck Ck SITE NUMBER Sec2-S10 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) ____ LAT 4244994 LONG 467183 RIVER CODE ____ RIVER MILE ____

DATE 9/15/05 SCORER JRB RJC COMMENTS ____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

original drainage modified

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	95
☐☐	BOULDER (>256 mm) [16 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock ____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points — Substrate Max = 40: 5 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ **MAXIMUM POOL DEPTH (centimeters):** ____

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ **AVERAGE BANKFULL WIDTH (meters)** 11'

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential. Park. New Field	☒	☒	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS ____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS ____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: 28 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 30

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

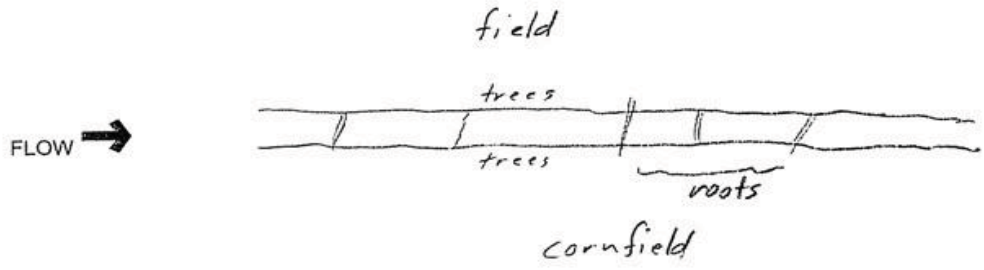
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

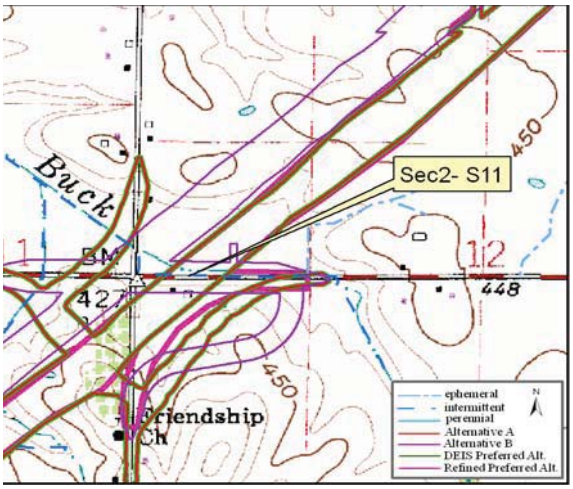
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

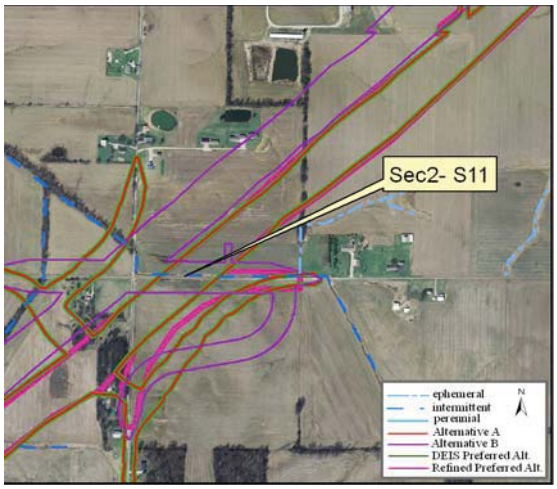
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 11



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Buck Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2S R9W	**OHWM Width ft:**	7.0
UTME:	467731	**OHWM Depth ft:**	1.0
UTMN:	4245355	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 11

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Buck Creek	731 feet	0.12 acres	A	HHEI 54 / Modified Class II
Buck Creek	1,554 feet	0.25 acres	B	HHEI 54 / Modified Class II
Buck Creek	731 feet	0.12 acres	DEIS Preferred	HHEI 54 / Modified Class II
Buck Creek	1,038 feet	0.17 acres	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	0.90
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0.06 ac, DP– 0, RP – 0

Stream Sec2S 11

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 11

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION _____

Buck Creek SITE NUMBER Sec2-S11 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.90

LENGTH OF STREAM REACH (ft) 200' LAT 4245355 LONG 467731 RIVER CODE _____ RIVER MILE _____

DATE 12-15-09 SCORER JK / MR COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 3 (B) 1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☒ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 27cm

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 7'

HHEI Metric Points

Substrate Max = 40: 4

A + B

Pool Depth Max = 30: 30

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☒	☒	Open Pasture. Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Road on left

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None
☐ 0 5
☐ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 53 UR 54 UL 55 UP 56 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

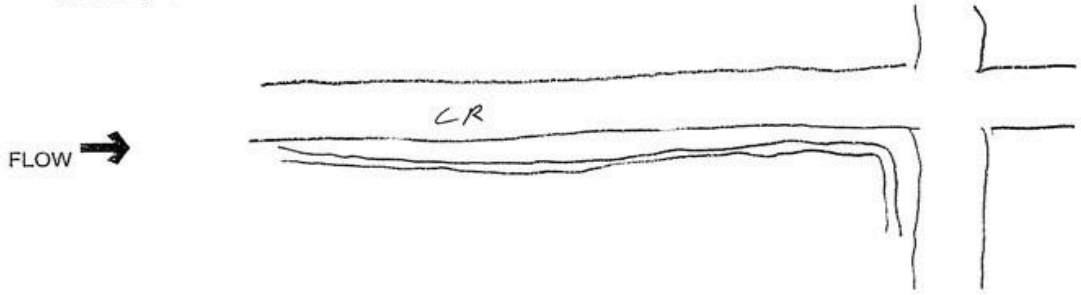
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

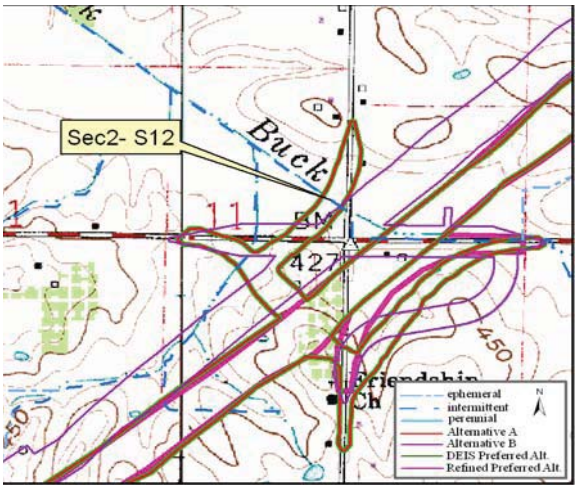
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

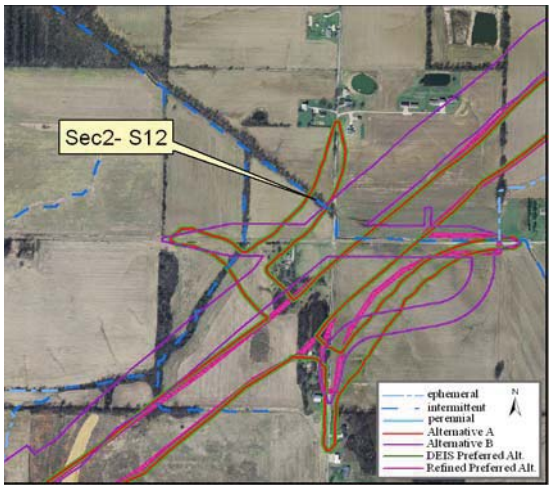
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 12



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Buck Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2S R9W	**OHWM Width ft:**	9.0
UTME:	467605	**OHWM Depth ft:**	1.0
UTMN:	4245393	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 12

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Buck Creek	166 feet	0.03 acres	A	HHEI 54 / Modified Class II
Buck Creek	94 feet	0.02 acres	B	HHEI 54 / Modified Class II
Buck Creek	166 feet	0.03 acres	DEIS Preferred	HHEI 54 / Modified Class II
Buck Creek	0	0	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	1.00
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.37 ac, B – 0.15 ac, DP–0.37, RP - 0

Stream Sec2S 12

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 12

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION _____

Buck Creek SITE NUMBER Sec2-S12 RIVER BASIN Patoka DRAINAGE AREA (mi²) 1.00

LENGTH OF STREAM REACH (ft) 200' LAT 4245393 LONG 467605 RIVER CODE _____ RIVER MILE _____

DATE 12-15-09 SCORER JK / MR COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 1

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☒ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 27cm

Pool Depth Max = 30 30

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 9'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS Road on Right

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 57 UR 58 UL 59 UP 60 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

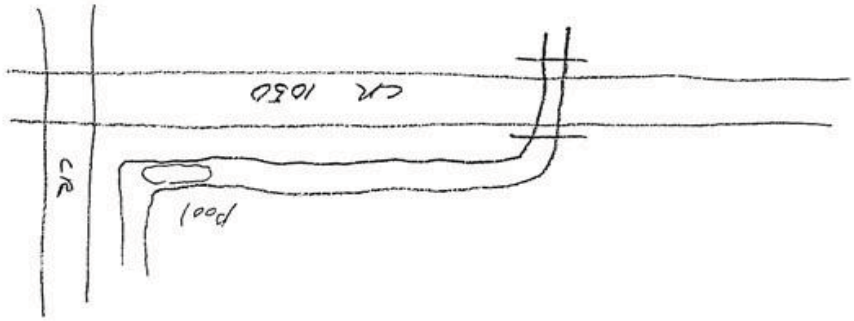
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) _____

Comments Regarding Biology: Ø crayfish

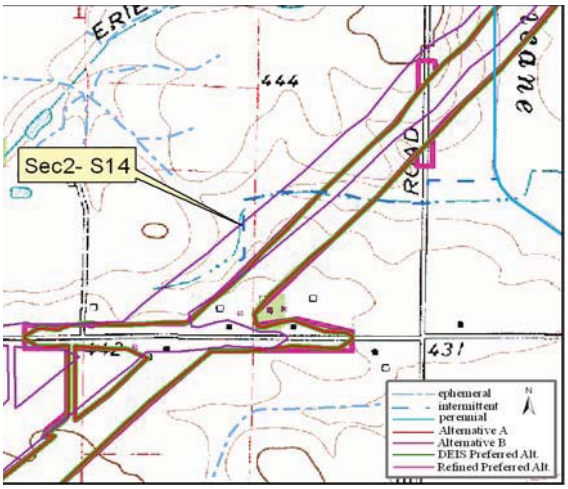
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

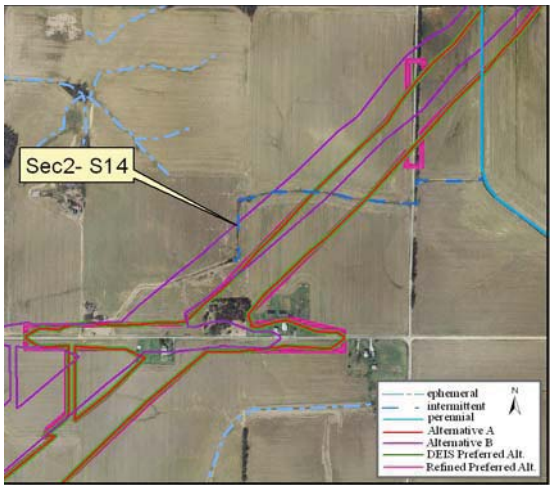
FLOW



Stream Id-Section 2 S 14



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un Trib Hurricane Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2S R9W	**OHWM Width ft:**	4.5
UTME:	468742	**OHWM Depth ft:**	1.3
UTMN:	4246378	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 14

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Creek	0	0	A	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	327 feet	0.03 acres	B	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	0	0	DEIS Preferred	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	0	0	Refined Preferred	HHEI 24 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0, DP–0, RP – 0

Stream Sec2S 14

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 14

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Hurricane Ck SITE NUMBER Sec2-S14 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200' LAT 4246378 LONG 468742 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	100
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 3 (B) 1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 4 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Oakland City NRCS Soil Map Page: 28 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: _____ Quantity: _____

Photograph Information: 4 PUR 50 UL 51 UP 52 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

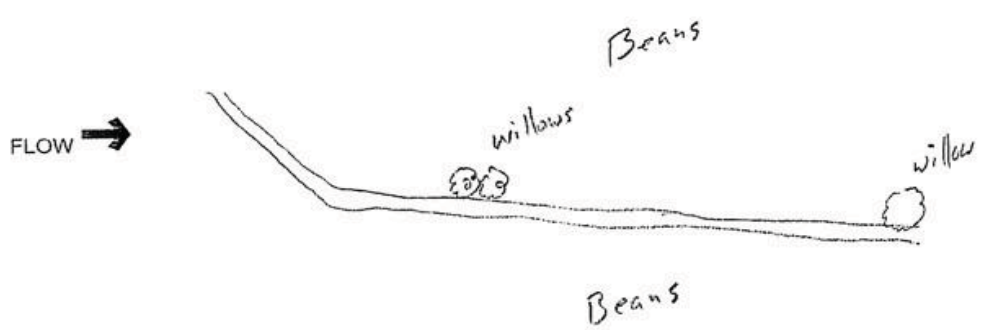
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)____

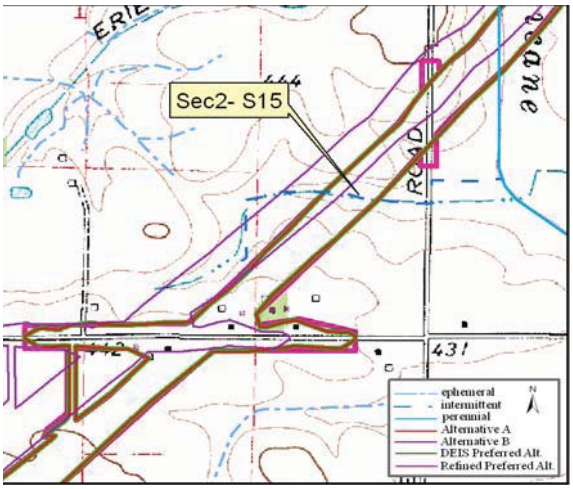
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

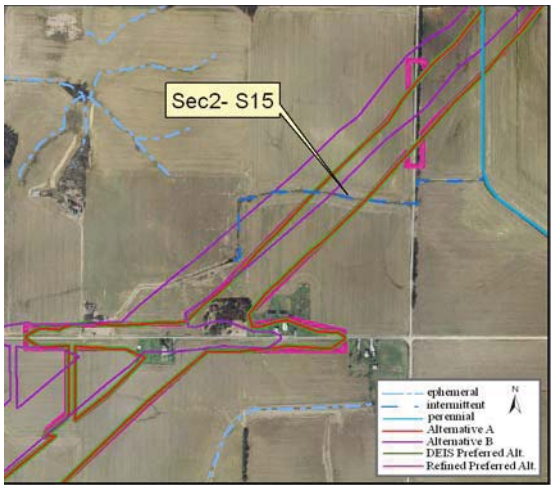
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 15



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un Trib Hurricane Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2S R9W	**OHWM Width ft:**	5.0
UTME:	468975	**OHWM Depth ft:**	1.3
UTMN:	4246501	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 15

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Creek	390 feet	0.04 acres	A	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	0	0	B	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	390 feet	0.04 acres	DEIS Preferred	HHEI 24 / Modified Class I
Unnamed Tributary Hurricane Creek	384 feet	0.04 acres	Refined Preferred	HHEI 24 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0, DP–0, RP – 0

Stream Sec2S 15

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 15

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Hurrican Ck SITE NUMBER Sec2-S15 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200' LAT 4246505 LONG 468972 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRO RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	100
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 1

HHEI Metric Points — Substrate Max = 40: 4 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐☐	Wide >10m	☐☐	Mature Forest, Wetland	☐☐	Conservation Tillage
☐☐	Moderate 5-10m	☐☐	Immature Forest, Shrub or Old Field	☐☐	Urban or Industrial
☐☐	Narrow <5m	☐☐	Residential, Park, New Field	☒☒	Open Pasture, Row Crop
☒☒	None	☐☐	Fenced Pasture	☐☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 6 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Oakland City NRCS Soil Map Page: 28 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 41 UR 42 UL 43 UP 44 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

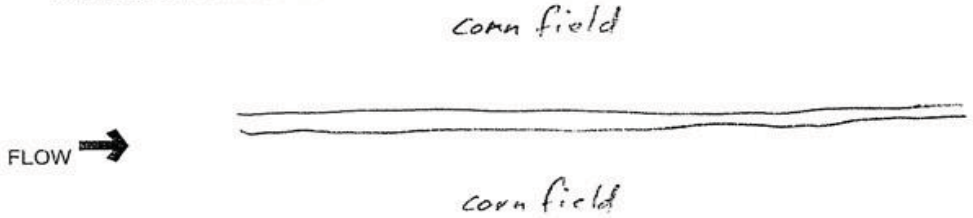
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)____

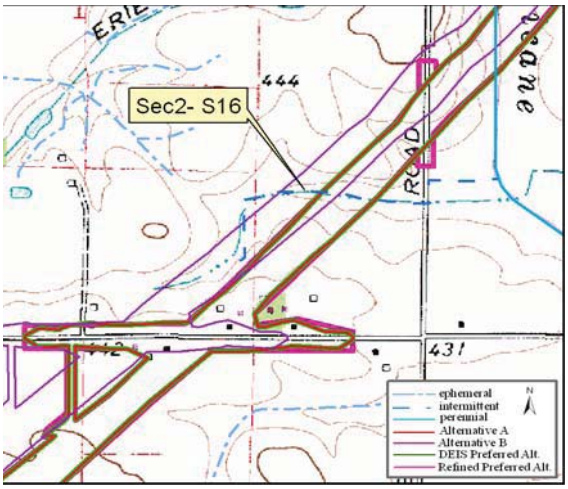
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

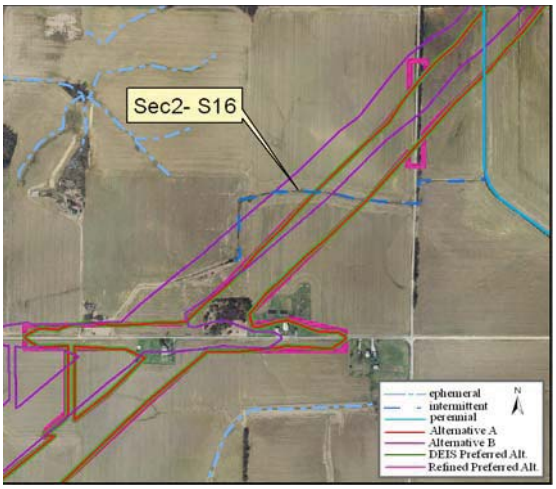
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 16



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un Trib Hurricane Creek	**Channelized:**	No
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2S R9W	**OHWM Width ft:**	5.0
UTME:	468890	**OHWM Depth ft:**	1.3
UTMN:	4246511	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 16

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Creek	0	0	A	HHEI 24 / Class I
Unnamed Tributary Hurricane Creek	448 feet	0.05 acres	B	HHEI 24 / Class I
Unnamed Tributary Hurricane Creek	0	0	DEIS Preferred	HHEI 24 / Class I
Unnamed Tributary Hurricane Creek	0	0	Refined Preferred	HHEI 24 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.08
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0, DP–0, RP – 0

Stream Sec2S 16

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 16

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Hurricane Ck SITE NUMBER Sec2-S16 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.08

LENGTH OF STREAM REACH (ft) 200' LAT 4246512 LONG 468890 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRB COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 1

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 5'

HHEI Metric Points

Substrate Max = 40	A + B	4
Pool Depth Max = 30		0
Bankfull Width Max=30		20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture. Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Oakland City NRCS Soil Map Page: 28 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 45 UR 46 UL 47 UP 48 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)_____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

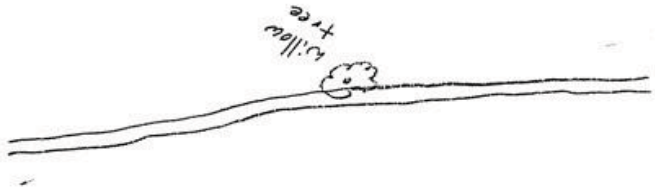
Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

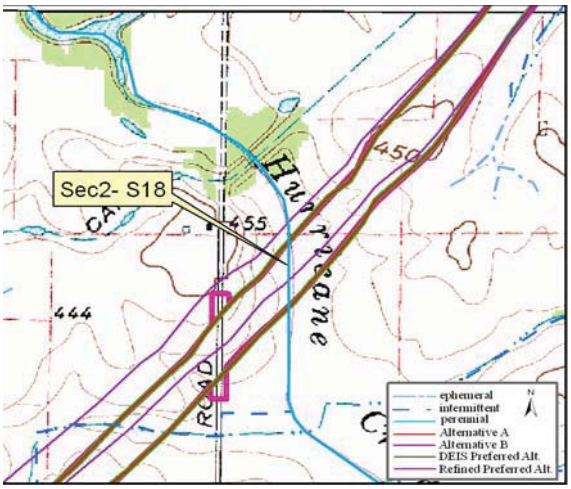
FLOW



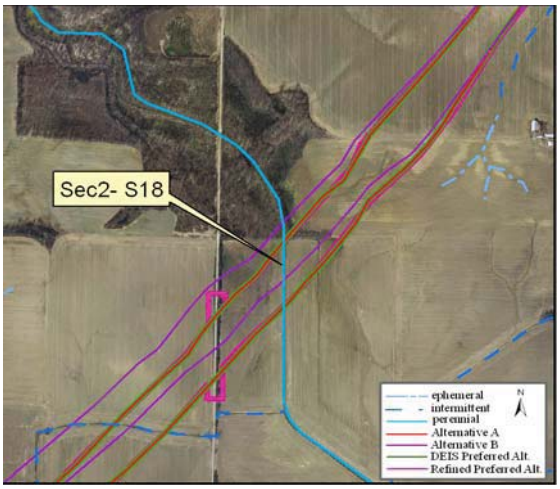
PHWH Form Page - 2

October 24 2002 Revision

Stream Id-Section 2 S 18



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Hurricane Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 6 T2S R8W	**OHWM Width ft:**	18.0
UTME:	469302	**OHWM Depth ft:**	1.5
UTMN:	4246919	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 18

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Hurricane Creek	509 feet	0.21 acres	A	QHEI 22 / Modified Warmwater Habitat
Hurricane Creek	443 feet	0.18 acres	B	QHEI 22 / Modified Warmwater Habitat
Hurricane Creek	509 feet	0.21 acres	DEIS Preferred	QHEI 22 / Modified Warmwater Habitat
Hurricane Creek	501 feet	0.21 acres	Refined Preferred	QHEI 22 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	22
Watershed Area (square miles):	2.27
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.17 ac, B – 0.70 ac, DP–0.17, RP – 0.16 ac

Stream Sec2S 18

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 18

Field Report

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S18 | bioSample # | Stream Name: Hurricane Branch | Location: 469298 4246895

Surveyor: JRB RJE | Sample Date: 9/15/05 | County: Gibson | Macro Sample Type | Habitat Complete | QHEI Score: 22

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)						Hardpan(4)			
		Boulders(9)						Detritus(3)			
		Cobble(8)						Muck(2)			
		Gravel(7)				X	X	Silt(2)			
		Sand(6)	X	X				Sludge(1)			
		Bedrock(5)						Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 1

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); Overhanging vegetation(1); Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); X Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	X Canopy Removal	Leveed
X None (1)	X Poor (1)	X Recent or no recovery (1)		X Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 3

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
X	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 6

Max pool depth (check one): >1m (6); X 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1); Intermittent (-2); X Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); X No riffle (0)

Comments: No riffle

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 18 | Gradient: 2.25 (ft/mile) | Drainage Area: 2.27 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 18

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 22

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [x] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 1 | % Riffle: 0 | Is reach representative of stream? Yes

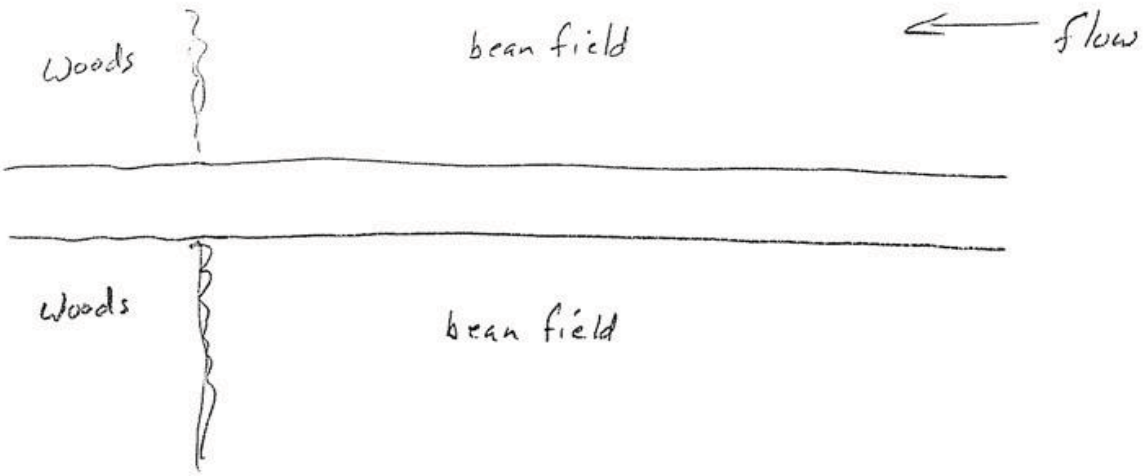
Aesthetic rating (1-10): 1 | % Run: 0

% Glide: 100

Canopy Cover (% Open): 100 | % Pool: 0

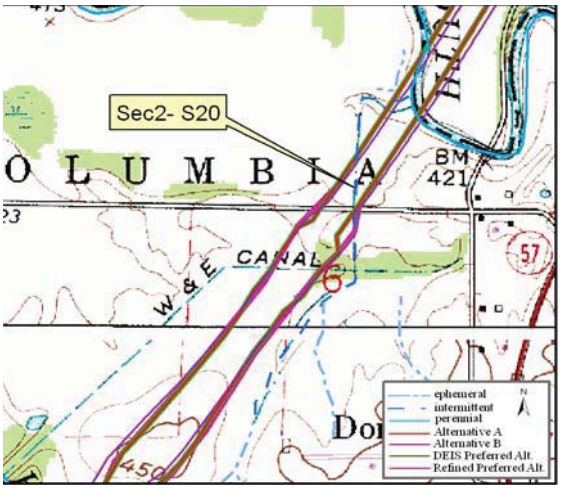
General QHEI Notes:

37 UR 38 UL 39 UP 40 DN

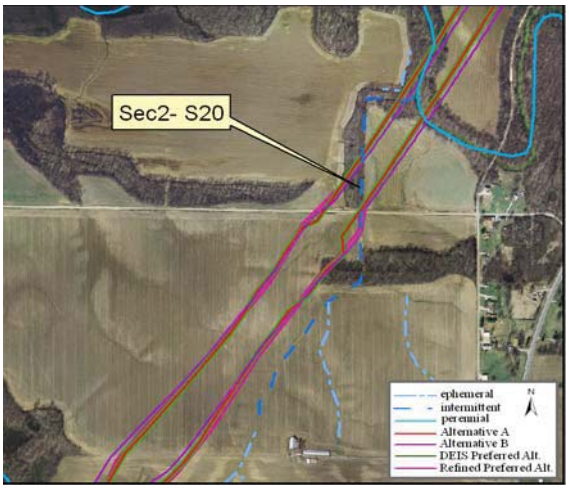


OWQ Biological Studies QHEI

Stream Id-Section 2 S 20



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib S. Fork Patoka River	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 31 T1S R8W	**OHWM Width ft:**	3.5
UTME:	470025	**OHWM Depth ft:**	0.5
UTMN:	4247838	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 20

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary S. Fork Patoka River	554 feet	0.04 acres	A	HHEI 20 / Modified Class I
Unnamed Tributary S. Fork Patoka River	489 feet	0.04 acres	B	HHEI 20 / Modified Class I
Unnamed Tributary S. Fork Patoka River	554 feet	0.04 acres	DEIS Preferred	HHEI 20 / Modified Class I
Unnamed Tributary S. Fork Patoka River	693 feet	0.06 acres	Refined Preferred	HHEI 20 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	20
Watershed Area (square miles):	0.17
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 1.16 ac, B – 0.91 ac, DP–1.16, RP – 1.18 ac

Stream Sec2S 20

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 20

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 20

SITE NAME/LOCATION _____

Unnamed Trib S. Fork Patoka SITE NUMBER Sec2-S20 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.17

LENGTH OF STREAM REACH (ft) 200' LAT 4247830 LONG 470025 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRD RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☒	SILT [3 pt]	95
☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]		☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]		☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points — **Substrate Max = 40**: 5 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☒	Open Pasture. Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

PHWH Form Page - 1

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 9 NRCS Soil Map Stream Order _____

County: Gibson Township / City: Columbia

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 33 UR 34 UL 35 UP 36 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): Y (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

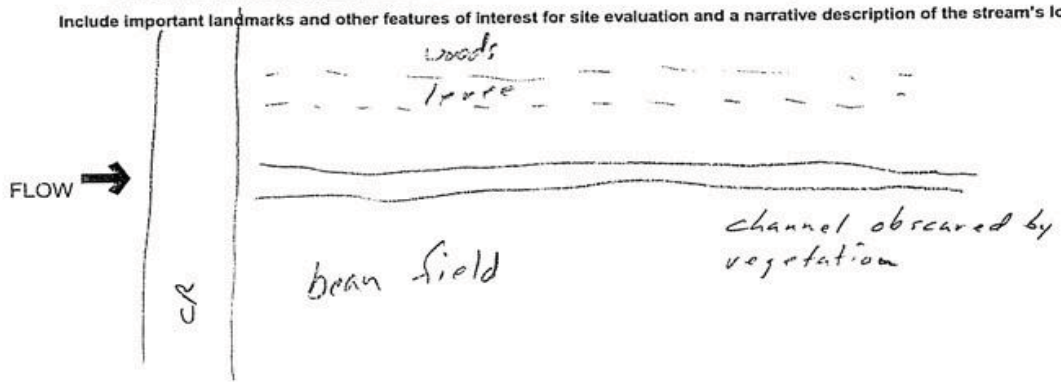
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

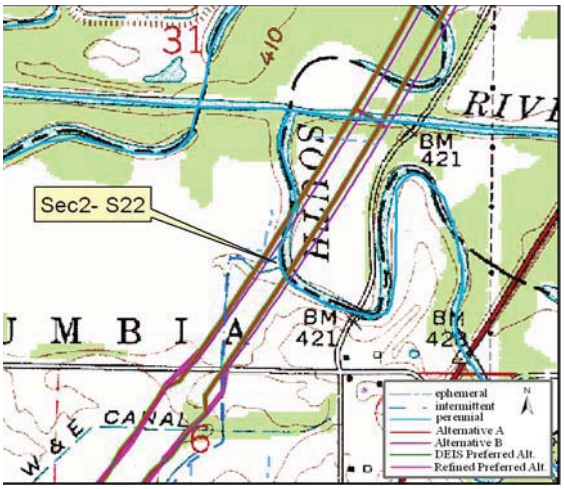
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

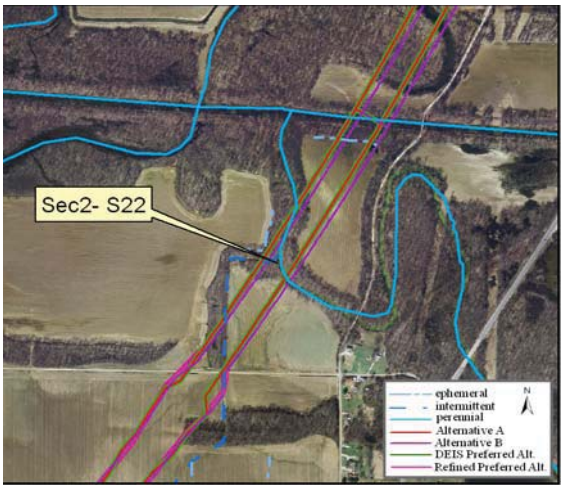
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 22



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	South Fork Patoka River	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	Yes
PLSS:	SE ¼ Section 31 T1S R8W	**OHWM Width ft:**	40.0
UTME:	470151	**OHWM Depth ft:**	5.8
UTMN:	4248037	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 22

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
South Fork Patoka River	569 feet	0.52 acres	A	QHEI 38 / Modified Warmwater Habitat
South Fork Patoka River	381 feet	0.35 acres	B	QHEI 38 / Modified Warmwater Habitat
South Fork Patoka River	569 feet	0.52 acres	DEIS Preferred	QHEI 38 / Modified Warmwater Habitat
South Fork Patoka River	571 feet	0.52 acres	Refined Preferred	QHEI 38 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	38
Watershed Area (square miles):	76.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 1.99 ac, B – 1.58 ac, DP–1.99, RP – 1.99 ac

Stream Sec2S 22

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 22

Field Report

IDEM QWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S22 | bioSample # | Stream Name: South Fork Patoka River | Location: 470153E 4248075N

Surveyor: JRG RDZ | Sample Date: 9/15/05 | County: Gibson | Macro SampleType | Habitat Complete | QHEI Score: 38

1-Substrate (20 points maximum)

Substrate Score: 7

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	P	R		Present P	Present R
		Bldrs/Slabs(10)					Hardpan(4)		
		Boulders(9)				X	Detritus(3)		
		Cobble(8)					Muck(2)		
		Gravel(7)		X			Silt(2)	X	
X		Sand(6)					Sludge(1)		
		Bedrock(5)					Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 6

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); Overhanging vegetation(1); Rootwads(1); X Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); X Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 6

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	X Poor (1)	X Recent or no recovery (1)		X Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 9

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			X Forest, Swamp (3)			Conservation Tillage (1)			X None or little (3)
X	X	Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 8

Max pool depth (check one): X >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); X No riffle (0)

Comments: No riffle

5-Gradient (10 points maximum)

Gradient Score: 2

Average width: 40 | Gradient: 0.25 (ft/mile) | Drainage Area: 76.02 (square miles)

Comments:

QWQ Biological Studies QHEI

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
22			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 38

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [x] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 3 | % Riffle: 0 | % Run: 0 | % Glide: 100 | % Pool:

Aesthetic rating (1-10): 2

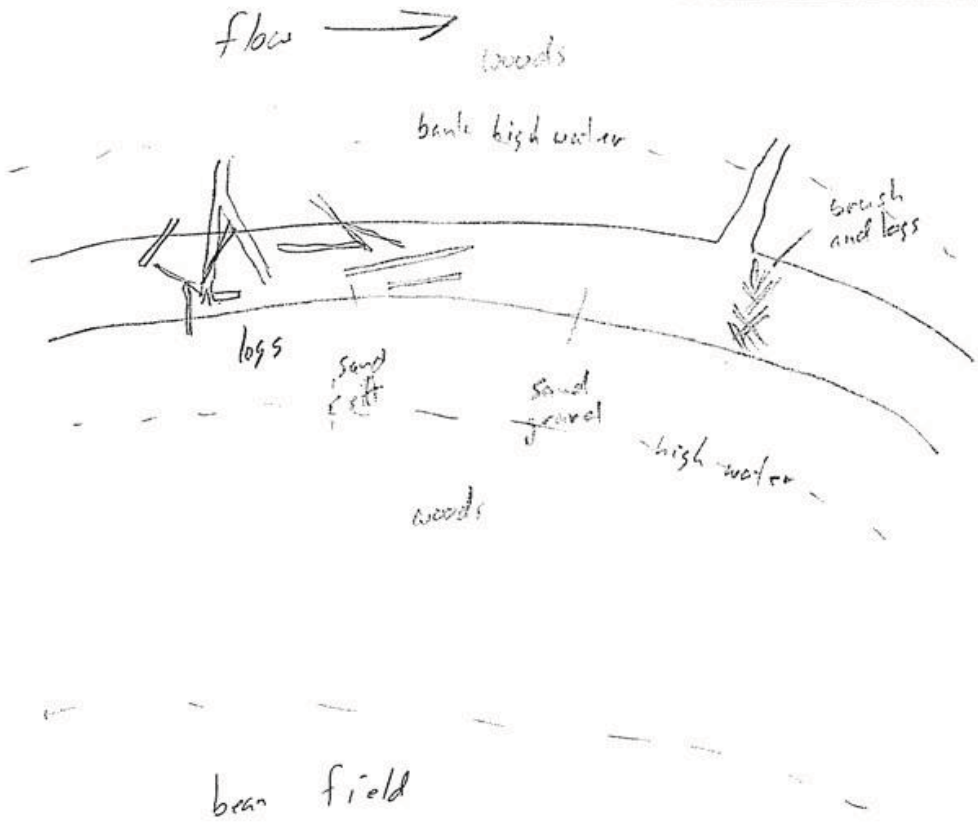
Canopy Cover (% Open): 40

Is reach representative of stream?

General QHEI Notes:

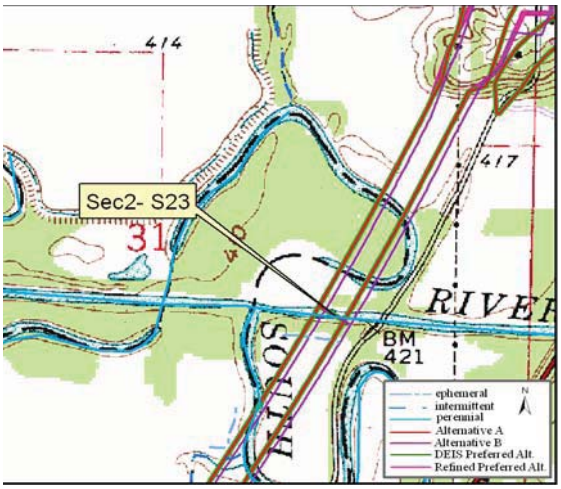
29 UL 30 UP 31 DN 32 UR

fish observed – sucker

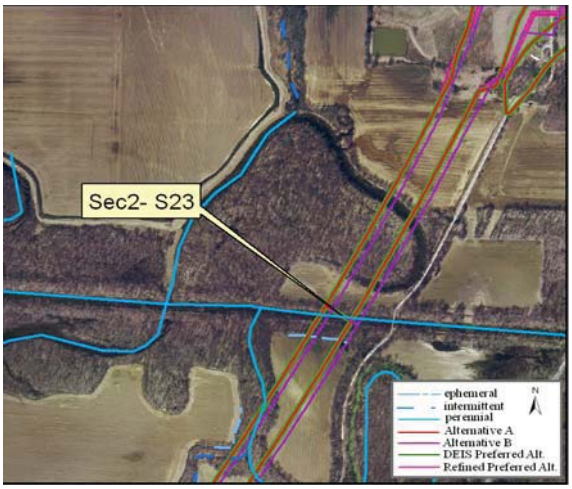


OWQ Biological Studies QHEI

Stream Id-Section 2 S 23



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Patoka River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	Yes
PLSS:	SE ¼ Section 31 T1S R8W	**OHWM Width ft:**	90.0
UTME:	470364	**OHWM Depth ft:**	11.0
UTMN:	4248367	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 23

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Patoka River	240 feet	0.50 acres	A	QHEI 30 / Modified Warmwater Habitat
Patoka River	240 feet	0.50 acres	B	QHEI 30 / Modified Warmwater Habitat
Patoka River	240 feet	0.50 acres	DEIS Preferred	QHEI 30 / Modified Warmwater Habitat
Patoka River	240 feet	0.50 acres	Refined Preferred	QHEI 30 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	30
Watershed Area (square miles):	253.66
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.95 ac, B – 0.96 ac, DP–0.95 ac, RP – 0.95 ac

Stream Sec2S 23

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 23

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec 2-S23 | bioSample #: | Stream Name: Petoka River | Location: 470364 E 4248367 N

Surveyor: RJ/JD | Sample Date: 7-15 | County: Pike | Macro SampleType: | Habitat Complete: | QHEI Score: 30

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)					Silt(2)
X				Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: X Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No riffles present in stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); Overhanging vegetation(1); Shallows(in slow water)(1); Rootmats(1); Deep pools(2); Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 9

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
X	X	Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 7

Max pool depth (check one): X >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: All glide no pool or riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand gravel (0)

Riffle/run embeddedness: Extensive (-1); X Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 1

Average width: 90 | Gradient: 0.25 (ft/mile) | Drainage Area: 253.6 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 30

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [x] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 2 | % Riffle: | % Run: | % Glide: 100 | % Pool:

Aesthetic rating (1-10): 2

Canopy Cover (% Open): 80

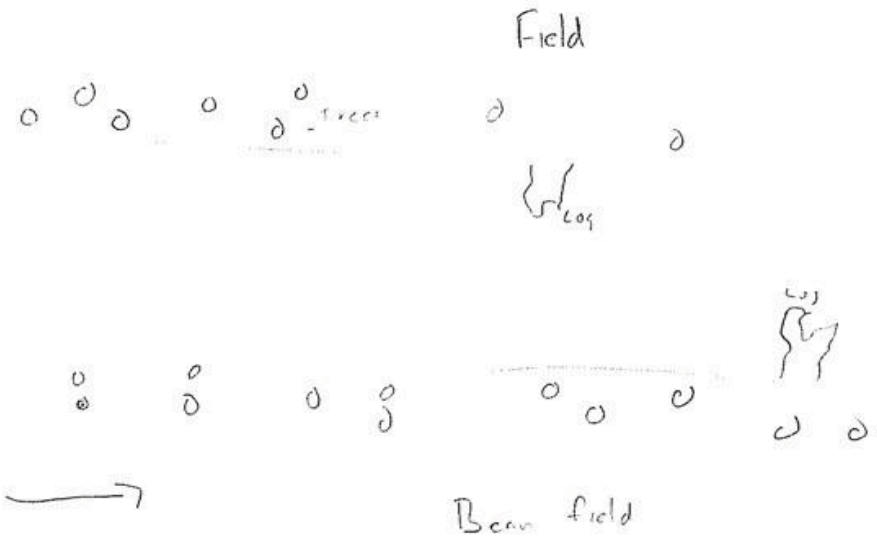
Is reach representative of stream? Y

General QHEI Notes:

Fish

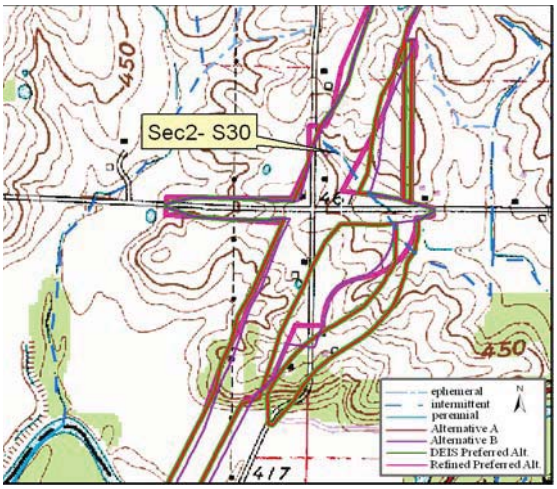
Photo

25 UR 26 UL 27 UP 28 DN

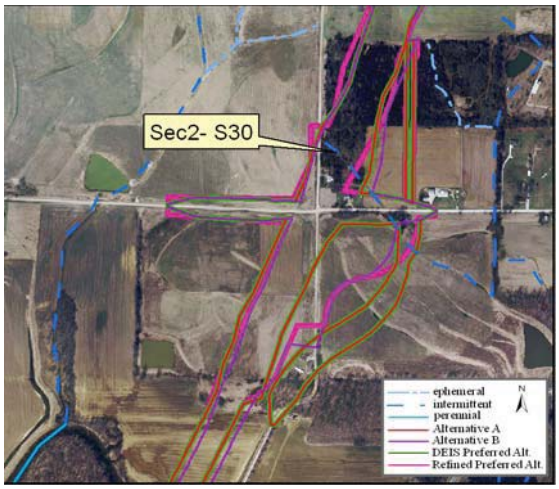


OWQ Biological Studies QHEI

Stream Id-Section 2 S 30



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Patoka River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 29 T1S R8W	**OHWM Width ft:**	2.5
UTME:	470881	**OHWM Depth ft:**	0.3
UTMN:	4249493	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 30

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Patoka River	954 feet	0.05 acres	A	HHEI 13 / Class I
Unnamed Tributary Patoka River	828 feet	0.05 acres	B	HHEI 13 / Class I
Unnamed Tributary Patoka River	954 feet	0.05 acres	DEIS Preferred	HHEI 13/ Class I
Unnamed Tributary Patoka River	810 feet	0.05 acres	Refined Preferred	HHEI 13 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	13
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 2.35 ac, B – 2.23 ac, DP- 2.35 ac, RP – 2.10 ac

Stream Sec2S 30

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 30

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 13

SITE NAME/LOCATION _____

Unnamed Trib Patoka SITE NUMBER Sec2-S30 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200' LAT 4249514 LONG 470882 RIVER CODE _____ RIVER MILE _____

DATE 7/15/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3 0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☐ 3 0
☐ 0 5 ☐ 1 5 ☐ 2 5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 30 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 13 UR 14 UL 15 UP 16 DN

Elevated Turbidity? (Y/N): Y Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

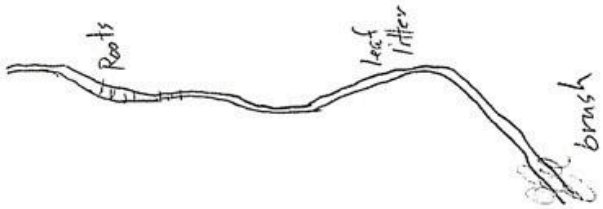
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

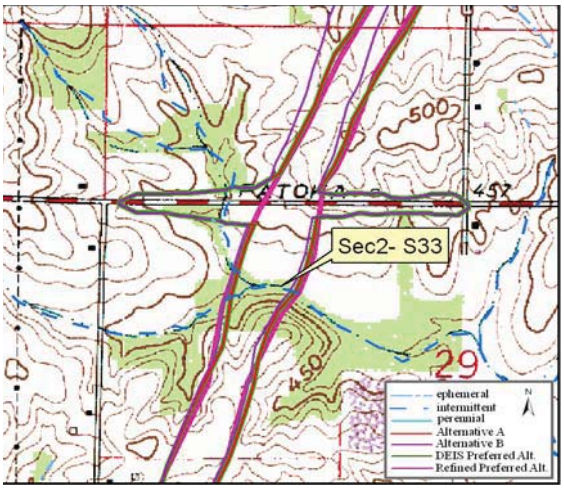
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

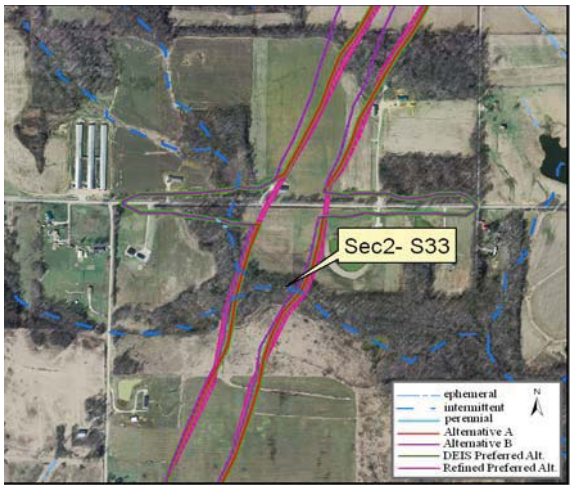
FLOW



Stream Id-Section 2 S 33



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 29 T1S R8W	**OHWM Width ft:**	12.5
UTME:	471195	**OHWM Depth ft:**	0.70
UTMN:	4250375	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 33

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	800 feet	0.23 acres	A	HHEI 38 / Class I
Unnamed Tributary Flat Creek	801 feet	0.23 acres	B	HHEI 38 / Class I
Unnamed Tributary Flat Creek	800 feet	0.23 acres	DEIS Preferred	HHEI 38 / Class I
Unnamed Tributary Flat Creek	547 feet	0.16 acres	Refined Preferred	HHEI 38 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	38
Watershed Area (square miles):	0.36
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 3.01 ac, B – 3.04 ac, DP- 3.01 ac, RP – 2.05 ac

Stream Sec2S 33

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 33

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 38

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S33 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.36

LENGTH OF STREAM REACH (ft) 200' LAT 4250375 LONG 471201 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRB RJE COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	50
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<5%
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	15	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	75	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points

Substrate Max = 40: 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 12.5'

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 30 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 9 UR 10 UL 11 UP 12 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

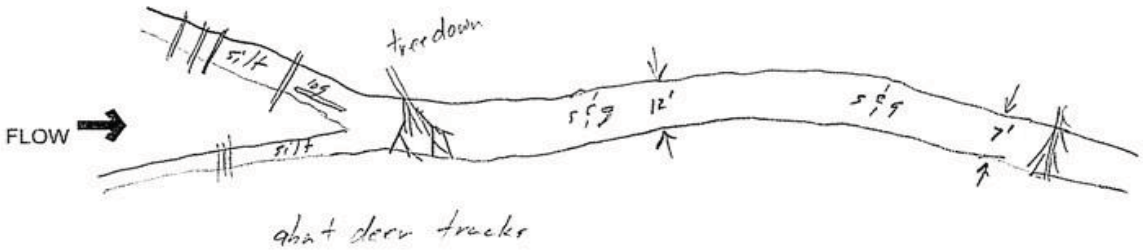
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

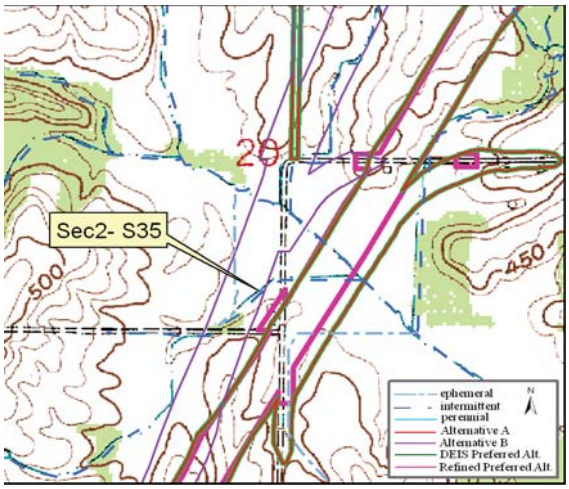
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

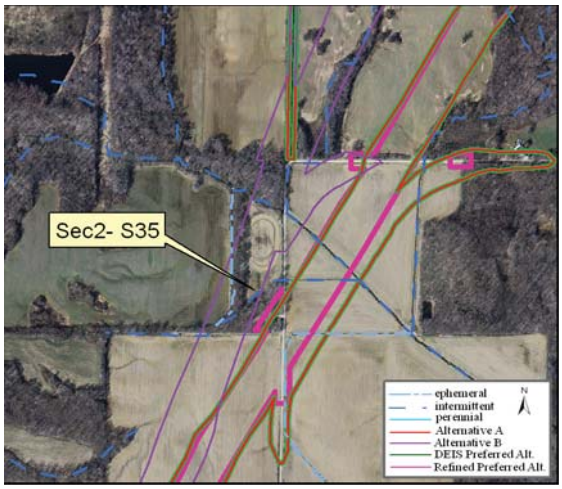
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 35



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 20 T1S R8W	**OHWM Width ft:**	4.5
UTME:	471561	**OHWM Depth ft:**	0.80
UTMN:	4251420	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 35

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	476 feet	0.05 acres	A	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	608 feet	0.06 acres	B	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	476 feet	0.05 acres	DEIS Preferred	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	362 feet	0.04 acres	Refined Preferred	HHEI 23 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	23
Watershed Area (square miles):	0.15
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 1.65 ac, DP – 0, RP – 0.01 ac

Stream Sec2S 35

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 35

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 23

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S35 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.15

LENGTH OF STREAM REACH (ft) 200' LAT 4251433 LONG 471561 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JRB RJC COMMENT _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	85
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	15
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS 1 _____ AVERAGE BANKFULL WIDTH (meters): 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☐	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☒	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☒ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 25 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 1. Up 44 Up 45 Up 46 D. 47

Elevated Turbidity? (Y/N): N Canopy (% open): 15

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Agricultural impacts on left

BIOTIC EVALUATION

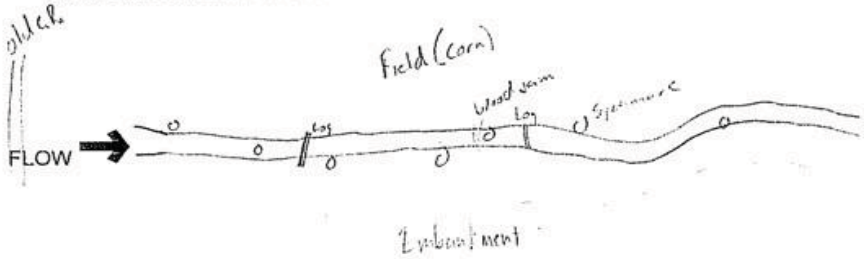
Performed? (Y/N): Y (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

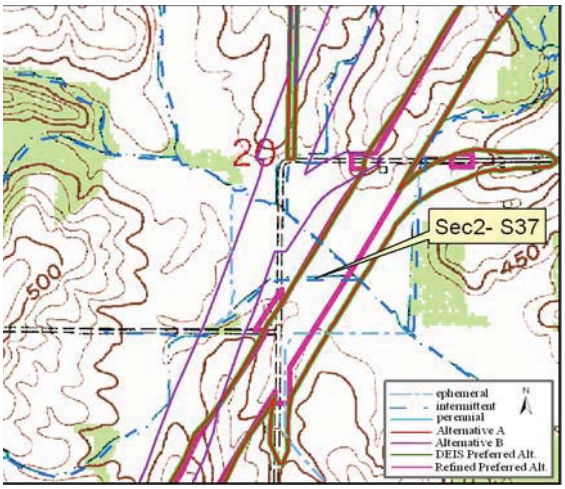


Embankment

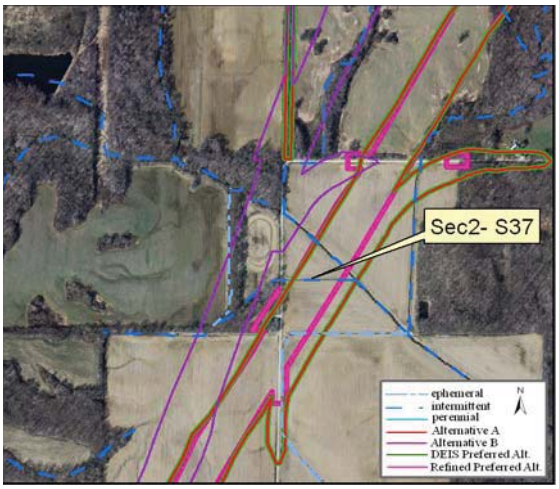
PHWH Form Page - 2

October 24 2002 Revision

Stream Id-Section 2 S 37



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 20 T1S R8W	**OHWM Width ft:**	14.0
UTME:	471798	**OHWM Depth ft:**	2.8
UTMN:	4251570	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 37

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	427 feet	0.14 acres	A	QHEI 29 / Modified Warmwater Habitat
Unnamed Tributary Flat Creek	0	0	B	QHEI 29 / Modified Warmwater Habitat
Unnamed Tributary Flat Creek	427 feet	0.14 acres	DEIS Preferred	QHEI 29 / Modified Warmwater Habitat
Unnamed Tributary Flat Creek	333 feet	0.11 acres	Refined Preferred	QHEI 29 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	29
Watershed Area (square miles):	2.11
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0, DP – 0, RP – 0

Stream Sec2S 37

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 37

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S37 | bioSample # | Stream Name Unnamed Trib Flat Creek | Location 471798 E 4251570 N

Surveyor RK/JD | Sample Date 9/14/05 | County Pike | Macro Sample Type | Habitat Complete | QHEI Score: 29

1-Substrate (20 points maximum)

Substrate Score: 0

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)			X		Silt(2)
				Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: Embedded in silt

2-Instream Cover (20 points maximum

Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); Rootwads(1); X Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 7

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
Low (2)	X Fair (3)	Recovering (3)	Low (1)	X Canopy Removal	Leveed
X None (1)	Poor (1)	X Recent or no recovery (1)		Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X	X	Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 2

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); X Moderate (1); Intermittent (-2); Slow (1); No pool (0)

Comments: No riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); X No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 7

Average width: 14' | Gradient: 2.51 (ft/mile) | Drainage Area: 2.11 (square miles)

Comments:

Stream Sec2S 37

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 29

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [x] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Pic's 40, 41, 42, 43

Miscellaneous QHEI Information

Subjective rating (1-10): 3

Aesthetic rating (1-10): 2

Canopy Cover (% Open): 100

% Riffle:

% Run: 100

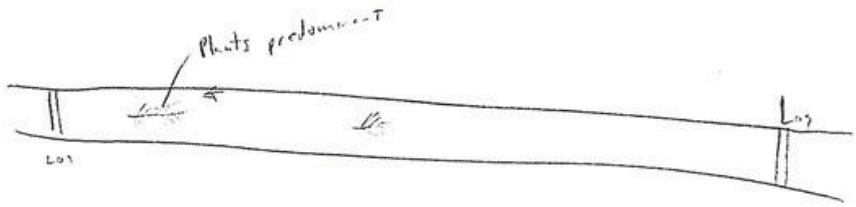
% Glide:

% Pool:

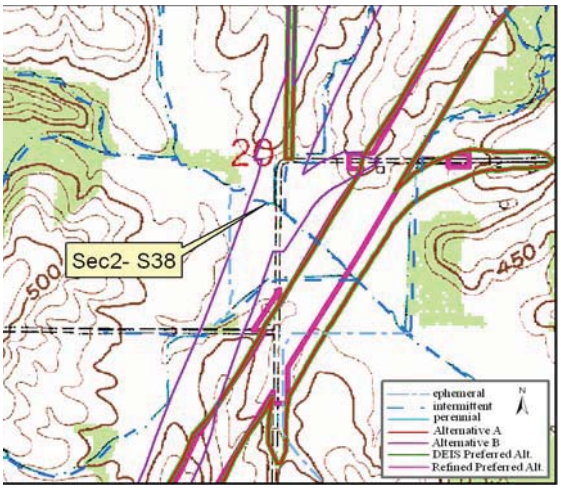
Is reach representative of stream? Y

General QHEI Notes:

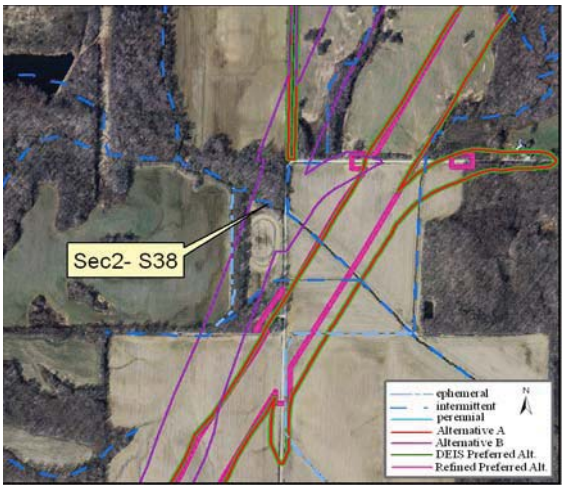
Flow →



Stream Id-Section 2 S 38



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 20 T1S R8W	**OHWM Width ft:**	25.0
UTME:	471655	**OHWM Depth ft:**	2.8
UTMN:	4251689	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 38

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	QHEI 55 / Warmwater Habitat
Unnamed Tributary Flat Creek	453 feet	0.26 acres	B	QHEI 55 / Warmwater Habitat
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	QHEI 55 / Warmwater Habitat
Unnamed Tributary Flat Creek	0	0	Refined Preferred	QHEI 55 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	55
Watershed Area (square miles):	2.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B-0.95 ac, DP – 0, RP – 0

Stream Sec2S 38

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S38 | bioSample # | Stream Name Unnamed Trib Flat Creek | Location 471655 E 4251675 N

Surveyor MC/JB | Sample Date 9/14/05 | County P.V. | Macro SampleType | Habitat Complete | QHEI Score: 55

1-Substrate (20 points maximum)

Substrate Score: 0

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)						Hardpan(4)			
		Boulders(9)						Detritus(3)			
		Cobble(8)						Muck(2)			
		Gravel(7)				X		Silt(2)			
		Sand(6)						Sludge(1)			
		Bedrock(5)						Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: Encrusted (unweathered) partial substrate

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); X Rootwads(1); Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); X Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 17

Sinuosity	Development	Channelization	Stability	Modifications/Other	
X High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
Moderate (3)	X Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
X		Wide >50m (4)	X		Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)	X	X	Moderate (2)
	X	Narrow 5-10m (2)		X	Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 9

Max pool depth (check one): X >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 8

Riffle/run depth (check one): X Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: X Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); X None (2); No riffle (0)

Comments: Riffles are mineral encrusted woody debris

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 25' | Gradient: 2.51 (ft/mile) | Drainage Area: 2.02 (square miles)

Comments:

15 26 27 28 — OWQ Biological Studies QHEI

Stream Sec2S 38

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 55
RCJPi					

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [x] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [x] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): % Riffle: 5
Aesthetic rating (1-10): % Run: 5
% Glide:
Canopy Cover (% Open): 40 % Pool: 90

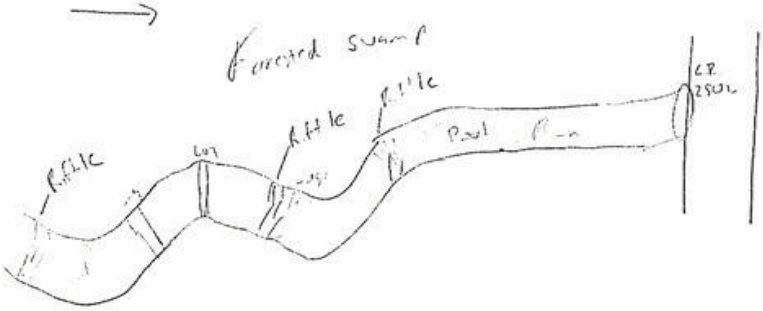
Is reach representative of stream? Y

General QHEI Notes:

Photo 35 U.R. 36 U.L. 37 UP 38 down

Crayfish present

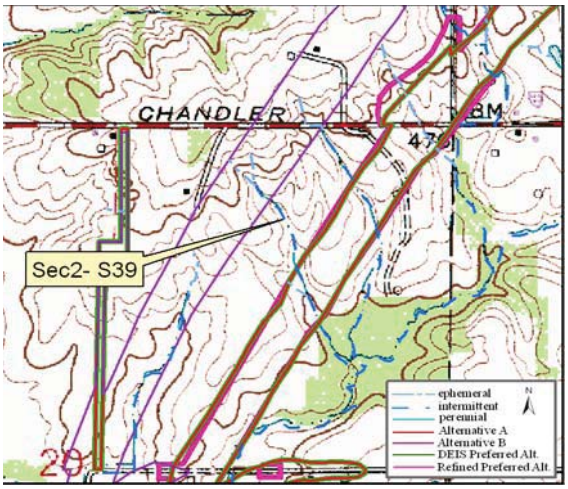
Flow →



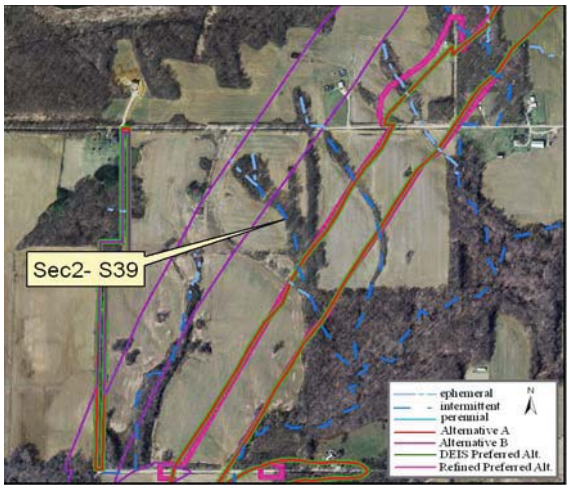
Place park

OWQ Biological Studies QHEI

Stream Id-Section 2 S 39



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	6.0
UTME:	472169	**OHWM Depth ft:**	0.8
UTMN:	4252210	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 39

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	460 feet	0.06 acres	A	HHEI 28 / Class I
Unnamed Tributary Flat Creek	157 feet	0.02 acres	B	HHEI 28 / Class I
Unnamed Tributary Flat Creek	460 feet	0.06 acres	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Flat Creek	448 feet	0.06 acres	Refined Preferred	HHEI 28 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 1.82 ac, B – 0.86 ac, DP -1.82 ac, RP –1.80 ac

Stream Sec2S 39

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 39

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S39 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200' LAT 4252210 LONG 472169 RIVER CODE _____ RIVER MILE _____

DATE 9/17/05 SCORER JRB RTC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____

(A) 6 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 8

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 6'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☒ 3 0
☐ 0 5 ☐ 1 5 ☐ 2 5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 25 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 27 UR 28 UL 29 UP 30 DN

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

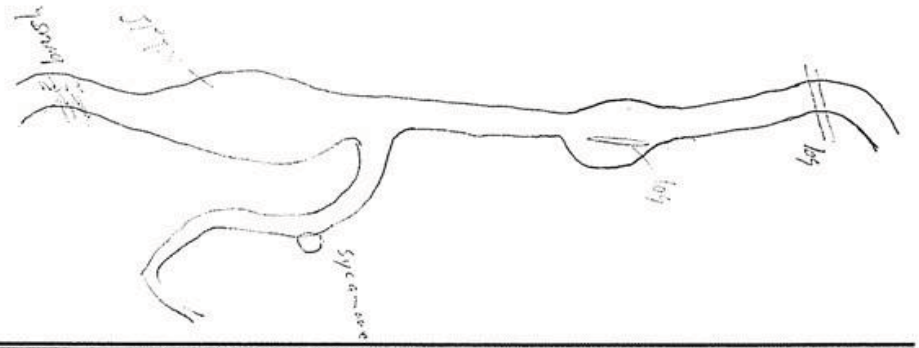
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

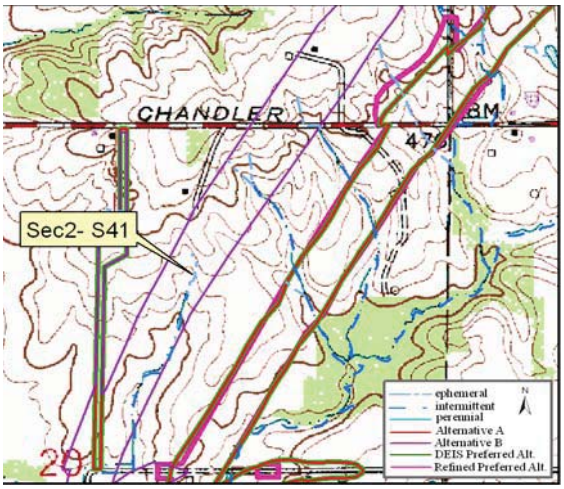
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

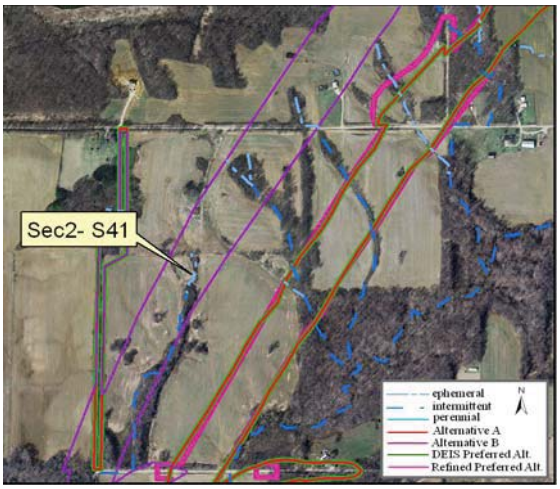
FLOW



Stream Id-Section 2 S 41



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	3.0
UTME:	471923	**OHWM Depth ft:**	0.3
UTMN:	4252285	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 41

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 13 / Modified Class I
Unnamed Tributary Flat Creek	338 feet	0.02 acres	B	HHEI 13 / Modified Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 13 / Modified Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 13 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	13
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0.32 ac, DP – 0, RP – 0

Stream Sec2S 41

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 41

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 13

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S41 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4252255 LONG 471878 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER TRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

< 1 m

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 3'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0.5
☐ 1.0
☐ 1.5
☒ 2.0
☐ 2.5
☐ 3.0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 25 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 31 UR 32 UL 33 UP 34 DN

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)_____ If not, please explain: No channel at intercept pt. however, channel up and down gradient

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

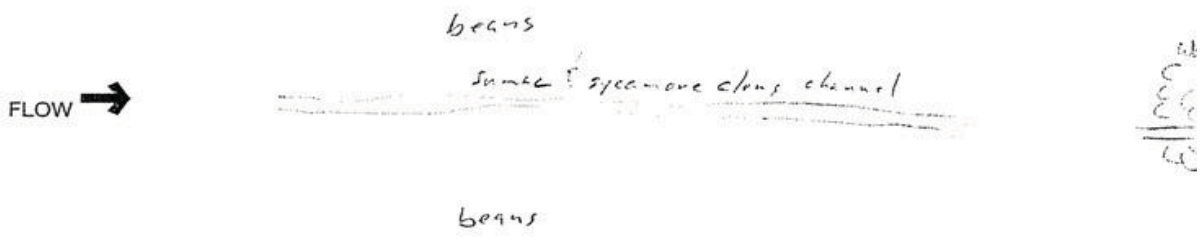
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N)_____ Salamanders Observed? (Y/N) N Voucher? (Y/N)_____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)_____

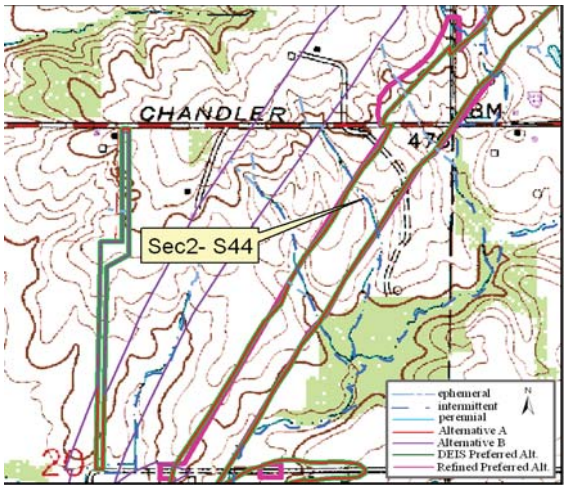
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

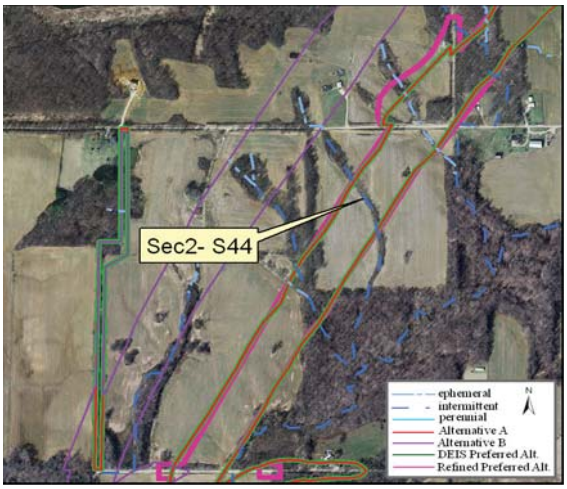
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 44



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	3.9
UTME:	472302	**OHWM Depth ft:**	0.8
UTMN:	4252436	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 44

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	419 feet	0.04 acres	A	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	419 feet	0.04 acres	DEIS Preferred	HHEI 23 / Modified Class I
Unnamed Tributary Flat Creek	447 feet	0.04 acres	Refined Preferred	HHEI 23 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	23
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A - 0.63 ac, B – 0, DP – 0.63 ac, RP - 0.66 ac

Stream Sec2S 44

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 44

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 23

SITE NAME/LOCATION Unnamed Trib Flat Ck SITE NUMBER Sec2-S44 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200' LAT 4252437 LONG 472302 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4'

HHEI Metric Points

Substrate Max = 40	8	A + B
Pool Depth Max = 30	0	
Bankfull Width Max=30	15	

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☑	☒	Narrow <5m	☐	☐	Residential. Park. New Field	☑	☒	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0 5
☒ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 25 NRCS Soil Map Stream Order _____

County: Pike Township / City: Patoka

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 19 UR 20 UL 21 UP 22 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

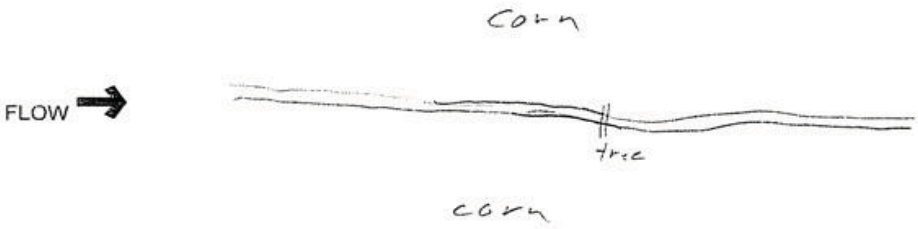
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

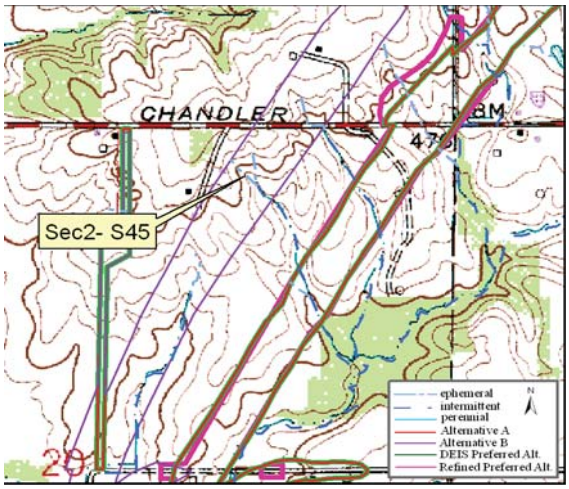
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

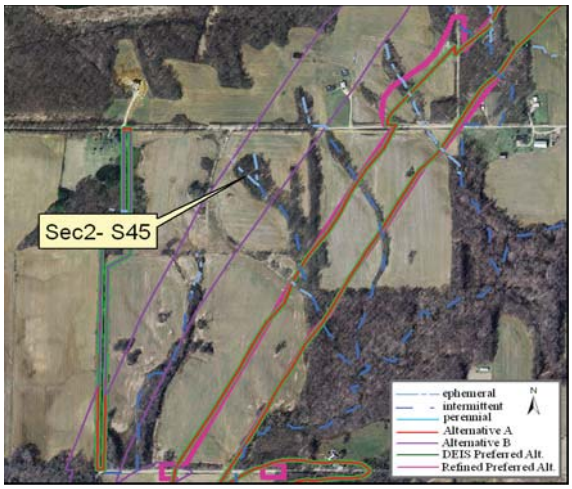
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 45



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	2.3
UTME:	472031	**OHWM Depth ft:**	0.3
UTMN:	4252493	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 45

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 13 / Class I
Unnamed Tributary Flat Creek	283 feet	0.01 acres	B	HHEI 13 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 13 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 13 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	13
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0.60 ac, DP - 0, RP – 0

Stream Sec2S 45

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 45

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 13

SITE NAME/LOCATION Ummaned Trib. Flat Ck SITE NUMBER Sec2-S45 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4259423 LONG 472031 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRB RTC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 8 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 1, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 5 MR 6 ML 7 UP 8 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 70

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

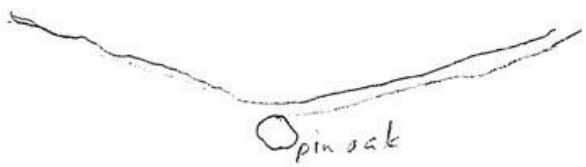
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

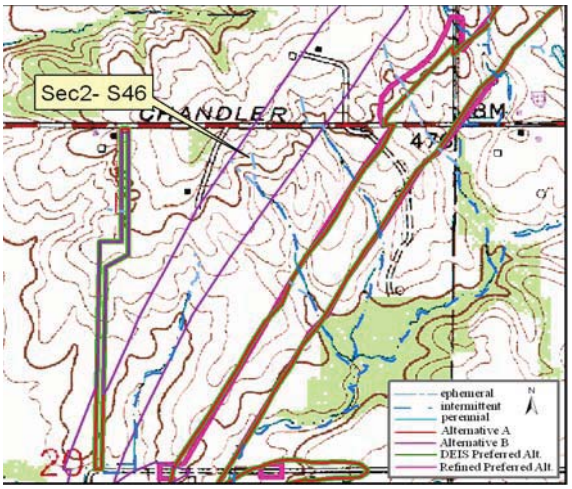
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

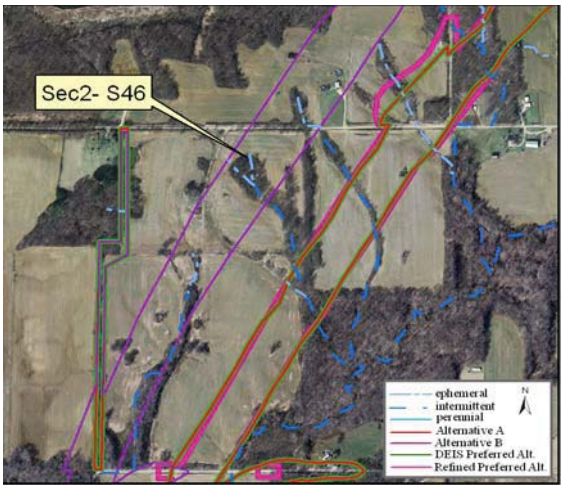
FLOW →



Stream Id-Section 2 S 46



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	2.0
UTME:	472047	**OHWM Depth ft:**	0.3
UTMN:	4252517	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 46

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 13 / Class I
Unnamed Tributary Flat Creek	253 feet	0.01 acres	B	HHEI 13 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 13 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 13 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	13
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B - 0.28 ac, DP – 0, RP – 0

Stream Sec2S 46

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 46

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 12

SITE NAME/LOCATION Unnamed Trib. Flat Ck SITE NUMBER Sec2-S46 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4252517 LONG 472047 RIVER CODE _____ RIVER MILE _____

DATE 9/15/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 6 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 8

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2'

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 0 5 ☐ 1 0 ☐ 1 5 ☒ 2 0 ☐ 2 5 ☐ 3 0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 1 UR 2 UL 3 UP 4 DN

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N)_____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

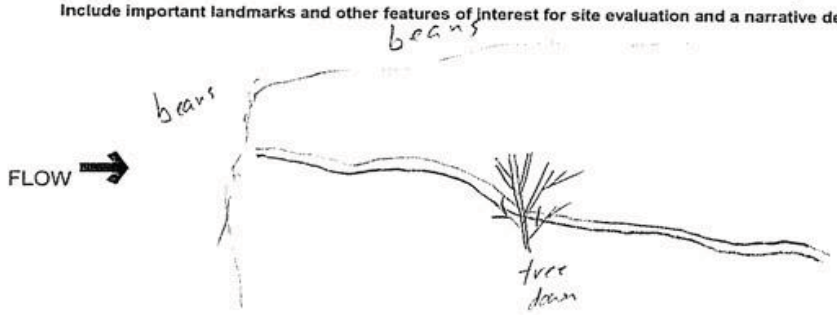
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N)____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N)____

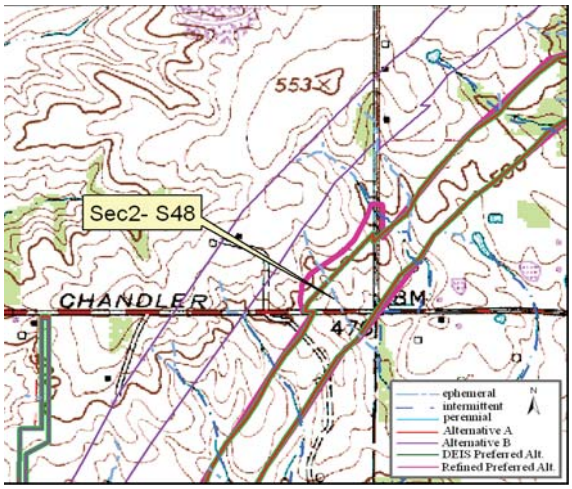
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

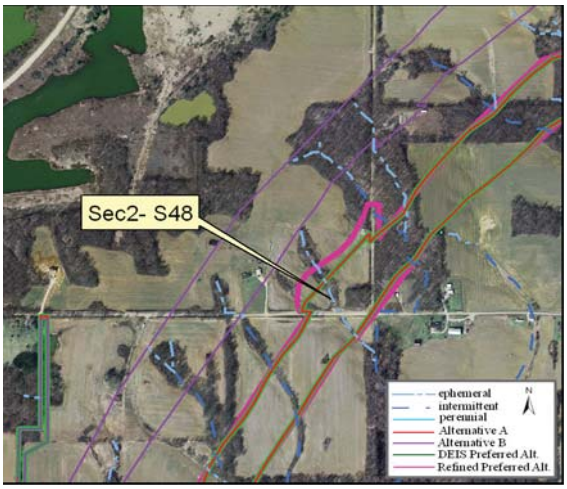
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 48



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	1.8
UTME:	472416	**OHWM Depth ft:**	1.0
UTMN:	4252606	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 48

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	486 feet	0.02 acres	A	HHEI 11 / Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 11 / Class I
Unnamed Tributary Flat Creek	486 feet	0.02 acres	DEIS Preferred	HHEI 11 / Class I
Unnamed Tributary Flat Creek	623 feet	0.03 acres	Refined Preferred	HHEI 11 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	11
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A - 0.66 ac, B – 0, DP – 0.66 ac, RP - 0.98 ac

Stream Sec2S 48

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 48

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 11

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S48 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200' LAT 4252606 LONG 472416 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JRB RJL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	30
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40: 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☒ ☒	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 5 UR 6 UL 7 UP 8 DN

Elevated Turbidity? (Y/N): _____ Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

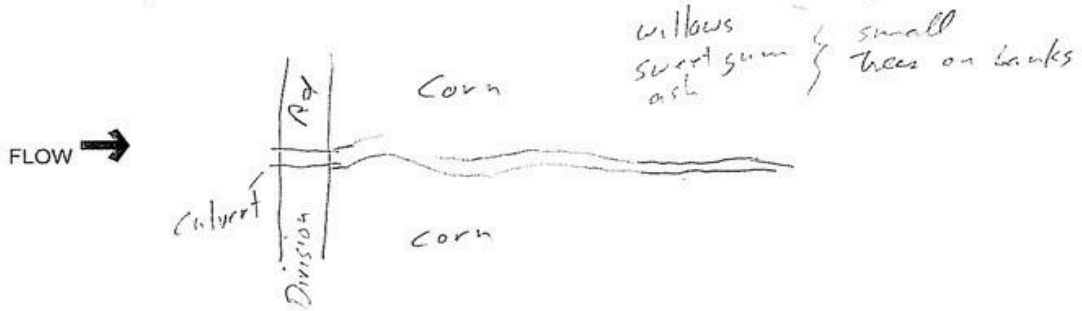
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

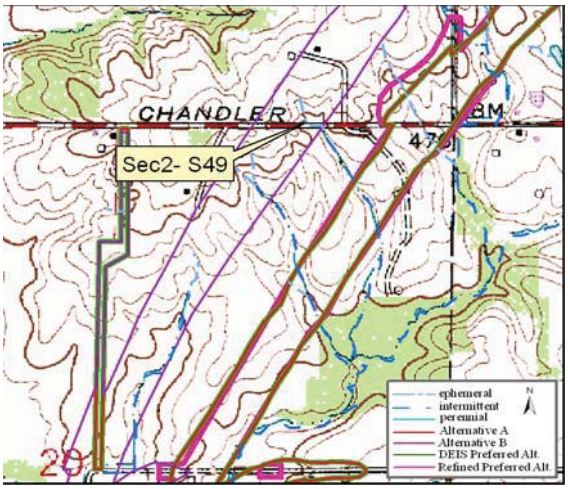
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

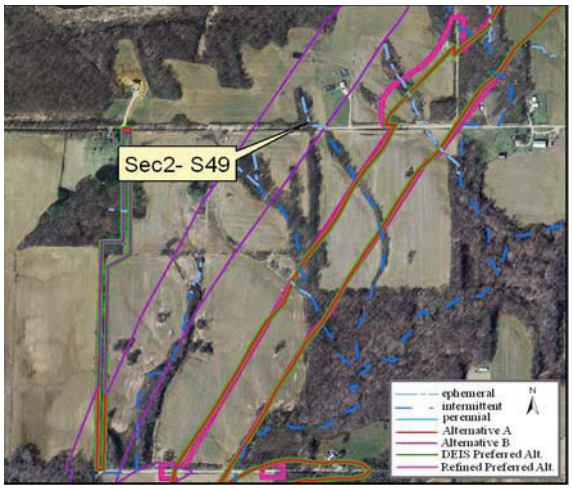
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 49



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 17 T1S R8W	**OHWM Width ft:**	6.0
UTME:	472151	**OHWM Depth ft:**	0.3
UTMN:	4252672	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 49

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 28 / Class I
Unnamed Tributary Flat Creek	375 feet	0.05 acres	B	HHEI 28 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 28 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B - 0.75 ac, DP – 0, RP – 0

Stream Sec2S 49

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 49

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S49 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4252672 LONG 472151 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JRB RTC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	80
☐☐	BOULDER (>256 mm) [16 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock ____ ____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS_____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS_____ **AVERAGE BANKFULL WIDTH (meters)** 6'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS_____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS_____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 23 UR 24 UL 25 UP 26 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 15

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

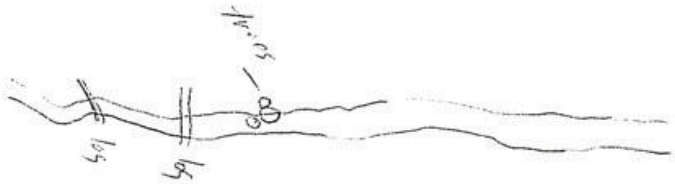
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

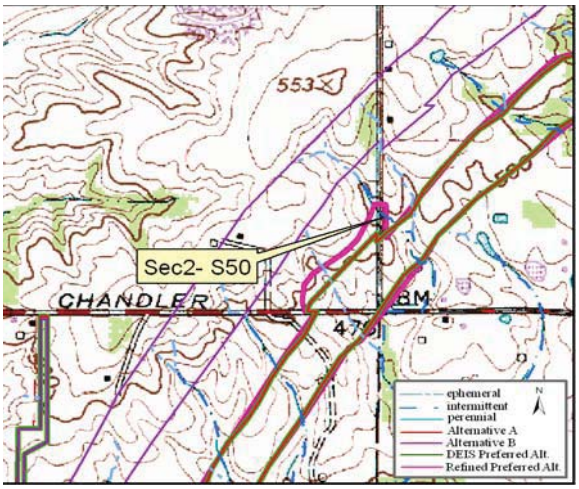
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

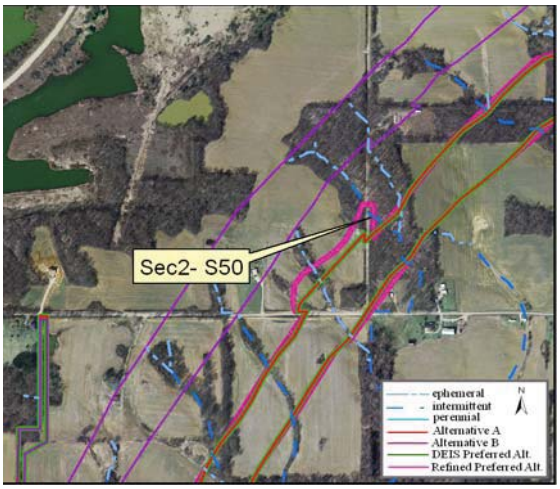
FLOW



Stream Id-Section 2 S 50



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	8.0
UTME:	472566	**OHWM Depth ft:**	1.5
UTMN:	4252783	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 50

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	393 feet	0.07 acres	A	HHEI 28 / Modified Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 28 / Modified Class I
Unnamed Tributary Flat Creek	393 feet	0.07 acres	DEIS Preferred	HHEI 28 / Modified Class I
Unnamed Tributary Flat Creek	536 feet	0.10 acres	Refined Preferred	HHEI 28 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.72 ac, B – 0, DP- 1.72 ac, RP – 2.21 ac

Stream Sec2S 50

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 50

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S50 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200' LAT 4252783 LONG 472566 RIVER CODE _____ RIVER MILE _____

DATE 9/13/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 8'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools, no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 40 UR 41 UL 42 UP 43 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

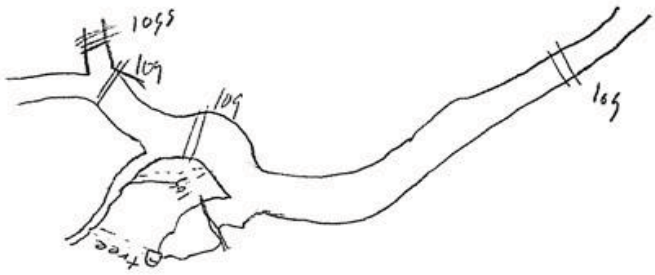
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

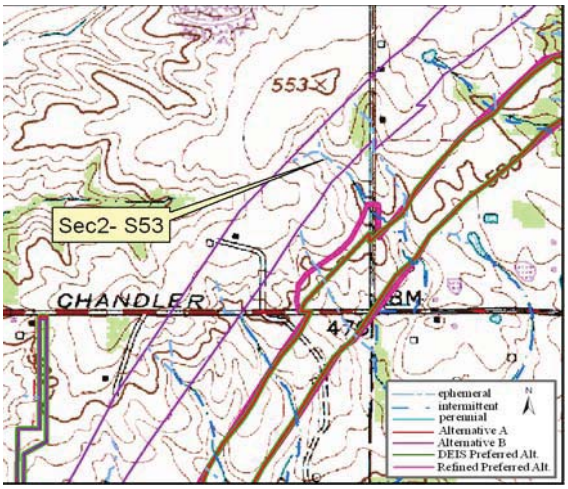
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

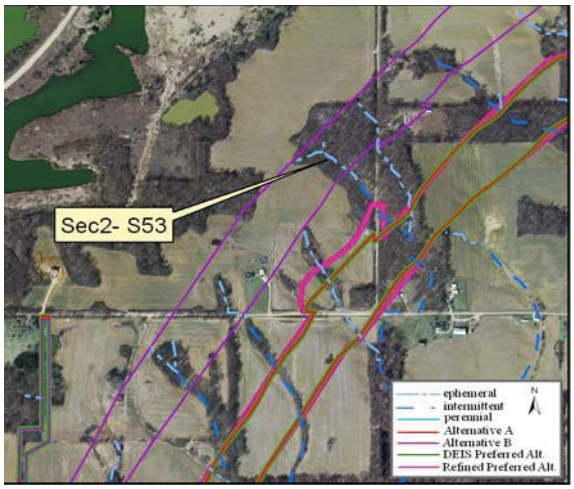
FLOW →



Stream Id-Section 2 S 53



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 17 T1S R8W	**OHWM Width ft:**	3.5
UTME:	472369	**OHWM Depth ft:**	0.5
UTMN:	4252995	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 53

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 23 / Class I
Unnamed Tributary Flat Creek	246 feet	0.02 acres	B	HHEI 23 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 23 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 23 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	23
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0.38 ac, DP – 0, RP– 0

Stream Sec2S 53

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 53

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S53 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4252995 LONG 472369 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JAO ATC COMMENTS 4

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	90
☐☐	BOULDER (>256 mm) [16 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.5'

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 1 UR 2 UL 3 UP 4 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 25

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

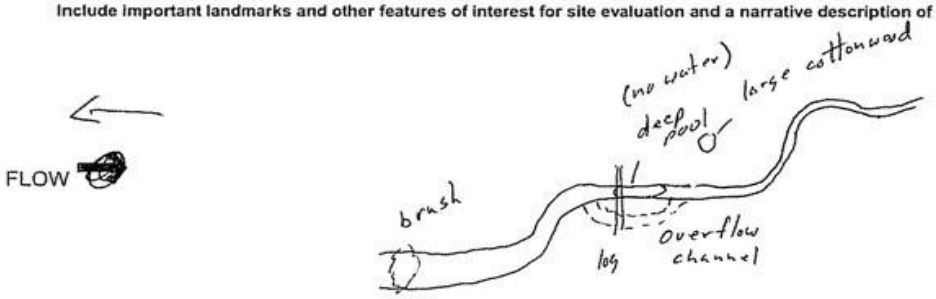
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

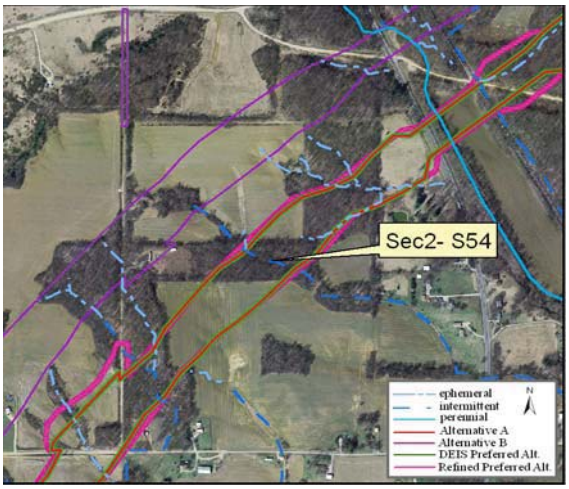
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 54

Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	8.0
UTME:	472827	**OHWM Depth ft:**	0.8
UTMN:	4253065	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 54

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	422 feet	0.08 acres	A	HHEI 28 / Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 28 / Class I
Unnamed Tributary Flat Creek	422 feet	0.08 acres	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Flat Creek	499 feet	0.09 acres	Refined Preferred	HHEI 28 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 1.94 ac, B – 0, DP – 1.94 ac, RP – 2.21 ac

Stream Sec2S 54

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 54

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S54 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200' LAT 4253065 LONG 472827 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present**. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 8'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 9 UR 10 UL 11 UP 12 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

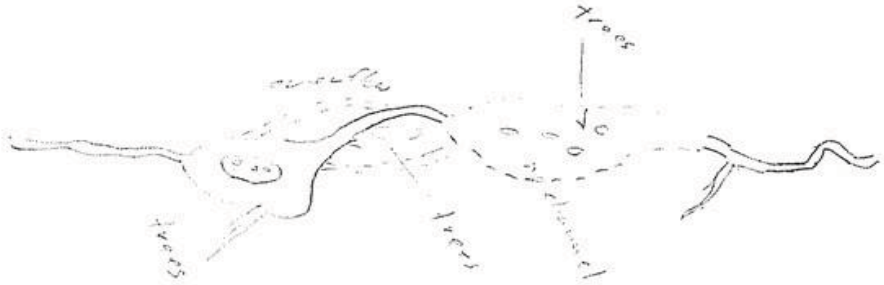
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

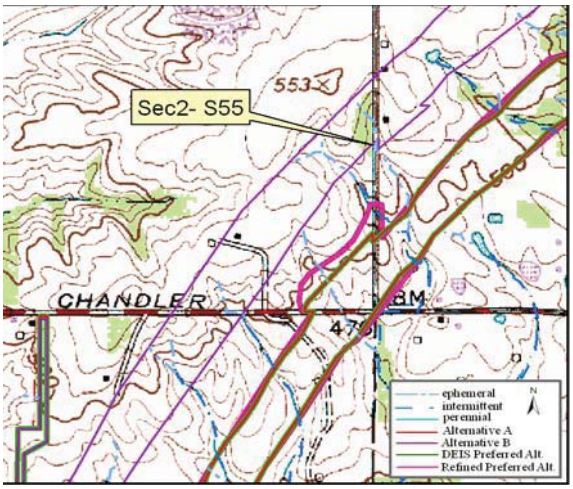
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

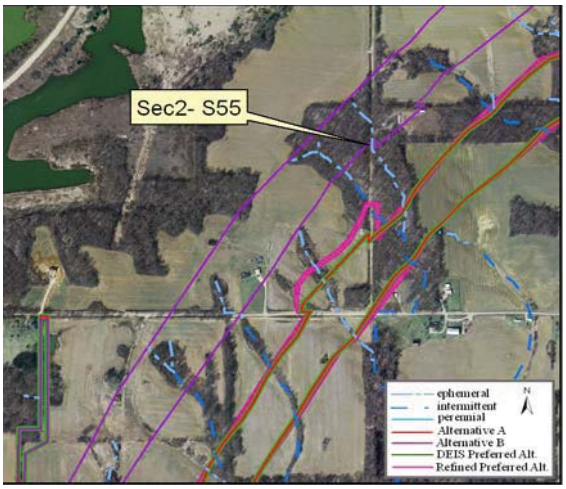
FLOW



Stream Id-Section 2 S 55



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 17 T1S R8W	**OHWM Width ft:**	4.0
UTME:	472482	**OHWM Depth ft:**	0.5
UTMN:	4253075	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 55

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 23 / Class I
Unnamed Tributary Flat Creek	386 feet	0.04 acres	B	HHEI 23 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 23 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 23 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	23
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 1.88 ac, DP – 0, RP – 0

Stream Sec2S 55

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 55

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 23

SITE NAME/LOCATION _____

Unnnamed Trib Flat Ck SITE NUMBER Sec2-S55 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4253075 LONG 472482 RIVER CODE _____ RIVER MILE _____

DATE 9/13/05 SCORER TRD RJL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	80
☐☐	BOULDER (>256 mm) [16 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 36 UR 37 UL 38 UP 39 DN

Elevated Turbidity? (Y/N): _____ Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): _____ (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

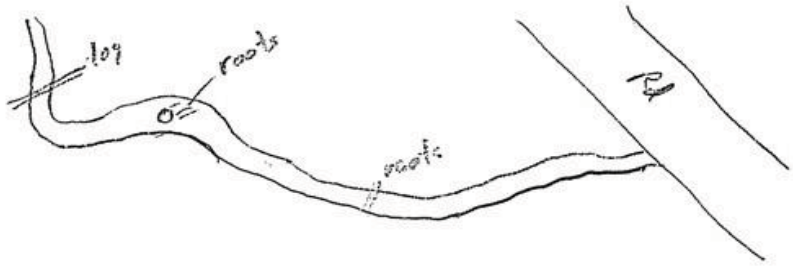
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

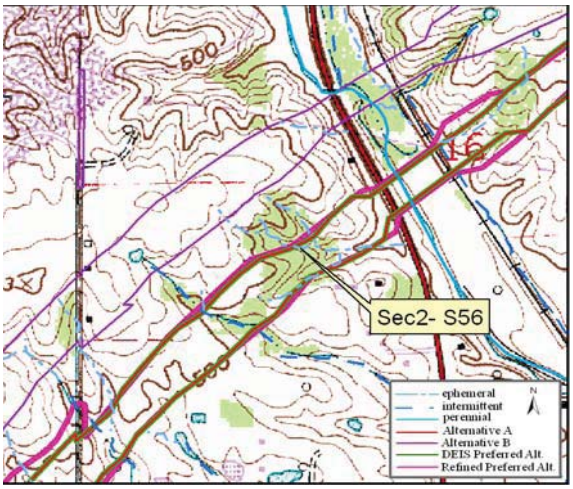
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

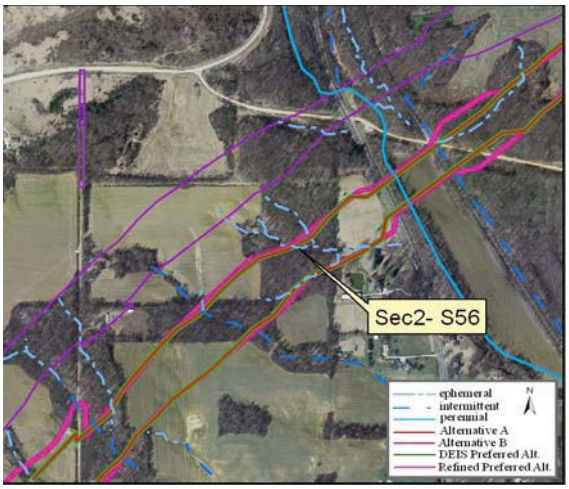
FLOW



Stream Id-Section 2 S 56



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	9.5
UTME:	473030	**OHWM Depth ft:**	1.0
UTMN:	4253242	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 56

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	597 feet	0.13 acres	A	HHEI 35 / Class I
Unnamed Tributary Flat Creek	92 feet	0.02 acres	B	HHEI 35 / Class I
Unnamed Tributary Flat Creek	597 feet	0.13 acres	DEIS Preferred	HHEI 35 / Class I
Unnamed Tributary Flat Creek	626 feet	0.14 acres	Refined Preferred	HHEI 35 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	35
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 1.50 ac, B – 0, DP – 1.50 ac, RP –1.71 ac

Stream Sec2S 56

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 56

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 35

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S56 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4253242 LONG 473030 RIVER CODE _____ RIVER MILE _____

DATE 9/14/05 SCORER JBB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☒	SILT [3 pt]	30
☐	BOULDER (>256 mm) [16 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☒	CLAY or HARDPAN [0 pt]	10
☒	GRAVEL (2-64 mm) [9 pts]	20	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	35	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 6

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 15

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 9.5'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 13 UR 14 UL 15 UP 16 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 25

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

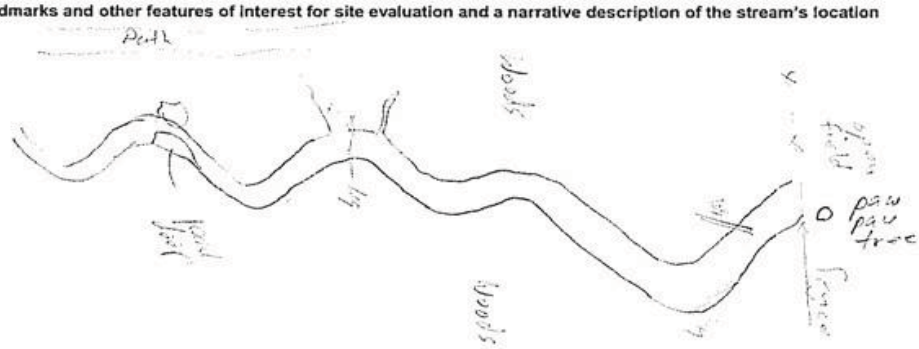
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

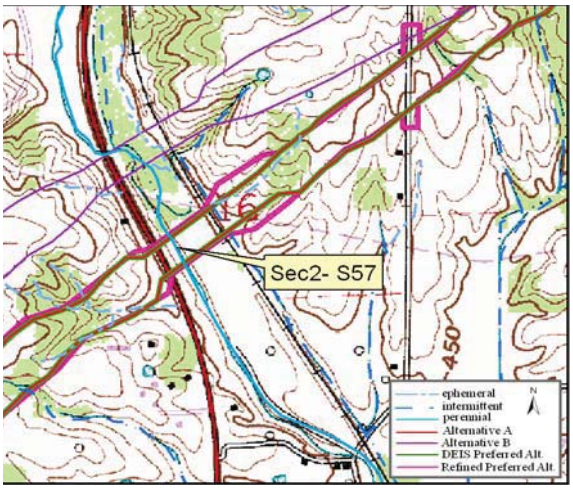
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

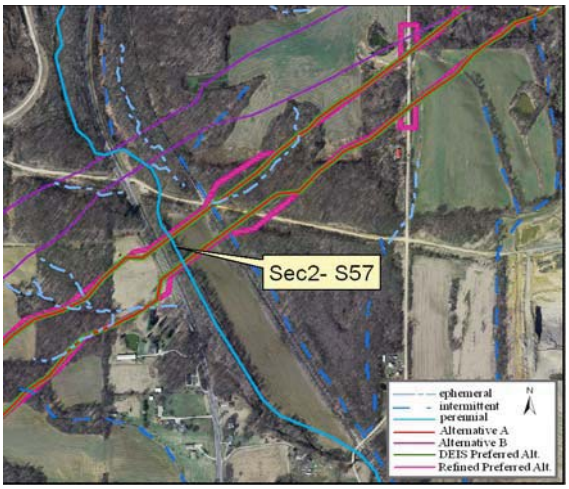
FLOW



Stream Id-Section 2 S 57



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	26.0
UTME:	473215	**OHWM Depth ft:**	2.3
UTMN:	4253380	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 57

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Flat Creek	225 feet	0.13 acres	A	QHEI 42.5 / Modified Waterwater Habitat
Flat Creek	0	0	B	QHEI 42.5 / Modified Waterwater Habitat
Flat Creek	225 feet	0.13 acres	DEIS Preferred	QHEI 42.5 / Modified Waterwater Habitat
Flat Creek	260 feet	0.16 acres	Refined Preferred	QHEI 42.5 / Modified Waterwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	42.5
Watershed Area (square miles):	6.10
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0.71 ac, B – 0, DP – 0.71 ac, RPA – 0.82 ac

Stream Sec2S 57

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

Stream Sec2S 57

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S57 | bioSample # | Stream Name Flat Creek | Location 473215 E 4253380 N

Surveyor | Sample Date 9/13/05 | County | Macro SampleType | Habitat Complete | QHEI Score: 42.5

1-Substrate (20 points maximum) — Substrate Score: 4

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); Shale(-1) X; Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2) X; Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1) X; Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); Deep pools(2) X; Oxbows(1); Overhanging vegetation(1) X; Rootwads(1) X; Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1) X; Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3) X; Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	Moderate (2) X	Relocation	Islands
Low (2) X	Fair (3) X	Recovering (3) X	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging X	Bank shaping
				One side channel modifications	

Comments: spoil along right bank from dredging

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 6.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)		X	Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
	X	Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X		Very narrow <5m (1)			Fenced pasture (1)	X		Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 8

Max pool depth (check one): >1m (6) X; 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1) X; Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1); Intermittent (-2); Slow (1) X; No pool (0)

Comments: All pool no riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); No riffle (0) X

Comments: no riffle

6-Gradient (10 points maximum) — Gradient Score: 6

low

Average width: 26 | Gradient: 5.91 (ft/mile) | Drainage Area: 6.10 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete

QHEI Score: 42.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments: Hwy runoff

Miscellaneous QHEI Information

Subjective rating (1-10): 4 | % Riffle: | Is reach representative of stream? Y

Aesthetic rating (1-10): 4 | % Run:

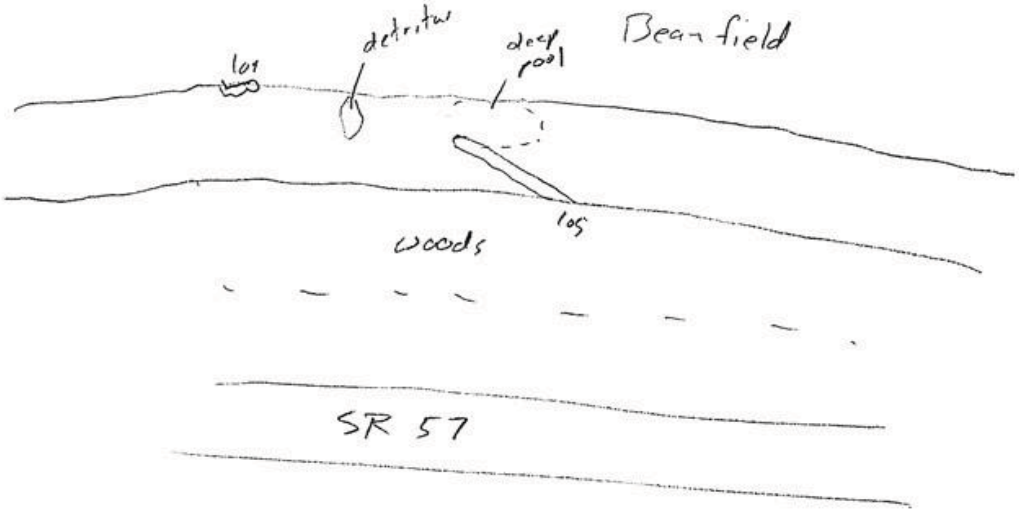
Canopy Cover (% Open): 60 | % Glide: | % Pool: 100

General QHEI Notes:

29 UL 30 dn 31 UP

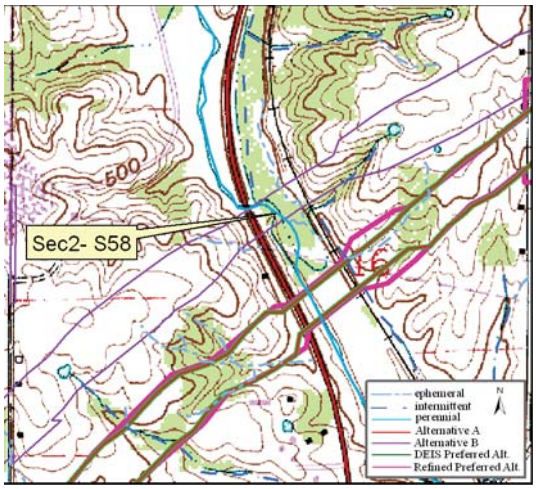
No UR

flow →

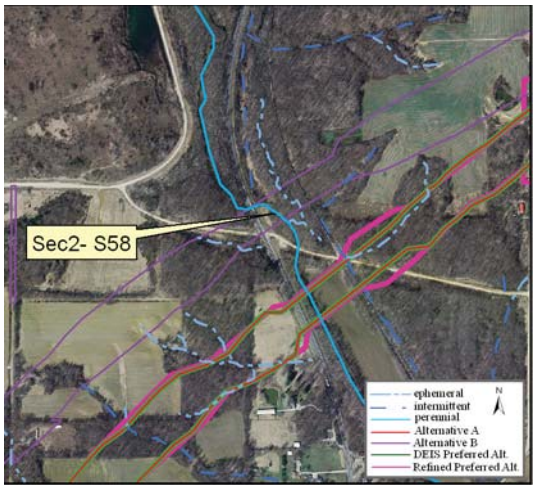


OWQ Biological Studies QHEI

Stream Id-Section 2 S 58



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 16 T1S R8W	**OHWM Width ft:**	25.0
UTME:	473114	**OHWM Depth ft:**	2.3
UTMN:	4253604	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 58

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Flat Creek	0	0	A	QHEI 42 / Warmwater Habitat
Flat Creek	321 feet	0.18 acres	B	QHEI 42 / Warmwater Habitat
Flat Creek	0	0	DEIS Preferred	QHEI 42 / Warmwater Habitat
Flat Creek	0	0	Refined Preferred	QHEI 42 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	42
Watershed Area (square miles):	6.05
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0, B – 1.07 ac, DP – 0, RP – 0

Stream Sec2S 58

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 58

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S58 | bioSample # | Stream Name: Flat Creek | Location: 473114 E 4253604 N

Surveyor | Sample Date: 9/13/05 | County | Macro Sample Type | Habitat Complete | QHEI Score: 42

1-Substrate (20 points maximum) — Substrate Score: 5

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
		X	X	Cobble(8)			X	X	Muck(2)
				Gravel(7)	X	X			Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0) X; Shale(-1) X; Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1) X; Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1) X; Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 7

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); Overhanging vegetation(1) X; Rootwads(1) X; Aquatic macrophytes(1); Shallows(in slow water)(1) X; Boulders(1); Logs and woody debris(1) X; Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3) X; Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 13

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6) X	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	Moderate (2) X	Relocation	Islands
Low (2) X	Fair (3) X	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 9

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
X		Wide >50m (4)	X		Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
	X	Moderate 10-50m (3)		X	Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 4

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2) X; 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1) X; Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1); Intermittent (-2); Slow (1) X; No pool (0)

Comments: No riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); No riffle (0) X

Comments: no riffle

6-Gradient (10 points maximum) — Gradient Score: 4

Average width: 25 | Gradient: 2.08 (ft/mile) | Drainage Area: 6.05 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 58

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 42

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments: Hwy runoff

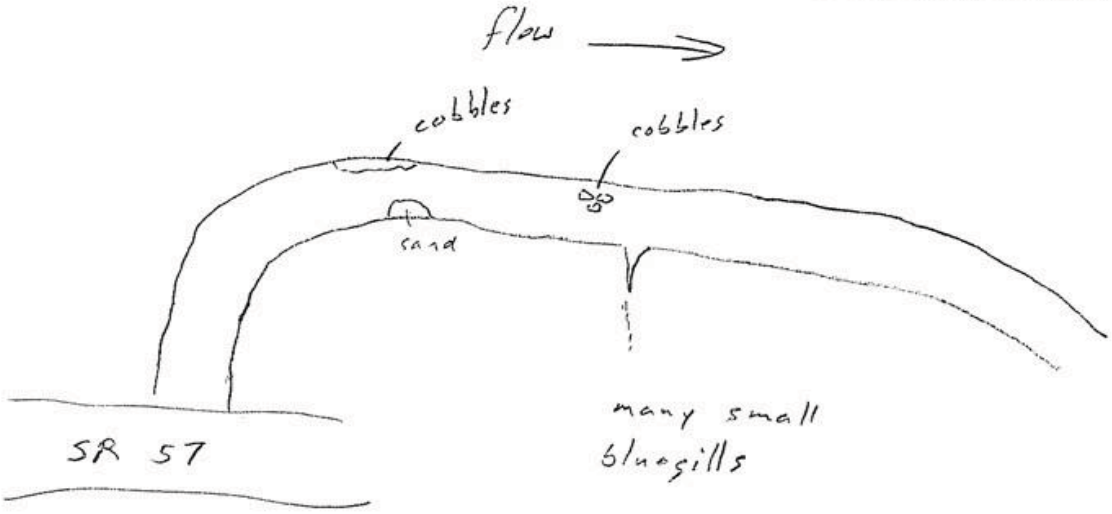
Miscellaneous QHEI Information

Subjective rating (1-10): 7 | % Riffle: 0 | Is reach representative of stream? Y

Aesthetic rating (1-10): 8 | % Run:

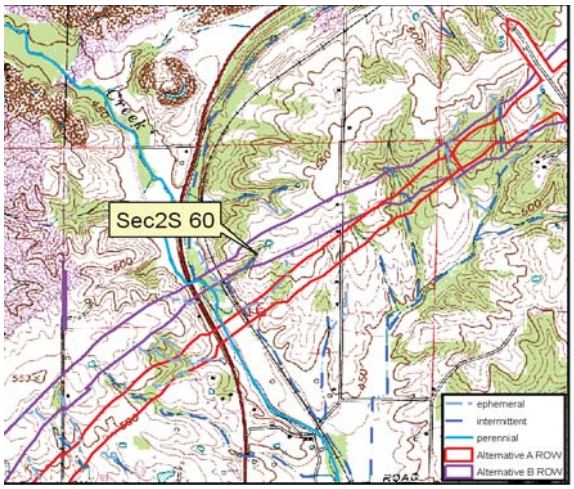
Canopy Cover (% Open): 20 | % Glide: | % Pool: 100

General QHEI Notes: 25 UR 26 UL 27 UP 28 ON

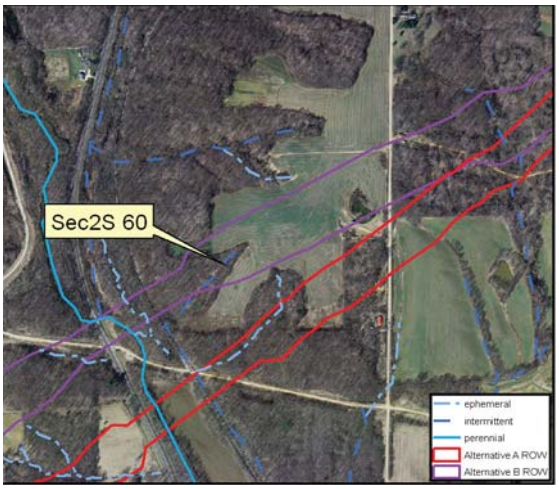


OWQ Biological Studies QHEI

Stream Id-Section 2 S 60



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 16 T1S R8W	**OHWM Width ft:**	5.5
UTME:	473364	**OHWM Depth ft:**	1.0
UTMN:	4253756	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 60

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 43 / Class II
Unnamed Tributary Flat Creek	476 feet	0.06 acres	B	HHEI 43 / Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 43 / Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 43 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	43
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 2.03 ac, DP – 0, RPA – 0.01 ac*

*This stream is not impacted by the right-of-way; however, the riparian of this stream is impacted.

Stream Sec2S 60

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 60

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 43

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S60 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4253756 LONG 473364 RIVER CODE _____ RIVER MILE _____

DATE 9/13/05 SCORER JRB, RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	50
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	10
☒ ☐	BEDROCK [16 pt]	40	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☒	COBBLE (65-256 mm) [12 pts]	<1	☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock 40 (A) 19

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 23

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 5.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

- ☐ Flat (0 5 ft/100 ft)
- ☐ Flat to Moderate
- ☐ Moderate (2 ft/100 ft)
- ☐ Moderate to Severe
- ☒ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 32 UR 33 UL 34 UP 35 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): _____ (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

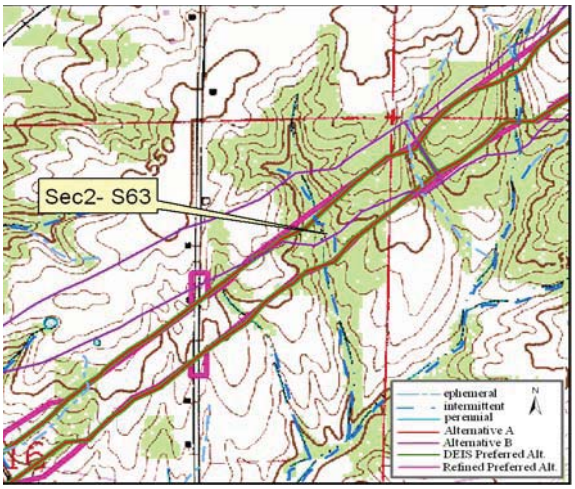
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

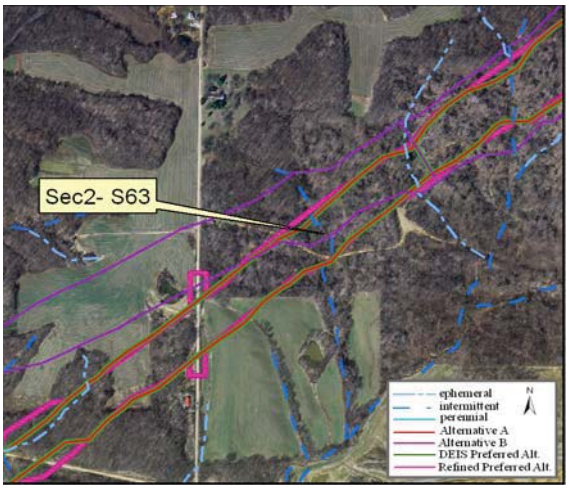
FLOW

Ravine has bedrock walls

Stream Id-Section 2 S 63



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 16 T1S R8W	**OHWM Width ft:**	11.0
UTME:	474021	**OHWM Depth ft:**	1.0
UTMN:	4254020	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 63

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	434 feet	0.11 acres	A	HHEI 57 / Class II
Unnamed Tributary Flat Creek	589 feet	0.15 acres	B	HHEI 57 / Class II
Unnamed Tributary Flat Creek	434 feet	0.11 acres	DEIS Preferred	HHEI 57 / Class II
Unnamed Tributary Flat Creek	486 feet	0.12 acres	Refined Preferred	HHEI 57 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	57
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 1.85 ac, B – 2.63 ac, DP – 1.85 ac, RP – 2.12 ac

Stream Sec2S 63

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 63

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 57

SITE NAME/LOCATION Unnamed Trib Flat Ck SITE NUMBER Sec2-S63 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200' LAT 4254020 LONG 474021 RIVER CODE _____ RIVER MILE _____

DATE 12-15-09 SCORER JK / MR COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	20
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☐ ☒	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 7 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12cm

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 12.5'

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☒ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☒ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 6 UR 7 UL 8 UP 9 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) N If not, please explain: Up stream drier, less pools

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

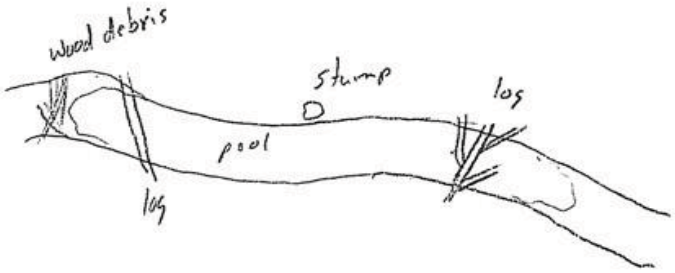
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) _____

Comments Regarding Biology: _____

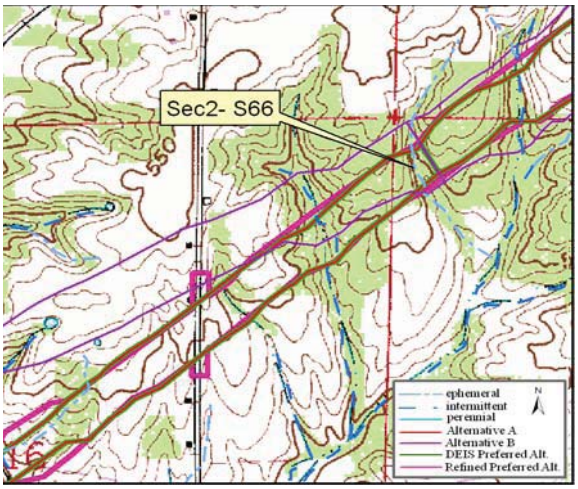
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

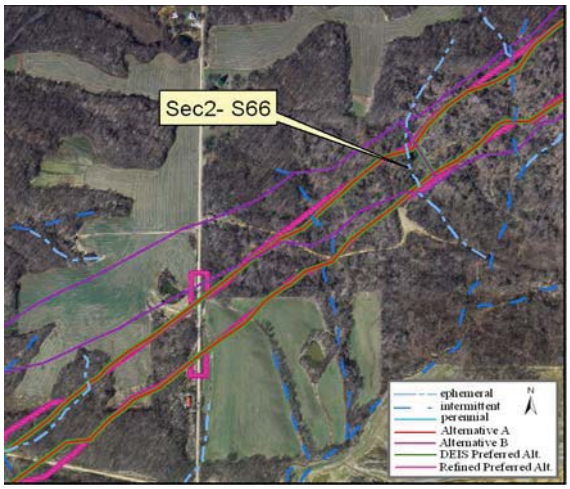
FLOW →



Stream Id-Section 2 S 66



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 15 T1S R8W	**OHWM Width ft:**	3.5
UTME:	474207	**OHWM Depth ft:**	0.3
UTMN:	4254166	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 66

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	295 feet	0.02 acres	A	HHEI 44 / Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 44 / Class II
Unnamed Tributary Flat Creek	295 feet	0.02 acres	DEIS Preferred	HHEI 44 / Class II
Unnamed Tributary Flat Creek	364 feet	0.03 acres	Refined Preferred	HHEI 44 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 1.40 ac, B – 0, DP – 1.40 ac, RP – 1.69 ac

Stream Sec2S 66

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 66

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S66 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT 4254166 LONG 474207 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NN / RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	30
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	.70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 7.5

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 3.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☒ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 13 up left 14 up left 15 up 16 down

Elevated Turbidity? (Y/N): N Canopy (% open): 80

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

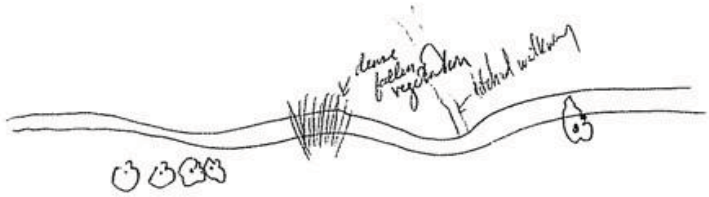
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

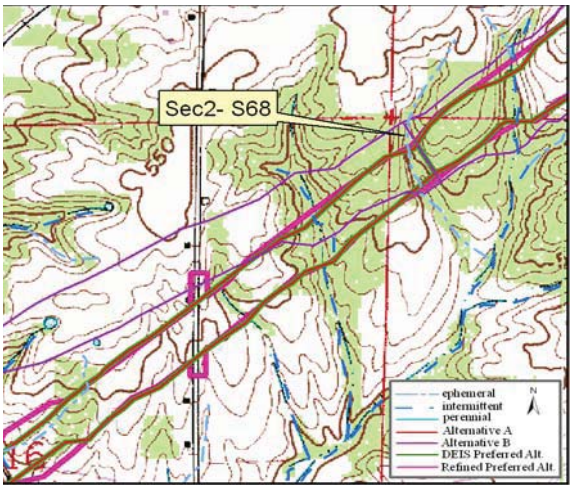
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

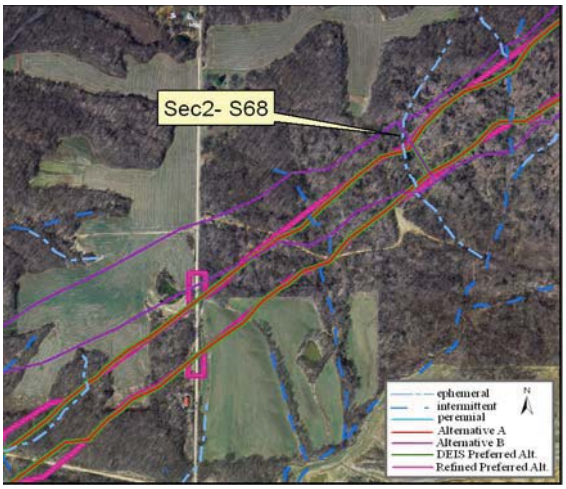
FLOW



Stream Id-Section 2 S 68



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 15 T1S R8W	**OHWM Width ft:**	4.0
UTME:	474199	**OHWM Depth ft:**	0.3
UTMN:	4254221	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 68

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 34 / Class I
Unnamed Tributary Flat Creek	603 feet	0.06 acres	B	HHEI 34 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 34 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 34 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0, B – 2.71 ac, DP – 0, RP – 0

Stream Sec2S 68

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 68

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S68 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT 4254221 LONG 474199 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NN/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	40
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	60	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3cm

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	RIPARIAN WIDTH R	(Per Bank)	FLOODPLAIN QUALITY L	FLOODPLAIN QUALITY R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools, no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☒ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 2 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 6/30 Quantity: 3.78"

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 70

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

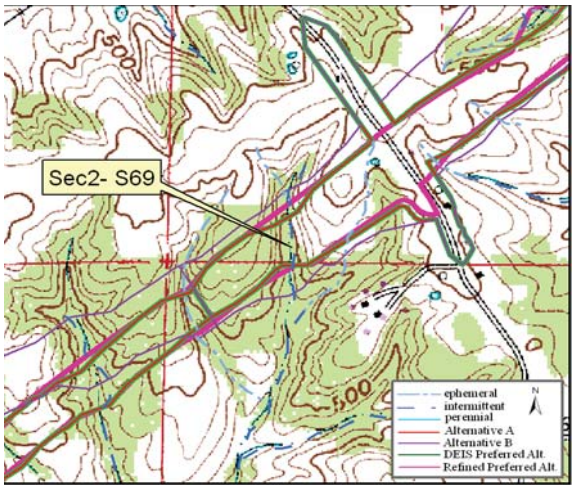
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

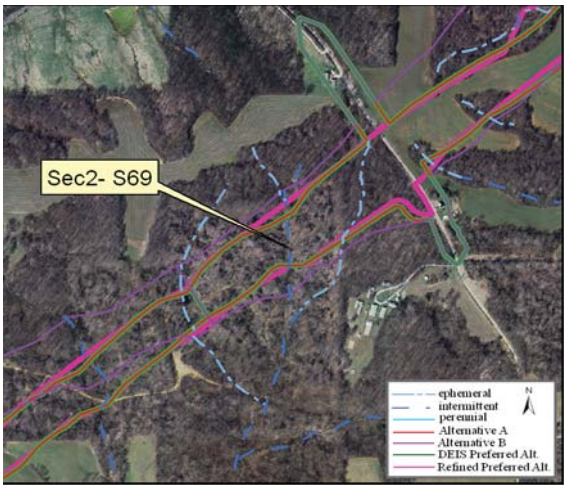
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Stream Id-Section 2 S 69



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	6.5
UTME:	474444	**OHWM Depth ft:**	1.0
UTMN:	4254299	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 69

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	404 feet	0.06 acres	A	HHEI 29 / Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 29 / Class I
Unnamed Tributary Flat Creek	404 feet	0.06 acres	DEIS Preferred	HHEI 29 / Class I
Unnamed Tributary Flat Creek	517 feet	0.08 acres	Refined Preferred	HHEI 29 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 1.88 ac, B – 0, DP – 1.88 ac, RP – 2.41 ac

Stream Sec2S 69

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 69

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION _____

Unnamed Trib Flat Ck SITE NUMBER Sec2-S69 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200' LAT 4254299 LONG 474444 RIVER CODE _____ RIVER MILE _____

DATE 9/13/05 SCORER _____ COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☐	SILT [3 pt]	
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	5	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	95	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5 (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points — Substrate Max = 40: 9 (A + B)

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☒ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 6.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R		FLOODPLAIN QUALITY (Most Predominant per Bank) L R		L R	
☒ ☒	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☒ ☒	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☐ ☐	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☐ 3 0
☐ 0 5 ☐ 1 5 ☒ 2 5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 14 UL 15 UP 16 DN

Elevated Turbidity? (Y/N): _____ Canopy (% open): 60% open

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

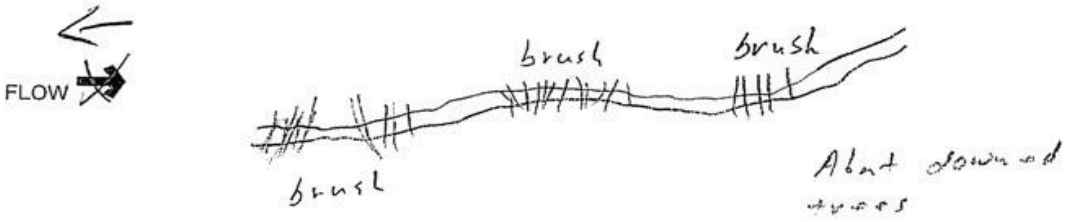
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

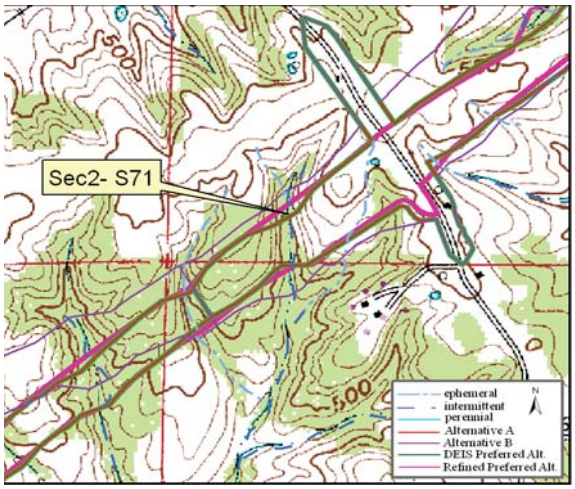
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

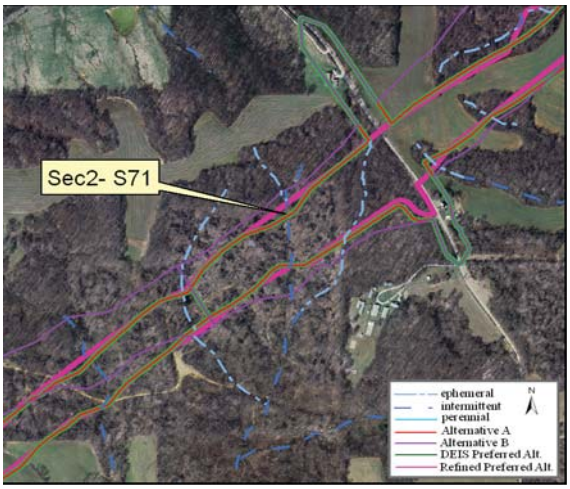
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 71



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	8.0
UTME:	474434	**OHWM Depth ft:**	1.0
UTMN:	4254389	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 71

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 47 / Class II
Unnamed Tributary Flat Creek	830 feet	0.15 acres	B	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 47 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	47
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0, B – 3.86 ac, DP – 0, RP – 0

Stream Sec2S 71

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 71

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 47

SITE NAME/LOCATION Unnamed Trib Flat Ck SITE NUMBER Sec2-S71 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200' LAT 4254389 LONG 474434 RIVER CODE _____ RIVER MILE _____

DATE 9/13/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☐	SILT [3 pt]	
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☒ ☐	BEDROCK [16 pt]	15	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☒	COBBLE (65-256 mm) [12 pts]	<1	☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	80	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble, Bedrock 15 (A) 22

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 27

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 8'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☒ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 10 UR 11 UL 12 UP 13 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 15

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

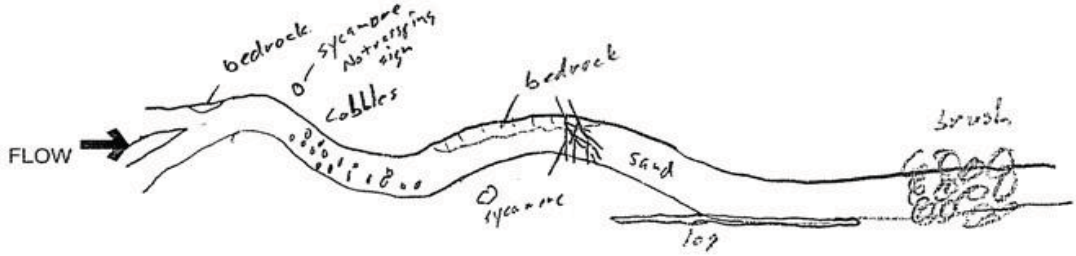
Performed? (Y/N): _____ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

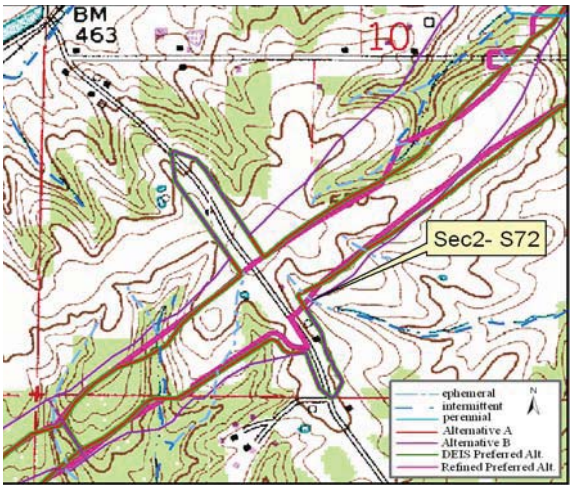
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

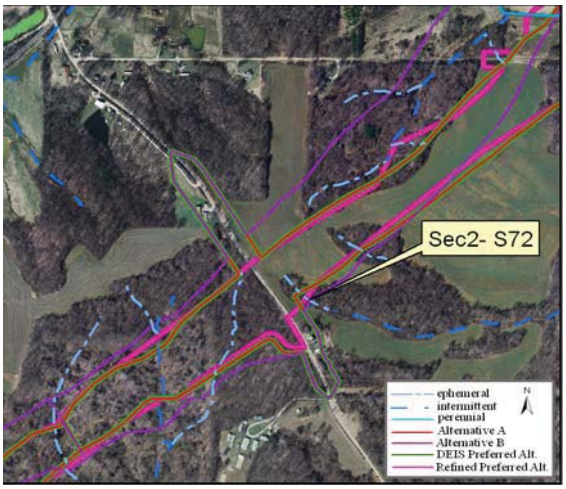
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 72



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	474747	**OHWM Depth ft:**	0.3
UTMN:	4254531	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 72

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	84 feet	0.01 acres	A	HHEI 31 / Class I
Unnamed Tributary Prides Creek	189 feet	0.02 acres	B	HHEI 31 / Class I
Unnamed Tributary Prides Creek	84 feet	0.01 acres	DEIS Preferred	HHEI 31 / Class I
Unnamed Tributary Prides Creek	145 feet	0.02 acres	Refined Preferred	HHEI 31 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.85 ac, B – 1.23 ac, DP – 0.85 ac, RP – 1.01 ac

Stream Sec2S 72

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 72

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION _____

Unnamed Trib Prides Ck SITE NUMBER Sec2-S72 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 100 LAT 4254531 LONG 474747 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NV/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☑ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	<1	☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	<1
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock <1

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 7 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 16 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 5.78"

Photograph Information: 9 up right 10 up left 11 up 12 down

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

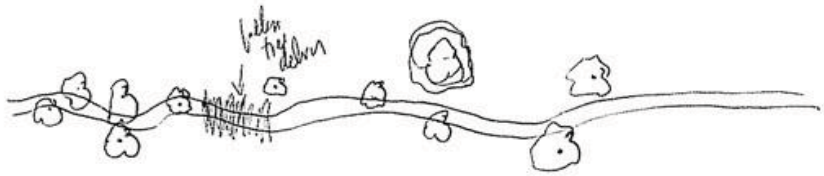
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

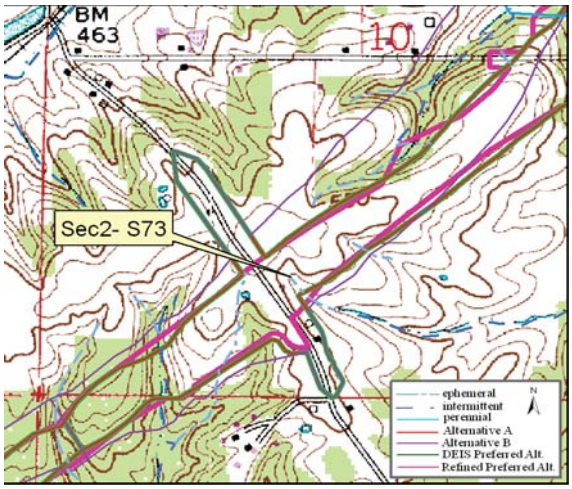
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

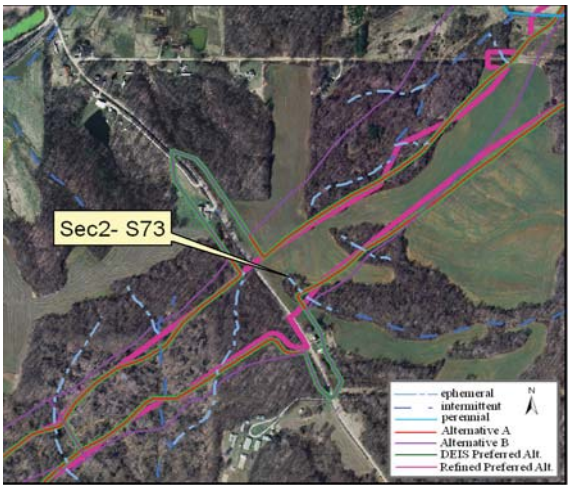
FLOW →



Stream Id-Section 2 S 73



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	7.0
UTME:	474720	**OHWM Depth ft:**	0.3
UTMN:	4254563	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 73

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	91 feet	0.01 acres	A	HHEI 40 / Class II
Unnamed Tributary Prides Creek	91 feet	0.01 acres	B	HHEI 40 / Class II
Unnamed Tributary Prides Creek	91 feet	0.01 acres	DEIS Preferred	HHEI 40 / Class II
Unnamed Tributary Prides Creek	91 feet	0.01 acres	Refined Preferred	HHEI 40 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	40
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A –0, B – 0, DP – 0, RP –0

Stream Sec2S 73

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 73

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 40

SITE NAME/LOCATION Unnamed Trib Prides Ck SITE NUMBER Sec2-S73 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 42.8523 LONG 474720 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NW/LC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	90
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	<1	☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 6

HHEI Metric Points

Substrate Max = 40 15

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3cm

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 7'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Moderate 5-10m	☒	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☒ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 5 up right 6 up left 7 up 8 down

Elevated Turbidity? (Y/N): N Canopy (% open): 50

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) N If not, please explain: _____

Stream begins from Northern edge at begin of wetland

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

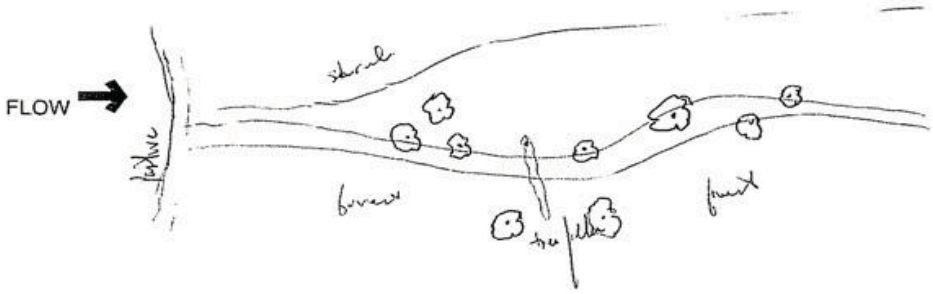
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

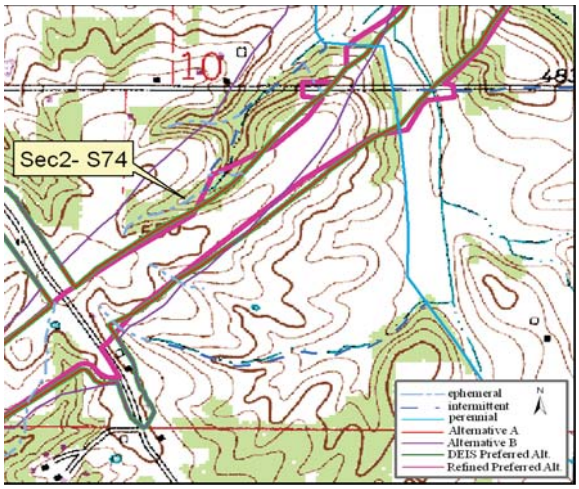
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

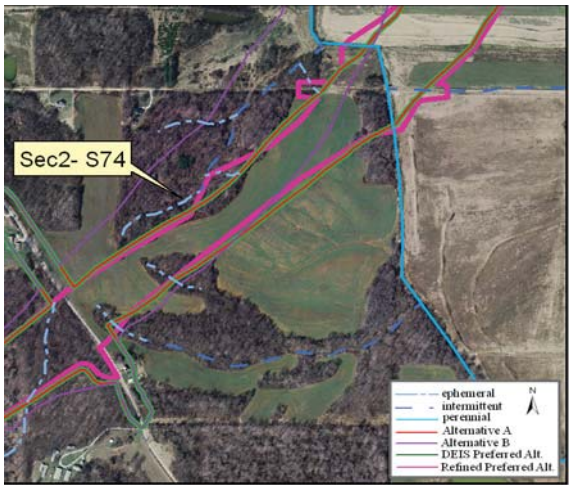
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 74



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	4.0
UTME:	474840	**OHWM Depth ft:**	0.3
UTMN:	4254784	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 74

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 29 / Class I
Unnamed Tributary Prides Creek	696 feet	0.06 acres	B	HHEI 29 / Class I
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 29 / Class I
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 29 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.08 ac*, B - 3.10 ac, DP – 0.08 ac*, RP-0.05 ac*

*This stream is not impacted within the right-of-way; however, the riparian of this stream is impacted.

Stream Sec2S 74

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 74

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION _____

Unnamed Trib Prides Ck SITE NUMBER Sec2-S74 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4258704 LONG 474840 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER AN/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	<1
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	30	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/40 Quantity: 3.78"

Photograph Information: 1 up right 2 up left 3 up 4 down

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

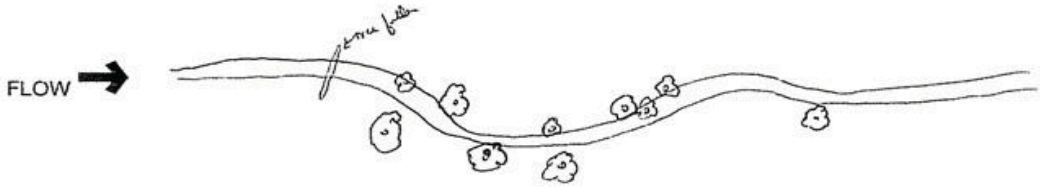
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

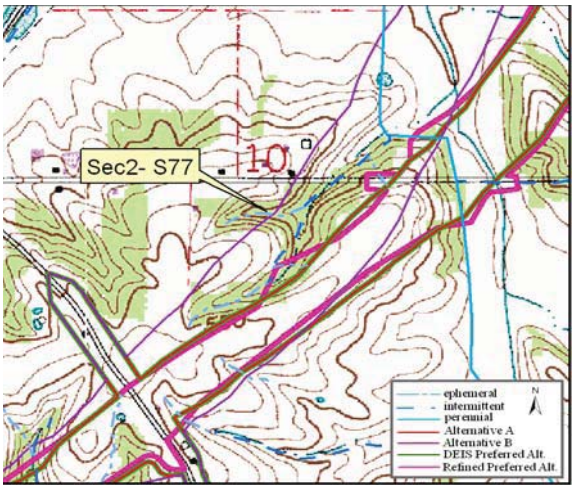
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

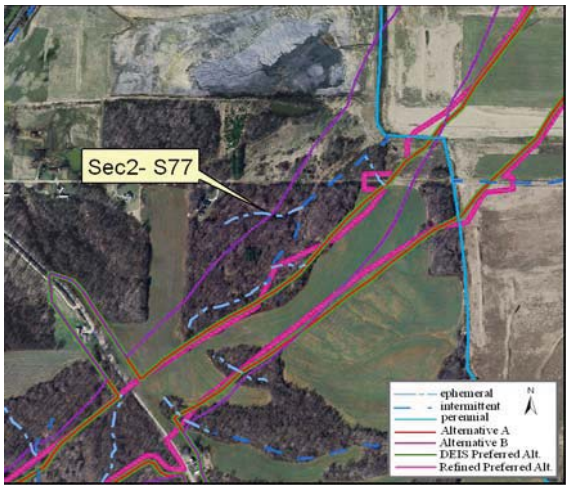
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 77



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 10 T1S R8W	**OHWM Width ft:**	6.0
UTME:	475015	**OHWM Depth ft:**	0.5
UTMN:	4255013	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 77

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 34 / Class I
Unnamed Tributary Prides Creek	260 feet	0.04 acres	B	HHEI 34 / Class I
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 34 / Class I
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 34 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0, B- 0.63 ac, DP – 0, RP-0

Stream Sec2S 77

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 77

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION near Pruden Creek Rd. & CR 150N

Unnamed Trib Prides Ck SITE NUMBER Sec2-S77 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT 4255013 LONG 475015 RIVER CODE _____ RIVER MILE _____

DATE 8/9/1 SCORER NN/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	20
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	<1	☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	80	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <1

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 5 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 14 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 7.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: No PHOTO

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) J If not, please explain: _____

Additional comments/description of pollution impacts: well fund

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

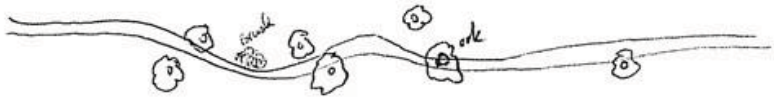
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

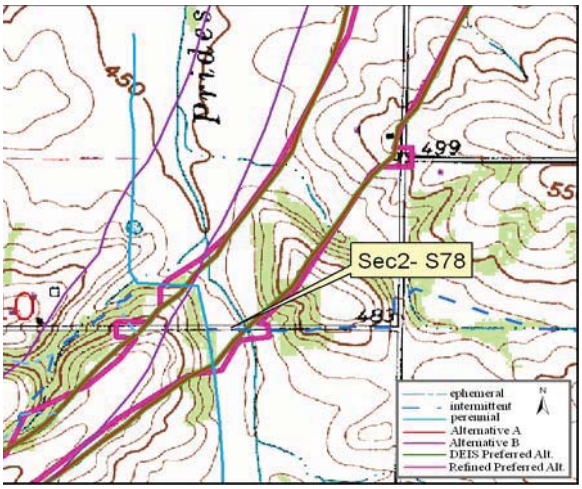
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

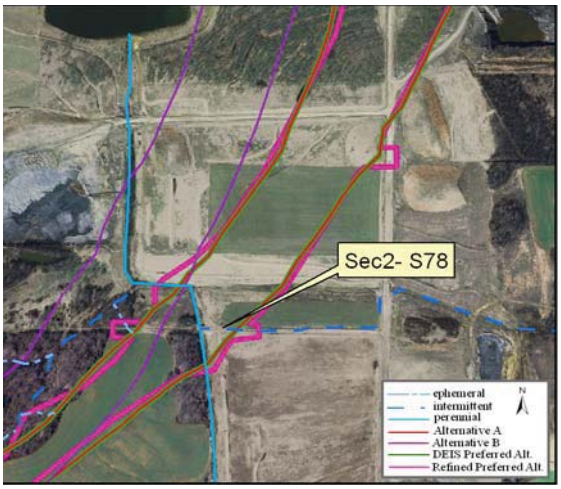
FLOW



Stream Id-Section 2 S 78



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	475402	**OHWM Depth ft:**	0.5
UTMN:	4255079	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 78

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Prides Creek	269 feet	0.03 acres	A	QHEI 47.5 / Modified Warmwater Habitat
Prides Creek	0	0	B	QHEI 47.5 / Modified Warmwater Habitat
Prides Creek	269 feet	0.03 acres	DEIS Preferred	QHEI 47.5 / Modified Warmwater Habitat
Prides Creek	434 feet	0.05 acres	Refined Preferred	QHEI 47.5 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	47.5
Watershed Area (square miles):	0.93
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B – 0, DP- 0, RPA-0

Stream Sec2S 78

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 78

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S78 | bioSample # | Stream Name Pride Creek | Location 475402 E 4255079 N

Surveyor WJEI | Sample Date 9/1 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 47.5

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					
		X		Boulders(9)					
				Cobble(8)					
				Gravel(7)					
		X		Sand(6)					
				Bedrock(5)					
				Hardpan(4)					
		X	X	Detritus(3)					
				Muck(2)					
X	X			Silt(2)					
				Sludge(1)					
				Artificial(0)					

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 13

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); X Deep pools(2); Rootwads(1); X Boulders(1); Oxbows(1); Aquatic macrophytes(1); Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity: High (4); X Moderate (3); Low (2); None (1)

Development: Excellent (7); Good (5); X Fair (3); Poor (1)

Channelization: None (6); Recovered (4); X Recovering (3); Recent or no recovery (1)

Stability: High (3); X Moderate (2); Low (1)

Modifications/Other: Snagging; X Relocation; Canopy Removal; Dredging; One side channel modifications; Impound; Islands; Leveed; Bank shaping

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): X Wide >50m (4); X Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); X Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0 4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); X Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); X Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 5' Gradient: 9.71 (ft/mile) Drainage Area: 0.93 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 78

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
78		Pride Creek	

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
Nee	9/1	PIKE			47.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [x] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 7 — % Riffle: 30 — Is reach representative of stream? yes

Aesthetic rating (1-10): 7 — % Run: 20

Canopy Cover (% Open): 90 — % Glide:

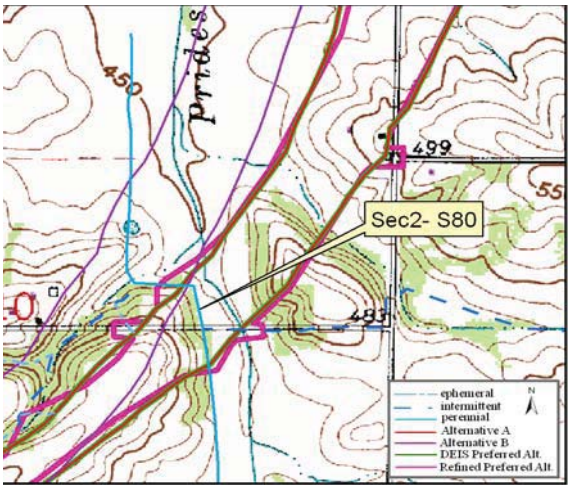
% Pool: 50

General QHEI Notes:

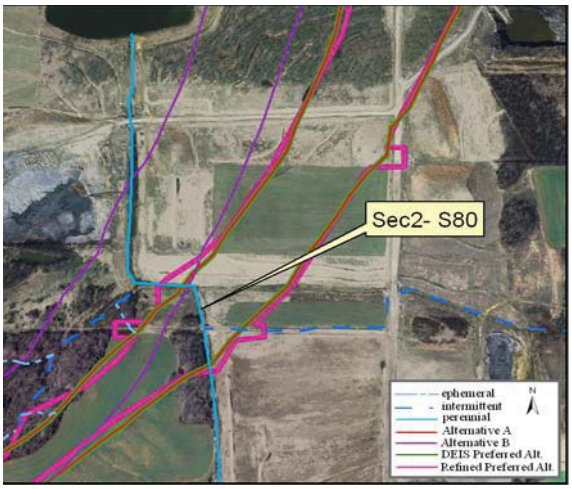
5 up right
6 up left
7 up
8 down

OWQ Biological Studies QHEI

Stream Id-Section 2 S 80



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 10 T1S R8W	**OHWM Width ft:**	8.0
UTME:	475349	**OHWM Depth ft:**	0.8
UTMN:	4255148	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 80

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Prides Creek	707 feet	0.13 acres	A	QHEI 50 / Modified Warmwater Habitat
Prides Creek	0	0	B	QHEI 50 / Modified Warmwater Habitat
Prides Creek	707 feet	0.13 acres	DEIS Preferred	QHEI 50 / Modified Warmwater Habitat
Prides Creek	915 feet	0.17 acres	Refined Preferred	QHEI 50 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	50
Watershed Area (square miles):	0.94
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.90 ac, B-0, DP-0.90 ac, RP-0.92 ac

Stream Sec2S 80

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 80

Field Report

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S80 | bioSample # | Stream Name Pribs Creek | Location 475349 E 4255148 N

Surveyor WLC | Sample Date 7/1 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 50

1-Substrate (20 points maximum)

Substrate Score: 1

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)			
		Boulders(9)	X		
		Cobble(8)			
		Gravel(7)			
		Sand(6)			
		Bedrock(5)			
		Hardpan(4)			
		Detritus(3)	X		
		Muck(2)			
	X	Silt(2)			
		Sludge(1)			
		Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No Riffles present in this stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 15

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); Rootwads(1); X Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 12

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	X Impound
Moderate (3)	X Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	X Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 8

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
X	X	Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
		Moderate 10-50m (3)	X	X	Shrub or Old field (2)			Urban or Industrial (0)	X	X	Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 6

Max pool depth (check one): >1m (6); X 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); X Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 8 | Gradient: 9.71 (ft/mile) | Drainage Area: 0.94 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 80

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
80			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
WM	9/1	Pike			50

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [x] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

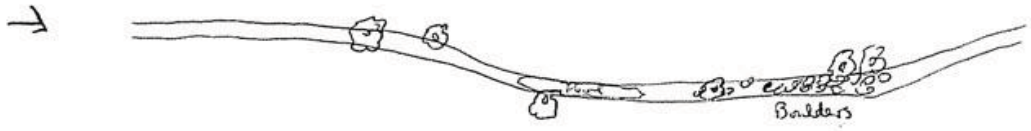
Subjective rating (1-10): 7
Aesthetic rating (1-10): 7
Canopy Cover (% Open): 70

% Riffle:
% Run: 20
% Glide:
% Pool: 80

Is reach representative of stream? Y

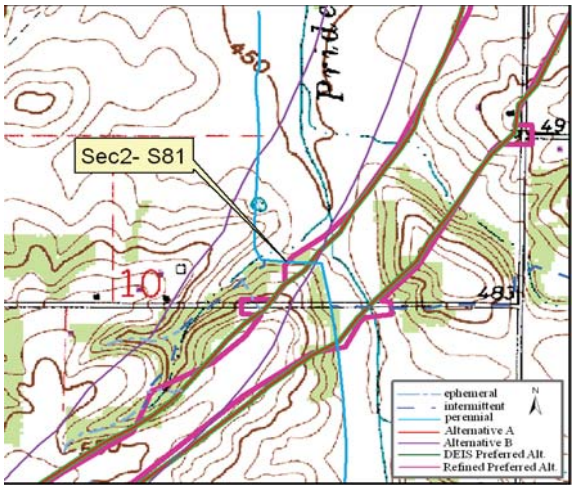
General QHEI Notes:

9 up right
10 up left
11 up
12 down

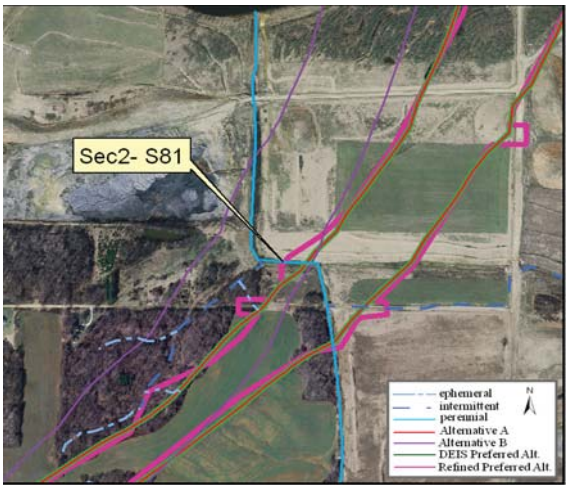


OWQ Biological Studies QHEI

Stream Id-Section 2 S 81



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	475273	**OHWM Depth ft:**	0.8
UTMN:	4255186	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 81

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Prides Creek	0	0	A	QHEI 56.5 / Modified Warmwater Habitat
Prides Creek	367 feet	0.04 acres	B	QHEI 56.5 / Modified Warmwater Habitat
Prides Creek	0	0	DEIS Preferred	QHEI 56.5 / Modified Warmwater Habitat
Prides Creek	0	0	Refined Preferred	QHEI 56.5 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	56.5
Watershed Area (square miles):	0.94
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 81

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 81

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S81 | bioSample #: | Stream Name: Pride Creek | Location: 475273 E 4255186 N

Surveyor: WMR | Sample Date: 9/1 | County: Pike | Macro SampleType: | Habitat Complete: | QHEI Score: 56.5

1-Substrate (20 points maximum)

Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)						Hardpan(4)			
		Boulders(9)						Detritus(3)	X	X	
		Cobble(8)						Muck(2)			
		Gravel(7)		X				Silt(2)	X		
X	X	Sand(6)						Sludge(1)			
		Bedrock(5)		X				Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

X >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 13

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 13

Sinuosity: High (4); X Moderate (3); Low (2); None (1)

Development: Excellent (7); X Good (5); Fair (3); Poor (1)

Channelization: None (6); Recovered (4); X Recovering (3); Recent or no recovery (1)

Stability: High (3); X Moderate (2); Low (1)

Modifications/Other: Snagging; Relocation; Canopy Removal; Dredging; Impound; Islands; Leveed; X Bank shaping; One side channel modifications

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 8.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): L X R X Wide >50m (4); L X R Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): L X R X Forest, Swamp (3); L X R X Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): L X R X None or little (3); Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: X Extensive (-1); Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 5 | Gradient: 9.71 (ft/mile) | Drainage Area: 0.94 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 81

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
81		Pride Creek	

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
WRC	9/1	PIKE			56.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [x] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 5 — % Riffle: 20 — Is reach representative of stream? Y

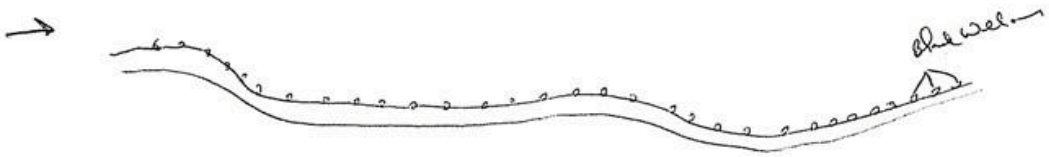
Aesthetic rating (1-10): 5 — % Run: 10

Canopy Cover (% Open): 60 — % Glide:

% Pool: 70

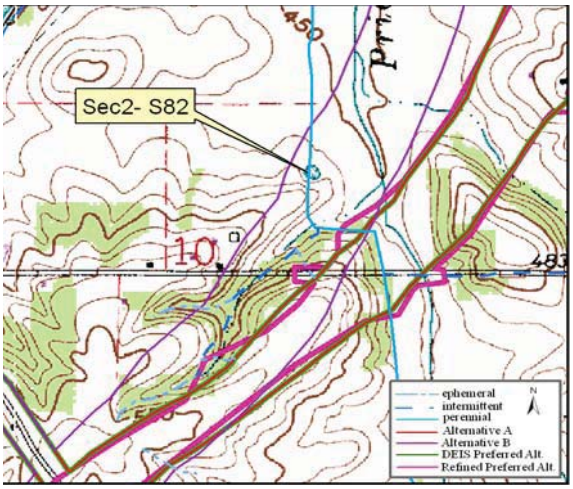
General QHEI Notes:

13 up right
14 up left
15 up
16 dam

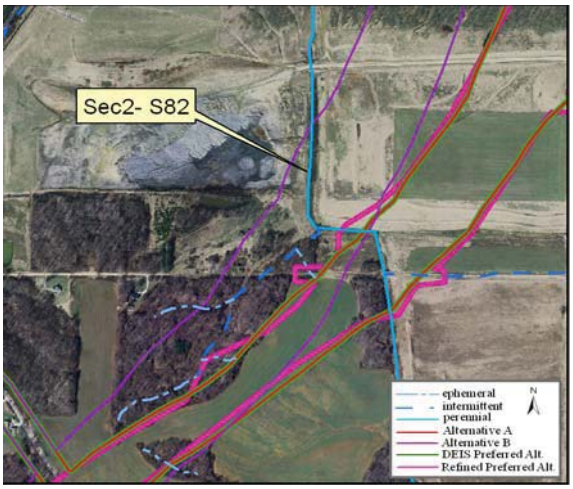


OWQ Biological Studies QHEI

Stream Id-Section 2 S 82



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 10 T1S R8W	**OHWM Width ft:**	8.0
UTME:	475195	**OHWM Depth ft:**	0.8
UTMN:	4255293	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 82

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Prides Creek	0	0	A	QHEI 44 / Modified Warmwater Habitat
Prides Creek	845 feet	0.16 acres	B	QHEI 44 / Modified Warmwater Habitat
Prides Creek	0	0	DEIS Preferred	QHEI 44 / Modified Warmwater Habitat
Prides Creek	0	0	Refined Preferred	QHEI 44 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	48
Watershed Area (square miles):	1.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 82

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 82

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S82 | bioSample # | Stream Name Pike Creek | Location 475195 E 4255293 N

Surveyor WJL | Sample Date 9/1 | County PIKE | Macro SampleType | Habitat Complete | QHEI Score: 44

1-Substrate (20 points maximum)

Substrate Score: 2

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)					Silt(2)
				Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No Riffles present in this stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 15

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); Overhanging vegetation(1); Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Comments:

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 8

Sinuosity: High (4); Moderate (3); Low (2); None (1)

Development: Excellent (7); Good (5); Fair (3); Poor (1)

Channelization: None (6); Recovered (4); Recovering (3); Recent or no recovery (1)

Stability: High (3); Moderate (2); Low (1)

Modifications/Other: Snagging; Relocation; Canopy Removal; Dredging; Impound; Islands; Leveed; Bank shaping; One side channel modifications

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 9

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 4

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments: No Riffles present

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 8 | Gradient: 9.71 (ft/mile) | Drainage Area: 1.02 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 82

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
82		Pryder Creek	

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
WLL	8/1	PIKE		☐	44

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- ☐ None
- ☐ Industrial
- ☐ WWTP
- ☒ Agricultural
- ☐ Livestock
- ☐ Silviculture
- ☐ Construction
- ☐ Urban Runoff
- ☐ Suburban
- ☐ Channelization
- ☐ Riparian Removal
- ☐ Flow Alteration
- ☐ CSOs
- ☒ Mining
- ☐ Landfills
- ☐ Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 8 % Riffle: Is reach representative of stream? Y

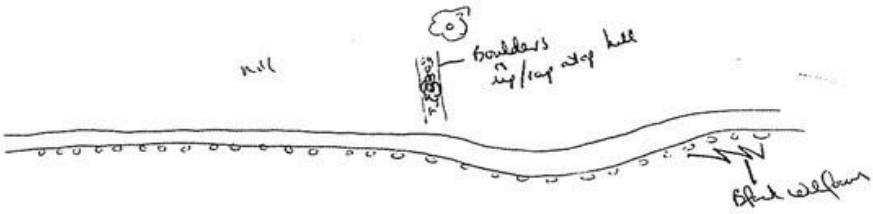
Aesthetic rating (1-10): 4 % Run:

% Glide:

Canopy Cover (% Open): 80 % Pool: 100

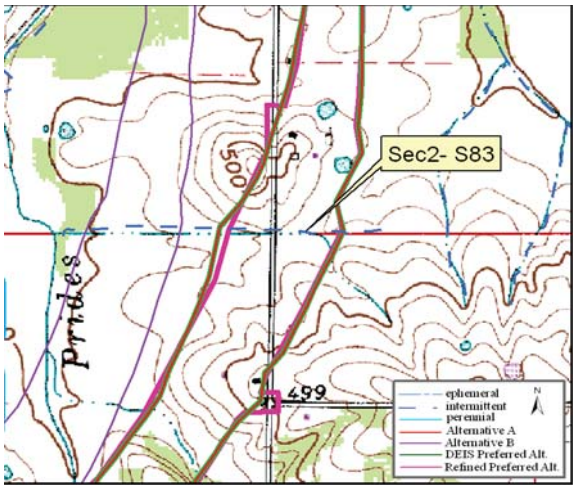
General QHEI Notes:

NO PICTURES DUE TO CAMERA PROBLEMS

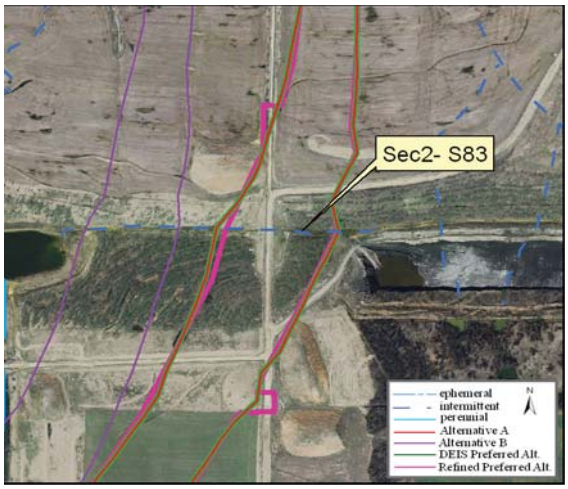


OWQ Biological Studies QHEI

Stream Id-Section 2 S 83



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 2 T1S R8W	**OHWM Width ft:**	10.0
UTME:	475871	**OHWM Depth ft:**	0.8
UTMN:	4255893	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 83

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	470 feet	0.11 acres	A	HHEI 58 / Modified Class II
Unnamed Tributary Prides Creek	0	0	B	HHEI 58 / Modified Class II
Unnamed Tributary Prides Creek	470 feet	0.11 acres	DEIS Preferred	HHEI 58 / Modified Class II
Unnamed Tributary Prides Creek	459 feet	0.11 acres	Refined Preferred	HHEI 58 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	58
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.77 ac, B-0, DP-1.77 ac, RP-1.73 ac

Stream Sec2S 83

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 83

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 58

SITE NAME/LOCATION Meridian Rd ITON

Unnamed Trib Prides Ck SITE NUMBER Sec2-S83 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT 4255893 LONG 475871 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NVIRC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	50
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	50
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40: 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12cm

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 10.5'

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☒ ☒	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☒ ☒	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☐ ☐	Open Pasture, Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 43 up right 44 up left 45 up 46 down

Elevated Turbidity? (Y/N): Y Canopy (% open): 70

Were samples collected for water chemistry? (Y/N): Y (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural, mining (near coal mine)

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

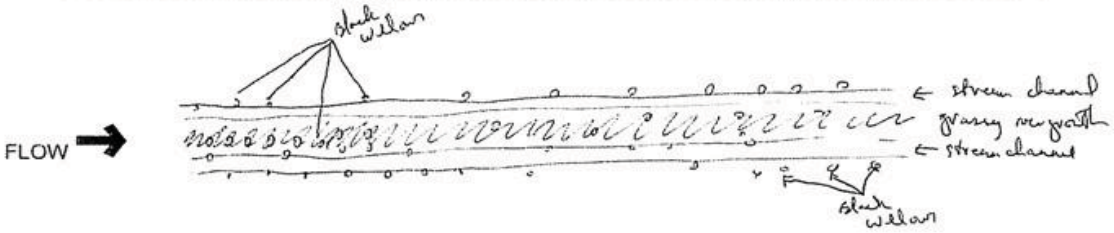
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

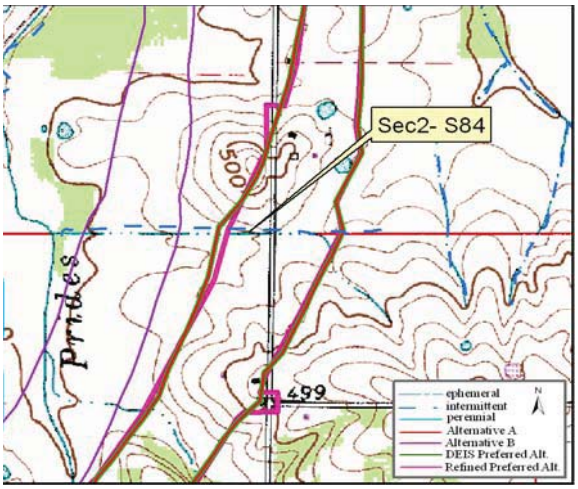
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

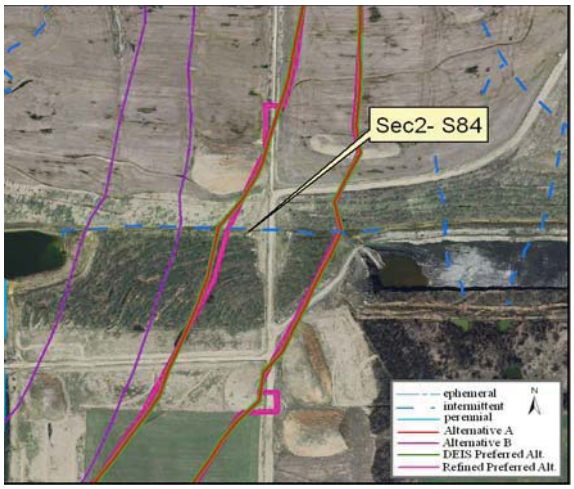
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 84



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 3 T1S R8W	**OHWM Width ft:**	10.0
UTME:	475774	**OHWM Depth ft:**	0.8
UTMN:	4255892	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 84

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	434 feet	0.10 acres	A	HHEI 70 / Modified Class II
Unnamed Tributary Prides Creek	0	0	B	HHEI 70 / Modified Class II
Unnamed Tributary Prides Creek	434 feet	0.10 acres	DEIS Preferred	HHEI 70 / Modified Class II
Unnamed Tributary Prides Creek	363 feet	0.08 acres	Refined Preferred	HHEI 70 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	70
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0.46 ac, B-0, DP-0.46 ac, RP-0.34 ac

Stream Sec2S 84

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 84

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 70

SITE NAME/LOCATION [illegible]

Unnamed Trib Prides Ck SITE NUMBER Sec2-S84 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT 4255892 LONG 475774 RIVER CODE _____ RIVER MILE _____

DATE 12-15-09 SCORER JK / MR COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☒	SILT [3 pt]	<1
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☒ ☐	GRAVEL (2-64 mm) [9 pts]	30	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	20	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 15 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points — Substrate Max = 40: 20 (A + B)

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

12cm

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

10'

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters)

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☒ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 19, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 47 up right 48 up left 49 up 50 down

Elevated Turbidity? (Y/N): Y Canopy (% open): 90

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) ~~Y~~N If not, please explain: Culvert in middle of section on other side of culvert (up stream) silty clay substrate predominate

Additional comments/description of pollution impacts: mining

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

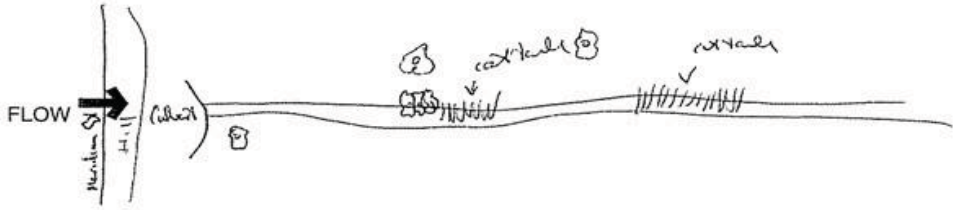
Fish Observed? (Y/N) Y Voucher? (Y/N) ____ Salamanders Observed? (Y/N) N Voucher? (Y/N) ____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) ____

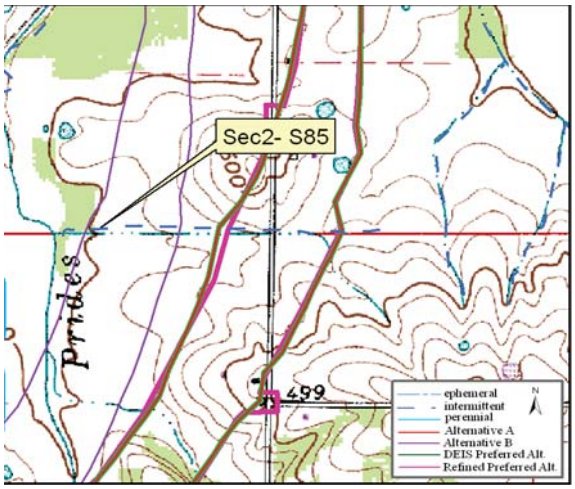
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

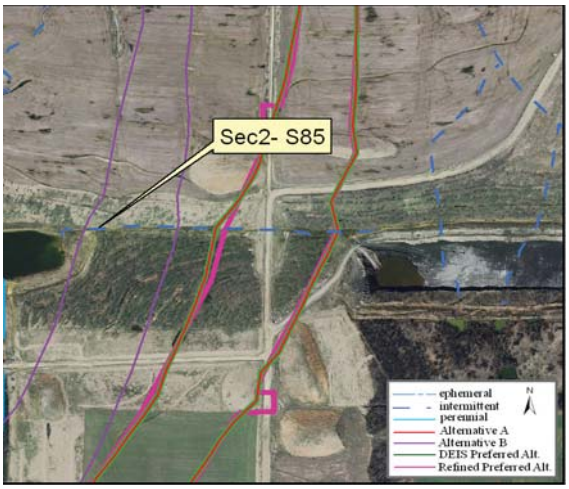
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 85



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 3 T1S R8W	**OHWM Width ft:**	4.0
UTME:	475451	**OHWM Depth ft:**	1.5
UTMN:	4255905	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 85

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	380 feet	0.03 acres	B	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.63 ac, DP-0, RP-0

Stream Sec2S 85

Site Photographs

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 85

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION _____

Unnamed Trib Prides Ck SITE NUMBER Sec2-S85 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200 LAT 4255905 LONG 475451 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER W/EC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	60
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	40	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 14cm

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1 0
- ☐ 1 5
- ☒ 2 0
- ☐ 2.5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 55 up upst 56(1) up left 57(2) up 58(3) down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Many

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

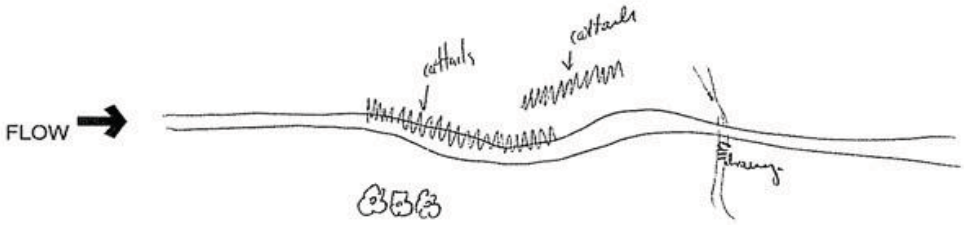
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

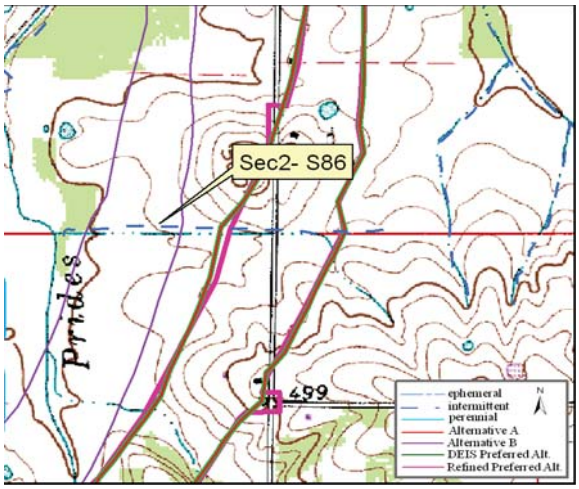
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

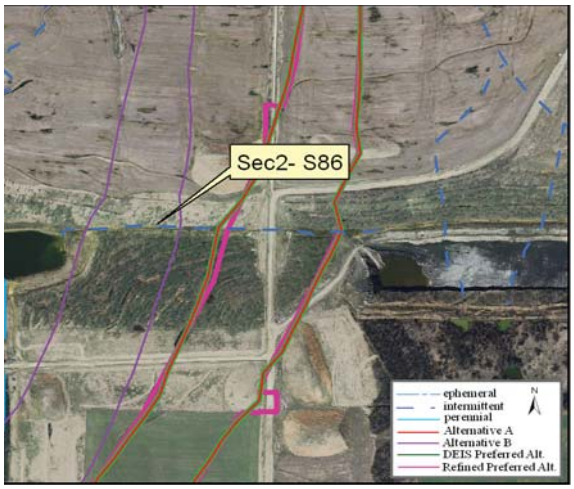
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 86



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 3 T1S R8W	**OHWM Width ft:**	4.0
UTME:	475533	**OHWM Depth ft:**	1.7
UTMN:	4255907	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 86

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 60 / Modified Class II
Unnamed Tributary Prides Creek	308 feet	0.03 acres	B	HHEI 60 / Modified Class II
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 60 / Modified Class II
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 60 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	60
Watershed Area (square miles):	0.08
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0, B-0.53 ac,DP-0, RP-0

Stream Sec2S 86

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 86

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 60

SITE NAME/LOCATION _____

Unnamed Trib Prides Ck SITE NUMBER Sec2-S86 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.08

LENGTH OF STREAM REACH (ft) 200 LAT 4255907 LONG 475533 RIVER CODE _____ RIVER MILE _____

DATE 9/1 SCORER NV/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☒	SILT [3 pt]	<1
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☒ ☐	GRAVEL (2-64 mm) [9 pts]	80	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	20	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock _____ (A) 15 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 20

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

16cm

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

4'

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)**

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 51 u upst 52 u left 53 u 54 down

Elevated Turbidity? (Y/N): Y Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: minimal

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

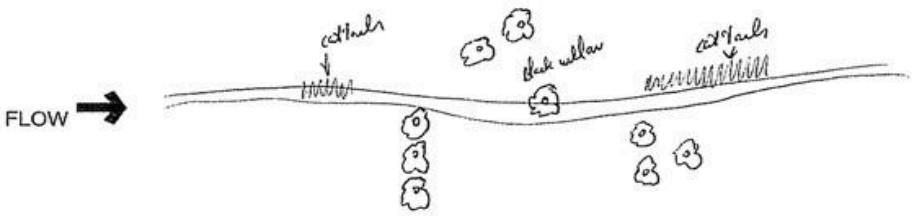
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

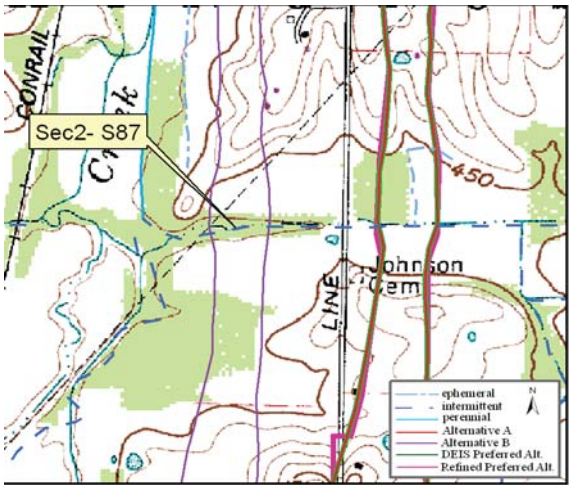
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

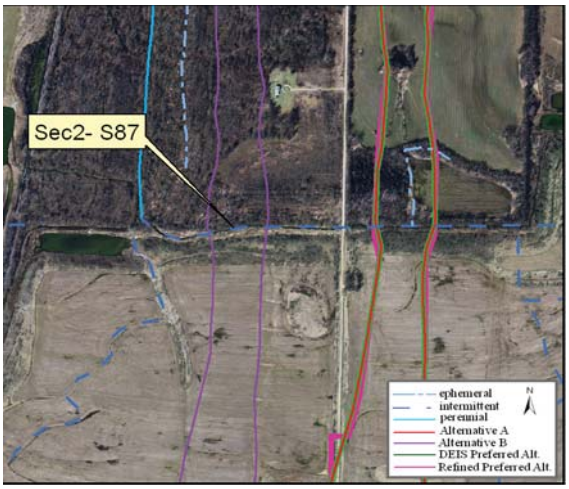
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 87



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 3 T1S R8W	**OHWM Width ft:**	18
UTME:	475571	**OHWM Depth ft:**	1.0
UTMN:	4256685	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 87

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	QHEI 45 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	431 feet	0.18 acres	B	QHEI 45 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	QHEI 45 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	0	0	Refined Preferred	QHEI 45 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	45
Watershed Area (square miles):	3.37
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-1.92 ac, DP-0, RP-0

Stream Sec2S 87

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 87

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S87 | bioSample # | Stream Name: Prides Creek | Location: 475571 E 4256685 N

Surveyor: JRB RSC | Sample Date: 9/13/05 | County: Pike | Macro SampleType | Habitat Complete | QHEI Score: 45

1-Substrate (20 points maximum) — Substrate Score: 5

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)			X	X	Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 7

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and wood/ debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 12

Sinuosity: High (4); Moderate (3); X Low (2); None (1)

Development: Excellent (7); X Good (5); Fair (3); Poor (1)

Channelization: None (6); Recovered (4); X Recovering (3); Recent or no recovery (1)

Stability: High (3); X Moderate (2); Low (1)

Modifications/Other: Snagging; X Relocation; Canopy Removal; Dredging; One side channel modifications; Impound; Islands; Leveed; Bank shaping

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 8.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): X Wide >50m (4); Moderate 10-50m (3); X Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): X Forest, Swamp (3); X Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): X None or little (3); Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0 7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); X Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum) — Gradient Score: 6.5

Average width: 18 | Gradient: low 5.43 (ft/mile) | Drainage Area: 3.37 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 45

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [x] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

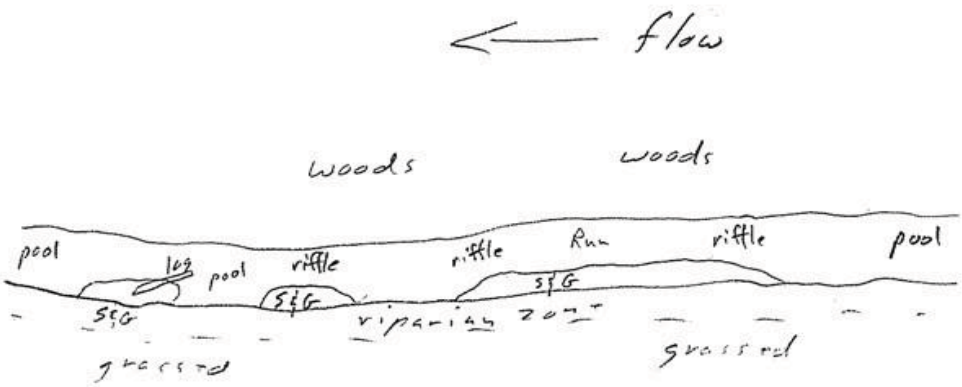
Subjective rating (1-10): 4 | % Riffle: 20 | Is reach representative of stream? Yes

Aesthetic rating (1-10): 4 | % Run: 20 | % Glide:

Canopy Cover (% Open): 30 | % Pool: 60 | west of road it is representative

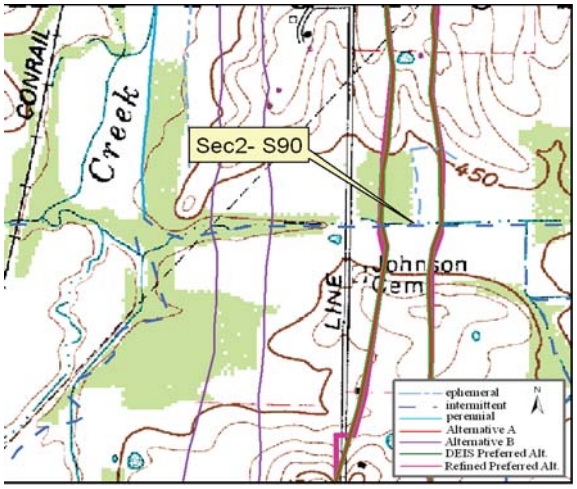
General QHEI Notes:

21 UR 22 UL 23 UP 24 dn

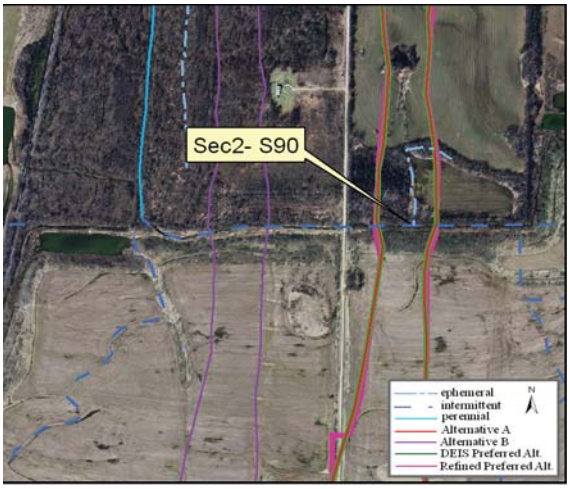


OWQ Biological Studies QHEI

Stream Id-Section 2 S 90



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 2 T1S R8W	**OHWM Width ft:**	20.0
UTME:	475952	**OHWM Depth ft:**	2.3
UTMN:	4256691	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 90

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	422 feet	0.19 acres	A	QHEI 50 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	0	0	B	QHEI 50 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	422 feet	0.19 acres	DEIS Preferred	QHEI 50 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	447 feet	0.21 acres	Refined Preferred	QHEI 50 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	48
Watershed Area (square miles):	3.28
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.89 ac, B-0, DP- 1.89 ac, RP-2.03 ac

Stream Sec2S 90

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 90

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S90 | bioSample # | Stream Name Prides Creek | Location 475952 E 4256691 N

Surveyor JRB RJC | Sample Date 9/13/05 | County Pike | Macro SampleType | Habitat Complete | **QHEI Score: 50**

1-Substrate (20 points maximum) — Substrate Score: 9

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)			X	X	Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

X >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 7

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 12

Sinuosity: High (4); Moderate (3); X Low (2); None (1)

Development: Excellent (7); X Good (5); Fair (3); Poor (1)

Channelization: None (6); Recovered (4); X Recovering (3); Recent or no recovery (1)

Stability: High (3); X Moderate (2); Low (1)

Modifications/Other: Snagging; X Relocation; Canopy Removal; Dredging; One side channel modifications; Impound; Islands; Leveed; Bank shaping

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 9.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): X Wide >50m (4); Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): X Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): X None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: Max depth 33 cm

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); X Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum) low — Gradient Score: 6.5

Average width: 20 | Gradient: 5.43 (ft/mile) | Drainage Area: 3.28 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 50

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [x] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

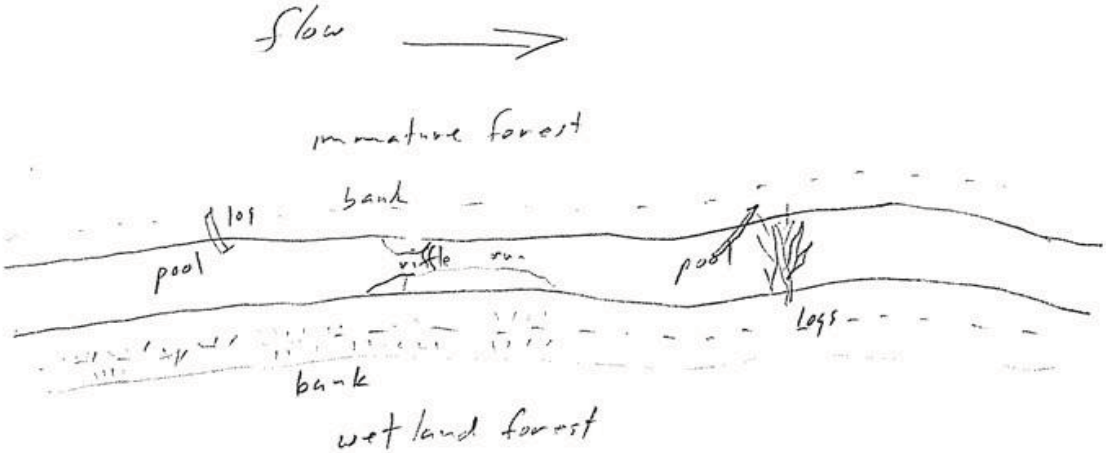
Subjective rating (1-10): 5 % Riffle: 10 Is reach representative of stream? Yes

Aesthetic rating (1-10): 6 % Run: 5 % Glide:

Canopy Cover (% Open): 15 % Pool: 85

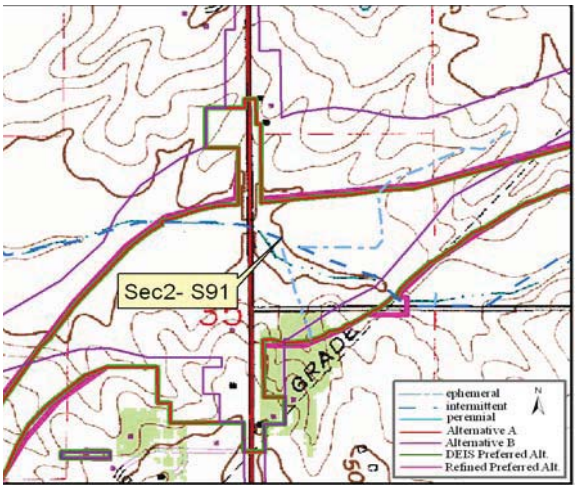
General QHEI Notes:

17 UR 18 UL 19 UP 20 DN
photos

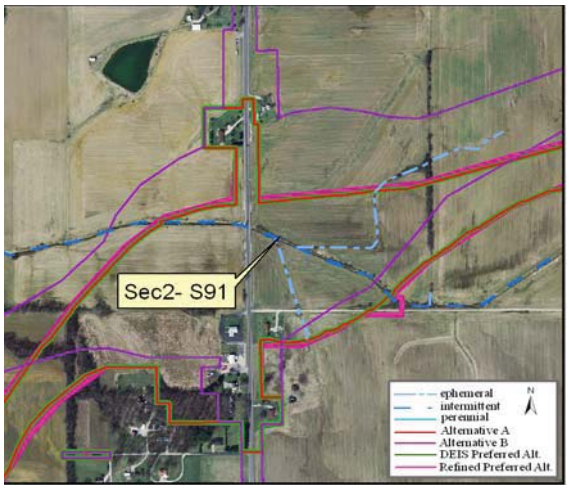


OWQ Biological Studies QHEI

Stream Id-Section 2 S 91



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 35 T1N R8W	**OHWM Width ft:**	10.0
UTME:	476701	**OHWM Depth ft:**	1.5
UTMN:	4258490	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 91

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	1,033 feet	0.24 acres	A	QHEI 57.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	876 feet	0.20 acres	B	QHEI 57.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	1,033 feet	0.24 acres	DEIS Preferred	QHEI 57.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	1,136 feet	0.26 acres	Refined Preferred	QHEI 57.5 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	57.5
Watershed Area (square miles):	0.57
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A – 0.54 ac, B – 0.54 ac, DP – 0.54 ac, RP – 0.54 ac

Stream Sec2S 91

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 91

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S91 | bioSample # | Stream Name | Location 476701 E 4258490 N

Surveyor NMR | Sample Date 8/51 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 57.5

1-Substrate (20 points maximum)

Substrate Score: 14

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R
				Bldrs/Slabs(10)				
				Boulders(9)				
				Cobble(8)				
X	X			Gravel(7)				
		X	X	Sand(6)				
				Bedrock(5)				
				Hardpan(4)				
				Detritus(3)	X	X		
				Muck(2)				
				Silt(2)				
				Sludge(1)				
				Artificial(0)				

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 15

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 14

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	X High (3)	Snagging	Impound
Moderate (3)	X Good (5)	X Recovered (4)	Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 2.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); Moderate 10-50m (3); Narrow 5-10m (2); X Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); X Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 10 | Gradient: 7.04 (ft/mile) | Drainage Area: 0.57 (square miles)

Comments:

OWQ Biological Studies QHEI

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
91			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
AN/RC	8/31	PIKE			57.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 3
Aesthetic rating (1-10): 3
Canopy Cover (% Open): 30

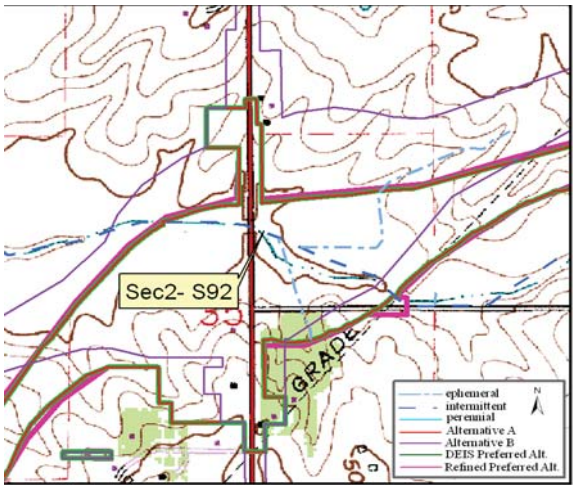
% Riffle: 20
% Run: 20
% Glide:
% Pool: 60

Is reach representative of stream? y

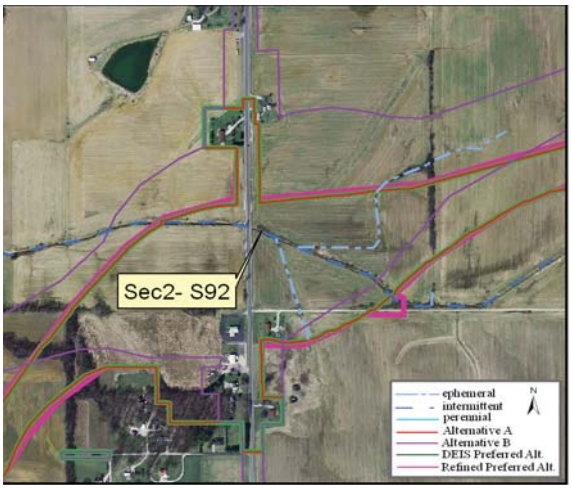
General QHEI Notes:

35 up right
36 up left
37 up
38 down

Stream Id-Section 2 S 92



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 35 T1N R8W	**OHWM Width ft:**	9.0
UTME:	476654	**OHWM Depth ft:**	2.3
UTMN:	4258508	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 92

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	802 feet	0.17 acres	A	QHEI 60.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	1,190 feet	0.25 acres	B	QHEI 60.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	802 feet	0.17 acres	DEIS Preferred	QHEI 60.5 / Modified Warmwater Habitat
Unnamed Tributary Prides Creek	830 feet	0.17 acres	Refined Preferred	QHEI 60.5 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	60.5
Watershed Area (square miles):	0.58
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A – 0.08 ac, B – 0.08 ac, DP – 0.08 ac, RP – 0.08 ac

Stream Sec2S 92

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 92

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S92 | bioSample # | Stream Name Stl Ck 61 near Cr 350 | Location 476654 E, 4258508 N

Surveyor MN/RC | Sample Date 8/31 | County PIKE | Macro SampleType | Habitat Complete | QHEI Score: 60.5

1-Substrate (20 points maximum)

Substrate Score: 16

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
			X	Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
X	X			Gravel(7)					Silt(2)
		X	X	Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

X >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 16

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); X Rootwads(1); X Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 13

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	X High (3)	Snagging	Impound
Moderate (3)	X Good (5)	X Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
X None (1)	Poor (1)	Recent or no recovery (1)		Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 2.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality L	Erosion/Runoff-Floodplain quality R	(most predominant per bank)	L	R		Bank Erosion L	Bank Erosion R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)		X	Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 9 | Gradient: 7.04 (ft/mile) | Drainage Area: 0.58 (square miles)

Comments:

OWQ Biological Studies QHEI

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
92			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
NW/RL	8/31	PIKE			58.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 3 % Riffle: 10 *Is reach representative of stream?* Yes

Aesthetic rating (1-10): 3 % Run: 20 % Glide:

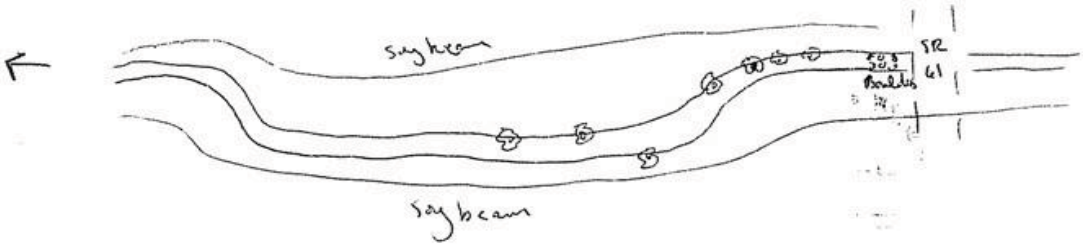
Canopy Cover (% Open): 30 % Pool: 70

General QHEI Notes:

31 up right 34 down

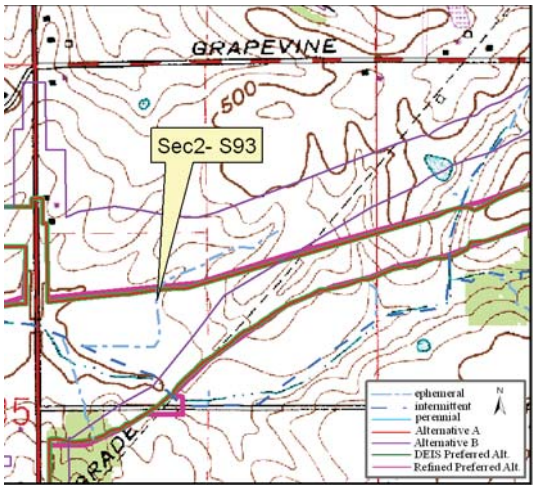
32 up left

33 up

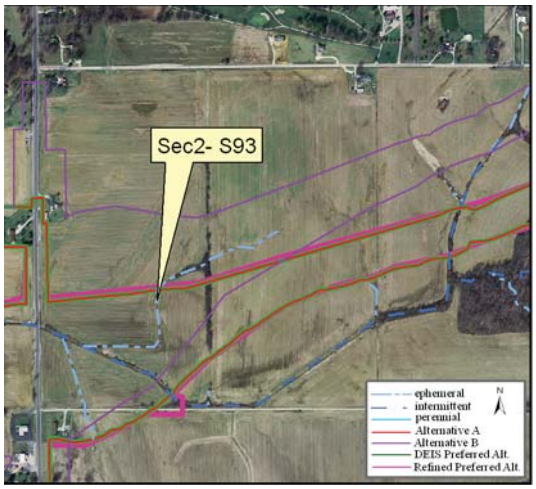


OWQ BIOLOGICAL STUDIES QHEI

Stream Id-Section 2 S 93



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 35 T1N R8W	**OHWM Width ft:**	2.0
UTME:	476910	**OHWM Depth ft:**	0.4
UTMN:	4258567	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 93

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	1,010 feet	0.05 acres	A	HHEI 13 / Modified Class I
Unnamed Tributary Prides Creek	2,094 feet	0.10 acres	B	HHEI 13 / Modified Class I
Unnamed Tributary Prides Creek	1,010 feet	0.05 acres	DEIS Preferred	HHEI 13 / Modified Class I
Unnamed Tributary Prides Creek	1,049 feet	0.05 acres	Refined Preferred	HHEI 13 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	13
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0.63 ac, DP-0, RP – 0

Stream Sec2S 93

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 93

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 13

SITE NAME/LOCATION Unnamed Trib Prides Ck SITE NUMBER Sec2-S93 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 100 LAT 4258567 LONG 476910 RIVER CODE _____ RIVER MILE _____

DATE 8/31 SCORER NW/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	60
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	5
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	25
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☒	SAND (<2 mm) [6 pts]	5	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble, Bedrock _____ (A) 3 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2'

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park, New Field	☒ ☒	Open Pasture. Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools, no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None
☐ 0 5
☐ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PICG Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 39 up right 40 up left 41 up 42 down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

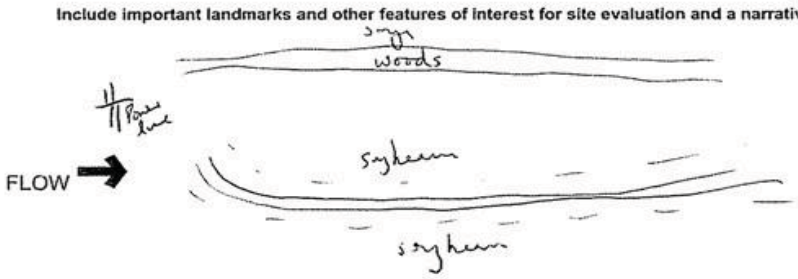
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

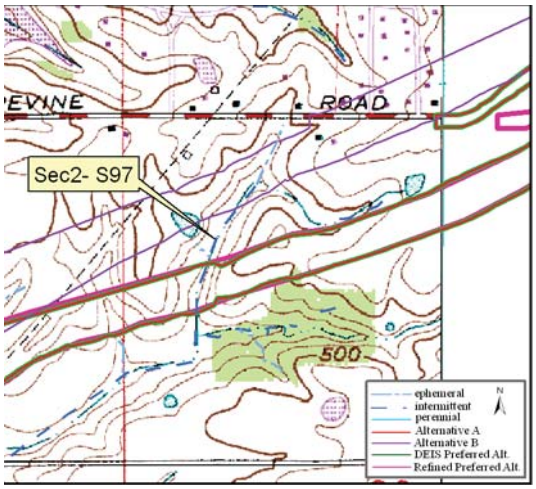
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

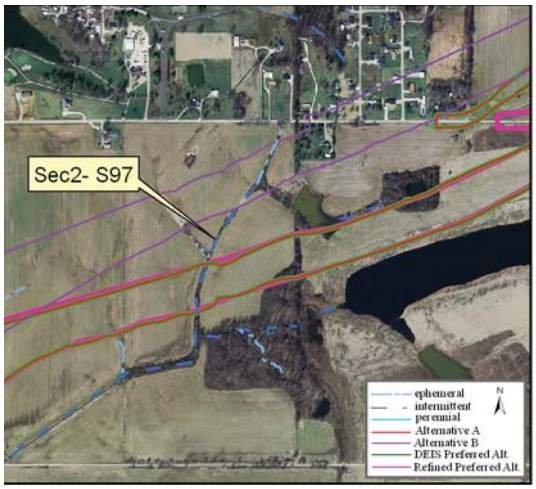
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 97



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 36 T1N R8W	**OHWM Width ft:**	5.0
UTME:	477651	**OHWM Depth ft:**	0.5
UTMN:	4258856	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 97

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	397 feet	0.05 acres	A	HHEI 39 / Modified Class II
Unnamed Tributary Prides Creek	220 feet	0.03 acres	B	HHEI 39 / Modified Class II
Unnamed Tributary Prides Creek	397 feet	0.05 acres	DEIS Preferred	HHEI 39 / Modified Class II
Unnamed Tributary Prides Creek	381 feet	0.04 acres	Refined Preferred	HHEI 39 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.32 ac, B – 0.32 ac, DP-0.32 ac, RP –0.31 ac

Stream Sec2S 97

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 97

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Unnamed Trib Prides Ck SITE NUMBER Sec2-S97 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200' LAT 4258856 LONG 477651 RIVER CODE _____ RIVER MILE _____

DATE 8/31 SCORER AW/EC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	30
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☐ ☒	SAND (<2 mm) [6 pts]	<1	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 6 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40: 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☒ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7cm

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☒	☒	Open Pasture. Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools, no flow (Intermittent)
☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0.5
☐ 1.0
☐ 1.5
☐ 2.0
☐ 2.5
☒ 3.0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? ☒ Yes ☐ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 27 up right 28 up left 29 up 30 down

Elevated Turbidity? (Y/N): ~~N~~ Y Canopy (% open): 50

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

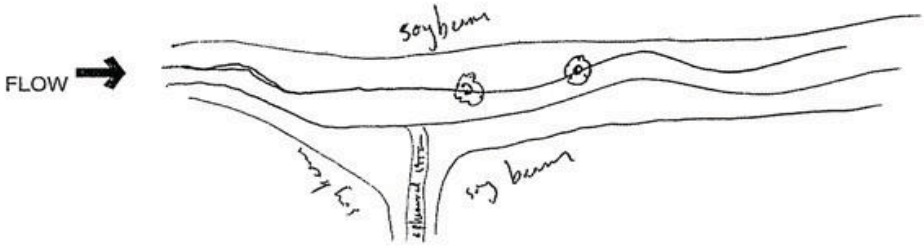
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

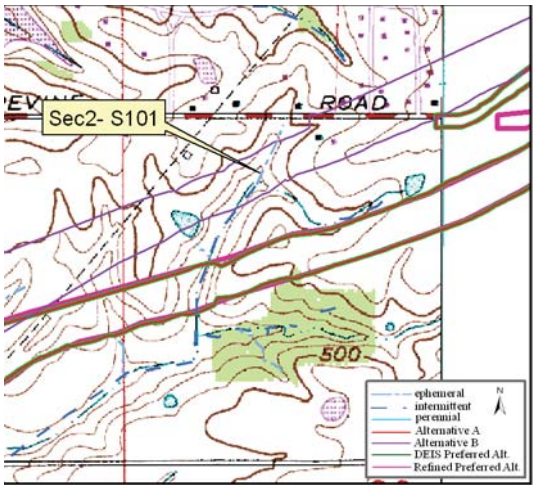
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

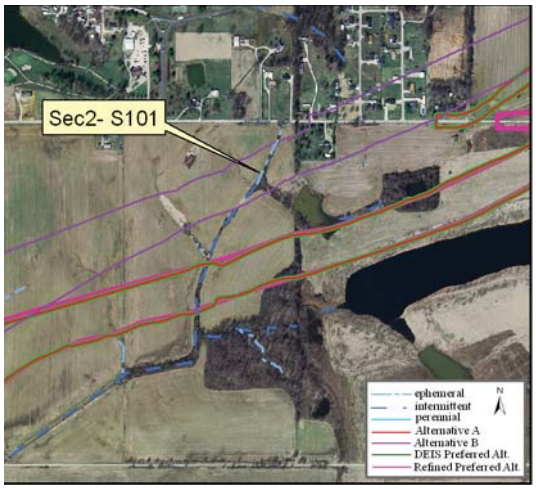
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 101



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White River
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 36 T1N R8W	**OHWM Width ft:**	2.5
UTME:	477764	**OHWM Depth ft:**	0.5
UTMN:	4259021	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 101

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 30 / Modified Class II
Unnamed Tributary Prides Creek	374 feet	0.02 acres	B	HHEI 30 / Modified Class II
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 30 / Modified Class II
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 30 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	30
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.26 ac, DP-0, RP-0

Stream Sec2S 101

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 101

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 30

SITE NAME/LOCATION _____

Unnamed Trib Prides Ck SITE NUMBER Sec2-S101 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT 4259021 LONG 477764 RIVER CODE _____ RIVER MILE _____

DATE 8/31 SCORER NV/RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☐	SILT [3 pt]	
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	<1
☒ ☐	GRAVEL (2-64 mm) [9 pts]	30	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points

Substrate Max = 40: 20

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☒ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3cm

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park. New Field	☒	☒	Open Pasture. Row Crop
☒	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel. isolated pools. no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0 5
☒ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 19 up right 20 up left 21 up 22 down

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

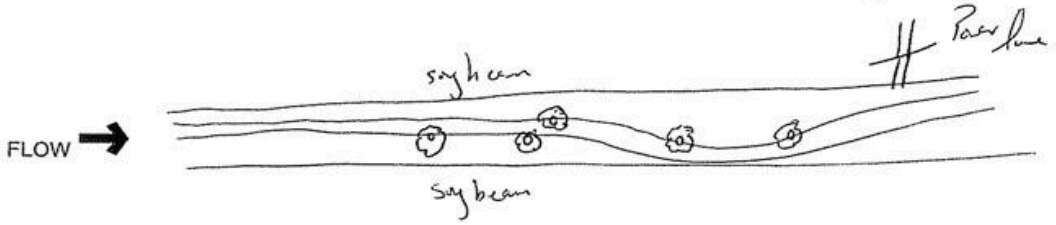
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Y Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

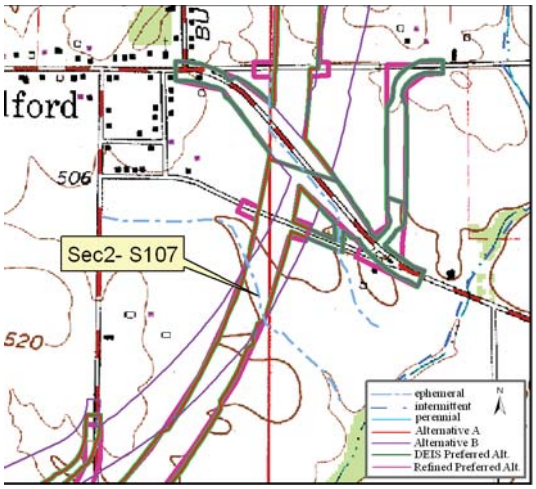
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

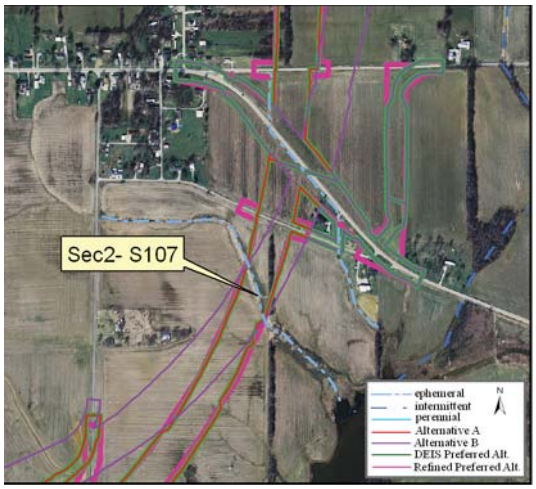
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 107



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower E Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 25 T1N R8W	**OHWM Width ft:**	1.7
UTME:	479056	**OHWM Depth ft:**	0.4
UTMN:	4259834	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 107

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	460 feet	0.02 acres	A	HHEI 11 / Modified Class I
Unnamed Tributary Mud Creek	459 feet	0.02 acres	B	HHEI 11 / Modified Class I
Unnamed Tributary Mud Creek	460 feet	0.02 acres	DEIS Preferred	HHEI 11 / Modified Class I
Unnamed Tributary Mud Creek	476 feet	0.02 acres	Refined Preferred	HHEI 11 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	11
Watershed Area (square miles):	0.19
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0, B – 0, DP – 0, RP – 0

Stream Sec2S 107

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 107

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 11

SITE NAME/LOCATION Jasper St culv row over Unnamed Trib Mud Ck SITE NUMBER Sec2-S107 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.19

LENGTH OF STREAM REACH (ft) 200 LAT 4259834 LONG 479056 RIVER CODE _____ RIVER MILE _____

DATE 8/31/05 SCORER AN / RC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	70
☐☐	BOULDER (>256 mm) [16 pts]		☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☒☐	CLAY or HARDPAN [0 pt]	25
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points — Substrate Max = 40: 6 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐☐ Wide >10m	☐☐ Mature Forest, Wetland	☐☐ Conservation Tillage
☐☐ Moderate 5-10m	☐☐ Immature Forest, Shrub or Old Field	☐☐ Urban or Industrial
☐☐ Narrow <5m	☐☐ Residential. Park, New Field	☒☒ Open Pasture. Row Crop
☒☒ None	☐☐ Fenced Pasture	☐☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools, no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☒ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

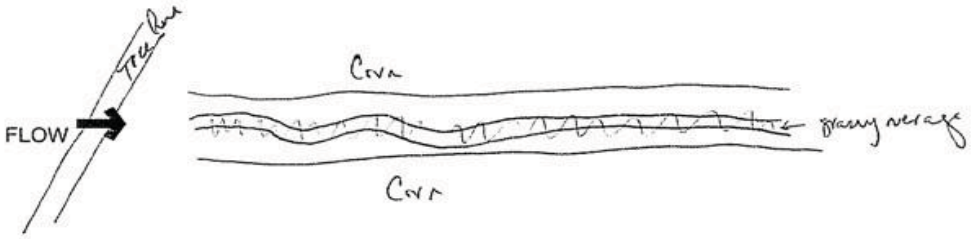
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

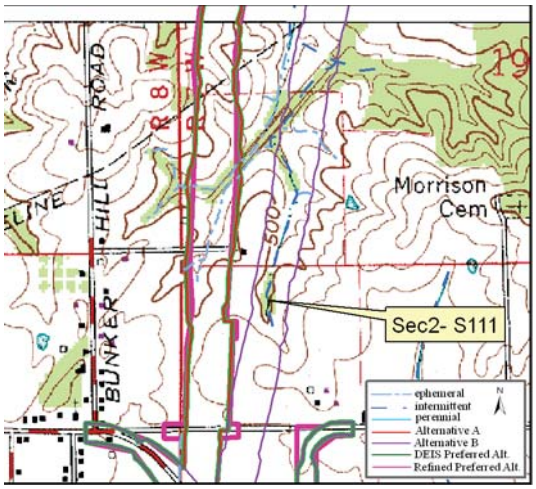
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

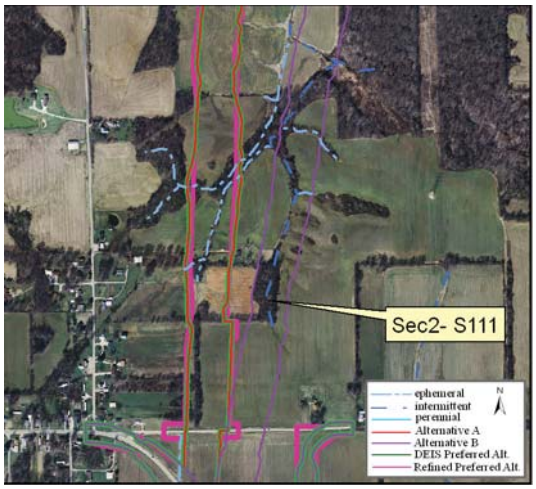
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 111



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 30 T1N R7W	**OHWM Width ft:**	3.0
UTME:	479300	**OHWM Depth ft:**	0.3
UTMN:	4260660	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 111

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 18 / Class I
Unnamed Tributary Lick Creek	464 feet	0.03 acres	B	HHEI 18 / Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 18 / Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 18 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-1.57 ac, DP -0, RP-0

Stream Sec2S 111

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 111

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION _____

Unnamed Trib Lick Ck SITE NUMBER Sec2-S111 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 4260660 LONG 479300 RIVER CODE _____ RIVER MILE _____

DATE 9/2 SCORER NJ/AL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	40
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	100	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.5'

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 17 up right 18 up left 19 up 20 down

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

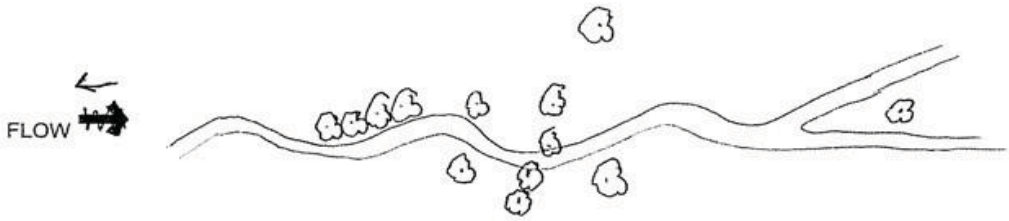
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

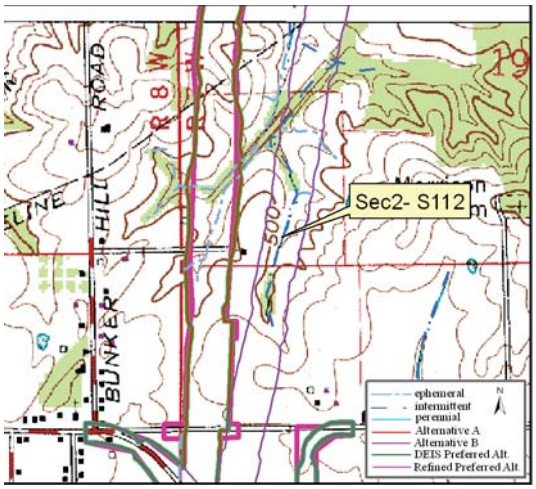
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

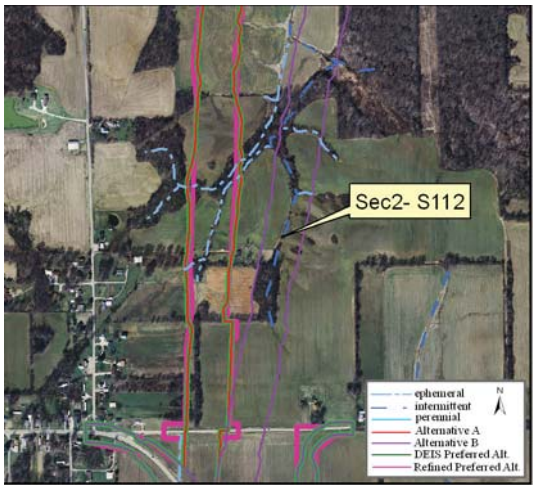
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 112



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	3.0
UTME:	479330	**OHWM Depth ft:**	0.5
UTMN:	4260815	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 112

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 11 / Class I
Unnamed Tributary Lick Creek	479 feet	0.03 acres	B	HHEI 11 / Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 11 / Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 11 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	11
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0,B-0.67 ac, DP-0, RP-0

Stream Sec2S 112

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 112

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 11

SITE NAME/LOCATION _____

Unnamed Trib Lick Ck SITE NUMBER Sec2-S112 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT 4260815 LONG 479330 RIVER CODE _____ RIVER MILE _____

DATE 9/6 SCORER NJ/RL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☑ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☑	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	20
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40: 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☑	☑	Open Pasture, Row Crop
☑	☑	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 21 up right 22 up left 23 up 24 down

Elevated Turbidity? (Y/N): N Canopy (% open): ~~[illegible]~~ 50

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: center of section open and wide field & then re-enters wooded area

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

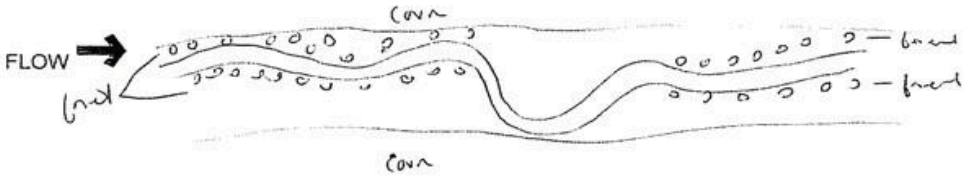
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

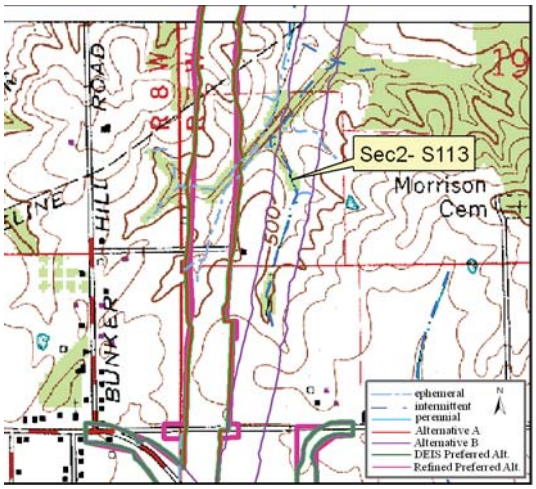
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

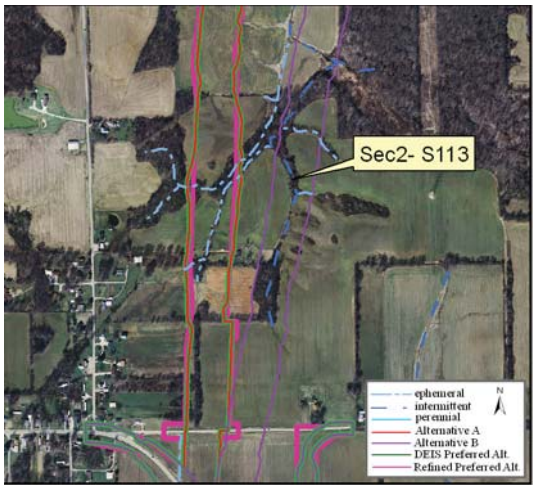
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 113



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	3.0
UTME:	479354	**OHWM Depth ft:**	0.5
UTMN:	4260943	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 113

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 19 / Class I
Unnamed Tributary Lick Creek	526 feet	0.04 acres	B	HHEI 19 / Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 19 / Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 19 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	19
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-1.20 ac, DP-0, RP-0

Stream Sec2S 113

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 113

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 19

SITE NAME/LOCATION _____

Unnamed Trib Lick Ck SITE NUMBER Sec2-S113 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT 4260943 LONG 479354 RIVER CODE _____ RIVER MILE _____

DATE 9/2 SCORER NJ/RL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	<1
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	<1
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	20	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 3'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential. Park. New Field	☐	☒	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/30 Quantity: 3.78"

Photograph Information: 25 up, 26 up left 27 up 28 down

Elevated Turbidity? (Y/N): N Canopy (% open): 40

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

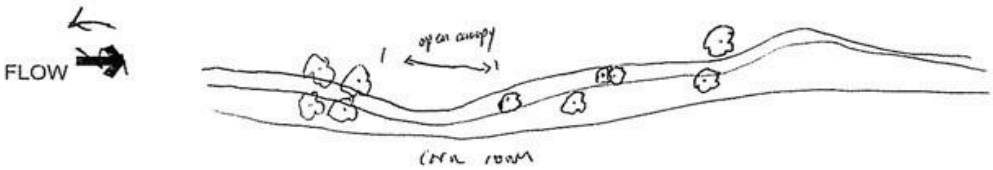
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

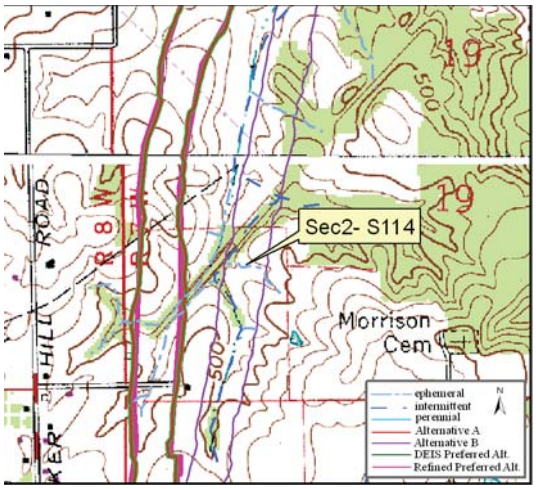
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

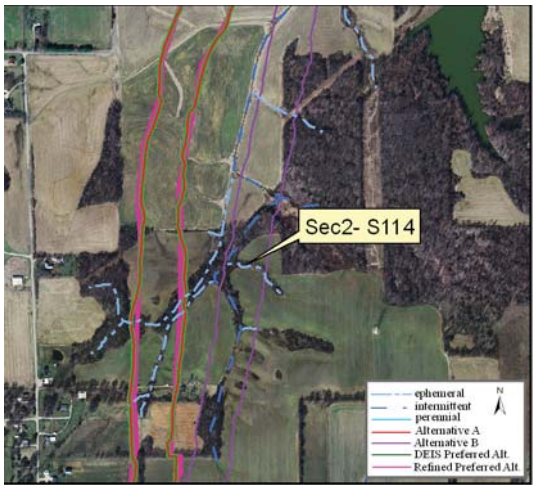
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 114



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	4.0
UTME:	479379	**OHWM Depth ft:**	0.3
UTMN:	4261070	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 114

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 28 / Class I
Unnamed Tributary Lick Creek	353 feet	0.03 acres	B	HHEI 28 / Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 28 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.24 ac, DP-0, RP-0

Stream Sec2S 114

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 114

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Lick Ck SITE NUMBER Sec2-S114 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 4261070 LONG 479379 RIVER CODE _____ RIVER MILE _____

DATE 9/2 SCORER NV/RL COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☑ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☑	SILT [3 pt]	30
☐	BOULDER (>256 mm) [16 pts]		☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐	BEDROCK [16 pt]		☒	FINE DETRITUS [3 pts]	<1
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]		☐	MUCK [0 pts]	
☑	SAND (<2 mm) [6 pts]	70	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1 0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 4'

HHEI Metric Points

Substrate Max = 40	13	A + B
Pool Depth Max = 30	0	
Bankfull Width Max=30	15	

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☐	Open Pasture, Row Crop
☑	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☑ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☐ 2 0
- ☐ 2 5
- ☐ 3 0
- ☑ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 1302 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: PIKE Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: _____ Quantity: _____

Photograph Information: 29 up right 30 up left 31 up 32 down

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

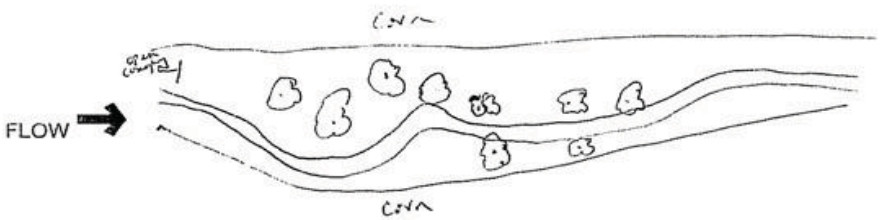
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

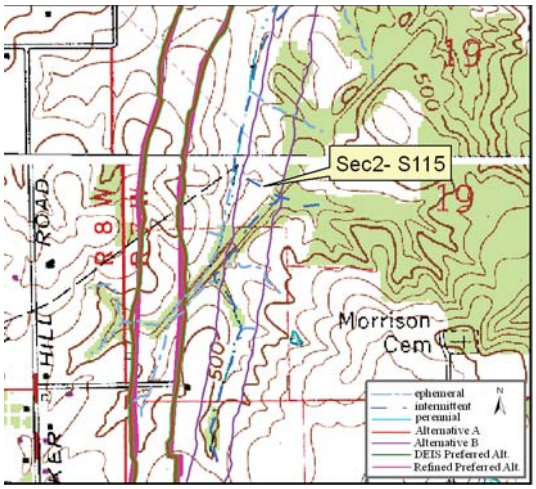
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

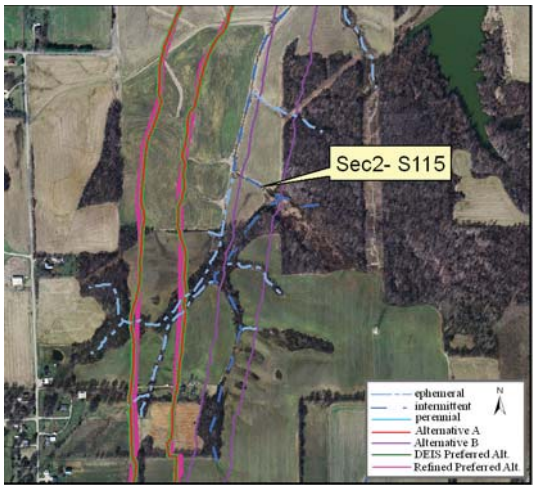
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 115



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	15.0
UTME:	479414	**OHWM Depth ft:**	0.7
UTMN:	4261256	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 115

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 72 / Modified Class II
Unnamed Tributary Lick Creek	360 feet	0.12 acres	B	HHEI 72 / Modified Class II
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 72 / Modified Class II
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 72 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	72
Watershed Area (square miles):	0.12
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.18 ac, DP-0, RP-0

Stream Sec2S 115

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 115

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 72

SITE NAME/LOCATION

Unnamed Trib Lick Ck SITE NUMBER Sec2-S115 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.12

LENGTH OF STREAM REACH (ft) 200' LAT 4261256 LONG 479414 RIVER CODE _____ RIVER MILE _____

DATE 9/16/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

post mining drainage

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☒	COBBLE (65-256 mm) [12 pts]	<1	☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☒ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 28cm

Pool Depth Max = 30: 30

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☒ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 15'

Bankfull Width Max=30: 30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9/15/05 Quantity: _____

Photograph Information: 5 UR 6 UL 7 UP 8 DN

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Ag Mining

BIOTIC EVALUATION

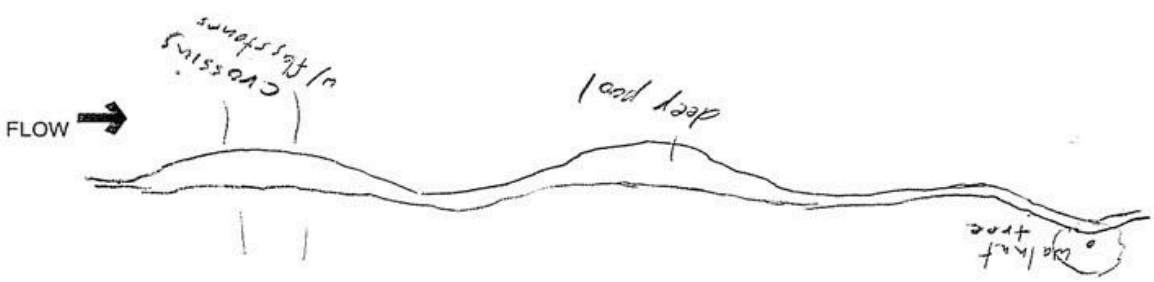
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Y Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

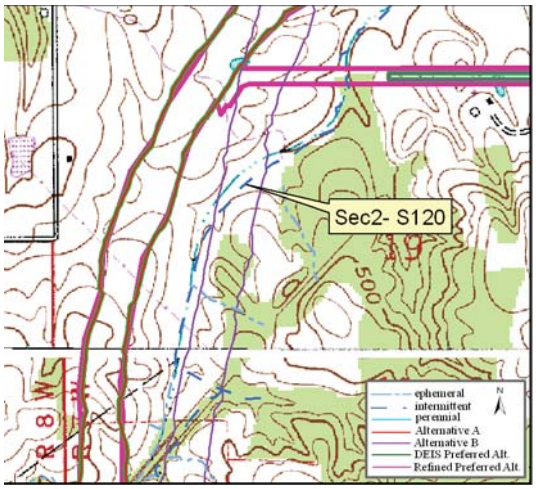
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

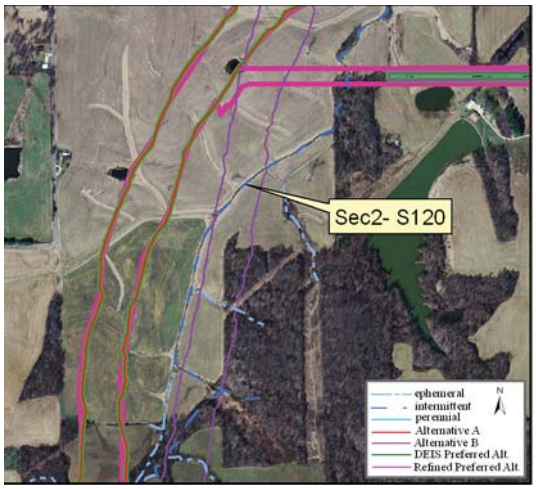
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 120



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 19 T1N R7W	**OHWM Width ft:**	6.0
UTME:	479503	**OHWM Depth ft:**	0.8
UTMN:	4261715	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 120

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	QHEI 30 / Modified Warmwater Habitat
Unnamed Tributary Lick Creek	590 feet	0.08 acres	B	QHEI 30 / Modified Warmwater Habitat
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	QHEI 30 / Modified Warmwater Habitat
Unnamed Tributary Lick Creek	139 feet	0.02 acres	Refined Preferred	QHEI 30 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	30
Watershed Area (square miles):	0.43
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP–0, RP-0

Stream Sec2S 120

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 120

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S120 | bioSample # | Stream Name Unnamed Trib Lick Creek | Location 479503 E 4261715 N

Surveyor | Sample Date 9/16/05 | County Pike | Macro SampleType | Habitat Complete | **QHEI Score: 30**

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)						Hardpan(4)		
		Boulders(9)						Detritus(3)		
		Cobble(8)	X					Muck(2)		
		Gravel(7)	X					Silt(2)	X	
X		Sand(6)						Sludge(1)		
		Bedrock(5)						Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No riffles present in this stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 6

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); X Overhanging vegetation(1); Rootwads(1); X Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 6

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	X Canopy Removal	Leveed
None (1)	X Poor (1)	X Recent or no recovery (1)		X Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X	X	Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 3

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1); Intermittent (-2); X Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); X No riffle (0)

Comments: dune

6-Gradient (10 points maximum)

Gradient Score: 8

Average width: 6' | Gradient: 14.17 (ft/mile) | Drainage Area: 0.43 (square miles)

Comments:

Stream Sec2S 120

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 30

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 4 | % Riffle: 0 | Is reach representative of stream? Yes

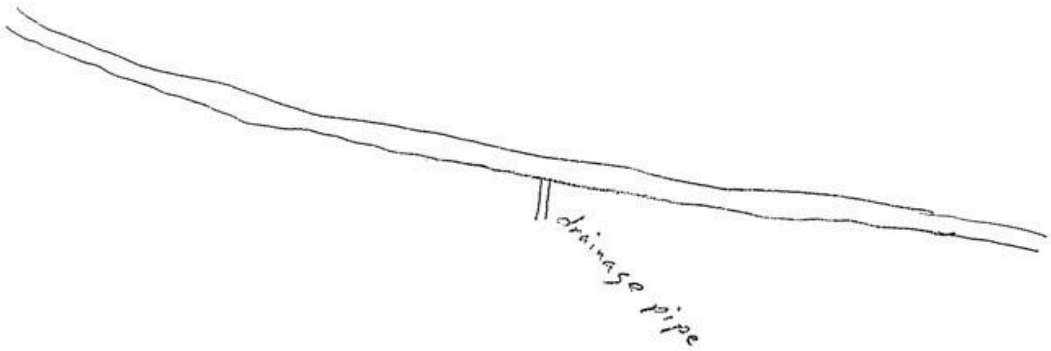
Aesthetic rating (1-10): 2 | % Run: 0

% Glide: 100

Canopy Cover (% Open): 100 | % Pool: 0

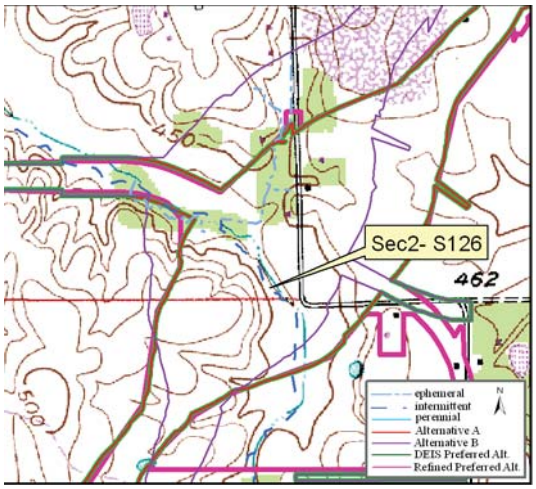
General QHEI Notes:

13 UR 14 UL 15 UP 16 DW

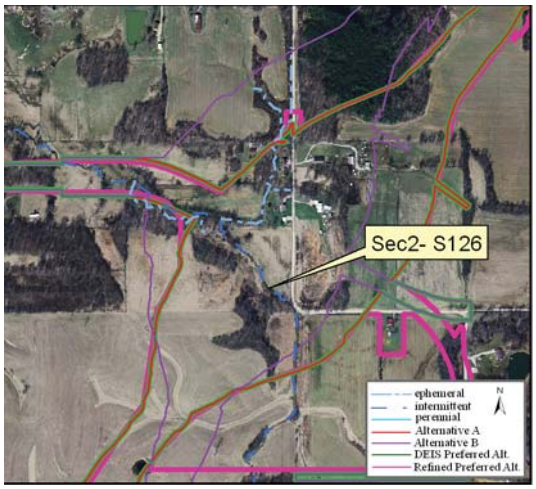


OWQ Biological Studies QHEI

Stream Id-Section 2 S 126



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	13.0
UTME:	479793	**OHWM Depth ft:**	0.8
UTMN:	4262428	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 126

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	990 feet	0.30 acres	A	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	818 feet	0.24 acres	B	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	990 feet	0.30 acres	DEIS Preferred Alternative	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	979 feet	0.29 acres	Refined Preferred Alternative	QHEI 57 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	57
Watershed Area (square miles):	0.75
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 0.96 ac, B – 0.96 ac, DP-0.96 ac, RPA-1.19ac

Stream Sec2S 126

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 126

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S126 | bioSample # | Stream Name Unnamed Trib Lick Creek | Location 479793 E 4262428 N

Surveyor NV/RL | Sample Date 8/29 | County PIKE | Macro SampleType | Habitat Complete | QHEI Score: 57

1-Substrate (20 points maximum)

Substrate Score: 12

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
		X		Cobble(8)					Muck(2)
		X	X	Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0); X Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 13

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); X Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 17

Sinuosity	Development	Channelization	Stability	Modifications/Other	
X High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
Moderate (3)	X Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); X Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); X None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); X Shrub or Old field (2); Residential, Park, New field (1); X Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 4

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); X <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

5-Gradient (10 points maximum)

Gradient Score: 6

Average width: 13 | Gradient 6.04 (ft/mile) | Drainage Area: 0.75 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 126

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
126			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
WRC	8/29				57

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [x] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 7 % Riffle: 20 *Is reach representative of stream?* Yes

Aesthetic rating (1-10): 4 % Run: 20

% Glide:

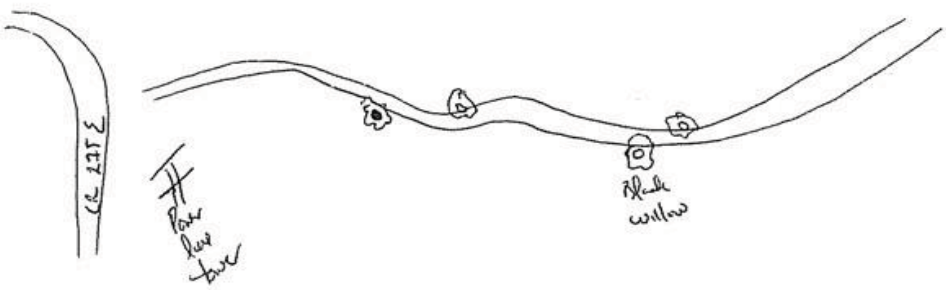
Canopy Cover (% Open): 60 % Pool: 60

General QHEI Notes:

1 up right 2 up left

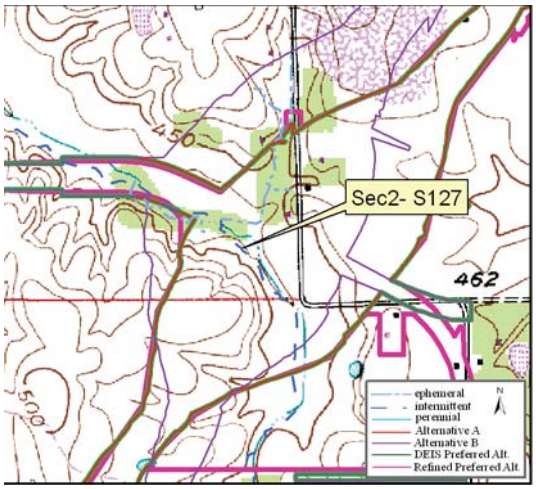
3 up 4 down (Pictures)

Pass line down

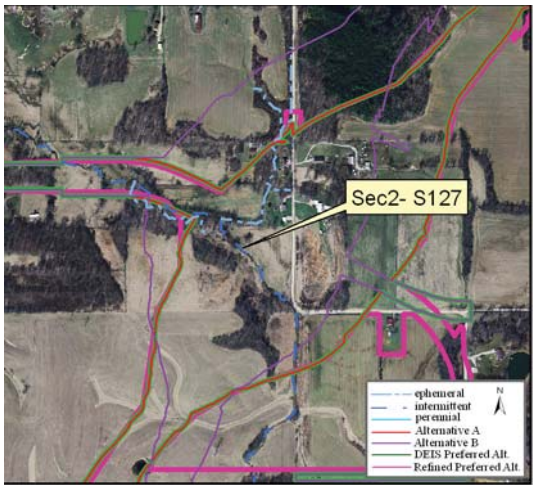


OWQ Biological Studies QHEI

Stream Id-Section 2 S 127



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	12.0
UTME:	479730	**OHWM Depth ft:**	0.8
UTMN:	4262516	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 127

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	1,162 feet	0.32 acres	A	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	1,263 feet	0.35 acres	B	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	1,162 feet	0.32 acres	DEIS Preferred	QHEI 57 / Warmwater Habitat
Unnamed Tributary Lick Creek	1,103 feet	0.30 acres	Refined Preferred	QHEI 57 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	57
Watershed Area (square miles):	0.77
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A – 3.10 ac, B – 3.82 ac, DP-3.10 ac, RP – 3.07 ac

Stream Sec2S 127

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 127

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
Sec2-S127		Unnamed Trib Lick Creek	479730 E 4262516 N

Surveyor: WJC | Sample Date: 8/20 | County: PIKE | Macro SampleType | Habitat Complete | QHEI Score: 57

1-Substrate (20 points maximum)

Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
		X	X	Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 15

Type (check ALL that apply): X Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); X Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); X Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 14

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
X Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
Low (2)	X Fair (3)	Recovering (3)	Low (1)	X Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping

Comments:

One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)	X	X	Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X	X	Very narrow <5m (1)	X	X	Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 12 | Gradient: 6.04 (ft/mile) | Drainage Area: 0.77 (square miles)

Comments:

OWQ Biological Studies QHEI

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
127			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
WJL	8/29	PIKE			57

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [x] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 5 % Riffle: 10 *Is reach representative of stream?*

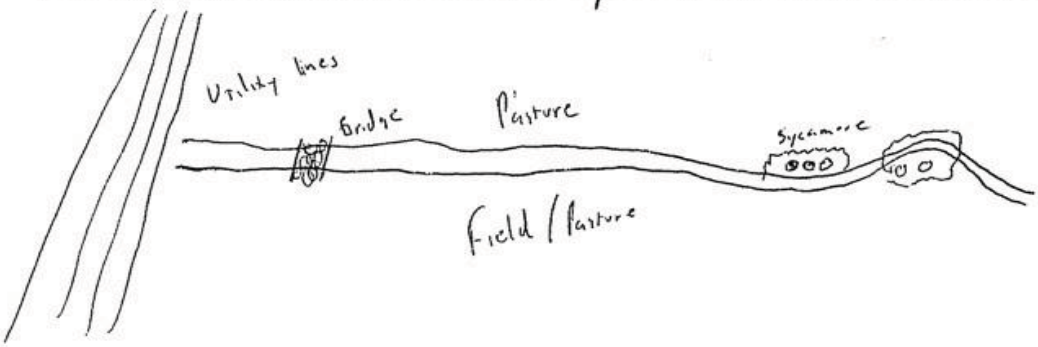
Aesthetic rating (1-10): 4 % Run: 10

Canopy Cover (% Open): 70 % Pool: 80 % Glide:

General QHEI Notes:

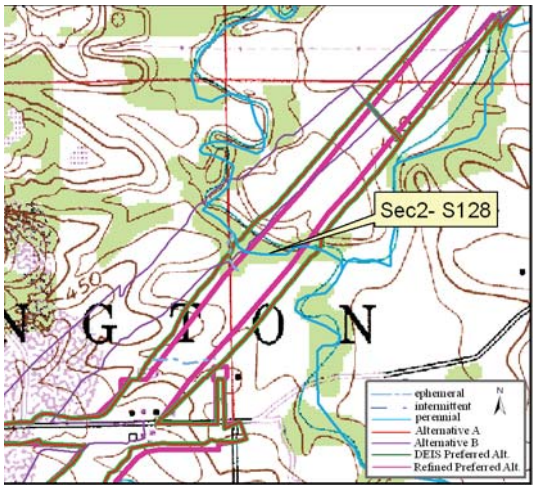
5 up right 6 up left

7 up 8 down

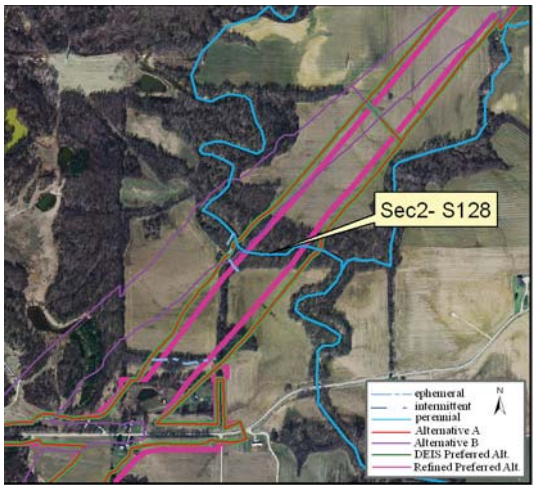


OWQ Biological Studies QHEI

Stream Id-Section 2 S 128



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower E Fork White
Stream Name:	Mud Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 17 T1N R7W	**OHWM Width ft:**	35.0
UTME:	480775	**OHWM Depth ft:**	2.0
UTMN:	4263610	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 128

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Mud Creek	710 feet	0.57 acres	A	QHEI 54.5 / Warmwater Habitat
Mud Creek	176 feet	0.14 acres	B	QHEI 54.5 / Warmwater Habitat
Mud Creek	710 feet	0.57 acres	DEIS Preferred	QHEI 54.5 / Warmwater Habitat
Mud Creek	475 feet	0.38 acres	Refined Preferred	QHEI 54.5 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	54.5
Watershed Area (square miles):	16.13
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-3.15 ac, B-0.72 ac, DP- 3.15 ac, RP-2.11 ac

Stream Sec2S 128

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 128

Field Report

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S128 | bioSample # | Stream Name Mud Creek | Location 480775 E 4263610 N

Surveyor | Sample Date 8/19/05 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 54.5

1-Substrate (20 points maximum) — Substrate Score: 5

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
			X	Cobble(8)					Muck(2)
				Gravel(7)		X			Silt(2)
	X	X		Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 17

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	X High (3)	Snagging	Impound
X Moderate (3)	X Good (5)	Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 8.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); X Moderate 10-50m (3); Narrow 5-10m (2); Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): X Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 8

Max pool depth (check one): >1m (6); X 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum) — Gradient Score: 4

Average width: 35' Gradient 2.46 (ft/mile) Drainage Area: 16.13 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM **QWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)**

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 54.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

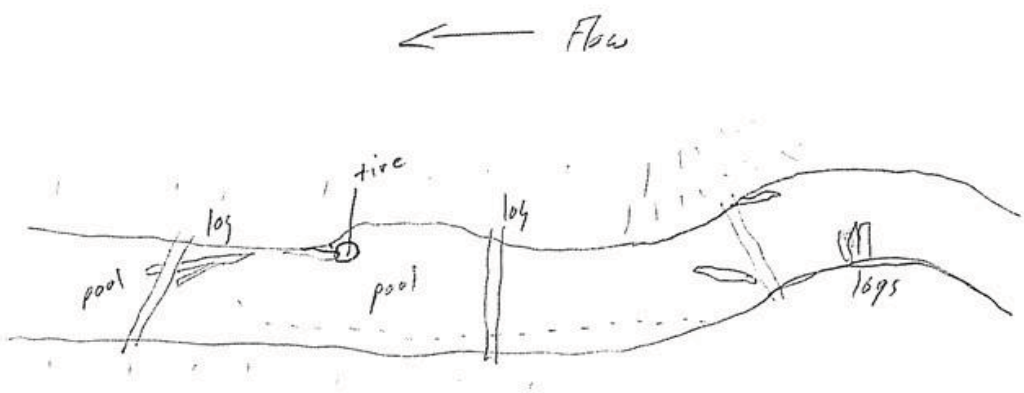
Subjective rating (1-10): 6 % Riffle: 5 *Is reach representative of stream?* Yes

Aesthetic rating (1-10): 7 % Run: 20 % Glide: 25

Canopy Cover (% Open): 30 % Pool: 50

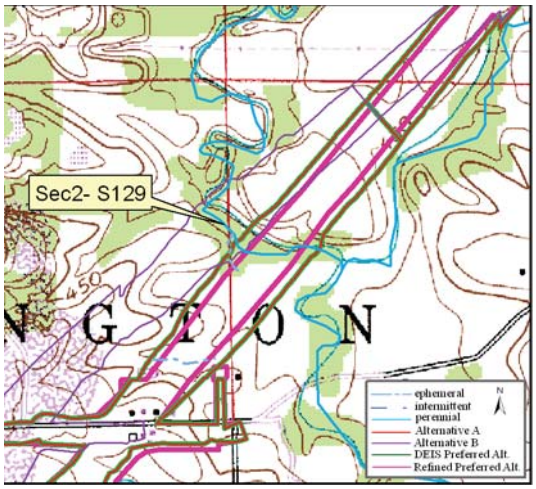
General QHEI Notes:

20 UR 21 UL 22 UP 23 down

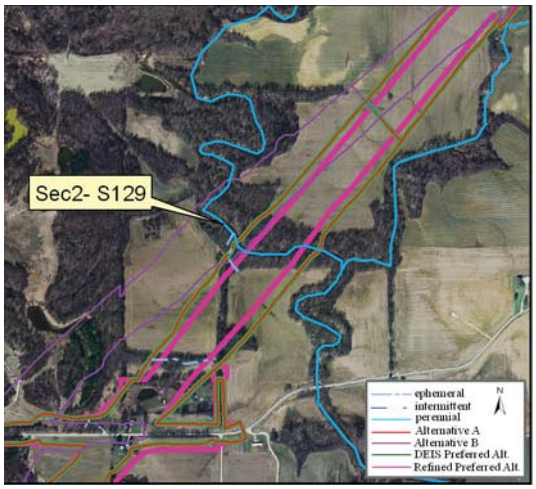


QWQ Biological Studies QHEI

Stream Id-Section 2 S 129



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower E Fork White
Stream Name:	Mud Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 18 T1N R7W	**OHWM Width ft:**	35.0
UTME:	480665	**OHWM Depth ft:**	2.0
UTMN:	4263679	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 129

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Mud Creek	0	0	A	QHEI 58.5 / Warmwater Habitat
Mud Creek	749 feet	0.60 acres	B	QHEI 58.5 / Warmwater Habitat
Mud Creek	0	0	DEIS Preferred	QHEI 58.5 / Warmwater Habitat
Mud Creek	0	0	Refined Preferred	QHEI 58.5 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	58.5
Watershed Area (square miles):	16.15
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-2.37 ac, DP-0, RP-0

Stream Sec2S 129

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 129

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S129 | bioSample # | Stream Name Mud Creek | Location 480665 E 4263679 N

Surveyor SRS NW | Sample Date 8/19/05 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 58.5

1-Substrate (20 points maximum)

Substrate Score: 7

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)						Hardpan(4)		
		Boulders(9)						Detritus(3)	X	X
		Cobble(8)		X				Muck(2)		
		Gravel(7)				X		Silt(2)		X
	X	Sand(6)	X					Sludge(1)		
		Bedrock(5)		X				Artificial(0)		

NOTE: ignore sludge originating from point sources; score based on natural substrates

X >4 substrates present(2)

Comments: Bedrock crops out in upper riffle

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); X Rootwads(1); Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); X Rootmats(1)

Comments:

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 17

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	X High (3)	Snagging	Impound
X Moderate (3)	X Good (5)	Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 8.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality L	Erosion/Runoff-Floodplain quality R	(most predominant per bank)	L	R		Bank Erosion L	Bank Erosion R	(per bank)
	X	Wide >50m (4)	X	X	Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
X		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)	X	X	Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 8

Max pool depth (check one): >1m (6); X 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); X Moderate (1); Intermittent (-2); X Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 4

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); X Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: X Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 35' Gradient: 2.46 (ft/mile) Drainage Area: 16.15 (square miles)

Comments:

OWQ Biological Studies QHEI

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 58.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

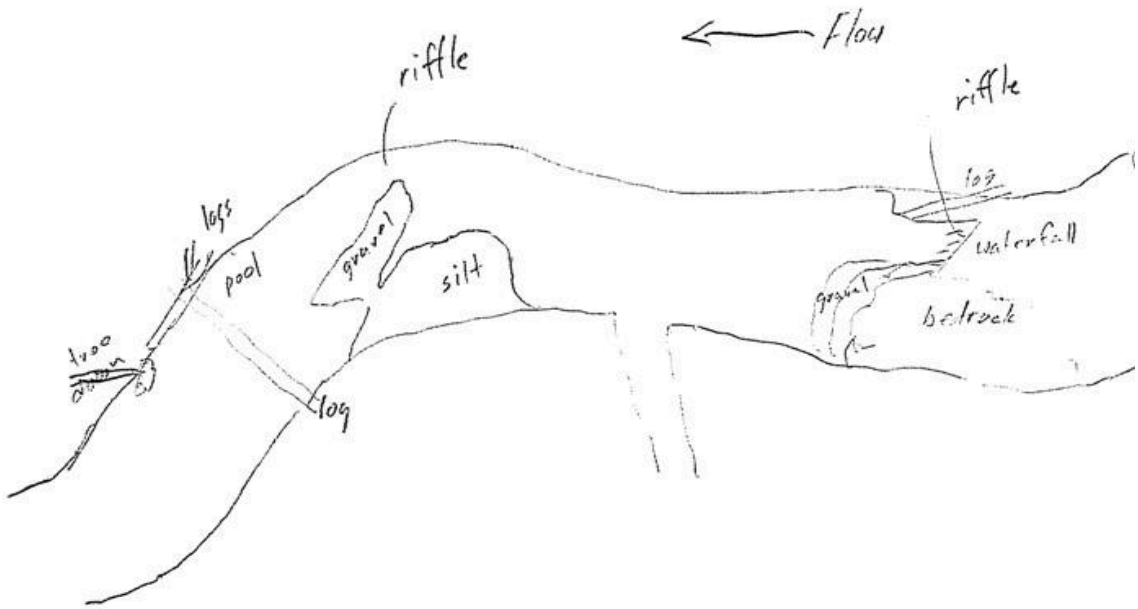
Subjective rating (1-10): 6 % Riffle: 5 *Is reach representative of stream?* Yes

Aesthetic rating (1-10): 7 % Run: 20 % Glide:

Canopy Cover (% Open): 70 % Pool: 65

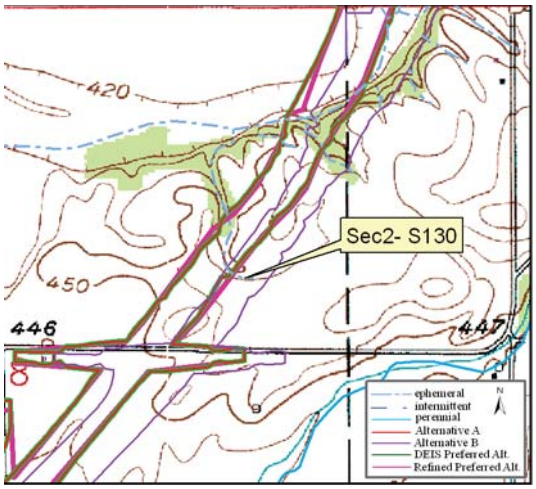
General QHEI Notes:

16 UR 17 OL 18 UP 19 Down

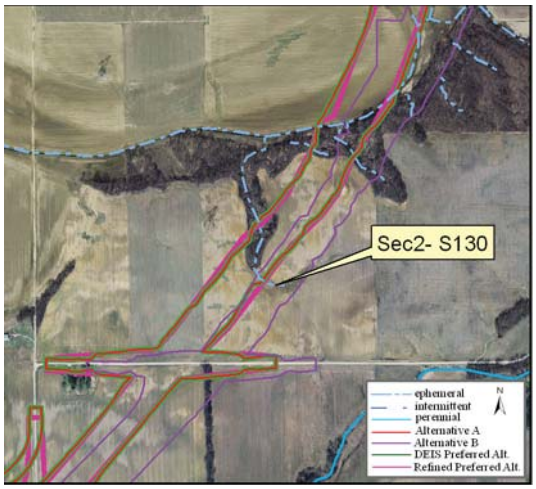


OWQ Biological Studies QHEI

Stream Id-Section 2 S 130



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower E Fork White
Stream Name:	Unnamed Trib E Fork White	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 8 T1N R7W	**OHWM Width ft:**	4.0
UTME:	482023	**OHWM Depth ft:**	0.3
UTMN:	4264988	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 130

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	93 feet	0.01 acres	A	HHEI 37 / Modified Class I
Unnamed Tributary East Fork White River	242 feet	0.02 acres	B	HHEI 37 / Modified Class I
Unnamed Tributary East Fork White River	93 feet	0.01 acres	DEIS Preferred	HHEI 37 / Modified Class I
Unnamed Tributary East Fork White River	106 feet	0.01 acres	Refined Preferred	HHEI 37 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	37
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 130

Site Photographs

ViewUpstream

View Cross stream - upstream right

ViewDownstream

View Cross stream - upstream left

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 37

SITE NAME/LOCATION Unnamed Trib E Fork White SITE NUMBER 130 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT 4264988 LONG 482023 RIVER CODE _____ RIVER MILE _____

DATE 12-15-09 SCORER JK/MR COMMENTS Drainage ditch creek from field

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☒	FINE DETRITUS [3 pts]	5
☐ ☐	COBBLE (65-256 mm) [12 pts]		☒ ☐	CLAY or HARDPAN [0 pt]	10
☐ ☒	GRAVEL (2-64 mm) [9 pts]	5	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40 7

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☒ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3.5cm

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS Narrow on west bank wide on east bank **AVERAGE BANKFULL WIDTH (meters)** 10'

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☒ ☒	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS surrounded by crops

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel. isolated pools. no flow (Intermittent)
☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 1/4/07 Quantity: _____

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: agricultural

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

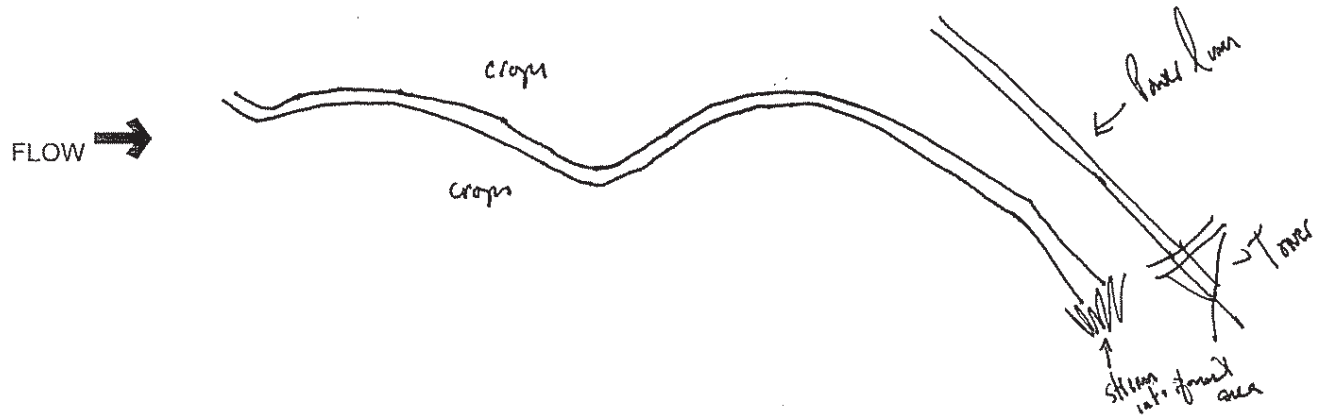
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

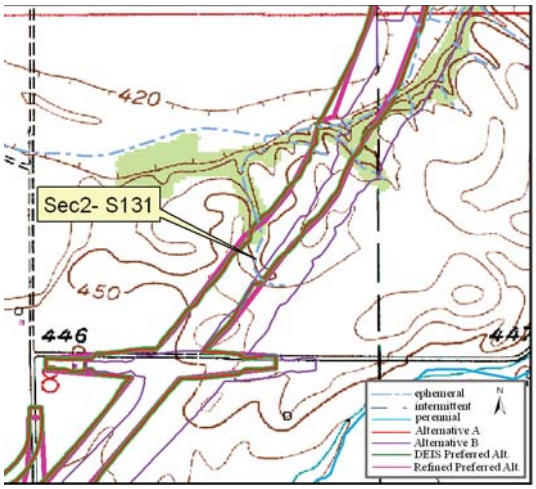
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

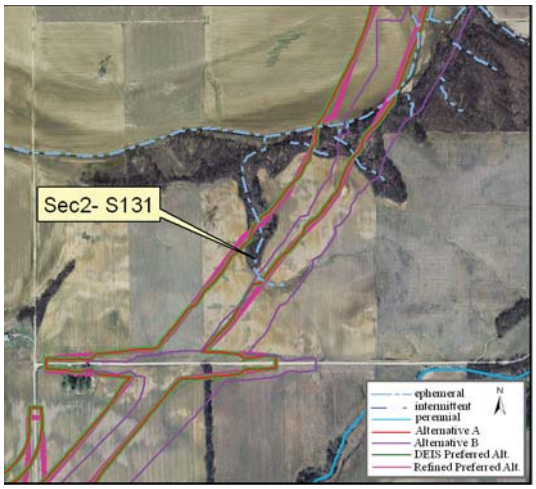
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 131



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower E Fork White
Stream Name:	Unnamed Trib E Fork White	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 8 T1N R7W	**OHWM Width ft:**	10.0
UTME:	481976	**OHWM Depth ft:**	0.8
UTMN:	4265054	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S 131

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	408 feet	0.09 acres	A	HHEI 61 / Modified Class II
Unnamed Tributary East Fork White River	0	0	B	HHEI 61 / Modified Class II
Unnamed Tributary East Fork White River	408 feet	0.09 acres	DEIS Preferred	HHEI 61 / Modified Class II
Unnamed Tributary East Fork White River	372 feet	0.09 acres	Refined Preferred	HHEI 61 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	61
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.30 ac, B-0, DP- 1.30 ac, RP-1.21 ac

Stream Sec2S 131

Site Photographs

View Upstream

View Cross stream - upstream right

View Downstream

View Cross stream - upstream left

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 61

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 131 RIVER BASIN Lower East Fork White DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 481976 LONG. 4265054 RIVER CODE _____ RIVER MILE _____

DATE 12/15/09 SCORER jsk / mtr COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	75%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☒	COBBLE (65-256 mm) **[12 pts]**	5%	☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	5%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	15%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5%

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12cm

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 10'

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☒	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: Washington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 20-21

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

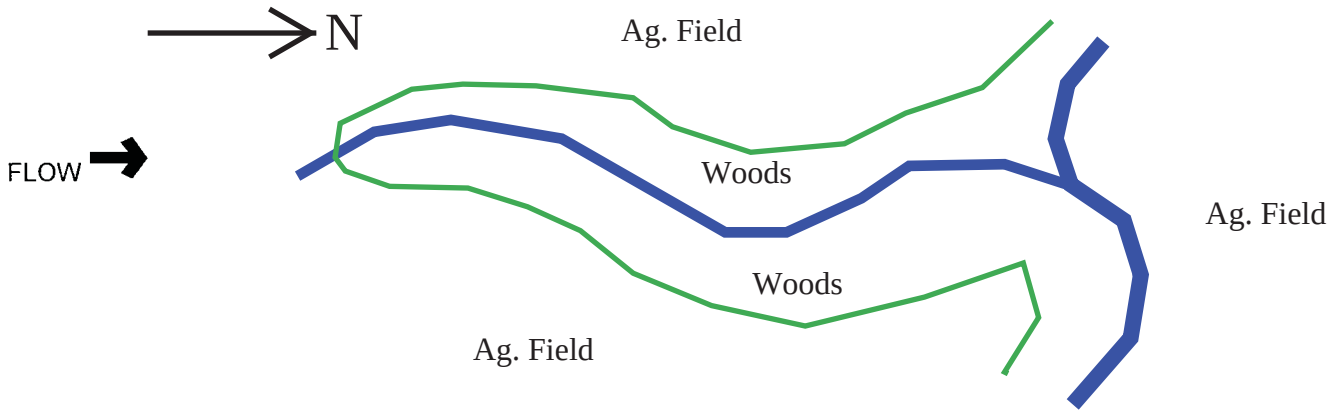
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

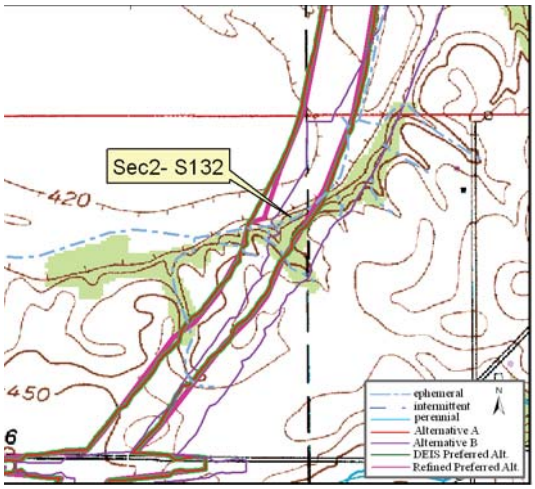
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

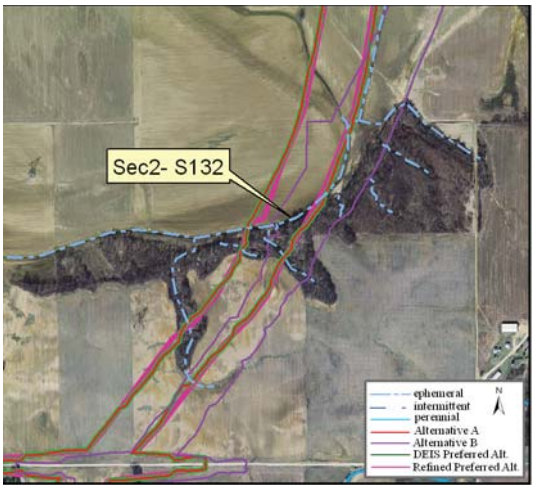
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 132



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 8 T1N R7W	**OHWM Width ft:**	18.0
UTME:	482202	**OHWM Depth ft:**	0.5
UTMN:	4265379	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S132

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	684 feet	0.28 acres	A	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	481 feet	0.20 acres	B	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	684 feet	0.28 acres	DEIS Preferred	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	604 feet	0.25 acres	Refined Preferred	QHEI 31 / Modified Warmwater Habitat

Stream Type:	Ephemeral
Evaluation Type:	QHEI
Evaluation Score:	31.0
Watershed Area (square miles):	0.85
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.48 ac, B-1.24 ac, DP- 1.48 ac, RP-1.29 ac

Stream Sec2S 132

Site Photographs

View Cross stream - upstream left

View Downstream

View Upstream

Stream Sec2S 132

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S132 | bioSample #: | Stream Name: Un Trib E Fork White River | Location: 482202 E 4265379 N

Surveyor: JRB NV | Sample Date: 8/19/05 | County: Pike | Macro SampleType: | Habitat Complete: | QHEI Score: 31

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)			
		Boulders(9)			
		Cobble(8)			
		Gravel(7)			
X		Sand(6)			
		Bedrock(5)			
		Hardpan(4)			
		Detritus(3)			
		Muck(2)			
X		Silt(2)			
		Sludge(1)			
		Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No riffles present in this stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 17

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); X Overhanging vegetation(1); Rootwads(1); Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): X Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 6

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	X Poor (1)	X Recent or no recovery (1)		Dredging	X Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 3

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
X	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 2

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); X <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: No riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); X No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 18' | Gradient: 1.55 (ft/mile) | Drainage Area: 0.85 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 132

IDEM QWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 31

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

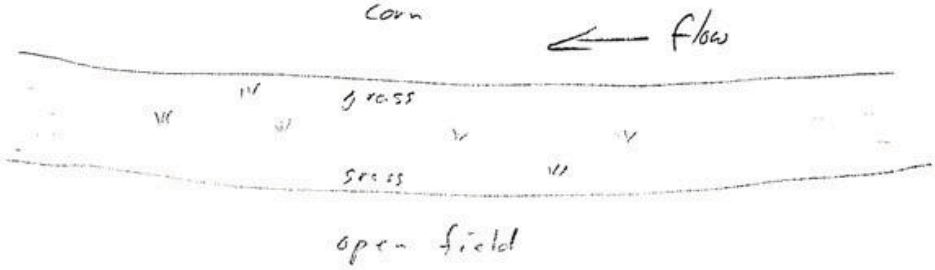
Miscellaneous QHEI Information

Subjective rating (1-10): 1 % Riffle:
Aesthetic rating (1-10): 0 % Run: 100
Canopy Cover (% Open): 100 % Glide:
% Pool:
Is reach representative of stream? Y

General QHEI Notes:

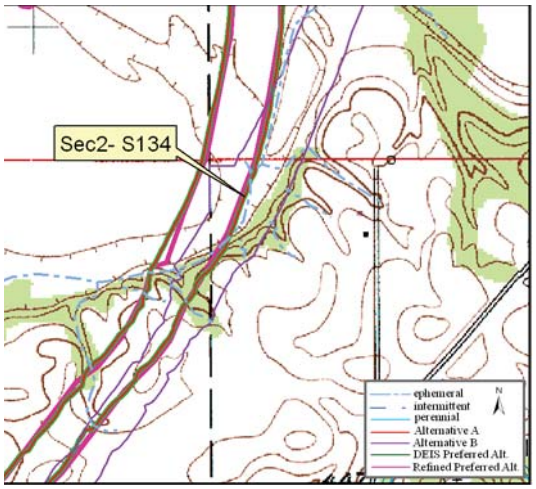
13 UL 14 ~~up~~ down 15 ~~down~~ up

Downstream of 134 more open pool than 134
very little flow — no riffles observed
basically long grassy pool

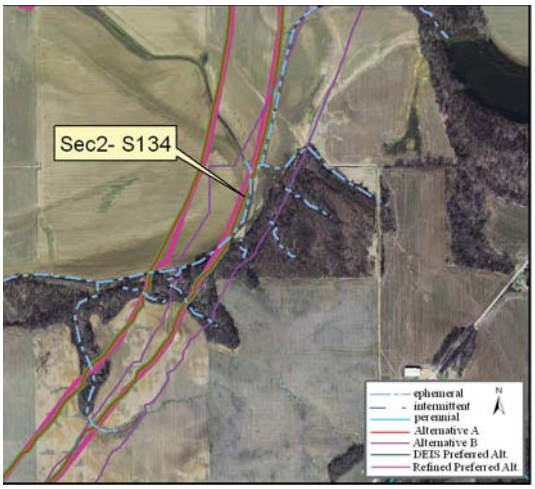


QWQ Biological Studies QHEI

Stream Id-Section 2 S 134



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 9 T1N R7W	**OHWM Width ft:**	18.0
UTME:	482356	**OHWM Depth ft:**	0.5
UTMN:	4265541	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S134

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	106 feet	0.04 acres	A	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	1,462 feet	0.60 acres	B	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	106 feet	0.04 acres	DEIS Preferred	QHEI 31 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	18 feet	0.01 acres	Refined Preferred	QHEI 31 / Modified Warmwater Habitat

Stream Type:	Ephemeral
Evaluation Type:	QHEI
Evaluation Score:	35.0
Watershed Area (square miles):	0.83
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.10 ac, DP-0, RP-0

Stream Sec2S 134

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 134

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
Sec2-S134		Un Trib E Fork White River	482356 E 4265541 N

Surveyor: JRB NV | Sample Date: 8/19/05 | County: Pike | Macro SampleType | ☐ Habitat Complete | **QHEI Score: 31**

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
☐	☐			Bldrs/Slabs(10)	☐	☐			Hardpan(4)
☐	☐			Boulders(9)	☐	☐			Detritus(3)
☐	☐			Cobble(8)	☐	☐			Muck(2)
☐	☐			Gravel(7)	☒	☐			Silt(2)
☒	☐			Sand(6)	☐	☐			Sludge(1)
☐	☐			Bedrock(5)	☐	☐			Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: ☐ Limestone(1) ☐ Hardpan(0) ☐ Lacustrine(0) ☐ Tills(1) ☐ Sandstone(0) ☒ Shale(-1) ☐ Wetlands(0) ☐ Rip/Rap(0) ☐ Coal fines(-2)

Silt Cover: ☐ Silt heavy(-2) ☐ Silt moderate(-1) ☒ Silt normal(0) ☐ Silt free(1)

Embeddedness: ☐ Extensive(-2) ☐ Moderate(-1) ☒ Low/Normal(0) ☐ None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates ☐ >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 17

Type (check ALL that apply): ☐ Undercut banks(1) ☐ Deep pools(2) ☐ Oxbows(1) ☒ Overhanging vegetation(1) ☐ Rootwads(1) ☐ Aquatic macrophytes(1) ☒ Shallows(in slow water)(1) ☐ Boulders(1) ☐ Logs and woody debris(1) ☐ Rootmats(1)

Comments:

Amount (check only 1, or 2 and AVERAGE): ☒ Extensive >75% (11) ☐ Moderate 25-75% (7) ☐ Sparse 5-25% (3) ☐ Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 6

Sinuosity	Development	Channelization	Stability	Modifications/Other	
☐ High (4)	☐ Excellent (7)	☐ None (6)	☐ High (3)	☐ Snagging	☐ Impound
☐ Moderate (3)	☐ Good (5)	☐ Recovered (4)	☒ Moderate (2)	☐ Relocation	☐ Islands
☒ Low (2)	☐ Fair (3)	☐ Recovering (3)	☐ Low (1)	☐ Canopy Removal	☐ Leveed
☐ None (1)	☒ Poor (1)	☒ Recent or no recovery (1)		☐ Dredging	☒ Bank shaping
				☐ One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 3

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
☐	☐	Wide >50m (4)	☐	☐	Forest, Swamp (3)	☐	☐	Conservation Tillage (1)	☒	☒	None or little (3)
☐	☐	Moderate 10-50m (3)	☐	☐	Shrub or Old field (2)	☐	☐	Urban or Industrial (0)	☐	☐	Moderate (2)
☐	☐	Narrow 5-10m (2)	☐	☐	Residential, Park, New field (1)	☐	☐	Mining, Construction (0)	☐	☐	Heavy/Severe (1)
☐	☐	Very narrow <5m (1)	☐	☐	Fenced pasture (1)	☒	☒	Open Pasture/Rowcrop (0)			
☒	☒	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 2

Max pool depth (check one): ☐ >1m (6) ☐ 0.7-1m (4) ☐ 0.4-0.7m (2) ☐ 0.2-0.4m (1) ☒ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): ☐ Pool width > riffle width (2) ☒ Pool width = riffle width (1) ☐ Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): ☐ Eddies (1) ☐ Torrential (-1) ☐ Fast (1) ☐ Interstitial (-1) ☐ Moderate (1) ☐ Intermittent (-2) ☒ Slow (1) ☐ No pool (0)

Comments: No riffle

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): ☐ Generally>10cm, Max>50cm (4) ☐ Generally>10cm, Max<50cm(3) ☐ Generally 5-10cm (1) ☒ Generally<5cm (riffle=0)

Riffle/run substrate: ☐ Stable-e.g. cobble, boulder (2) ☐ Mod. stable-e.g. pea gravel (1) ☒ Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: ☐ Extensive (-1) ☐ Normal/Low (1) ☐ Moderate (0) ☐ None (2) ☒ No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 18' | Gradient: 1.55 (ft/mile) | Drainage Area: 0.83 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 31

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

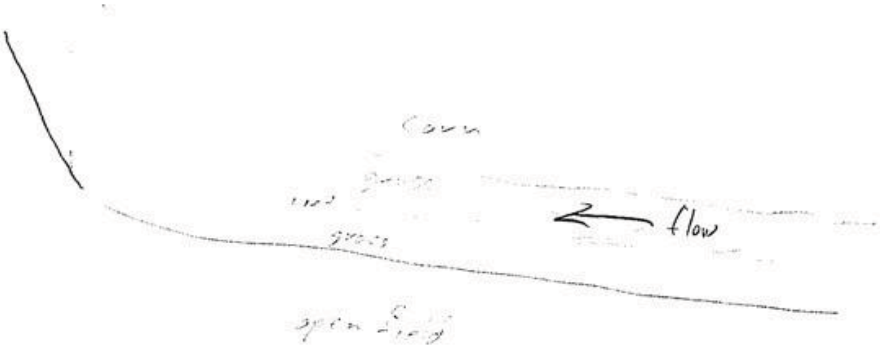
Miscellaneous QHEI Information

Subjective rating (1-10): 1 % Riffle:
Aesthetic rating (1-10): 0 % Run: 100
Canopy Cover (% Open): 100 % Glide:
% Pool:

Is reach representative of stream? Y

General QHEI Notes:

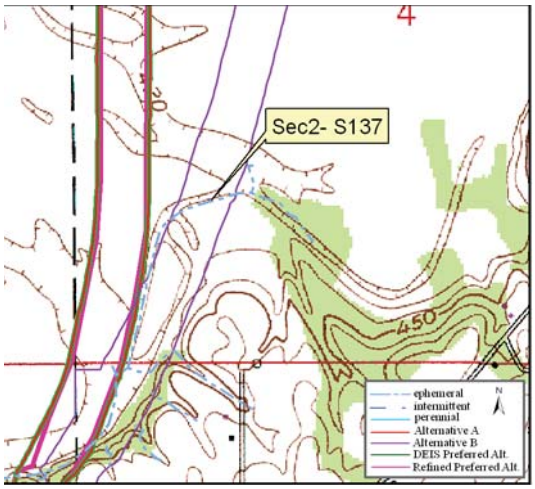
9 UR 10 UL 11 UP 12 Down



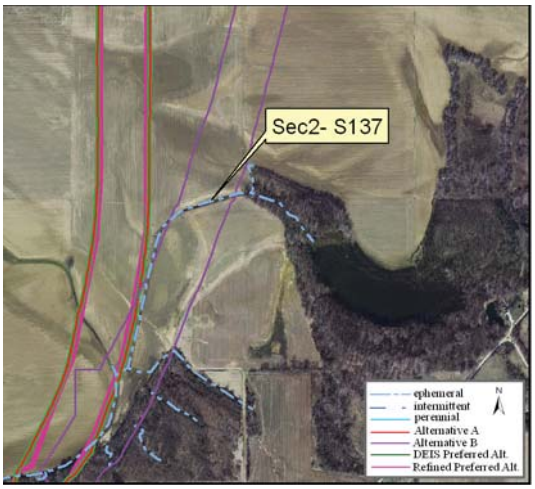
no flow observed
grassy channel
had to part grass cover to see water

OWQ Biological Studies QHEI

Stream Id-Section 2 S 137



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 4 T1N R7W	**OHWM Width ft:**	18.0
UTME:	482568	**OHWM Depth ft:**	0.3
UTMN:	4266013	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S137

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	0	0	A	QHEI 35.5 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	550 feet	0.23 acres	B	QHEI 35.5 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	0	0	DEIS Preferred	QHEI 35.5 / Modified Warmwater Habitat
Unnamed Tributary East Fork White River	0	0	Refined Preferred	QHEI 35.5 / Modified Warmwater Habitat

Stream Type:	Ephemeral
Evaluation Type:	QHEI
Evaluation Score:	35.5
Watershed Area (square miles):	0.58
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 137

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream right

View Cross stream - upstream right

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
Sec2-S137		Un Trib E Fork White River	482568 E 4266013 N

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 35.5
NW	1/8/02	Pike			

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
		X		Gravel(7)	X	X			Silt(2)
		X	X	Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); Shale(-1) X; Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0) X; Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); Low/Normal(0) X; None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); Overhanging vegetation(1) X; Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1) X; Boulders(1); Logs and woody debris(1) X; Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7) X; Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 9

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3) X	Good (5)	Recovered (4)	Moderate (2) X	Relocation	Islands
Low (2)	Fair (3) X	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1) X		Dredging	Bank shaping

Comments:

One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 3.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 4

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1) X; <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2) X; Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1) X; Intermittent (-2); Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 2

Riffle/run depth (check one): Generally>10cm. Max>50cm (4); Generally>10cm. Max<50cm(3); Generally 5-10cm (1) X; Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1) X; Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0) X; None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 16 Gradient: 1.52 (ft/mile) Drainage Area: 0.58 (square miles)

Comments:

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
137			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
NV					35.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 2

Aesthetic rating (1-10): 1

Canopy Cover (% Open): 90

% Riffle: 10

% Run: 80

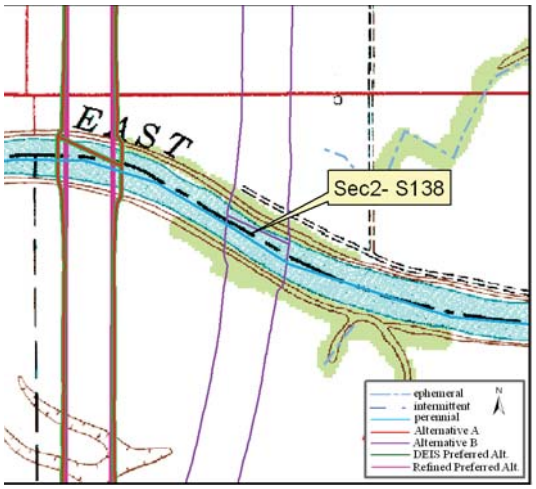
% Glide:

% Pool: 10

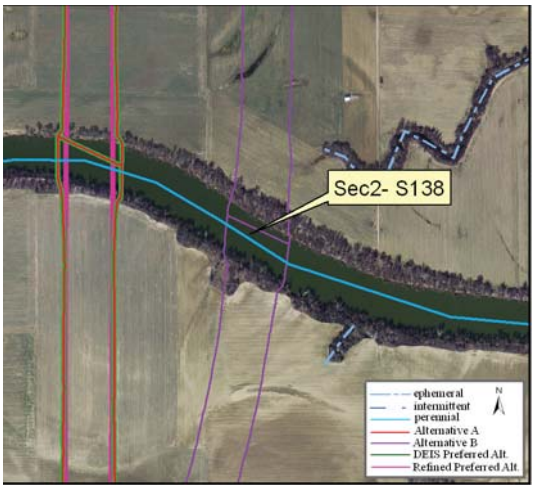
Is reach representative of stream? yes

General QHEI Notes:

Stream Id-Section 2 S 138



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	Yes
PLSS:	NW ¼ Section 4 T1N R7W	**OHWM Width ft:**	390.0
UTME:	482777	**OHWM Depth ft:**	12.00
UTMN:	4266918	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S138

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
East Fork White River	0	0	A	QHEI 43 / Warmwater Habitat
East Fork White River	555 feet	4.97 acres	B	QHEI 43 / Warmwater Habitat
East Fork White River	0	0	DEIS Preferred	QHEI 43 / Warmwater Habitat
East Fork White River	0	0	Refined Preferred	QHEI 43 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	43
Watershed Area (square miles):	5,746.0
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-2.79 ac, DP-0, RP-0

Stream Sec2S 138

Site Photographs

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 138

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S138 | bioSample # | Stream Name: East Fork White River | Location: 482777 E 4266918 N

Surveyor: SRD NV | Sample Date: 8/18/05 | County: Daviess | Macro Sample Type | Habitat Complete | **QHEI Score: 43**

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)						Hardpan(4)			
		Boulders(9)						Detritus(3)			
		Cobble(8)						Muck(2)			
		Gravel(7)	X					Silt(2)	X		
X		Sand(6)						Sludge(1)			
		Bedrock(5)						Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); Shale(-1) X; Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1) X; Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1) X; Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 9

Type (check ALL that apply): Undercut banks(1); Deep pools(2) X; Oxbows(1); Overhanging vegetation(1) X; Rootwads(1) X; Aquatic macrophytes(1) X; Shallows(in slow water)(1) X; Boulders(1); Logs and woody debris(1) X; Rootmats(1) X

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1) X

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6) X	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	Moderate (2) X	Relocation	Islands
Low (2) X	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1) X	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
X	X	Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 9

Max pool depth (check one): >1m (6) X; 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1) X; Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); Moderate (1) X; Intermittent (-2); Slow (1) X; No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm. Max>50cm (4); Generally>10cm. Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); No riffle (0) X

Comments: No riffle

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 390 | Gradient: 20.5 (ft/mile) | Drainage Area: 11123 (square miles)

Comments: 5,746 (Drainage refigured from aerial)

Stream Sec2S 138

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 43

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

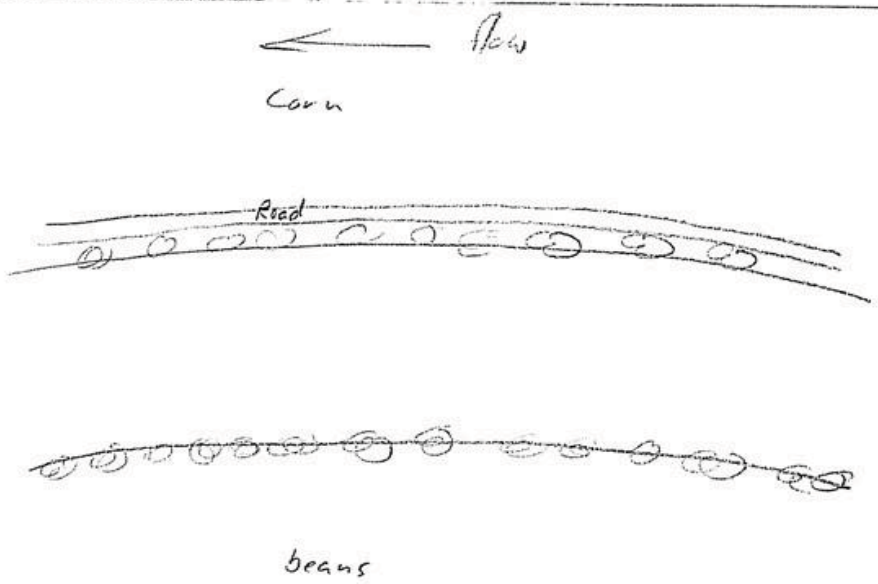
Miscellaneous QHEI Information

Subjective rating (1-10): 6
Aesthetic rating (1-10): 5
Canopy Cover (% Open): 98

% Riffle: 0
% Run: 0
% Glide: 100
% Pool:

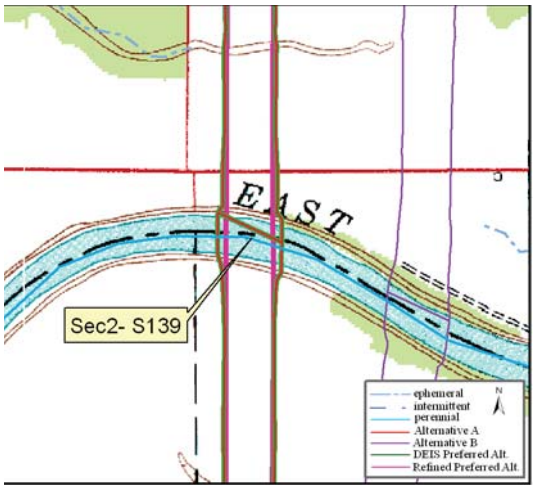
Is reach representative of stream? Yes

General QHEI Notes:

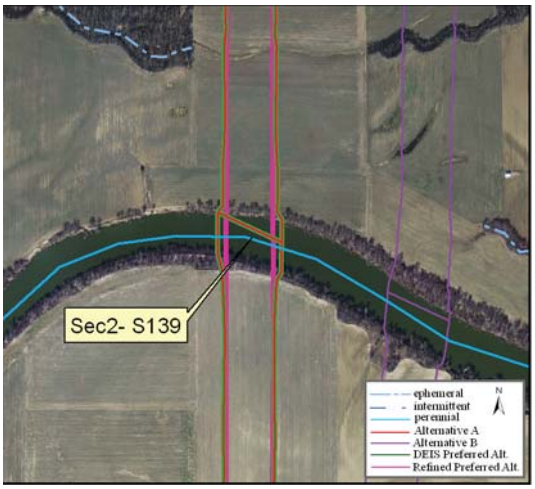


OWQ Biological Studies QHEI

Stream Id-Section 2 S 139



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	Yes
PLSS:	NW ¼ Section 4 T1N R7W	**OHWM Width ft:**	390.0
UTME:	482380	**OHWM Depth ft:**	12.00
UTMN:	4267112	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S139

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
East Fork White River	512 feet	4.58 acres	A	QHEI 43 / Warmwater Habitat
East Fork White River	0	0	B	QHEI 43 / Warmwater Habitat
East Fork White River	512 feet	4.58 acres	DEIS Preferred	QHEI 43 / Warmwater Habitat
East Fork White River	377 feet	3.38 acres	Refined Preferred	QHEI 43 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	43
Watershed Area (square miles):	5,746.0
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.84 ac, B-0, DP-1.84 ac, RP-1.40 ac

Stream Sec2S 139

Site Photographs

View Cross stream - upstream left

View Upstream

View Downstream

IDEM — **OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)**

Sample #: Sec2-S139 | bioSample #: | Stream Name: East Fork White River | Location: 482380 E 4267112 N

Surveyor: JRB NV | Sample Date: 8/18/05 | County: Daviess | Macro SampleType: | Habitat Complete: | **QHEI Score: 43**

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)					Hardpan(4)		
		Boulders(9)					Detritus(3)		
		Cobble(8)					Muck(2)		
		Gravel(7)	X				Silt(2)	X	
X		Sand(6)					Sludge(1)		
		Bedrock(5)					Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 9

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); X Rootwads(1); X Aquatic macrophytes(1); X Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); X Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); X Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	X Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
X	X	Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 9

Max pool depth (check one): X >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); X Moderate (1); Intermittent (-2); X Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Normal/Low (1); Moderate (0); None (2); X No riffle (0)

Comments: No riffle

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 390 | Gradient: <0.5 (ft/mile) | Drainage Area: 1123 (square miles)

Comments:

Stream Sec2S 139

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 43

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

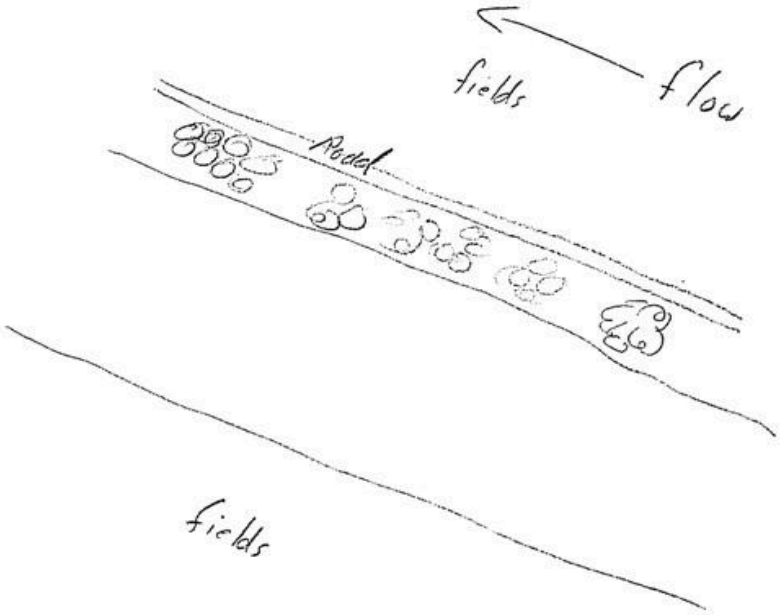
Subjective rating (1-10): 6 | % Riffle: 0 | Is reach representative of stream? yes

Aesthetic rating (1-10): 5 | % Run: 0

% Glide: 100

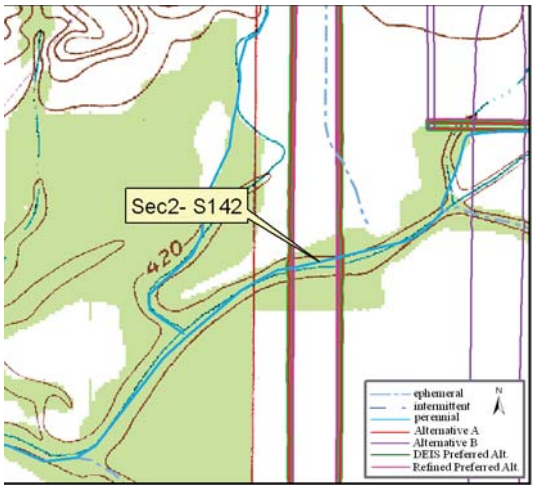
Canopy Cover (% Open): 98 | % Pool:

General QHEI Notes:

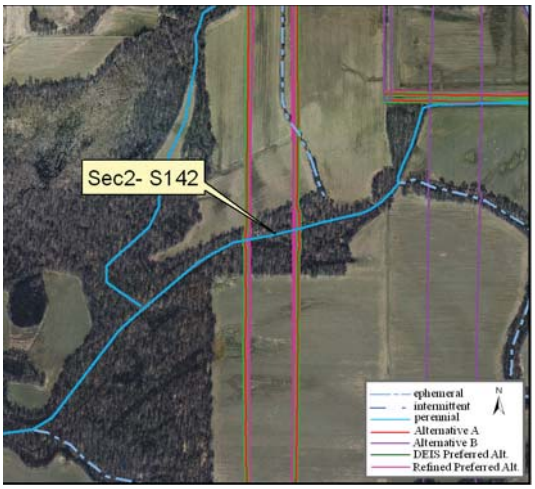


OWQ Biological Studies QHEI

Stream Id-Section 2 S 142



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	27.0
UTME:	482384	**OHWM Depth ft:**	2.00
UTMN:	4268185	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S142

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	434 feet	0.27 acres	A	QHEI 34 / Warmwater Habitat
Unnamed Tributary Jackson Pond	0	0	B	QHEI 34 / Warmwater Habitat
Unnamed Tributary Jackson Pond	434 feet	0.27 acres	DEIS Preferred	QHEI 34 / Warmwater Habitat
Unnamed Tributary Jackson Pond	369 feet	0.23 acres	Refined Preferred	QHEI 34 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	34
Watershed Area (square miles):	2.48
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.97 ac, B-0, DP- 1.97 ac, RP-1.69 ac

Stream Sec2S 142

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S142 | bioSample #: | Stream Name: Jackson Pond Trib | Location: 482384 E 4268185 N

Surveyor: | Sample Date: 8/18/05 | County: Daviess | Macro SampleType: | Habitat Complete: | QHEI Score: 34

1-Substrate (20 points maximum)

Substrate Score: -1

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)		
		Boulders(9)		
		Cobble(8)		
		Gravel(7)		
		Sand(6)		
		Bedrock(5)		
		Hardpan(4)		
		Detritus(3)	X	
		Muck(2)		X
X		Silt(2)		
		Sludge(1)		
		Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: X Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No riffle present in this stream reach

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); Shallows(in slow water)(1); Rootmats(1); Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments: Wetland plants

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	X Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 10

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality L	Erosion/Runoff-Floodplain quality R	(most predominant per bank)	L	R		Bank Erosion L	Bank Erosion R	(per bank)
X	X	Wide >50m (4)	X	X	Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 2

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: No flow No water

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments: No riffle

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 25-30 | Gradient: 0.97 (ft/mile) | Drainage Area: 2.48 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 142

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 34

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [X] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

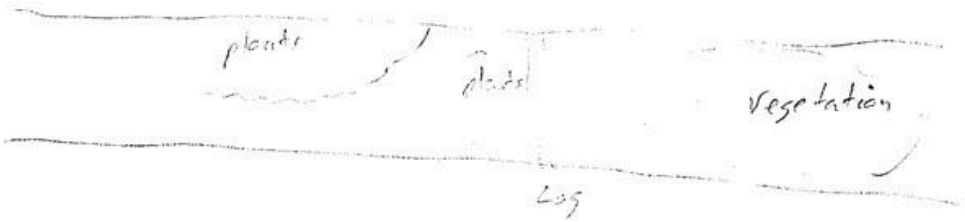
Miscellaneous QHEI Information

Subjective rating (1-10): 1 % Riffle:
Aesthetic rating (1-10): 1 % Run:
Canopy Cover (% Open): 10 % Glide:
% Pool:

Is reach representative of stream? Yes

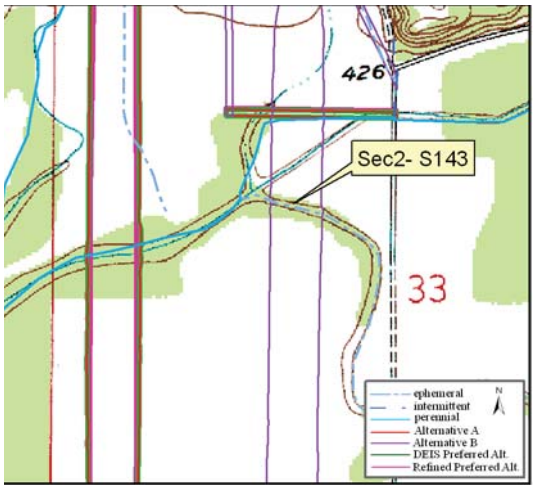
General QHEI Notes:

44 UR 45 UL 46 UP 47 Downs

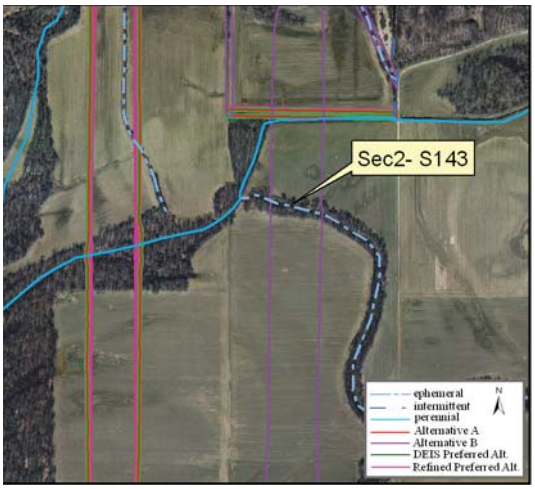


OWQ Biological Studies QHEI

Stream Id-Section 2 S 143



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	20.0
UTME:	482817	**OHWM Depth ft:**	2.30
UTMN:	4268288	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S143

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	QHEI 24.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	423 feet	0.19 acres	B	QHEI 24.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	QHEI 24.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	QHEI 24.5 / Modified Warmwater Habitat

Stream Type:	Ephemeral
Evaluation Type:	QHEI
Evaluation Score:	24.5
Watershed Area (square miles):	0.80
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-1.61 ac, DP-0, RP-0

Stream Sec2S 143

Site Photographs

View Cross stream - upstream left

View Upstream

View Downstream

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S143 | bioSample #: | Stream Name: Jackson Pond Trib | Location: 482817 E 4268288 N

Surveyor: JBJ MW | Sample Date: 8/18/05 | County: Daviess | Macro SampleType: | Habitat Complete: | QHEI Score: 24.5

1-Substrate (20 points maximum)

Substrate Score: -2

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)	X				Silt(2)
				Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: X Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: No riffle, all pool

2-Instream Cover (20 points maximum

Instream Cover Score: 7

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); Rootmats(1); Deep pools(2); X Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 8

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
X Low (2)	Fair (3)	X Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	X Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
X		Moderate 10-50m (3)	X	X	Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
	X	Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 2

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); X <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); X Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments: None

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 20 ft | Gradient: 0.97 (ft/mile) | Drainage Area: 0.80 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 143

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 24.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [x] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 2 | % Riffle: 0 | Is reach representative of stream? Y

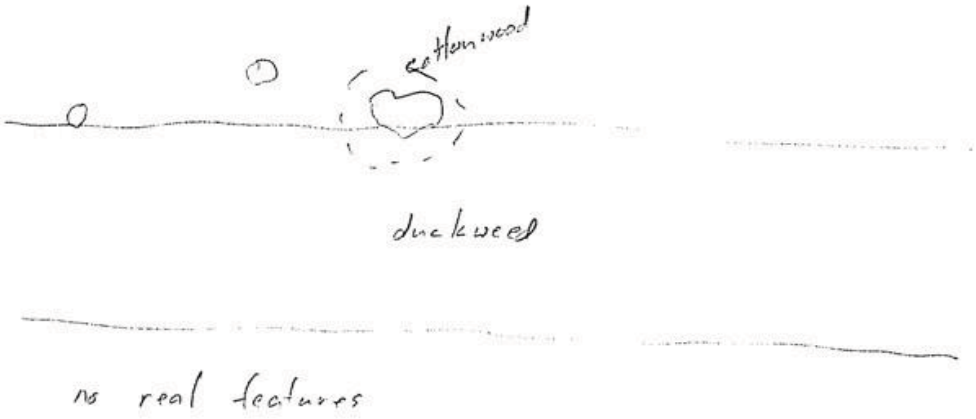
Aesthetic rating (1-10): 3 | % Run: 0

% Glide: 0

Canopy Cover (% Open): 80 | % Pool: 100

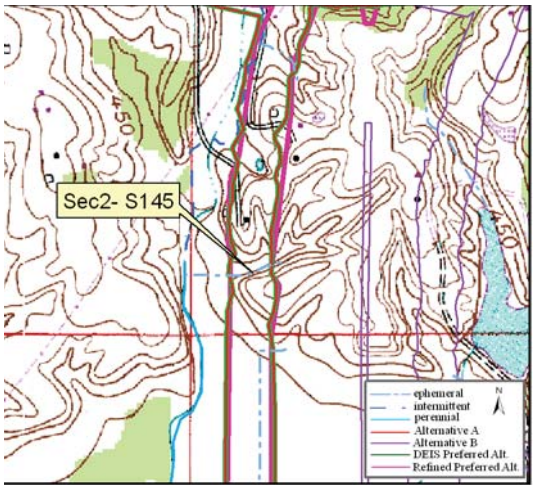
General QHEI Notes:

41 UL 42 UP 43 Down

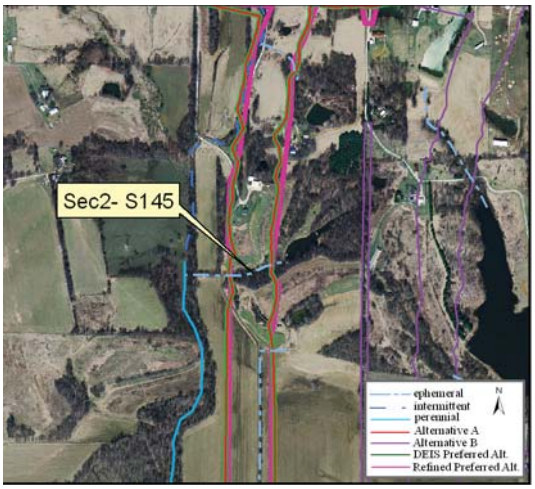


OWQ Biological Studies QHEI

Stream Id-Section 2 S 145



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 28 T2N R7W	**OHWM Width ft:**	1.5
UTME:	482387	**OHWM Depth ft:**	0.50
UTMN:	4269060	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S145

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	348 feet	0.01 acres	A	HHEI 18 / Class I
Unnamed Tributary Jackson Pond	0	0	B	HHEI 18 / Class I
Unnamed Tributary Jackson Pond	348 feet	0.01 acres	DEIS Preferred	HHEI 18 / Class I
Unnamed Tributary Jackson Pond	340 feet	0.01 acres	Refined Preferred	HHEI 18 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.88 ac, B-0, DP-0.88 ac, RP-0.89 ac

Stream Sec2S 145

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S145 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT 4269060 LONG 482387 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRD NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	10
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	60	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☒	Open Pasture. Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hood NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 33 UR 34 UL 35 UP 36 Down

Elevated Turbidity? (Y/N): N Canopy (% open): 80

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

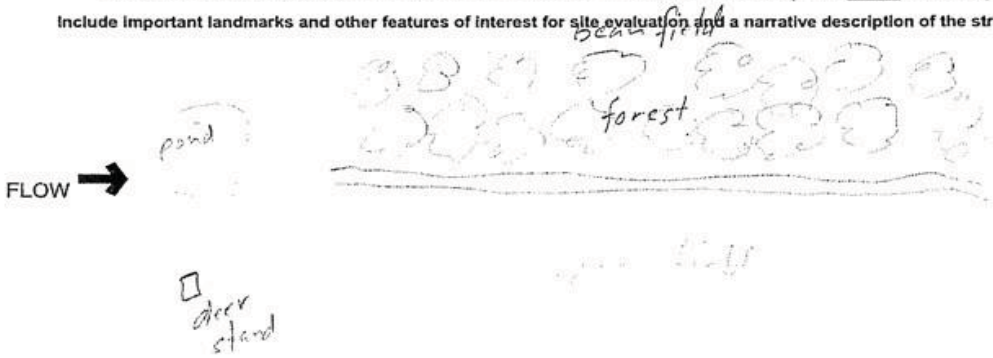
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

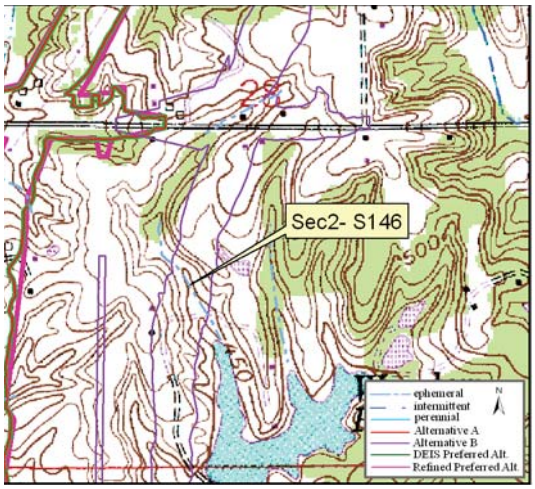
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

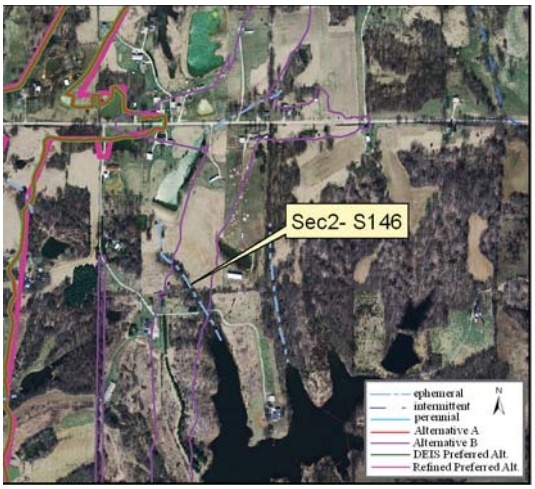
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 146



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 28 T2N R7W	**OHWM Width ft:**	4.0
UTME:	482873	**OHWM Depth ft:**	0.40
UTMN:	4269346	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S146

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	495 feet	0.05 acres	B	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 27 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	27
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-1.58 ac, DP-0, RP-0

Stream Sec2S 146

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 146

Field Report

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S146 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT 4269346 LONG 482873 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRO NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	10
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	90	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4'

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 37 UR 38 UL 39 UP 40 Down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 60%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

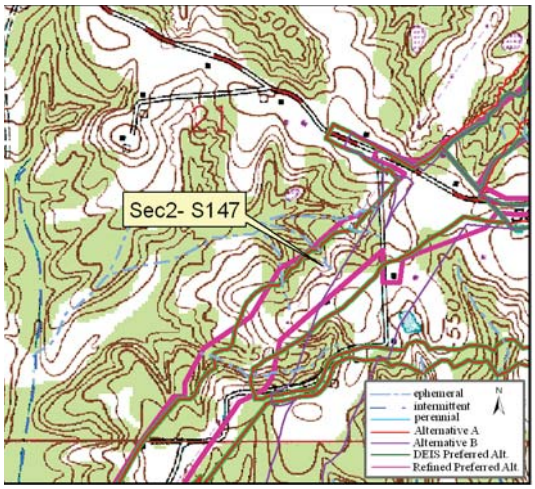
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

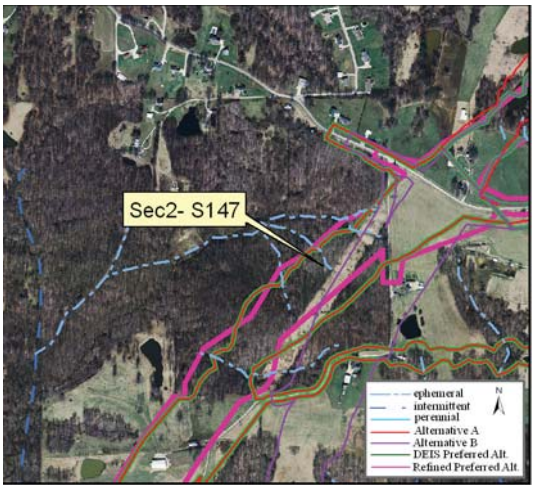
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Stream Id-Section 2 S 147



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	1.5
UTME:	483342	**OHWM Depth ft:**	0.30
UTMN:	4270969	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S147

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	236 feet	0.01 acres	A	HHEI 33 / Class I
Unnamed Tributary Jackson Pond	0	0	B	HHEI 33 / Class I
Unnamed Tributary Jackson Pond	236 feet	0.01 acres	DEIS Preferred	HHEI 33 / Class I
Unnamed Tributary Jackson Pond	285 feet	0.01 acres	Refined Preferred	HHEI 33 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	33
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.07 ac, B-0, DP- 1.07 ac, RP-1.19 ac

Stream Sec2S 147

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 33

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S147 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 4270969 LONG 483342 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER TDB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	10	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pts]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble, Bedrock 10 (A) 9 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 3cm

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☒ ☒	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☐ ☐	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 9 UR 10 UL 11 up 12 down

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: Upstream 100' is in Powerline ROW downstream in mature forest

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

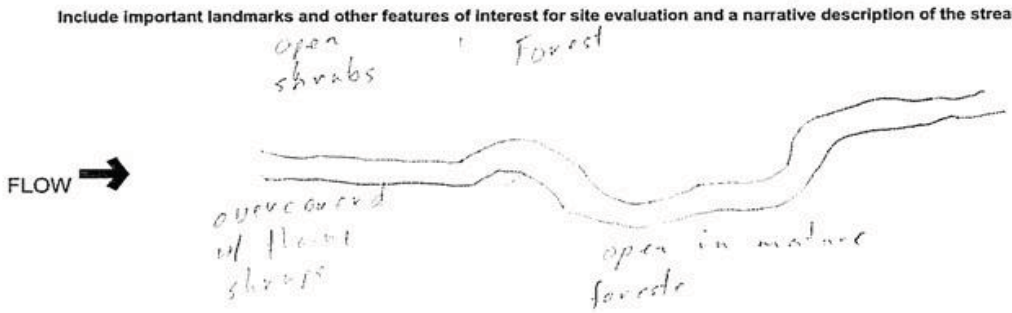
Performed? (Y/N): _____ (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

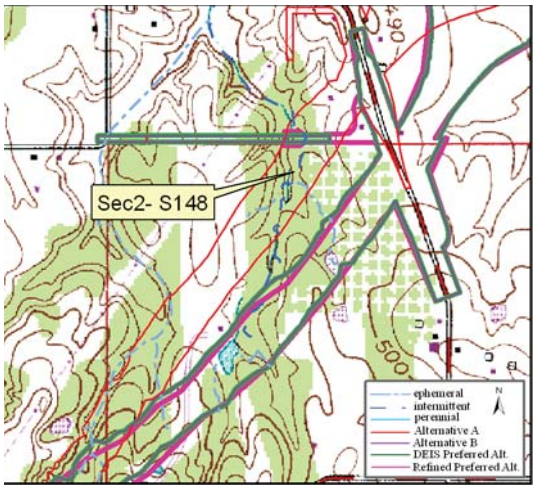
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

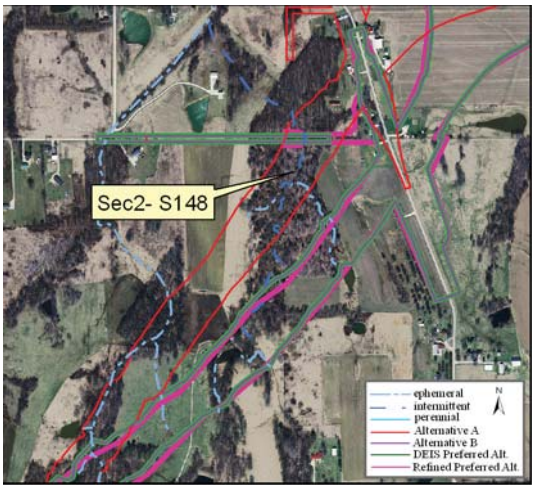
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 148



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	14.0
UTME:	484341	**OHWM Depth ft:**	0.5
UTMN:	4272104	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S148

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	1,303 feet	0.42 acres	A	HHEI 68 / Class III
Unnamed Tributary Veale Creek	67 feet	0.02 acres	B	HHEI 68 / Class III
Unnamed Tributary Veale Creek	67 feet	0.02 acres	DEIS Preferred	HHEI 68 / Class III
Unnamed Tributary Veale Creek	79 feet	0.03 acres	Refined Preferred	HHEI 68 / Class III

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	68
Watershed Area (square miles):	0.20
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-5.14 ac, B-0.28 ac, DP- 0.28 ac, RP-0.47ac

Stream Sec2S 148

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 148

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 68

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S148 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.20

LENGTH OF STREAM REACH (ft) 200 LAT 4272104 LONG 484341 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRB NM COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	20
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☒	BEDROCK [16 pt]	10	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	20	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	50	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble, Bedrock 10 (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 15cm

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☒ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 14'

Bankfull Width Max=30: 30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☒ ☒	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☒ ☒	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☐ ☐	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☒ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18 Quantity: _____

Photograph Information: 1 UR 2 UL 3 UP 4 Down

Elevated Turbidity? (Y/N): N Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

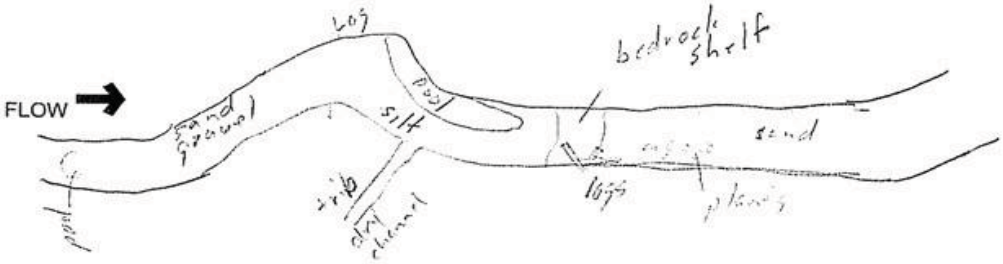
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

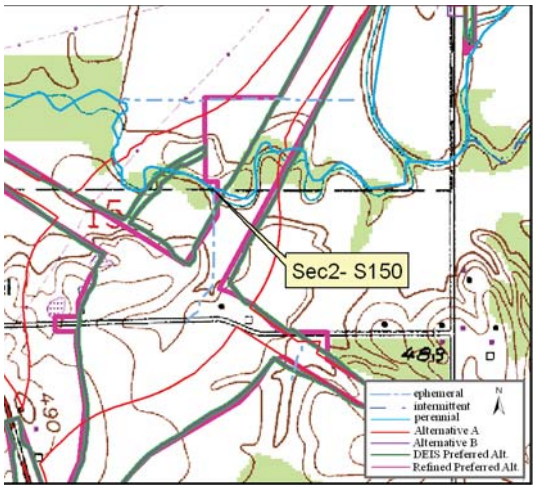
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

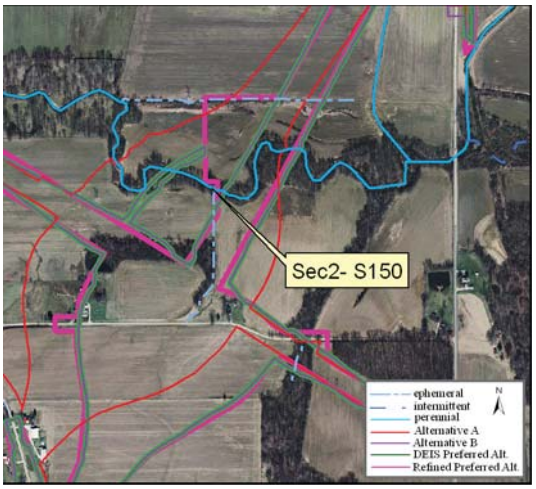
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 150



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	34.0
UTME:	484953	**OHWM Depth ft:**	2.3
UTMN:	4272994	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S150

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Veale Creek	1,449 feet	1.13 acres	A	QHEI 56 / Warmwater Habitat
Veale Creek	318 feet	0.25 acres	B	QHEI 56 / Warmwater Habitat
Veale Creek	318 feet	0.25 acres	DEIS Preferred	QHEI 56 / Warmwater Habitat
Veale Creek	310 feet	0.24 acres	Refined Preferred	QHEI 56 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	56.0
Watershed Area (square miles):	7.85
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-4.37 ac, B-1.34 ac, DP- 1.34 ac, RP-1.21 ac

Stream Sec2S 150

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 150

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S150 | bioSample # | Stream Name Veales Ck | Location 484953 E 4272994 N

Surveyor JRD NV | Sample Date 8/17/05 | County Daviess | Macro SampleType | ☐ Habitat Complete | QHEI Score: 56

1-Substrate (20 points maximum)

Substrate Score: 13

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
☐	☐	☐	☐	Bldrs/Slabs(10)	☐	☐	☐	☐	Hardpan(4)
☐	☐	☐	☐	Boulders(9)	☐	☐	X	☐	Detritus(3)
☐	☐	☐	☐	Cobble(8)	☐	☐	☐	☐	Muck(2)
☐	X	X	☐	Gravel(7)	☐	☐	X	X	Silt(2)
X	☐	☐	☐	Sand(6)	☐	☐	☐	☐	Sludge(1)
☐	☐	☐	☐	Bedrock(5)	☐	☐	☐	☐	Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: ☐ Limestone(1) ☐ Hardpan(0) ☐ Lacustrine(0) ☐ Tills(1) X Sandstone(0) ☐ Shale(-1) ☐ Wetlands(0) ☐ Rip/Rap(0) ☐ Coal fines(-2)

Silt Cover: ☐ Silt heavy(-2) ☐ Silt moderate(-1) X Silt normal(0) ☐ Silt free(1)

Embeddedness: ☐ Extensive(-2) ☐ Moderate(-1) X Low/Normal(0) ☐ None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply)

☐ Undercut banks(1) X Deep pools(2) ☐ Oxbows(1)
X Overhanging vegetation(1) X Rootwads(1) ☐ Aquatic macrophytes(1)
X Shallows(in slow water)(1) ☐ Boulders(1) X Logs and woody debris(1)
X Rootmats(1)

Comments:

Amount (check only 1, or 2 and AVERAGE)

☐ Extensive >75% (11)
☐ Moderate 25-75% (7)
X Sparse 5-25% (3)
☐ Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 16

Sinuosity	Development	Channelization	Stability	Modifications/Other	
☐ High (4)	☐ Excellent (7)	X None (6)	X High (3)	☐ Snagging	☐ Impound
☐ Moderate (3)	X Good (5)	☐ Recovered (4)	☐ Moderate (2)	☐ Relocation	☐ Islands
X Low (2)	☐ Fair (3)	☐ Recovering (3)	☐ Low (1)	☐ Canopy Removal	☐ Leveed
☐ None (1)	☐ Poor (1)	☐ Recent or no recovery (1)		☐ Dredging	☐ Bank shaping
				☐ One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): ☐ Wide >50m (4) ☐ Moderate 10-50m (3) ☐ Narrow 5-10m (2) ☐ Very narrow <5m (1) ☐ None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): X Forest, Swamp (3) ☐ Shrub or Old field (2) ☐ Residential, Park, New field (1) ☐ Fenced pasture (1) ☐ Conservation Tillage (1) ☐ Urban or Industrial (0) ☐ Mining, Construction (0) X Open Pasture/Rowcrop (0)

Bank Erosion (per bank): X None or little (3) ☐ Moderate (2) ☐ Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 6

Max pool depth (check one): ☐ >1m (6) ☐ 0.7-1m (4) X 0.4-0.7m (2) ☐ 0.2-0.4m (1) ☐ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2) ☐ Pool width = riffle width (1) ☐ Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): ☐ Eddies (1) ☐ Fast (1) X Moderate (1) X Slow (1) ☐ Torrential (-1) ☐ Interstitial (-1) ☐ Intermittent (-2) ☐ No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 1

Riffle/run depth (check one): ☐ Generally>10cm, Max>50cm (4) ☐ Generally>10cm, Max<50cm(3) X Generally 5-10cm (1) ☐ Generally<5cm (riffle=0)

Riffle/run substrate: ☐ Stable-e.g. cobble, boulder (2) ☐ Mod. stable-e.g. pea gravel (1) X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: ☐ Extensive (-1) X Moderate (0) ☐ Normal/Low (1) ☐ None (2) ☐ No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 34 Gradient: 1.76 (ft/mile) Drainage Area: 7.85 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 150

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 56

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

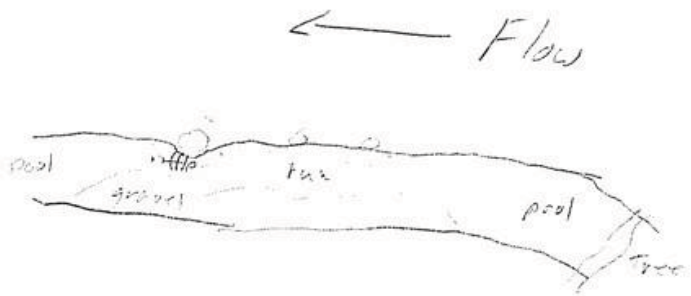
Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 5 % Riffle:
Aesthetic rating (1-10): 5 % Run:
Canopy Cover (% Open): 50 % Glide:
% Pool:

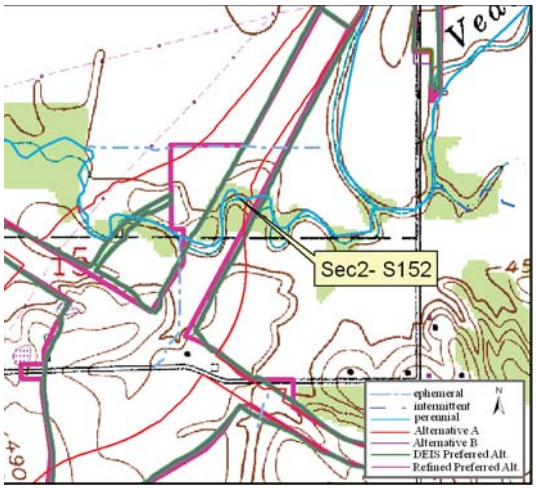
Is reach representative of stream? Y

General QHEI Notes:

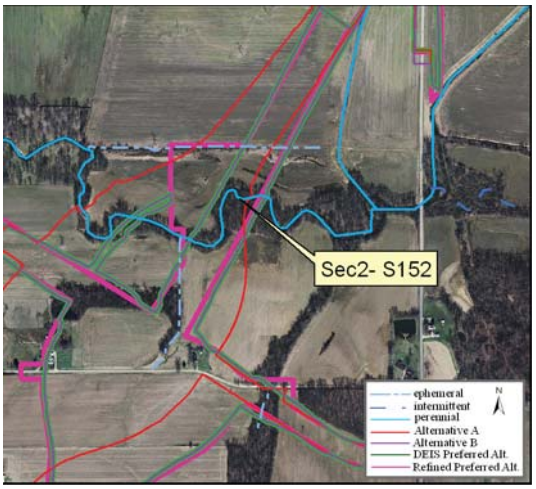


OWQ Biological Studies QHEI

Stream Id-Section 2 S 152



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	34.0
UTME:	485101	**OHWM Depth ft:**	2.3
UTMN:	4273083	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S152

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Veale Creek	876 feet	0.68 acres	A	QHEI 56 / Warmwater Habitat
Veale Creek	1,004 feet	0.78 acres	B	QHEI 56 / Warmwater Habitat
Veale Creek	1,005 feet	0.78 acres	DEIS Preferred	QHEI 56 / Warmwater Habitat
Veale Creek	706 feet	0.55 acres	Refined Preferred	QHEI 56 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	56
Watershed Area (square miles):	7.79
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-2.03 ac, B-2.51 ac, DP-2.51 ac, RP-2.37 ac

Stream Sec2S 152

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 152

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S152 | bioSample # | Stream Name Yellow Creek | Location 485401 E 4273083 N

Surveyor 126/104 | Sample Date 8/17/05 | County Bowers | Macro SampleType | Habitat Complete | QHEI Score: 56

1-Substrate (20 points maximum)

Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
			X	Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Tills(1); Wetlands(0); Hardpan(0); Sandstone(0) X; Rip/Rap(0); Lacustrine(0); Shale(-1); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0) X; Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1) X; Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 13

Type (check ALL that apply): Undercut banks(1); Overhanging vegetation(1) X; Shallows(in slow water)(1); Rootmats(1); Deep pools(2) X; Rootwads(1) X; Boulders(1); Oxbows(1); Aquatic macrophytes(1) X; Logs and woody debris(1) X

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7) X; Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 15

Sinuosity: High (4); Moderate (3); Low (2); None (1) X

Development: Excellent (7); Good (5) X; Fair (3); Poor (1)

Channelization: None (6) X; Recovered (4); Recovering (3); Recent or no recovery (1)

Stability: High (3) X; Moderate (2); Low (1)

Modifications/Other: Snagging; Relocation; Canopy Removal; Dredging; Impound; Islands; Leveed; Bank shaping; One side channel modifications

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); Moderate 10-50m (3) X; Narrow 5-10m (2); Very narrow <5m (1) X; None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3) X; Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); Open Pasture/Rowcrop (0) X

Bank Erosion (per bank): None or little (3) X; Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 6

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2) X; 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2) X; Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1) X; Slow (1) X; Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1) X; Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0) X

Riffle/run embeddedness: Extensive (-1); Moderate (0) X; Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 34 | Gradient 1.76 (ft/mile) | Drainage Area: 7.79 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 152

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
152			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
JDR/MV					56

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 5 % Riffle: 10 *Is reach representative of stream?*

Aesthetic rating (1-10): 4 % Run: 45

% Glide:

Canopy Cover (% Open): 40 % Pool: 45

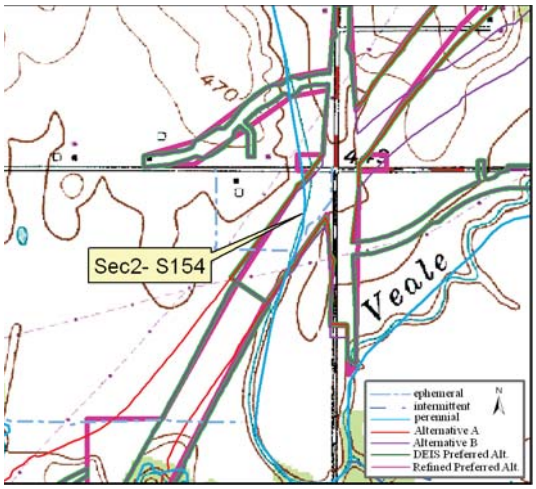
General QHEI Notes:

45 up to upst 46 from to upst

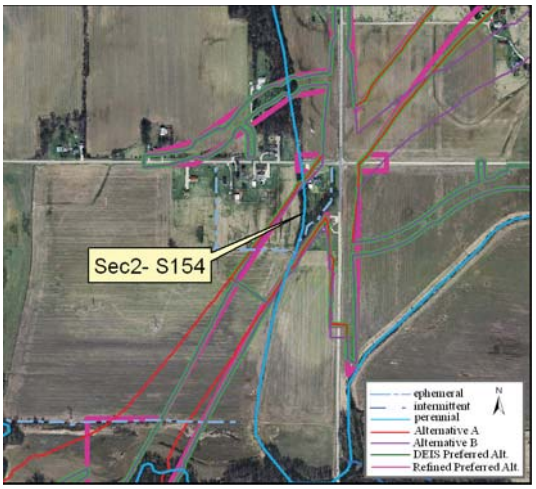
47 up Shea 49 from Shea

OWQ Biological Studies QHEI

Stream Id-Section 2 S 154



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	18.0
UTME:	485453	**OHWM Depth ft:**	2.0
UTMN:	4273697	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S154

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	868 feet	0.36 acres	A	QHEI 58.5 / Warmwater Habitat
Unnamed Tributary Veale Creek	887 feet	0.37 acres	B	QHEI 58.5 / Warmwater Habitat
Unnamed Tributary Veale Creek	868 feet	0.36 acres	DEIS Preferred	QHEI 58.5 / Warmwater Habitat
Unnamed Tributary Veale Creek	991 feet	0.41 acres	Refined Preferred	QHEI 58.5 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	58.5
Watershed Area (square miles):	1.90
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.58 ac, B-1.51 ac, DP-1.58 ac, RP-1.70 ac

Stream Sec2S 154

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 154

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S154 | bioSample # | Stream Name Unnamed Trib Veale Ck | Location 485453 E 4273697 N

Surveyor SEI | Sample Date 8/19/05 | County Daviess | Macro SampleType | ☐ Habitat Complete | QHEI Score: 58.5

1-Substrate (20 points maximum) — Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
☐	☐			Bldrs/Slabs(10)	☐	☐			Hardpan(4)
☐	☐			Boulders(9)	☐	☐	✓	✓	Detritus(3)
☐	☐			Cobble(8)	☐	☐	☐	☐	Muck(2)
☐	☐	✓	✓	Gravel(7)	☐	☐	✓	✓	Silt(2)
✓	✓			Sand(6)	☐	☐	☐	☐	Sludge(1)
☐	☐			Bedrock(5)	☐	☐	☐	☐	Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: ☐ Limestone(1) ☐ Hardpan(0) ☐ Lacustrine(0); ☐ Tills(1) ✓ Sandstone(0) ☐ Shale(-1); ☐ Wetlands(0) ☐ Rip/Rap(0) ☐ Coal fines(-2)

Silt Cover: ☐ Silt heavy(-2) ☐ Silt moderate(-1) ✓ Silt normal(0) ☐ Silt free(1)

Embeddedness: ☐ Extensive(-2) ✓ Moderate(-1) ☐ Low/Normal(0) ☐ None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 14

Type (check ALL that apply)

☐ Undercut banks(1) ✓ Deep pools(2) ☐ Oxbows(1)
☐ Overhanging vegetation(1) ✓ Rootwads(1) ✓ Aquatic macrophytes(1)
☐ Shallows(in slow water)(1) ☐ Boulders(1) ✓ Logs and woody debris(1)
✓ Rootmats(1)

Amount (check only 1, or 2 and AVERAGE)

☐ Extensive >75% (11)
✓ Moderate 25-75% (7)
☐ Sparse 5-25% (3)
☐ Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 16

Sinuosity	Development	Channelization	Stability	Modifications/Other	
☐ High (4)	☐ Excellent (7)	✓ None (6)	✓ High (3)	☐ Snagging	☐ Impound
☐ Moderate (3)	✓ Good (5)	☐ Recovered (4)	☐ Moderate (2)	☐ Relocation	☐ Islands
✓ Low (2)	☐ Fair (3)	☐ Recovering (3)	☐ Low (1)	☐ Canopy Removal	☐ Leveed
☐ None (1)	☐ Poor (1)	☐ Recent or no recovery (1)		☐ Dredging	☐ Bank shaping
				☐ One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 4.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
☐	☐	Wide >50m (4)	☐	☐	Forest, Swamp (3)	☐	☐	Conservation Tillage (1)	✓	✓	None or little (3)
☐	☐	Moderate 10-50m (3)	☐	☐	Shrub or Old field (2)	☐	☐	Urban or Industrial (0)	☐	☐	Moderate (2)
☐	☐	Narrow 5-10m (2)	✓	✓	Residential, Park, New field (1)	☐	☐	Mining, Construction (0)	☐	☐	Heavy/Severe (1)
☐	✓	Very narrow <5m (1)	☐	☐	Fenced pasture (1)	☐	☐	Open Pasture/Rowcrop (0)			
✓	☐	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 6

Max pool depth (check one)

☐ >1m (6)
☐ 0.7-1m (4)
✓ 0.4-0.7m (2)
☐ 0.2-0.4m (1)
☐ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE)

✓ Pool width > riffle width (2)
☐ Pool width = riffle width (1)
☐ Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply)

☐ Eddies (1) ☐ Torrential (-1)
✓ Fast (1) ☐ Interstitial (-1)
☐ Moderate (1) ☐ Intermittent (-2)
✓ Slow (1) ☐ No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 1

Riffle/run depth (check one)

☐ Generally>10cm, Max>50cm (4)
☐ Generally>10cm, Max<50cm(3)
✓ Generally 5-10cm (1)
☐ Generally<5cm (riffle=0)

Riffle/run substrate

Stable-e.g. cobble, boulder (2)
Mod. stable-e.g. pea gravel (1)
✓ Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness

☐ Extensive (-1) ☐ Normal/Low (1)
✓ Moderate (0) ☐ None (2)
☐ No riffle (0)

Comments:

6-Gradient (10 points maximum) — Gradient Score: 6

Average width: 18 | Gradient: 6.67 ft/mile | Drainage Area: 1.90 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 154

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
154			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
	8/17/05	DAVIES			58.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [x] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 3 — % Riffle: 20 — Is reach representative of stream?

Aesthetic rating (1-10): 3 — % Run: 10

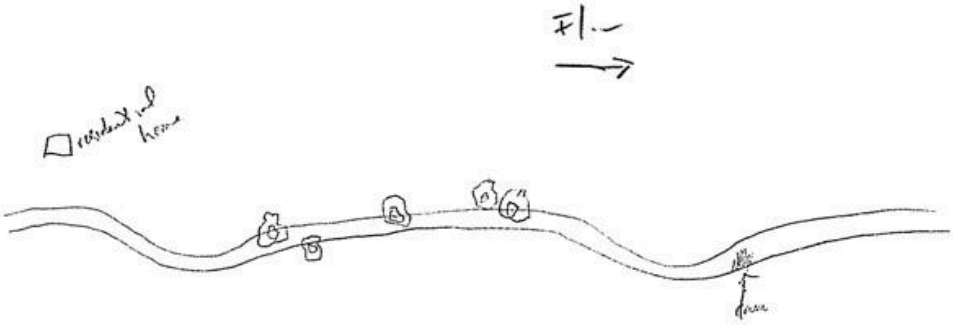
Canopy Cover (% Open): 30 — % Glide:

% Pool: 70

General QHEI Notes:

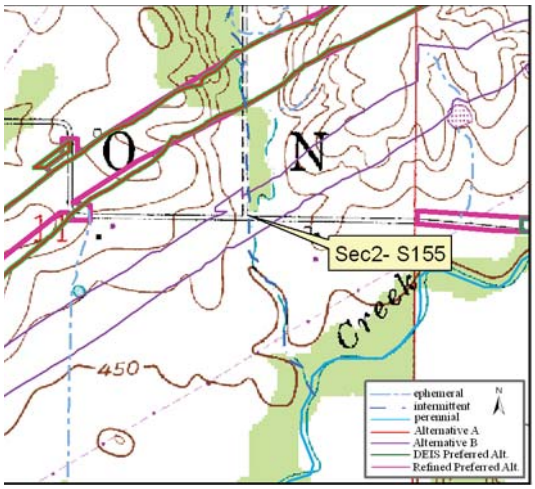
37 [illegible] 38 [illegible]

39 [illegible] 40 [illegible]

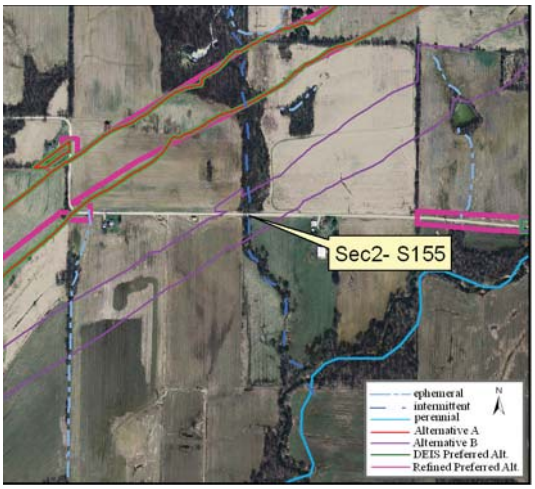


OWQ Biological Studies QHEI

Stream Id-Section 2 S 155



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 11 T2N R7W	**OHWM Width ft:**	16.0
UTME:	486799	**OHWM Depth ft:**	1.0
UTMN:	4274624	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S155

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	QHEI 52 / Warmwater Habitat
Unnamed Tributary Veale Creek	359 feet	0.13 acres	B	QHEI 52 / Warmwater Habitat
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	QHEI 52 / Warmwater Habitat
Unnamed Tributary Veale Creek	0	0	Refined Preferred	QHEI 52 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	52
Watershed Area (square miles):	0.96
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.85 ac, DP-0, RP-0

Stream Sec2S 155

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

DEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S155 | bioSample #: | Stream Name: Unnamed Trib Veale Creek | Location: 486799 E 4274624 N

Surveyor: [illegible] | Sample Date: 8/17/07 | County: | Macro SampleType: | Habitat Complete: | QHEI Score: 52

1-Substrate (20 points maximum)

Substrate Score: 12

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)					Hardpan(4)		
		Boulders(9)					Detritus(3)		
		Cobble(8)					Muck(2)		
		Gravel(7)	X	X			Silt(2)	X	X
X	X	Sand(6)					Sludge(1)		
		Bedrock(5)					Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1) | Hardpan(0) | Lacustrine(0) | Tills(1) | X Sandstone(0) | Shale(-1) | Wetlands(0) | Rip/Rap(0) | Coal fines(-2)

Silt Cover: Silt heavy(-2) | Silt moderate(-1) | X Silt normal(0) | Silt free(1)

Embeddedness: Extensive(-2) | Moderate(-1) | X Low/Normal(0) | None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 12

Type (check ALL that apply): Undercut banks(1) | Deep pools(2) | Oxbows(1) | X Overhanging vegetation(1) | X Rootwads(1) | X Aquatic macrophytes(1) | X Shallows(in slow water)(1) | Boulders(1) | X Logs and woody debris(1) | Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11) | X Moderate 25-75% (7) | Sparse 5-25% (3) | Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 15

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	X High (3)	Snagging	Impound
Moderate (3)	X Good (5)	Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
X None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 2

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)			None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)	X	X	Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
X	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 4

Max pool depth (check one): >1m (6) | 0.7-1m (4) | 0.4-0.7m (2) | 0.2-0.4m (1) | X <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2) | Pool width = riffle width (1) | Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1) | Torrential (-1) | Fast (1) | Interstitial (-1) | X Moderate (1) | Intermittent (-2) | X Slow (1) | No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4) | Generally>10cm, Max<50cm(3) | Generally 5-10cm (1) | X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2) | Mod. stable-e.g. pea gravel (1) | X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1) | X Normal/Low (1) | Moderate (0) | None (2) | No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 16 | Gradient: 6.07 (ft/mile) | Drainage Area: 0.96 (square miles)

Comments:

OWQ Biological Studies QHEI

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
155			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
NV/JOB	8/17/07	DAVIESS			52

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [x] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 1 — % Riffle: 20 — Is reach representative of stream? yes

Aesthetic rating (1-10): 2 — % Run: 30

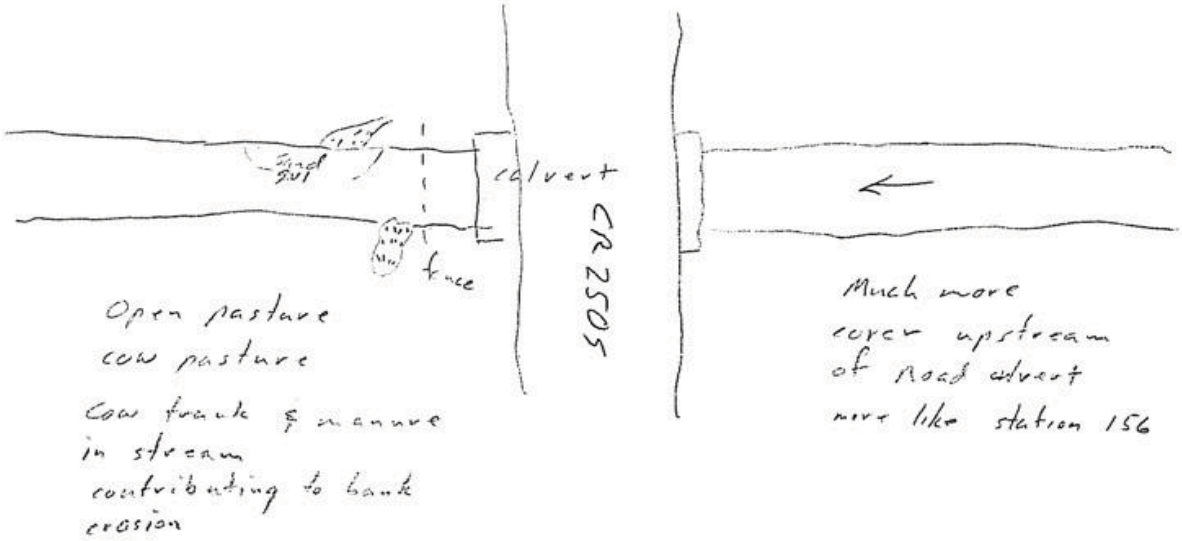
Canopy Cover (% Open): 40 — % Glide:

% Pool: 50

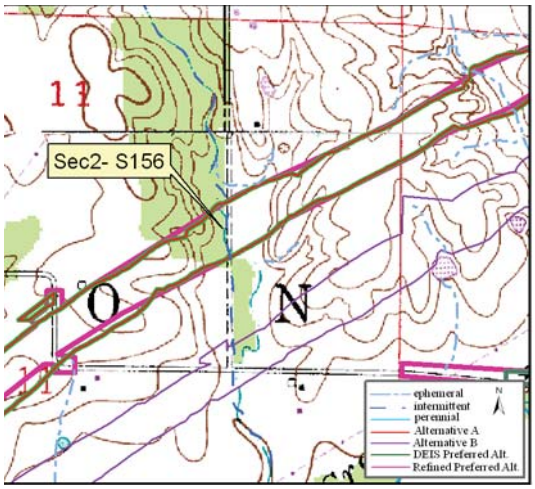
General QHEI Notes:

33 up no riffle — 34 down no riffle

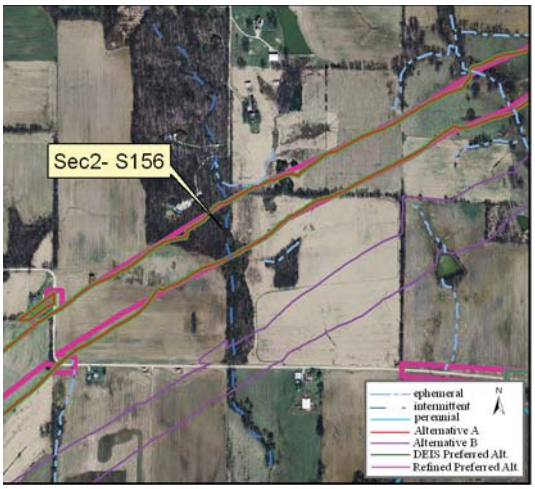
35 up — 36 down



Stream Id-Section 2 S 156



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 11 T2N R7W	**OHWM Width ft:**	16.0
UTME:	486781	**OHWM Depth ft:**	0.8
UTMN:	4274949	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S156

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	441 feet	0.16 acres	A	QHEI 68 / Warmwater Habitat
Unnamed Tributary Veale Creek	0	0	B	QHEI 68 / Warmwater Habitat
Unnamed Tributary Veale Creek	441 feet	0.16 acres	DEIS Preferred	QHEI 68 / Warmwater Habitat
Unnamed Tributary Veale Creek	445 feet	0.16 acres	Refined Preferred	QHEI 68 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	68
Watershed Area (square miles):	0.89
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.64 ac, B-0, DP-1.64 ac, RP-1.62 ac

Stream Sec2S 156

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 156

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
Sec2-S156		Unnamed Trib Veale Ck	486781 E 4274949 N

Surveyor: DW/BCB | Sample Date: 8/19/X | County: DAVISS | Macro SampleType | ☐ Habitat Complete | **QHEI Score: 68**

1-Substrate (20 points maximum) — Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
☐	☐			Bldrs/Slabs(10)	☐	☐	☐	☒	Hardpan(4)
☐	☐			Boulders(9)	☐	☐	☒	☒	Detritus(3)
☐	☐			Cobble(8)	☐	☐	☐	☐	Muck(2)
☐	☐			Gravel(7)	☐	☐	☒	☒	Silt(2)
☒	☒			Sand(6)	☐	☐	☐	☐	Sludge(1)
☐	☐			Bedrock(5)	☐	☐	☐	☐	Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: ☐ Limestone(1) ☐ Hardpan(0) ☐ Lacustrine(0) ☐ Tills(1) ☒ Sandstone(0) ☐ Shale(-1) ☐ Wetlands(0) ☐ Rip/Rap(0) ☐ Coal fines(-2)

Silt Cover: ☐ Silt heavy(-2) ☐ Silt moderate(-1) ☒ Silt normal(0) ☐ Silt free(1)

Embeddedness: ☐ Extensive(-2) ☒ Moderate(-1) ☐ Low/Normal(0) ☐ None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum — Instream Cover Score: 18

Type (check ALL that apply): ☒ Undercut banks(1) ☐ Deep pools(2) ☐ Oxbows(1) ☒ Overhanging vegetation(1) ☒ Rootwads(1) ☒ Aquatic macrophytes(1) ☒ Shallows(in slow water)(1) ☐ Boulders(1) ☒ Logs and woody debris(1) ☒ Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): ☒ Extensive >75% (11) ☐ Moderate 25-75% (7) ☐ Sparse 5-25% (3) ☐ Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE) — Channel Score: 18

Sinuosity	Development	Channelization	Stability	Modifications/Other	
☐ High (4)	☒ Excellent (7)	☒ None (6)	☐ High (3)	☐ Snagging	☐ Impound
☒ Moderate (3)	☐ Good (5)	☐ Recovered (4)	☒ Moderate (2)	☐ Relocation	☐ Islands
☐ Low (2)	☐ Fair (3)	☐ Recovering (3)	☐ Low (1)	☐ Canopy Removal	☐ Leveed
☐ None (1)	☐ Poor (1)	☐ Recent or no recovery (1)		☐ Dredging	☒ Bank shaping
				☐ One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum) — Riparian Score: 9

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
☐	☒	Wide >50m (4)	☐	☒	Forest, Swamp (3)	☐	☐	Conservation Tillage (1)	☒	☒	None or little (3)
☒	☐	Moderate 10-50m (3)	☒	☐	Shrub or Old field (2)	☐	☐	Urban or Industrial (0)	☐	☐	Moderate (2)
☐	☐	Narrow 5-10m (2)	☐	☐	Residential, Park, New field (1)	☐	☐	Mining, Construction (0)	☐	☐	Heavy/Severe (1)
☐	☐	Very narrow <5m (1)	☐	☐	Fenced pasture (1)	☐	☐	Open Pasture/Rowcrop (0)			
☐	☐	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum — Pool/Glide Score: 5

Max pool depth (check one): ☐ >1m (6) ☐ 0.7-1m (4) ☐ 0.4-0.7m (2) ☒ 0.2-0.4m (1) ☐ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): ☒ Pool width > riffle width (2) ☐ Pool width = riffle width (1) ☐ Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): ☐ Eddies (1) ☐ Torrential (-1) ☐ Fast (1) ☐ Interstitial (-1) ☒ Moderate (1) ☐ Intermittent (-2) ☒ Slow (1) ☐ No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE) — Riffle/Run Score: 1

Riffle/run depth (check one): ☐ Generally>10cm, Max>50cm (4) ☐ Generally>10cm, Max<50cm(3) ☐ Generally 5-10cm (1) ☒ Generally<5cm (riffle=0)

Riffle/run substrate: ☐ Stable-e.g. cobble, boulder (2) ☐ Mod. stable-e.g. pea gravel (1) ☒ Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: ☐ Extensive (-1) ☒ Normal/Low (1) ☐ Moderate (0) ☐ None (2) ☐ No riffle (0)

Comments:

6-Gradient (10 points maximum) — Gradient Score: 6

Average width: 16 | Gradient: 6.07 (ft/mile) | Drainage Area: 0.89 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 156

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
156			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
JEB/NV	8/17/05	Daviess			68

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 6 % Riffle: 10 Is reach representative of stream? Yes

Aesthetic rating (1-10): 6 % Run: 50

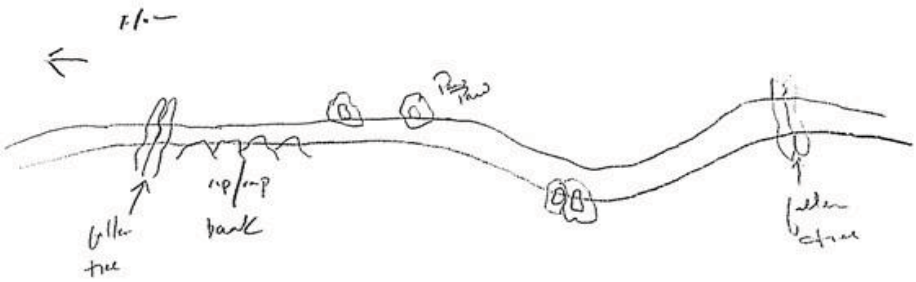
Canopy Cover (% Open): 30 % Glide:

% Pool: 40

General QHEI Notes:

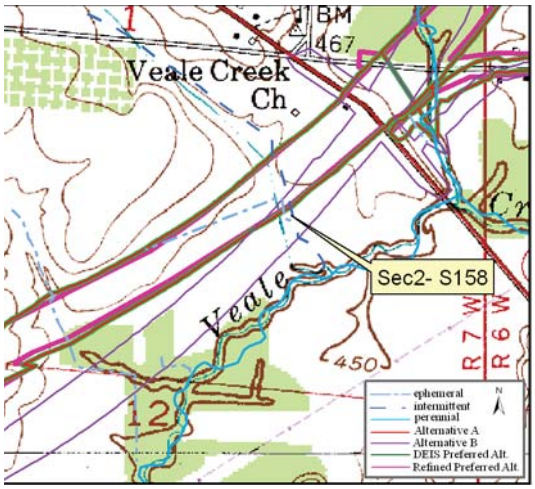
29 [illegible] 30 [illegible]

31 up [illegible] 32 [illegible]

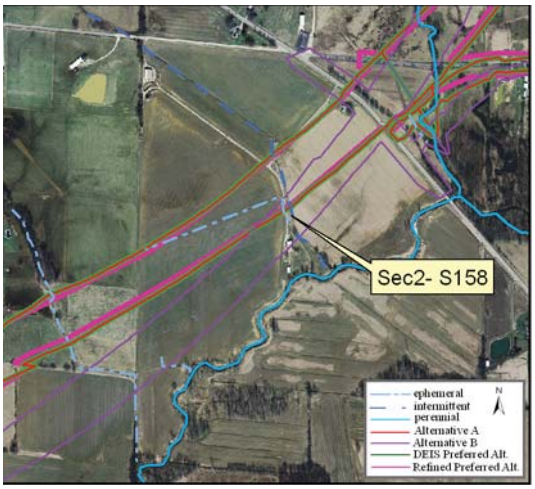


OWQ Biological Studies QHEI

Stream Id-Section 2 S 158



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2N R7W	**OHWM Width ft:**	4.0
UTME:	488375	**OHWM Depth ft:**	0.7
UTMN:	4275744	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S158

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 28 / Modified Class I
Unnamed Tributary Veale Creek	353 feet	0.03 acres	B	HHEI 28 / Modified Class I
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 28 / Modified Class I
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 28 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.30
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 158

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION South of 257

Unnamed Trib Veale Ck SITE NUMBER Sec2-S158 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.30

LENGTH OF STREAM REACH (ft) 200 LAT 4275744 LONG 488375 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRD NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	25
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	5
☐ ☒	GRAVEL (2-64 mm) [9 pts]	10	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	60	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4 0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
☒ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park. New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0 5
☐ 1 0
☐ 1 5
☐ 2 0
☐ 2 5
☒ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 13 UR 14 UL 15 up 16 down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Agricultural

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

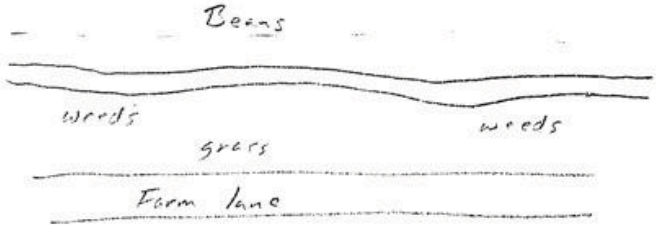
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: Crayfish mounds

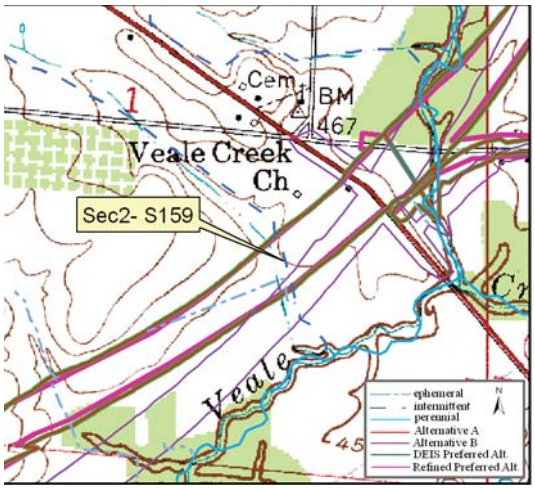
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

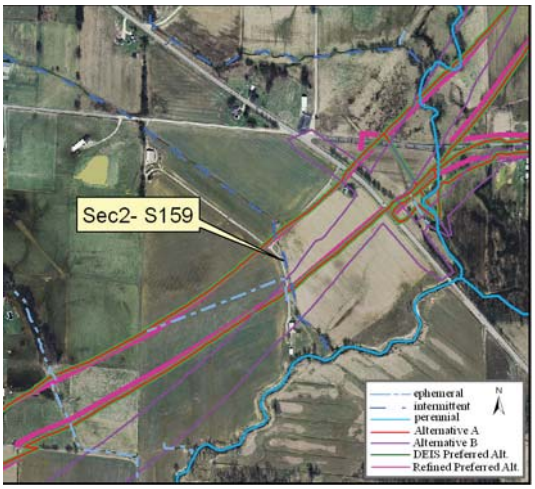
FLOW →



Stream Id-Section 2 S 159



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2N R7W	**OHWM Width ft:**	4.0
UTME:	488352	**OHWM Depth ft:**	0.7
UTMN:	4275831	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S159

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	441 feet	0.04 acres	A	HHEI 28 / Class I
Unnamed Tributary Veale Creek	0	0	B	HHEI 28 / Class I
Unnamed Tributary Veale Creek	441 feet	0.04 acres	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Veale Creek	405 feet	0.04 acres	Refined Preferred	HHEI 28 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.29
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 159

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION: Southeast 257 Unnamed Trib Veale Ck

SITE NUMBER: Sec2-S159 RIVER BASIN: Lower White DRAINAGE AREA (mi²): 0.29

LENGTH OF STREAM REACH (ft): 200 LAT: 4275831 LONG: 488352 RIVER CODE: _____ RIVER MILE: _____

DATE: 8/17/05 SCORER: TRB NV COMMENTS: _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	25
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☒	CLAY or HARDPAN [0 pt]	5
☐ ☒	GRAVEL (2-64 mm) [9 pts]	10	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	60	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock: 0

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 13 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: no water **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: _____ **AVERAGE BANKFULL WIDTH (meters):** 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS: [illegible]

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools, no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS: _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Paulding Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 9 - up to right, 10 - down to right, 11 up 17 down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

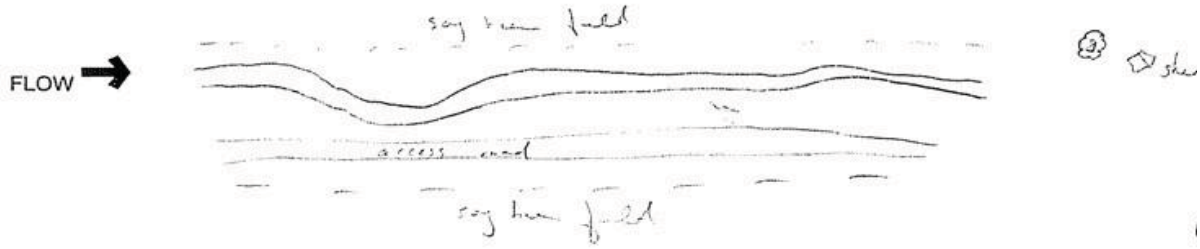
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

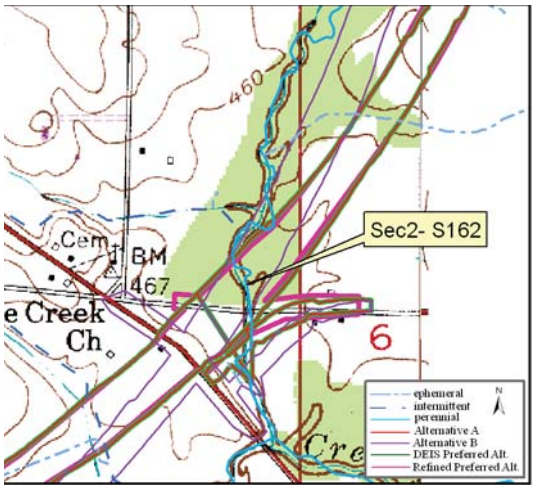
Comments Regarding Biology: crayfish salamander

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

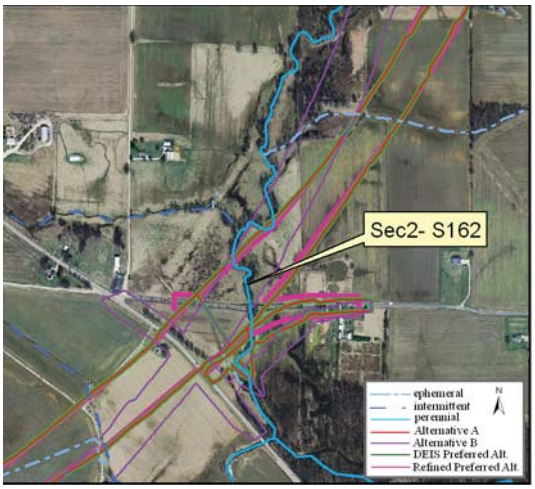
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 162



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 1 T2N R7W	**OHWM Width ft:**	18.0
UTME:	488705	**OHWM Depth ft:**	0.5
UTMN:	4276153	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S162

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Hurricane Branch	1,253 feet	0.52 acres	A	QHEI 51 / Warmwater Habitat
Hurricane Branch	1,190 feet	0.49 acres	B	QHEI 51 / Warmwater Habitat
Hurricane Branch	1,253 feet	0.52 acres	DEIS Preferred	QHEI 51 / Warmwater Habitat
Hurricane Branch	683 feet	0.28 acres	Refined Preferred	QHEI 51 / Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	51
Watershed Area (square miles):	0.26
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.90 ac, B-2.45 ac, DP-1.90 ac, RP-1.14 ac

Stream Sec2S 162

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 162

Field Report

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S162 | bioSample #: | Stream Name: Hurricane Branch | Location: 488705 E 4276153 N

Surveyor: WJCB | Sample Date: 8/12/05 | County: | Macro SampleType: | Habitat Complete: | QHEI Score: 51

1-Substrate (20 points maximum)

Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 14

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); Overhanging vegetation(1); Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 14

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
X	X	None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle Score: 2

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 18 | Gradient: 0.88 (ft/mile) | Drainage Area: 5.88 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 162

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
162			

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score:
[illegible]	[illegible]			☐	51

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- ☐ None
- ☐ Industrial
- ☐ WWTP
- ☒ Agricultural
- ☒ Livestock
- ☐ Silviculture
- ☐ Construction
- ☐ Urban Runoff
- ☐ Suburban
- ☐ Channelization
- ☐ Riparian Removal
- ☐ Flow Alteration
- ☐ CSOs
- ☐ Mining
- ☐ Landfills
- ☐ Natural

Pollution Impact Comments:

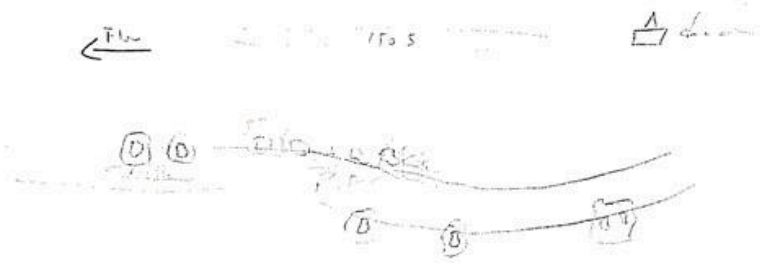
Miscellaneous QHEI Information

Subjective rating (1-10):	1	% Riffle:	5
Aesthetic rating (1-10):	1	% Run:	10
Canopy Cover (% Open):	20	% Glide:	
		% Pool:	85

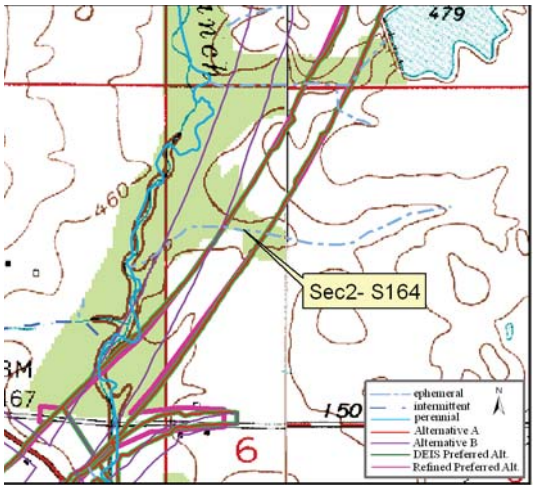
Is reach representative of stream? [illegible]

General QHEI Notes:

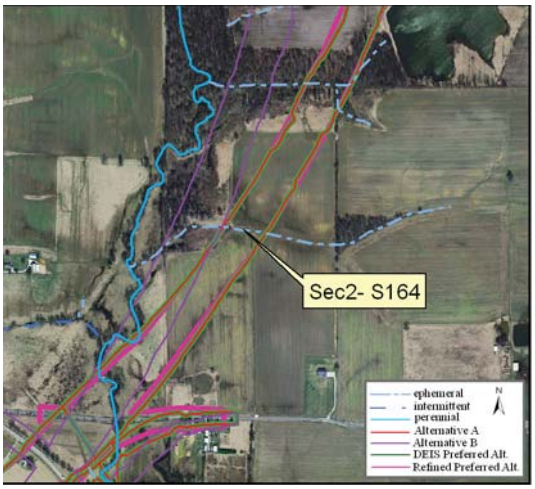
5 - up to [illegible]
6 - dn to [illegible]
7 - up [illegible]
8 - dn [illegible]



Stream Id-Section 2 S 164



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 6 T2N R6W	**OHWM Width ft:**	4.0
UTME:	489020	**OHWM Depth ft:**	0.6
UTMN:	4276550	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S164

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	336 feet	0.03 acres	A	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	336 feet	0.03 acres	DEIS Preferred	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	331 feet	0.03 acres	Refined Preferred	HHEI 20 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	20
Watershed Area (square miles):	0.11
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 164

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 20

SITE NAME/LOCATION Un Trib Hurricane Branch SITE NUMBER Sec2-S164 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.11

LENGTH OF STREAM REACH (ft) 200 LAT 4276550 LONG 489020 RIVER CODE _____ RIVER MILE _____

DATE 8/19/05 SCORER TRB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points — Substrate Max = 40: 5 (A + B)

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture. Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 5 UR 6 UL 7 UP 8 down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) N If not, please explain: Open channel, downstream stream flows along edge of immature forest

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

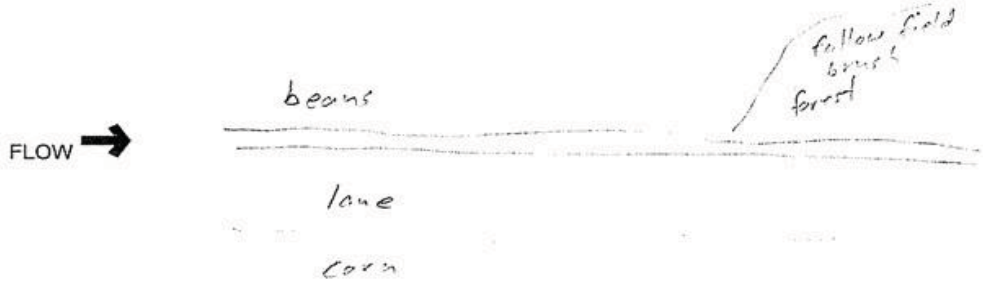
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

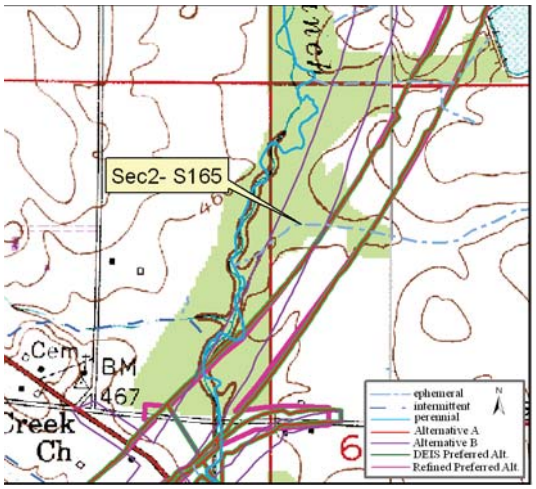
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

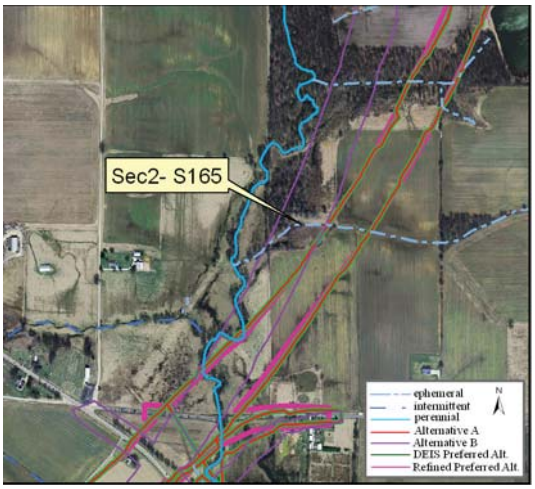
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 165



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 6 T2N R6W	**OHWM Width ft:**	4.4
UTME:	488906	**OHWM Depth ft:**	0.6
UTMN:	4276559	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S165

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	528 feet	0.05 acres	B	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 20 / Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 20 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	20
Watershed Area (square miles):	0.12
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.82 ac, DP-0, RP-0

Stream Sec2S 165

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 20

SITE NAME/LOCATION Un Trib Hurricane Branch SITE NUMBER Sec2-S165 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.12

LENGTH OF STREAM REACH (ft) 200' LAT 4276559 LONG 488906 RIVER CODE _____ RIVER MILE _____

DATE 8/19/05 SCORER JRB RW COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points

Substrate Max = 40: 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Davies Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 1 UR 2 UL 3 UP 4 Down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Ag

BIOTIC EVALUATION

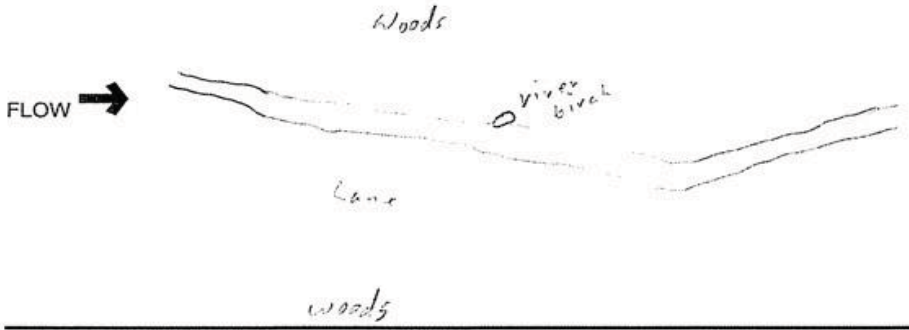
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

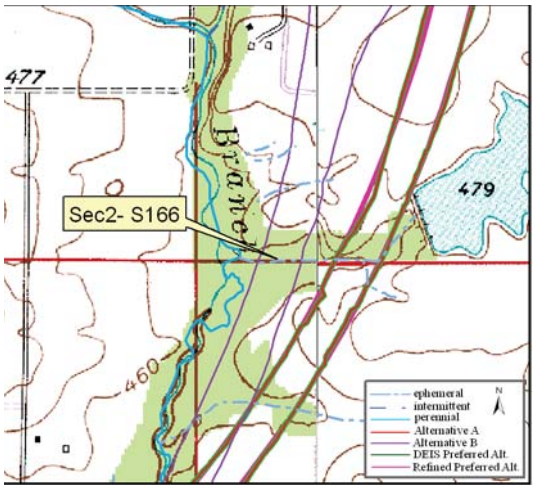
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

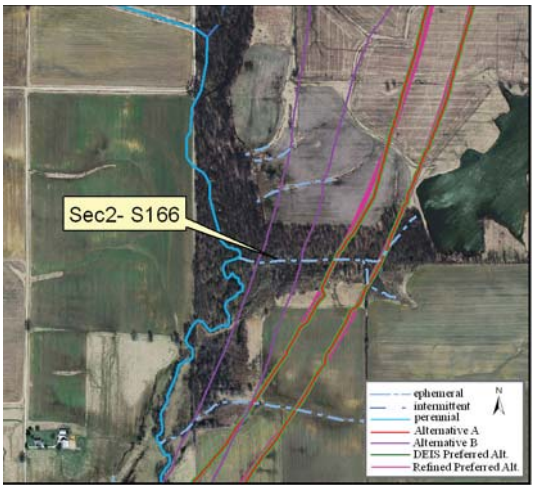
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 166



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 6 T2N R6W	**OHWM Width ft:**	8.0
UTME:	489032	**OHWM Depth ft:**	0.8
UTMN:	4276895	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S166

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	345 feet	0.06 acres	B	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 24 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.26
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-1.55 ac, DP-0, RP-0

Stream Sec2S 166

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION _____

Un Trib Hurricane Branch SITE NUMBER Sec2-S166 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.26

LENGTH OF STREAM REACH (ft) 200 LAT 4276895 LONG 489032 RIVER CODE _____ RIVER MILE _____

DATE 8/16/05 SCORER IRB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☑ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

None noted

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	100
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 1

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4 0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 8'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest. Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☐ 2 5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24 2002 Revision

PHWH Form Page - 1

Stream Sec2S 166

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: UR 5 UL 6 U 7 D 8

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

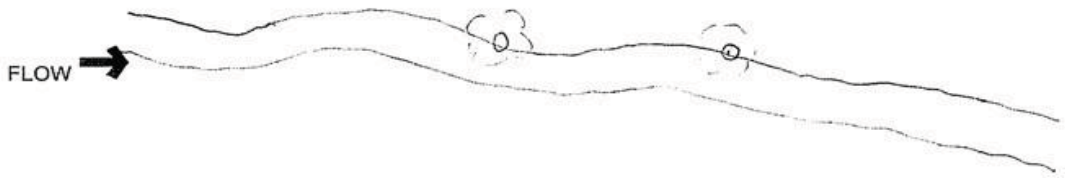
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

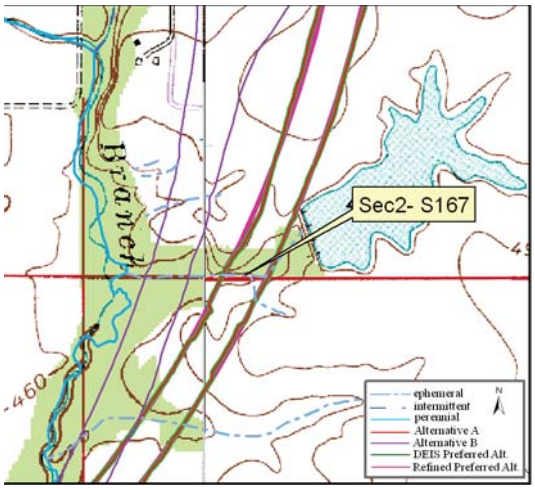
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

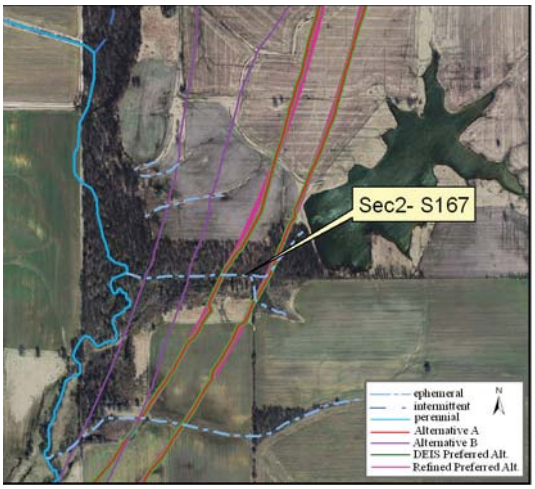
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 167



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 6 T2N R6W	**OHWM Width ft:**	8.0
UTME:	489218	**OHWM Depth ft:**	0.8
UTMN:	4276897	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S167

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	395 feet	0.07 acres	A	HHEI 30 / Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 30 / Class I
Unnamed Tributary Hurricane Branch	395 feet	0.07 acres	DEIS Preferred	HHEI 30 / Class I
Unnamed Tributary Hurricane Branch	356 feet	0.07 acres	Refined Preferred	HHEI 30 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	30
Watershed Area (square miles):	0.23
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.98 ac,B-0, DP-1.98 ac, RP-1.91 ac

Stream Sec2S 167

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 167

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 30

SITE NAME/LOCATION Hurricane [illegible]

Un Trib Hurricane Branch SITE NUMBER Sec2-S167 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.23

LENGTH OF STREAM REACH (ft) 250 LAT 4276897 LONG 489218 RIVER CODE _____ RIVER MILE _____

DATE 8/16/05 SCORER MM/JR COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☑ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

None

1. SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☑ ☐	SILT [3 pt]	95
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☑	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 5

A + B

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☑ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 5

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1 0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 8'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☑ Moist Channel, isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS [illegible]

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☒ 3 0
☐ 0 5	☐ 1 5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24. 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 9 upstream, 10 downstream, 11 upstream 12 downstream

Elevated Turbidity? (Y/N): N Canopy (% open): 20

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

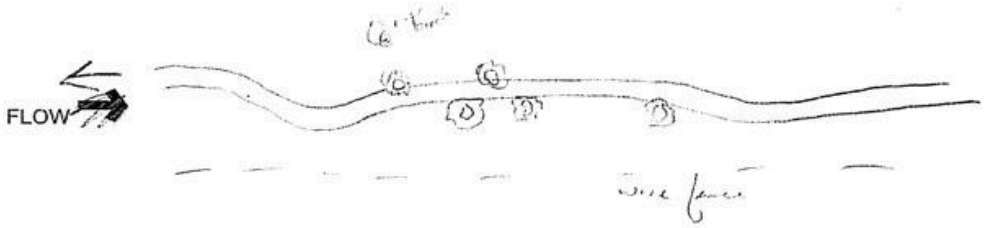
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

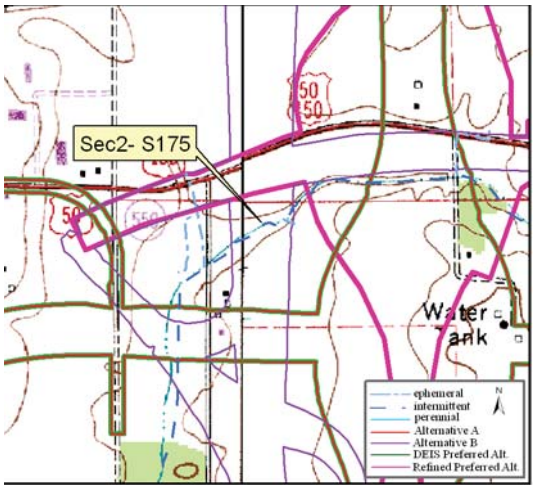
Comments Regarding Biology: Small gray fish moved upstream in blue dry stream

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

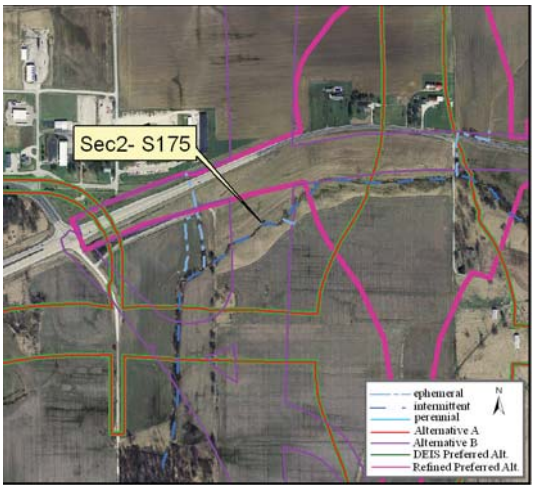
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 175



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 31 T3N R6W	**OHWM Width ft:**	4.5
UTME:	489168	**OHWM Depth ft:**	1.3
UTMN:	4278427	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S175

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	QHEI 39.0 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	708 feet	0.07 acres	B	QHEI 39.0 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	QHEI 39.0 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	334 feet	0.03 acres	Refined Preferred	QHEI 39.0 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	39.0
Watershed Area (square miles):	1.52
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 175

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 175

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S175 | bioSample #: | Stream Name: Harricane Branch | Location: 489168 E 4278427 N

Surveyor: JRD NV | Sample Date: 8/15/05 | County: Davies | Macro SampleType: | Habitat Complete: | QHEI Score: 39

1-Substrate (20 points maximum)

Substrate Score: 12

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R		Predominant P	Predominant R		Present P	Present R	
		Bldrs/Slabs(10)						Hardpan(4)			
		Boulders(9)						Detritus(3)			
		Cobble(8)						Muck(2)			
	✓	Gravel(7)						Silt(2)	✓	✓	
✓		Sand(6)						Sludge(1)			
		Bedrock(5)	✓	✓				Artificial(0)			

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); ✓ Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); ✓ Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); ✓ Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: Shale present in bed & banks

2-Instream Cover (20 points maximum

Instream Cover Score: 5

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); ✓ Overhanging vegetation(1); Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); ✓ Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); ✓ Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	✓ Moderate (2)	✓ Relocation	Islands
✓ Low (2)	✓ Fair (3)	✓ Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments: very little sinuosity

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6

Left/Right banks looking downstream (For each category, check only one per bank. OR two per bank and AVERAGE).

Riparian width L	R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)	✓	✓	Conservation Tillage (1)	✓	✓	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
✓	✓	Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)			Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 1

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); ✓ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): ✓ Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Torrential (-1); Fast (1); Interstitial (-1); ✓ Moderate (1); ✓ Intermittent (-2); Slow (1); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 1

Riffle/run depth (check one): Generally>10cm. Max>50cm (4); Generally>10cm Max<50cm(3); Generally 5-10cm (1); ✓ Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); ✓ Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); ✓ Normal/Low (1); Moderate (0); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 4.5 ft | Gradient: 3.86 (ft/mile) | Drainage Area: 1.5 (square miles)

Comments:

Stream Sec2S 175

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 39

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

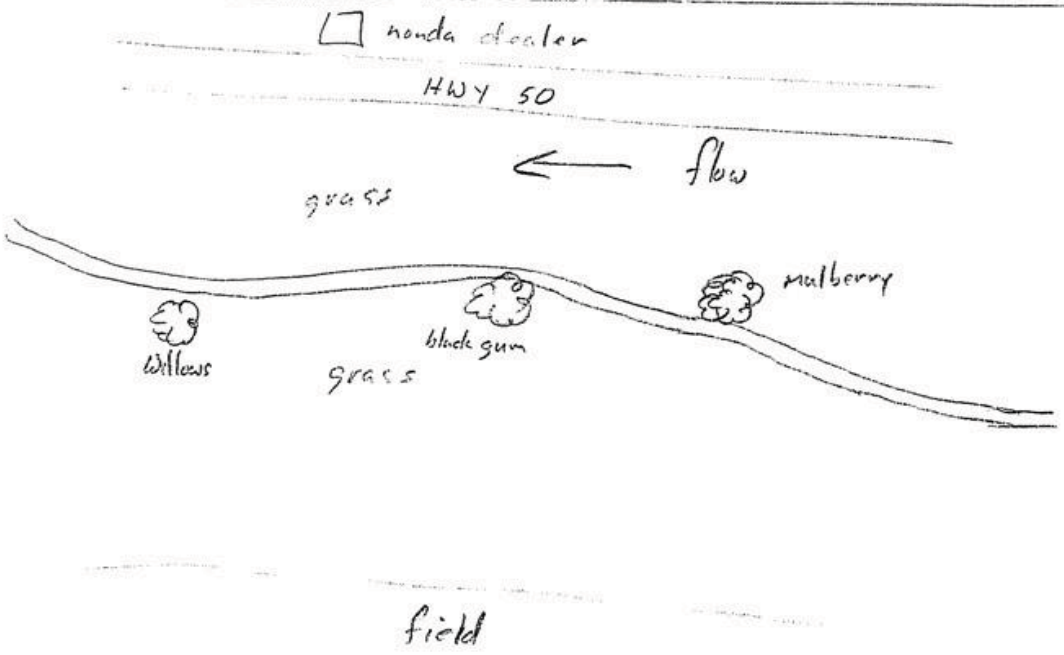
Subjective rating (1-10): 1 | % Riffle: 5 | Is reach representative of stream? yes

Aesthetic rating (1-10): 2 | % Run: 30 | % Glide:

Canopy Cover (% Open): 90 | % Pool: 65

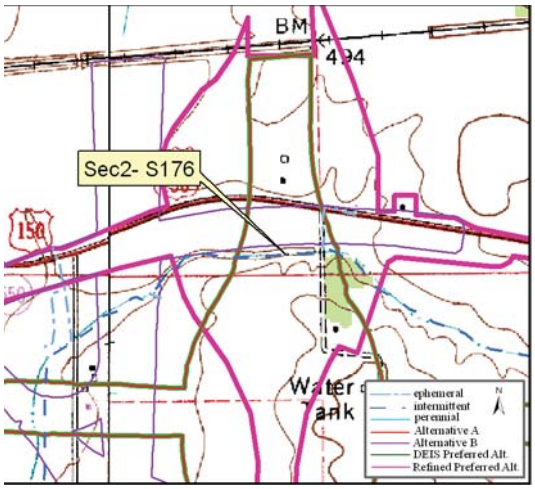
General QHEI Notes:

36 UR 37 UL 38 UP 39 DN

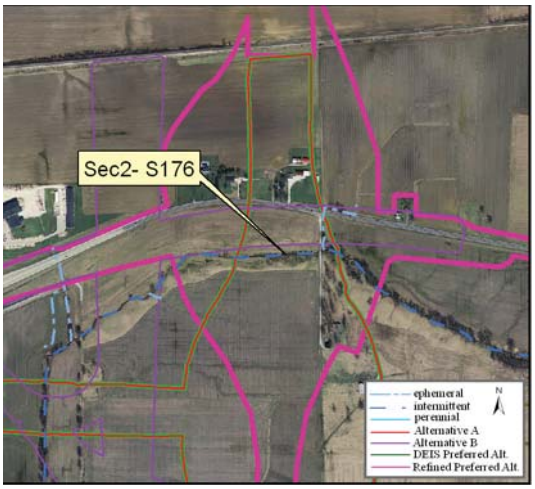


OWQ Biological Studies QHEI

Stream Id-Section 2 S 176



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 30 T3N R6W	**OHWM Width ft:**	8.0
UTME:	489530	**OHWM Depth ft:**	1.3
UTMN:	4278534	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S176

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	802 feet	0.15 acres	A	QHEI 40.5 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	0	0	B	QHEI 40.5 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	802 feet	0.15 acres	DEIS Preferred	QHEI 40.5 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	1,456 feet	0.27 acres	Refined Preferred	QHEI 40.5 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	40.5
Watershed Area (square miles):	1.25
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.29 ac, B*-0.09 ac, DP- 1.29 ac, RP-2.30 ac

*This stream is not impacted within the right-of-way; however, the riparian of this stream is within the right-of-way.

Stream Sec2S 176

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S176 | bioSample # | Stream Name Hurricane Branch | Location 176 | 489530 E 4278534 N

Surveyor SRB HV | Sample Date 8/16/05 | County Daviess County | Macro SampleType | Habitat Complete | QHEI Score: 40.5

1-Substrate (20 points maximum)

Substrate Score: 12

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
	✓			Gravel(7)			✓	✓	Silt(2)
✓			✓	Sand(6)					Sludge(1)
		✓	✓	Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); Sandstone(0); ✓Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); ✓Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); ✓Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments: Shale present in banks

2-Instream Cover (20 points maximum

Instream Cover Score: 5

Type (check ALL that apply): Undercut banks(1); ✓Overhanging vegetation(1); Shallows(in slow water)(1); Rootmats(1); Deep pools(2); Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); ✓Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); ✓Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	✓Moderate (2)	Relocation	Islands
✓Low (2)	✓Fair (3)	✓Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments: little to no sinuosity

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality L	Erosion/Runoff-Floodplain quality R	(most predominant per bank)	L	R	Bank Erosion (per bank) L	Bank Erosion (per bank) R	
		Wide >50m (4)			Forest, Swamp (3)	✓	✓	✓	✓	None or little (3)
✓		Moderate 10-50m (3)			Shrub or Old field (2)					Moderate (2)
	✓	Narrow 5-10m (2)			Residential, Park, New field (1)					Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)					
		None (0)								

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 3

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); ✓0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): ✓Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); ✓Fast (1); ✓Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); ✓Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); ✓Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); ✓Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); ✓Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 8 ft | Gradient: 3.86 (ft/mile) | Drainage Area: 1.26 (square miles)

Comments:

OWQ Biological Studies QHEI

Stream Sec2S 176

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 40.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [x] Channelization
- [x] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): % Riffle: 5

Aesthetic rating (1-10): 2 % Run: 30

Canopy Cover (% Open): 90 % Glide:

% Pool: 65

Is reach representative of stream? yes

General QHEI Notes:

small fish & crayfish present

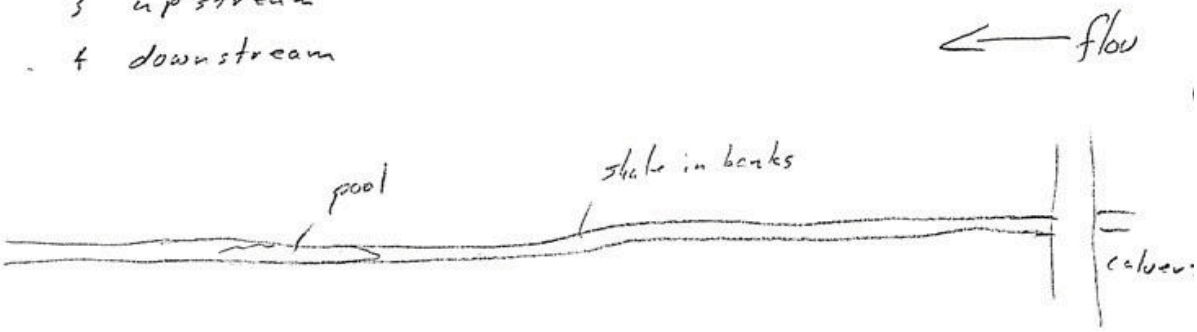
Pictures

1 cross up on right

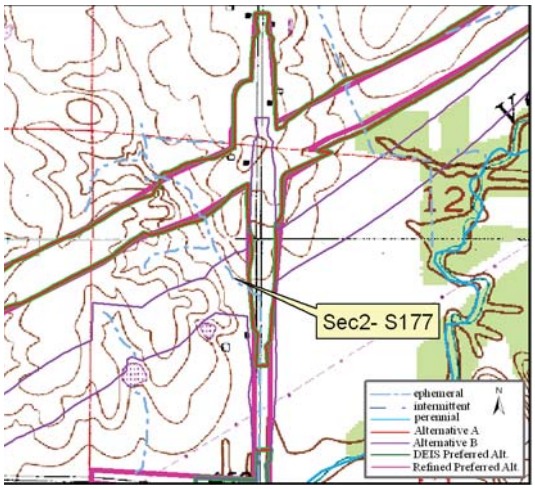
2 cross up on left

3 upstream

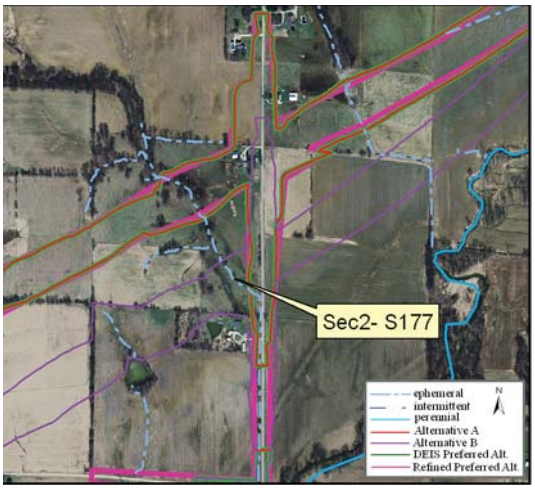
4 downstream



Stream Id-Section 2 S 177



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2N R7W	**OHWM Width ft:**	4.0
UTME:	487535	**OHWM Depth ft:**	1.0
UTMN:	4275084	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S177

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	1,170 feet	0.11 acres	A	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	2,158 feet	0.20 acres	B	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	1,170 feet	0.11 acres	DEIS Preferred	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	1,691 feet	0.16 acres	Refined Preferred	HHEI 41 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	41
Watershed Area (square miles):	0.23
Legal Drain:	No
Predominate Substrate:	sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0,RP-0

Stream Sec2S 177

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S177 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.23

LENGTH OF STREAM REACH (ft) 200 LAT 4275084 LONG 487535 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRO NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	20
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	80	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8 cm

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4 0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3 0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.5'

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0 5
- ☐ 1 0
- ☐ 1 5
- ☒ 2 0
- ☐ 2 5
- ☐ 3 0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 21 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 21 up + 22 down No right 23 up 24 down

Elevated Turbidity? (Y/N): N Canopy (% open): 90

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: [illegible]

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

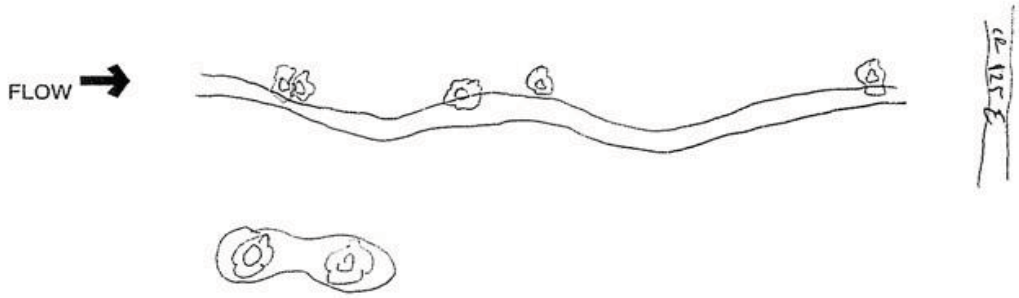
Fish Observed? (Y/N) Y Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

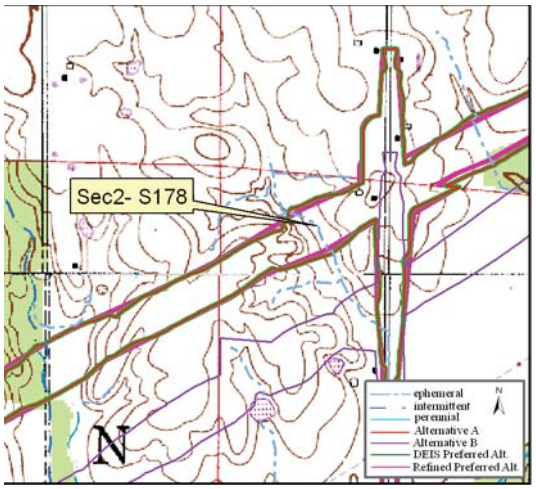
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

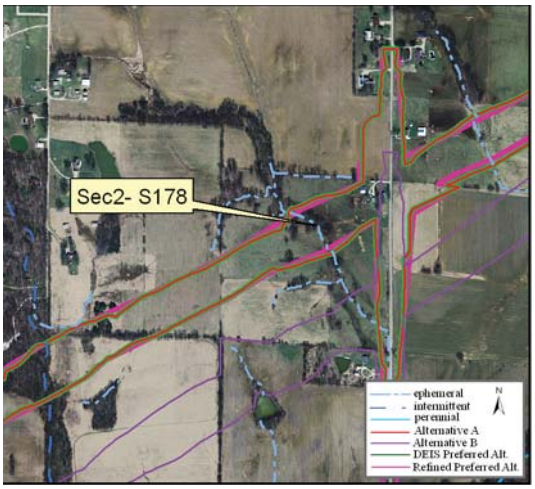
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 178



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2N R7W	**OHWM Width ft:**	1.4
UTME:	487431	**OHWM Depth ft:**	1.0
UTMN:	4275293	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S178

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	513 feet	0.02 acres	A	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	0	0	B	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	513 feet	0.02 acres	DEIS Preferred	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	417 feet	0.01 acres	Refined Preferred	HHEI 41 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	41
Watershed Area (square miles):	0.20
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.01 ac, B-0, DP-1.01 ac, RP-0.84 ac

Stream Sec2S 178

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 178

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S178 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.20

LENGTH OF STREAM REACH (ft) 200' LAT 4275293 LONG 487431 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 11

A + B

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☒ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 7cm

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 4.5'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest. Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☒ ☒	Open Pasture. Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☐ 3 0
☐ 0 5 ☐ 1 5 ☐ 2 5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 25 up to right 26 down to right 27 up 28 down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

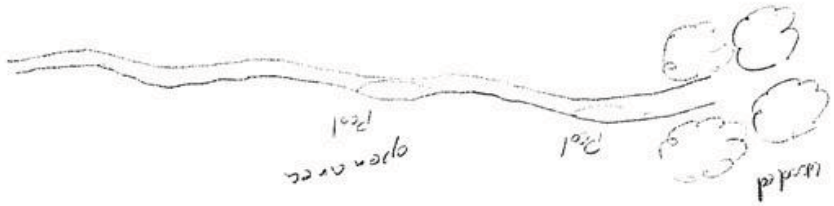
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

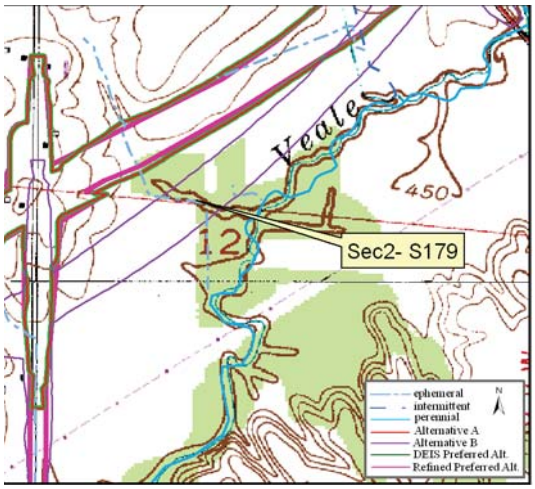
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

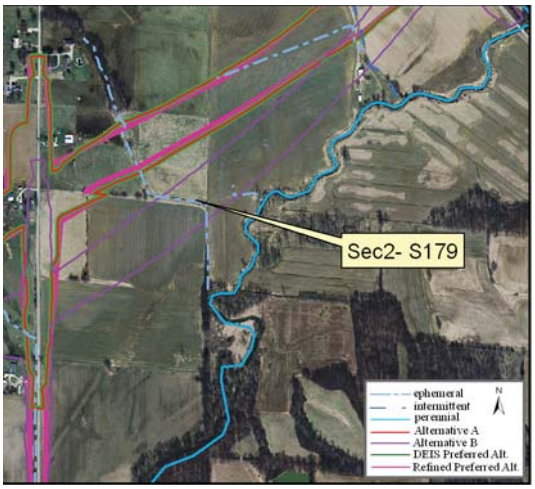
FLOW →



Stream Id-Section 2 S 179



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 1 T2N R7W	**OHWM Width ft:**	4.0
UTME:	487969	**OHWM Depth ft:**	0.8
UTMN:	4275371	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S179

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 31 / Modified Class II
Unnamed Tributary Veale Creek	367 feet	0.03 acres	B	HHEI 31 / Modified Class II
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 31 / Modified Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 31 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.15
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 179

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S179 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.15

LENGTH OF STREAM REACH (ft) 200' LAT 4275371 LONG 487969 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	20	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (B) 2 TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points — Substrate Max = 40: 11 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 3cm

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools, no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☒ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 13 up to right, 14 down to right, 15 up 16 down

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) yes If not, please explain: _____

Additional comments/description of pollution impacts: agricultural w/ livestock impact

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

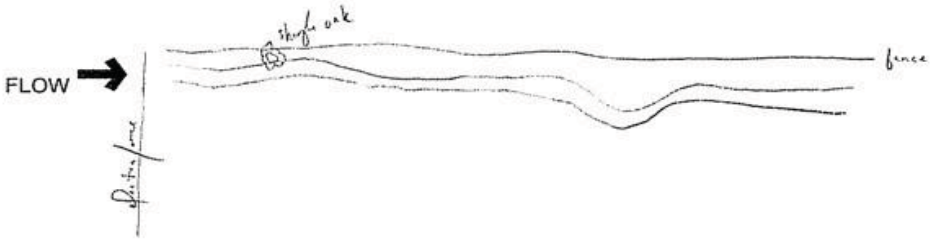
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

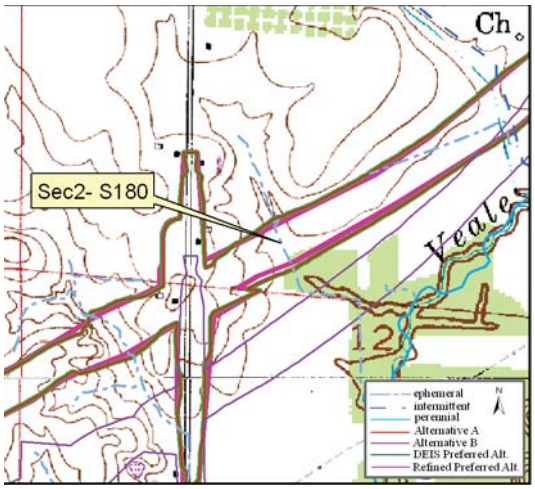
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

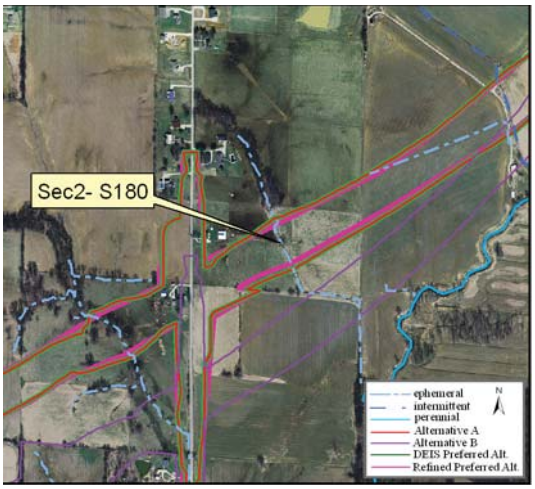
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 180



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 1 T2N R7W	**OHWM Width ft:**	4.0
UTME:	487816	**OHWM Depth ft:**	0.7
UTMN:	4275496	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S180

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	451 feet	0.04 acres	A	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	0	0	B	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	451 feet	0.04 acres	DEIS Preferred	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	321 feet	0.03 acres	Refined Preferred	HHEI 41 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	41
Watershed Area (square miles):	0.12
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 180

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION Unnamed Trib Veale Cks SITE NUMBER Sec2-S180 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.12

LENGTH OF STREAM REACH (ft) 200 LAT 4275496 LONG 487816 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRB NV COMMENTS Cows prevented access to exact site

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	20	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS only one pool in reach **MAXIMUM POOL DEPTH (centimeters):** 7cm

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4'

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS only one pool below culvert

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 17 up to right 18 down to right 19 up 20 down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: livestock impacts

BIOTIC EVALUATION

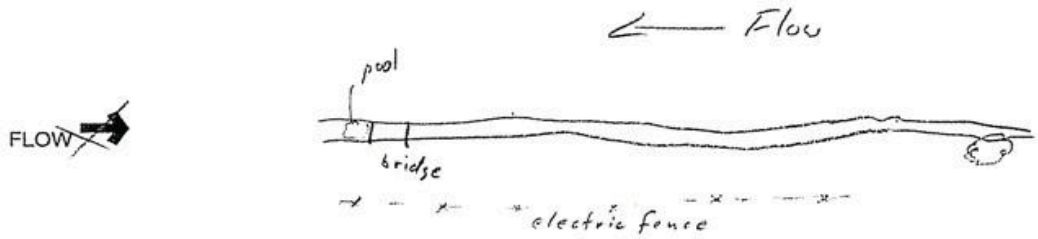
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

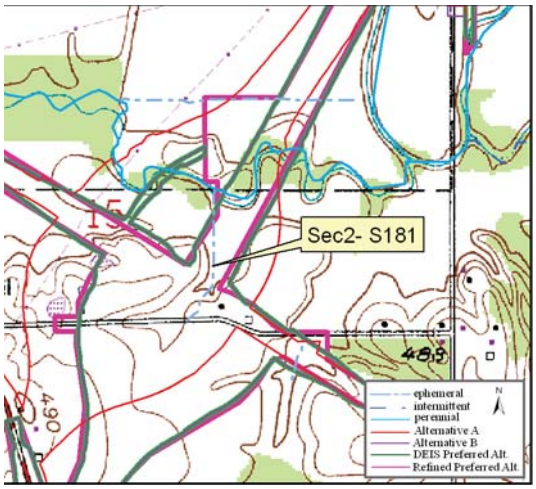
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

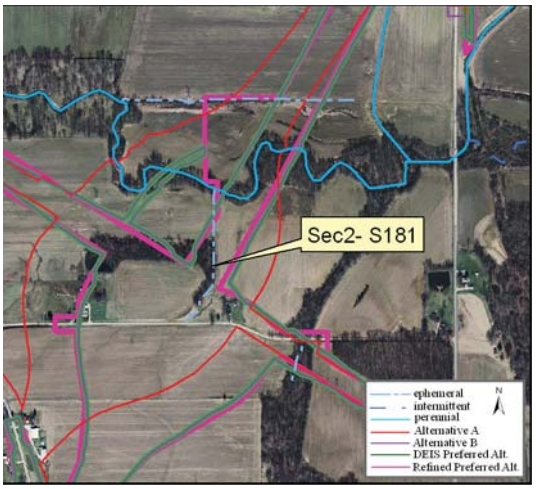
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 181



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2N R7W	**OHWM Width ft:**	4.0
UTME:	484952	**OHWM Depth ft:**	0.4
UTMN:	4272803	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S181

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	1,119 feet	0.10 acres	A	HHEI 27 / Class I
Unnamed Tributary Veale Creek	940 feet	0.09 acres	B	HHEI 27 / Class I
Unnamed Tributary Veale Creek	940 feet	0.09 acres	DEIS Preferred	HHEI 27 / Class I
Unnamed Tributary Veale Creek	877 feet	0.08 acres	Refined Preferred	HHEI 27 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	27
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.15 ac, B-1.15 ac, DP-1.15 ac, RP-1.15 ac

Stream Sec2S 181

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 181

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S181 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200' LAT 4272803 LONG 484952 RIVER CODE _____ RIVER MILE _____

DATE 8/17/05 SCORER JRB NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	80
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest. Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential. Park, New Field	☐	☒	Open Pasture. Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/16/05 Quantity: _____

Photograph Information: 41 UR 42 UL 43 U 44 D

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

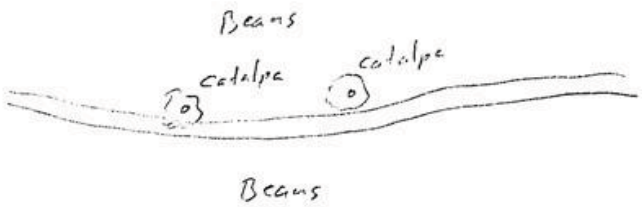
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

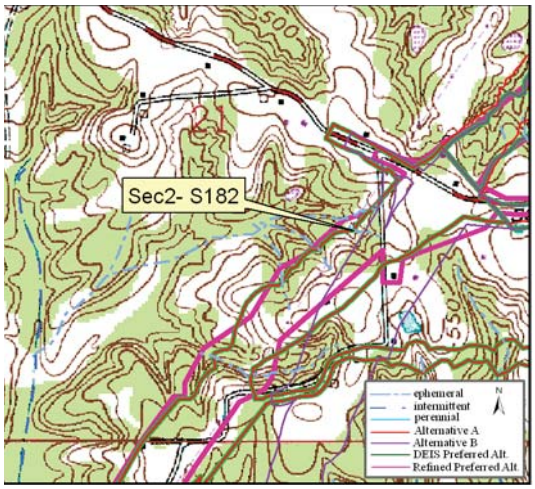
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

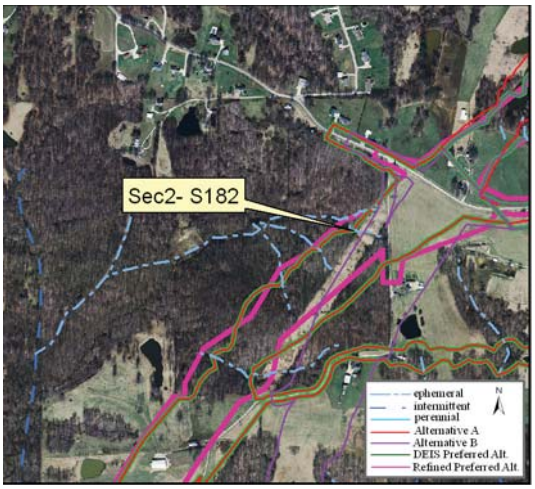
FLOW →



Stream Id-Section 2 S 182



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	2.5
UTME:	483441	**OHWM Depth ft:**	0.2
UTMN:	4271051	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S182

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	220 feet	0.01 acres	A	HHEI 23 / Class I
Unnamed Tributary Jackson Pond	141 feet	0.01 acres	B	HHEI 23 / Class I
Unnamed Tributary Jackson Pond	220 feet	0.01 acres	DEIS Preferred	HHEI 23 / Class I
Unnamed Tributary Jackson Pond	333 feet	0.02 acres	Refined Preferred	HHEI 23 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	23
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.71 ac, B-0.45 ac, DP-0.71 ac, RP-1.07 ac

Stream Sec2S 182

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 182

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 23

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S182 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 4271051 LONG 483441 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER _____ COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

Powerline ROW

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☒	SILT [3 pt]	10
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☒ ☐	GRAVEL (2-64 mm) [9 pts]	20	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40: 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 2.5'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Under powerlines - cleared area - shrubby

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Davies Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 5 UR 6 UL 7 UP 8 down

Elevated Turbidity? (Y/N): _____ Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) N If not, please explain: This reach lies in powerline ROW upstream and down wooded

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

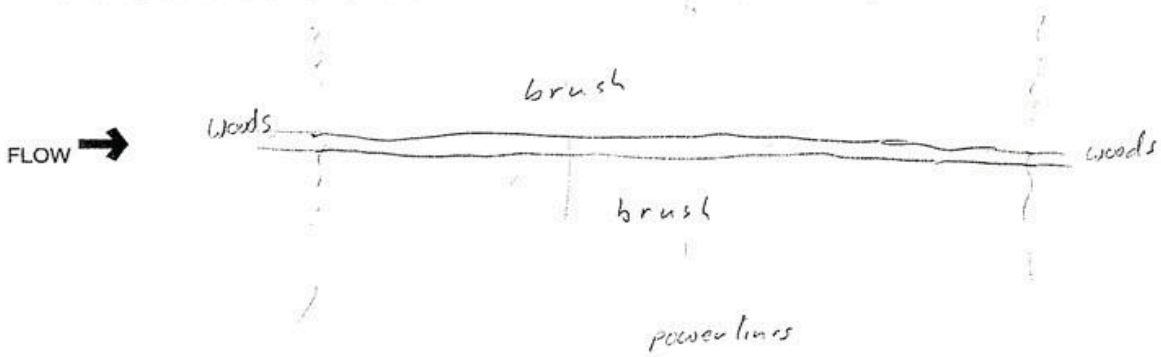
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

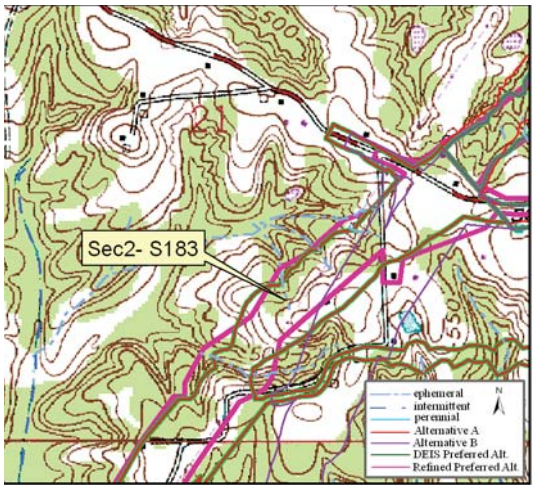
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

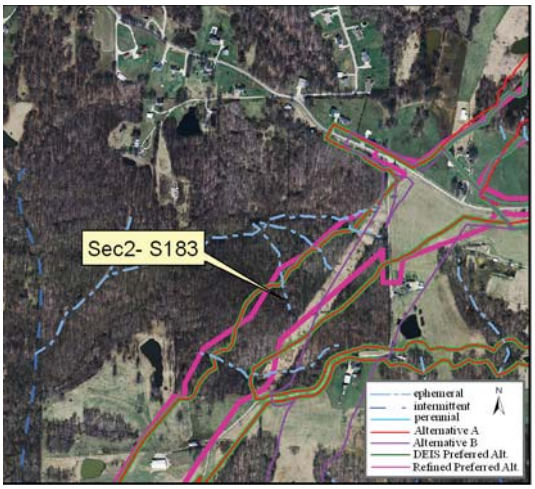
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 183



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	4.5
UTME:	483246	**OHWM Depth ft:**	0.2
UTMN:	4270884	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S183

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	230 feet	0.02 acres	A	HHEI 28 / Class I
Unnamed Tributary Jackson Pond	0	0	B	HHEI 28 / Class I
Unnamed Tributary Jackson Pond	230 feet	0.02 acres	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Jackson Pond	336 feet	0.03 acres	Refined Preferred	HHEI 28 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.48 ac, B-0, DP-1.48 ac, RP-1.81 ac

Stream Sec2S 183

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 183

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION _____

Unnamed Trib Jackson Pond SITE NUMBER Sec2-S183 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4270884 LONG 483246 RIVER CODE _____ RIVER MILE _____

DATE 8/12/05 SCORER JRD NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	65
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☒	BEDROCK [16 pt]	5	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]	5	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	25	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5

(A) 9 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☒ > 1 0 m - 1 5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.5'

HHEI Metric Points

Substrate Max = 40	13
A + B	
Pool Depth Max = 30	0
Bankfull Width Max=30	15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest. Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☐ 3 0
☐ 0 5 ☐ 1 5 ☐ 2 5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 13 UR 14 UL 15 UP 16 Down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

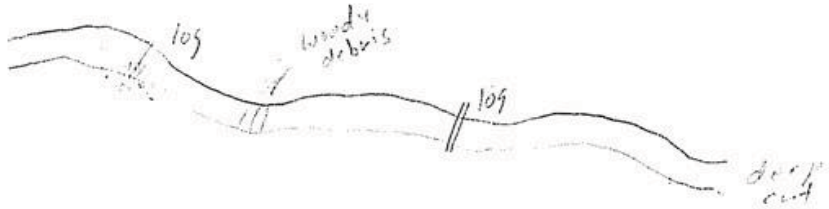
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

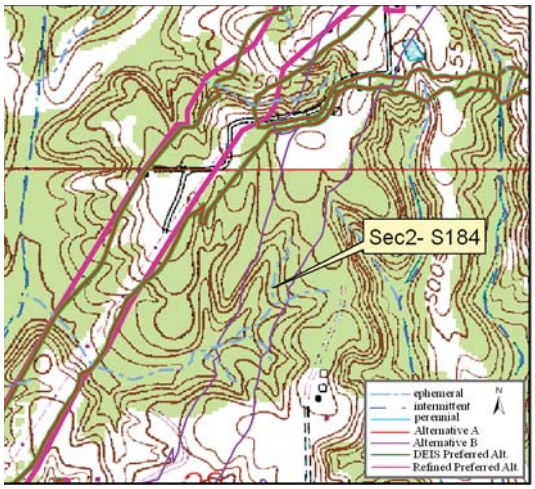
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

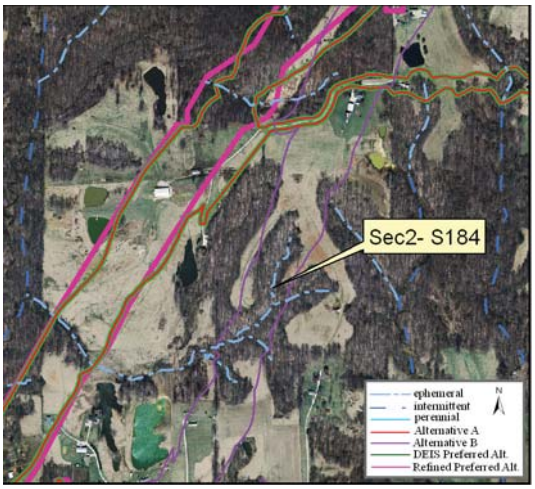
FLOW →



Stream Id-Section 2 S 184



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 28 T2N R7W	**OHWM Width ft:**	8.0
UTME:	483198	**OHWM Depth ft:**	0.4
UTMN:	4270263	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S184

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 50 / Class II
Unnamed Tributary Jackson Pond	593 feet	0.11 acres	B	HHEI 50 / Class II
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 50 / Class II
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 50 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	50
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-2.13 ac, DP-0, RP-0

Stream Sec2S 184

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 50

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S184 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT 4270263 LONG 483198 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRO NV COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	60
☐ ☐	BOULDER (>256 mm) [16 pts]		☒ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	30
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	<1	☐ ☐	MUCK [0 pts]	
☐ ☒	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 10

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3cm

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 8'

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☒ ☒ Wide >10m	☒ ☒ Mature Forest. Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☐ ☐ Open Pasture. Row Crop
☐ ☐ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel. isolated pools. no flow (Intermittent)
☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None
☐ 0 5
☐ 1 0
☐ 1 5
☒ 2 0
☐ 2 5
☐ 3 0
☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: 17 UR 18 UL 19 UP 20 Down

Elevated Turbidity? (Y/N): _____ Canopy (% open): 10 21 – 24 oil staining 25 - 28 oil well

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: Black stain and coating on substrate black sheen on pool strong petroleum odor

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

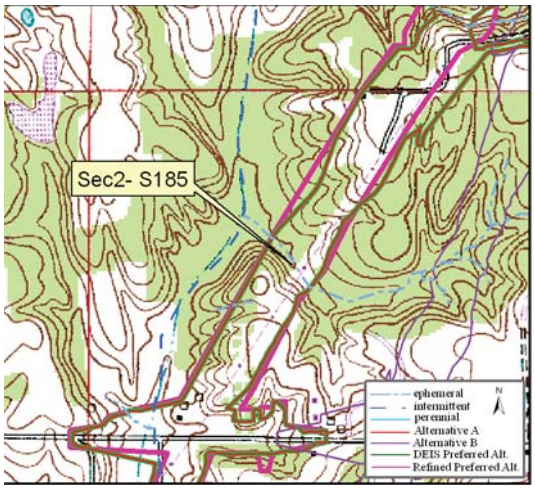
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

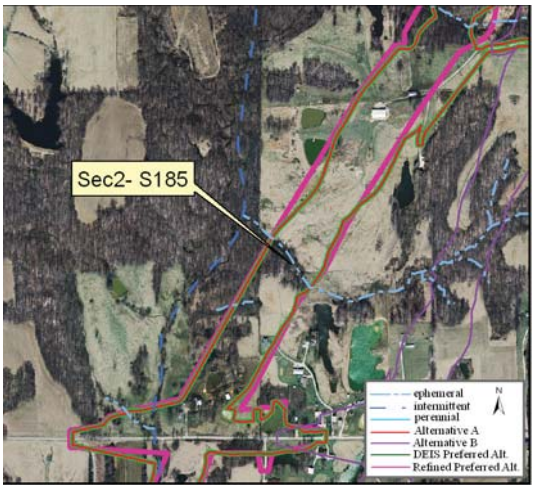
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Stream Id-Section 2 S 185



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 28 T2N R7W	**OHWM Width ft:**	7.5
UTME:	482759	**OHWM Depth ft:**	0.4
UTMN:	4270111	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S185

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	490 feet	0.08 acres	A	HHEI 71 / Class III
Unnamed Tributary Jackson Pond	0	0	B	HHEI 71 / Class III
Unnamed Tributary Jackson Pond	490 feet	0.08 acres	DEIS Preferred	HHEI 71 / Class III
Unnamed Tributary Jackson Pond	500 feet	0.09 acres	Refined Preferred	HHEI 71 / Class III

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	71
Watershed Area (square miles):	0.12
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.31 ac, B-0, DP- 1.31 ac, RP-1.33 ac

Stream Sec2S 185

Site Photographs

View Cross stream - upstream right

View Cross stream - upstream left

View Upstream

View Downstream

Stream Sec2S 185

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 71

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S185 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.12

LENGTH OF STREAM REACH (ft) 200' LAT 4270111 LONG 482759 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRD COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

None

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☐ ☒	SILT [3 pt]	<1
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☒	BEDROCK [16 pt]	<1	☐ ☐	FINE DETRITUS [3 pts]	
☐ ☒	COBBLE (65-256 mm) [12 pts]	<1	☐ ☐	CLAY or HARDPAN [0 pt]	
☒ ☐	GRAVEL (2-64 mm) [9 pts]	30	☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	70	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble, Bedrock <1 (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 6

HHEI Metric Points

Substrate Max = 40: 21

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☒ > 22 5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 25cm

Pool Depth Max = 30: 30

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 7.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☒	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☒ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel. isolated pools. no flow (Intermittent)
- ☐ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1 0	☐ 2 0	☐ 3 0
☐ 0 5	☐ 1 5	☒ 2 5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 6/18/05 Quantity: _____

Photograph Information: 29 UR 30 UL 31 UP 32 Down

Elevated Turbidity? (Y/N): N Canopy (% open): 30

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

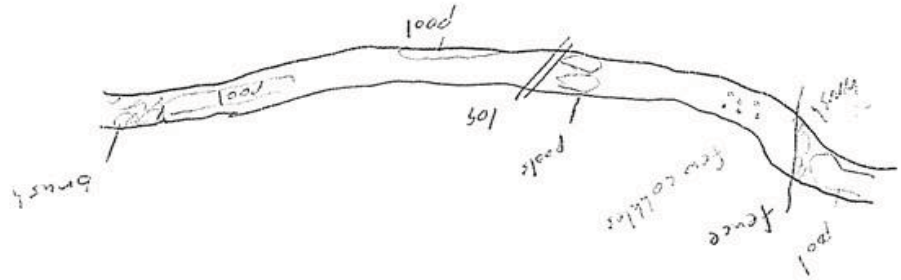
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

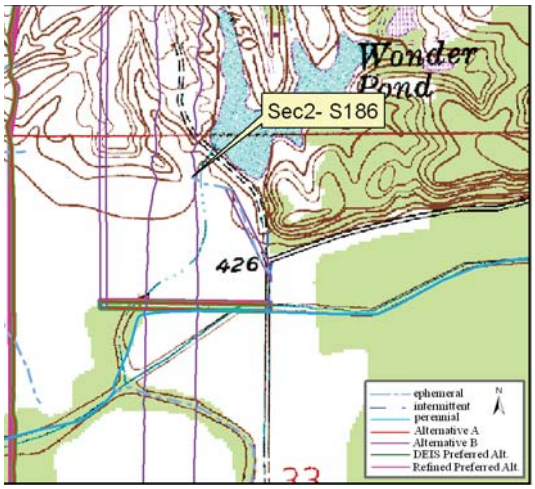
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include Important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

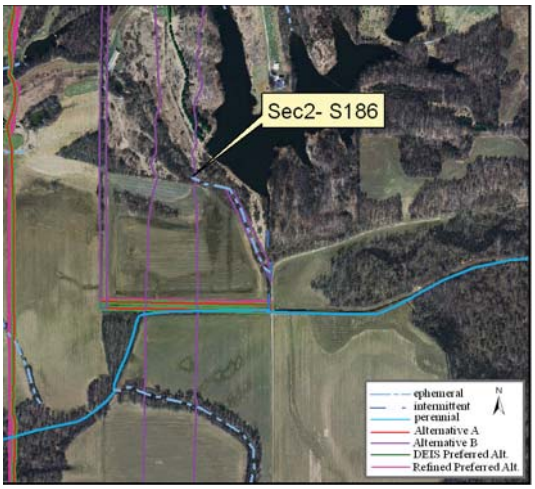
FLOW



Stream Id-Section 2 S 186



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	5.5
UTME:	482872	**OHWM Depth ft:**	0.3
UTMN:	4268814	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S186

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	39 feet	0.01 acres	B	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.40 ac, DP-0, RP-0

Stream Sec2S 186

Site Photographs

Photo Not Available

View Downstream

Photo Not Available

View Cross stream - upstream left

Photo Not Available

View Upstream

Photo Not Available

View Cross stream - upstream right

Stream Sec2S 186

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Jackson Pond SITE NUMBER Sec2-S186 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT 4268814 LONG 482872 RIVER CODE _____ RIVER MILE _____

DATE 8/18/05 SCORER JRB NP COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	70
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pt]	10
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☒ ☐	SAND (<2 mm) [6 pts]	60	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder. Cobble. Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22 5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3 0 m - 4 0 m (> 9' 7" - 13') [25 pts]
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 5.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park. New Field	☐	☐	Open Pasture. Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools. no flow (Intermittent)
☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1 0 ☐ 2 0 ☐ 3.0
☐ 0 5 ☐ 1 5 ☐ 2 5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0 5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 8/18/05 Quantity: _____

Photograph Information: No pictures

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

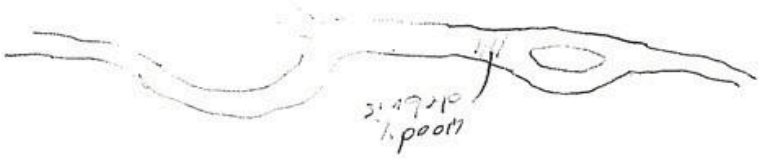
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

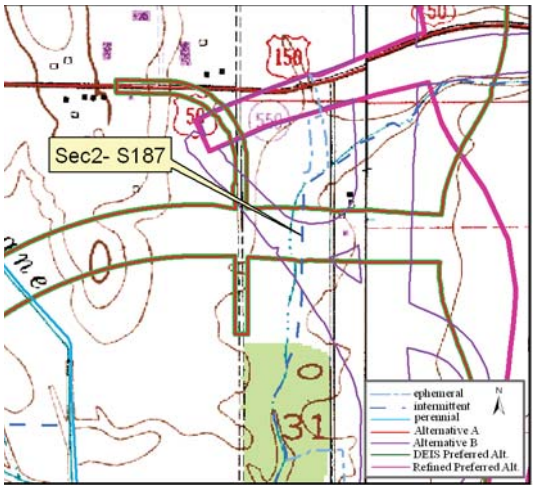
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

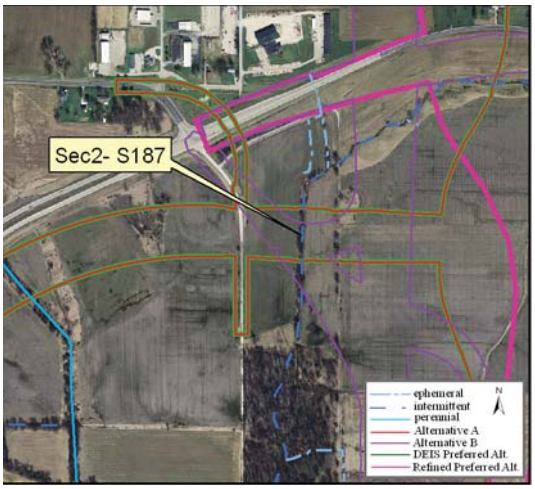
FLOW →



Stream Id-Section 2 S 187



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 31 T3N R6W	**OHWM Width ft:**	4.5
UTME:	488969	**OHWM Depth ft:**	1.3
UTMN:	4278167	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S187

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	424 feet	0.04 acres	A	QHEI 46 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	527 feet	0.05 acres	B	QHEI 46 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	424 feet	0.04 acres	DEIS Preferred	QHEI 46 / Modified Warmwater Habitat
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	QHEI 46 / Modified Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	46
Watershed Area (square miles):	1.93
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.56 ac, B-0.69 ac, DP-0.56 ac, RP-0

Stream Sec2S 187

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S187 | bioSample # | Stream Name Un Trib Hurricane Branch | Location 488969 E 4278167 N

Surveyor LL/BB | Sample Date 9-21 | County Davis | Macro SampleType | Habitat Complete | QHEI Score: 46

1-Substrate (20 points maximum)

Substrate Score: 10

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R		Present P	Present R	Predominant P	Predominant R		Present P	Present R
		Bldrs/Slabs(10)					Hardpan(4)		
		Boulders(9)					Detritus(3)		
		Cobble(8)					Muck(2)		
		Gravel(7)		X			Silt(2)	X	
X	X	Sand(6)		X			Sludge(1)		
		Bedrock(5)					Artificial(0)		

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Tills(1); Wetlands(0); Hardpan(0); X Sandstone(0); Rip/Rap(0); Lacustrine(0); Shale(-1); Coal fines(-2)

Silt Cover: Silt heavy(-2); X Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 9

Type (check ALL that apply): Undercut banks(1); X Overhanging vegetation(1); X Shallows(in slow water)(1); X Rootmats(1); X Deep pools(2); Rootwads(1); Boulders(1); Oxbows(1); Aquatic macrophytes(1); X Logs and woody debris(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 10

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	X Relocation	Islands
X Low (2)	X Fair (3)	X Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 3

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width (per bank): Wide >50m (4); Moderate 10-50m (3); Narrow 5-10m (2); X Very narrow <5m (1); None (0)

Erosion/Runoff-Floodplain quality (past 100 ft Riparian) (most predominant per bank): Forest, Swamp (3); Shrub or Old field (2); Residential, Park, New field (1); Fenced pasture (1); Conservation Tillage (1); Urban or Industrial (0); Mining, Construction (0); X Open Pasture/Rowcrop (0)

Bank Erosion (per bank): None or little (3); X Moderate (2); Heavy/Severe (1)

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 5

Max pool depth (check one): >1m (6); 0.7-1m (4); X 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: 51 cm deep

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 5

Riffle/run depth (check one): X Generally>10cm Max>50cm (4); Generally>10cm Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); X Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); X Moderate (0); Normal/Low (1); None (2); No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 7' | Gradient: 3.86 ft/mile | Drainage Area: 1.93 square miles

Comments:

Stream Sec2S 187

IDEM — QWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name | Location: 187

Surveyor | Sample Date | County | Macro SampleType | Habitat Complete | QHEI Score: 46

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 3 | % Riffle: 20 | Is reach representative of stream? Y

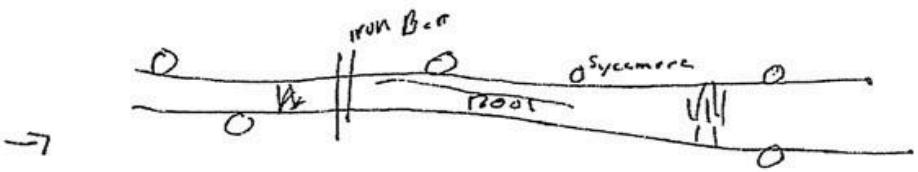
Aesthetic rating (1-10): 3 | % Run: 10

Canopy Cover (% Open): 60 | % Glide: | % Pool: 70

General QHEI Notes:

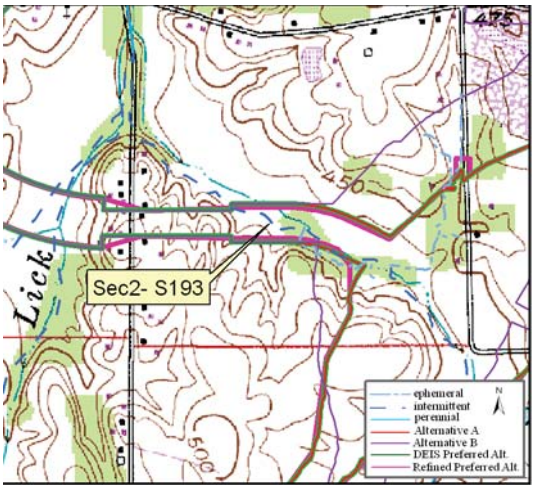
45 44 47 48

Field

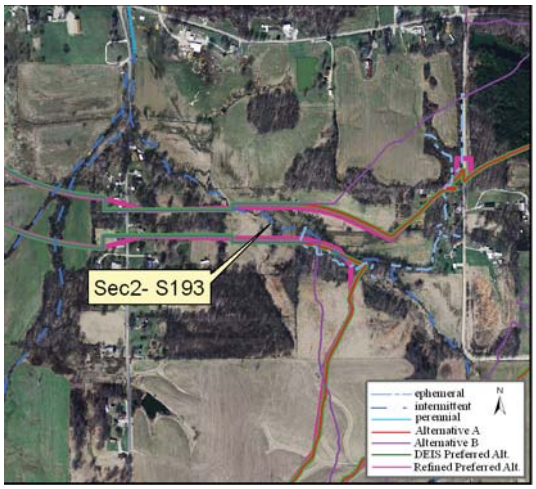


Field

Stream Id-Section 2 S 193



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	7.5
UTME:	479304	**OHWM Depth ft:**	1.0
UTMN:	4262731	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S193

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	703 feet	0.12 acres	A	HHEI 56 / Modified Class II
Unnamed Tributary Lick Creek	703 feet	0.12 acres	B	HHEI 56 / Modified Class II
Unnamed Tributary Lick Creek	703 feet	0.12 acres	DEIS Preferred	HHEI 56 / Modified Class II
Unnamed Tributary Lick Creek	709 feet	0.12 acres	Refined Preferred	HHEI 56 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	56
Watershed Area (square miles):	0.97
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.04 ac, B-1.04 ac, DP- 1.04 ac, RP-0.97 ac

Stream Sec2S 193

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 193

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 56

SITE NAME/LOCATION Unnamed Trib Lick Ck SITE NUMBER Sec2-S193 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.97

LENGTH OF STREAM REACH (ft) 200' LAT 4262731 LONG 479304 RIVER CODE _____ RIVER MILE _____

DATE 9-21 SCORER RLDA COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	30
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☒☐	CLAY or HARDPAN [0 pt]	10
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☒☐	SAND (<2 mm) [6 pts]	60	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder. Cobble, Bedrock _____ (A) 9 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points — Substrate Max = 40: 11 — A + B

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☒ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 16cm

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 7.5'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐☐	Wide >10m	☐☐	Mature Forest, Wetland	☐☐	Conservation Tillage
☐☐	Moderate 5-10m	☐☐	Immature Forest. Shrub or Old Field	☐☐	Urban or Industrial
☒☒	Narrow <5m	☐☐	Residential Park New Field	☐☐	Open Pasture Row Crop
☐☐	None	☒☒	Fenced Pasture	☐☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel. Isolated pools. no flow (Intermittent)
☐ Dry channel no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 0.5 ☒ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24 2002 Revision

193

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9-20 Quantity: _____

Photograph Information: 17 UR 18 UL 19 DN 20 UP

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) N If not, please explain: ~~[illegible]~~ utility easement

Additional comments/description of pollution impacts: Agriculture pasture

BIOTIC EVALUATION

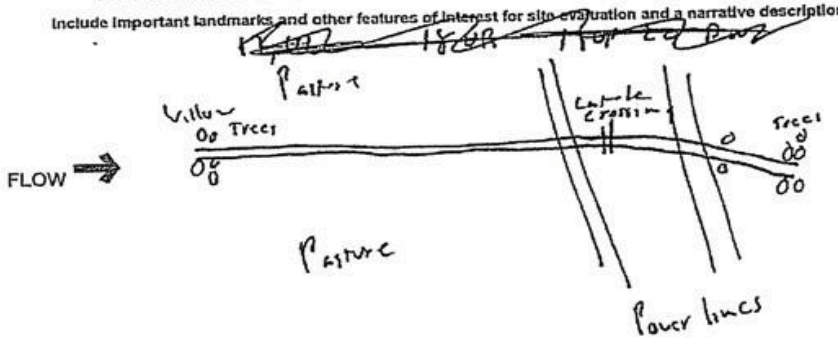
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N/ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

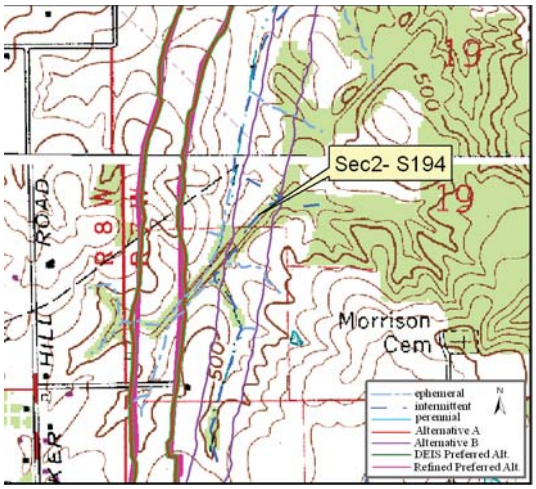
Comments Regarding Biology: Frogs

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

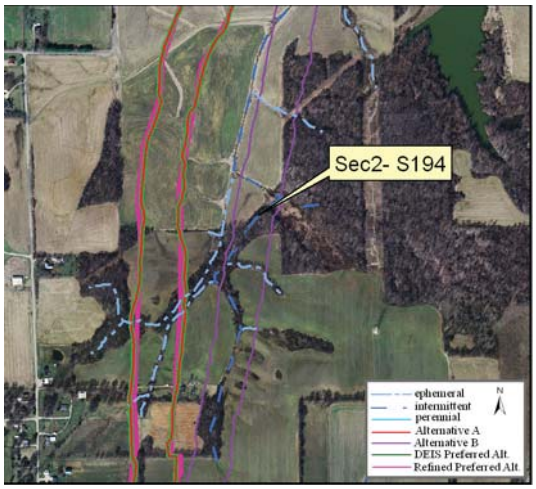
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 194



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	9.0
UTME:	479402	**OHWM Depth ft:**	1.2
UTMN:	4261190	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S194

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 29 / Modified Class I
Unnamed Tributary Lick Creek	744 feet	0.15 acres	B	HHEI 29 / Modified Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 29 / Modified Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 29 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-2.52 ac, DP-0, RP-0

Stream Sec2S 194

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 194

Field Report

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION Unnamed Trib Lick Cks SITE NUMBER Sec2-S194 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4261190 LONG 479402 RIVER CODE _____ RIVER MILE _____

DATE 9/16/05 SCORER JRB RJC COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

Drainage modified for mining

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	60
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	<1
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☒	COBBLE (65-256 mm) [12 pts]	<1	☒ ☐	CLAY or HARDPAN [0 pt]	20
☐ ☒	GRAVEL (2-64 mm) [9 pts]	10	☐ ☐	MUCK [0 pts]	
☐ ☒	SAND (<2 mm) [6 pts]	10	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs. Boulder, Cobble. Bedrock <1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 6

HHEI Metric Points — Substrate Max = 40: 9 (A + B)

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** _____

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 9'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest. Wetland	☐ ☐	Conservation Tillage
☐ ☒	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☒ ☐	Narrow <5m	☐ ☐	Residential. Park. New Field	☐ ☐	Open Pasture. Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel. isolated pools. no flow (Intermittent)
- ☒ Dry channel. no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☒ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☒ Yes ☐ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9/15/05 Quantity: _____

Photograph Information: 9 UR 10 UL 11 UP 12 DN

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): N (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

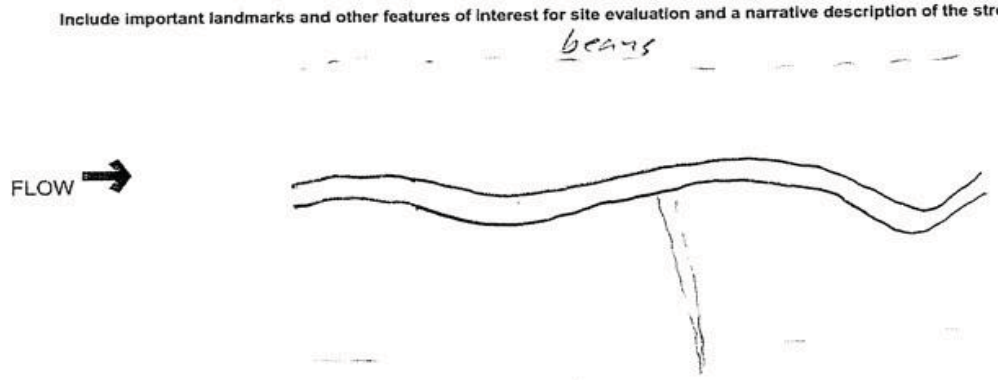
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

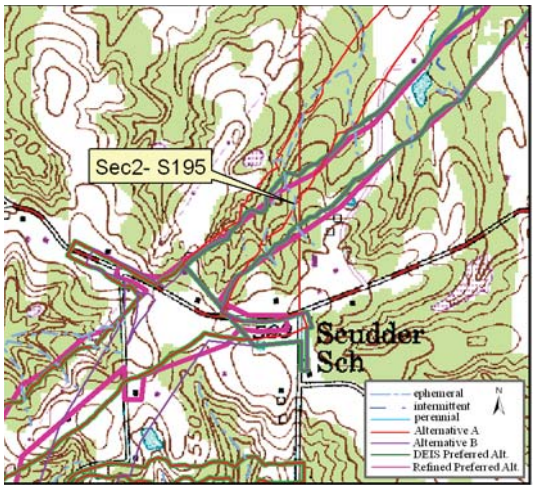
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

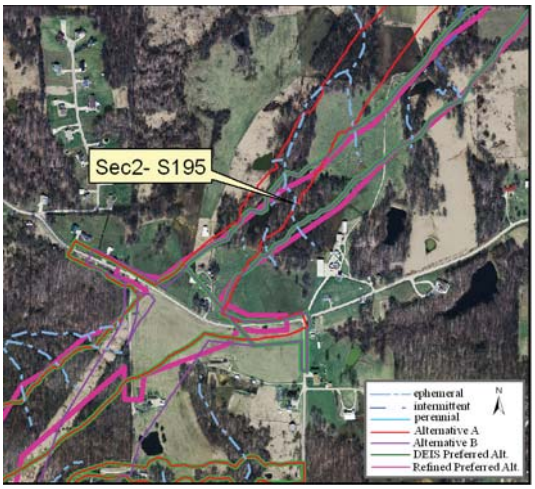
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 195



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 21 T2N R7W	**OHWM Width ft:**	6.6
UTME:	483874	**OHWM Depth ft:**	0.6
UTMN:	4271395	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S195

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	206 feet	0.03 acres	A	HHEI 49 / Class II
Unnamed Tributary Veale Creek	356 feet	0.05 acres	B	HHEI 49 / Class II
Unnamed Tributary Veale Creek	356 feet	0.05 acres	DEIS Preferred	HHEI 49 / Class II
Unnamed Tributary Veale Creek	407 feet	0.06 acres	Refined Preferred	HHEI 49 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	49
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.44 ac, B-1.15 ac, DP- 1.15 ac, RP-1.42 ac

Stream Sec2S 195

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 195

Field Report

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 49

SITE NAME/LOCATION Unnamed Trib Veale Cks SITE NUMBER Sec2-S195 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200' LAT 4271395 LONG 483874 RIVER CODE _____ RIVER MILE _____

DATE 9-21 SCORER RC/BA COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1 SUBSTRATE (Estimate percent of every type of substrate present Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☐	SILT [3 pt]	40
☐ ☐	BOULDER (>256 mm) [16 pts]		☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☒ ☐	BEDROCK [16 pt]	25	☒ ☐	FINE DETRITUS [3 pts]	20
☒ ☐	COBBLE (65-256 mm) [12 pts]	5	☒ ☐	CLAY or HARDPAN [0 pt]	10
☐ ☐	GRAVEL (2-64 mm) [9 pts]		☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30 (A) 19 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points — Substrate Max = 40: 24 (A + B)

2. Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft)* evaluation reach at the time of evaluation Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 3cm

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 6.6'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box)

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

Stream Sec2S 195

195

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☐ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: 9-20 Quantity: _____

Photograph Information: 41 42 43 44

Elevated Turbidity? (Y/N): N Canopy (% open): 15

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S U) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Cow pasture

BIOTIC EVALUATION

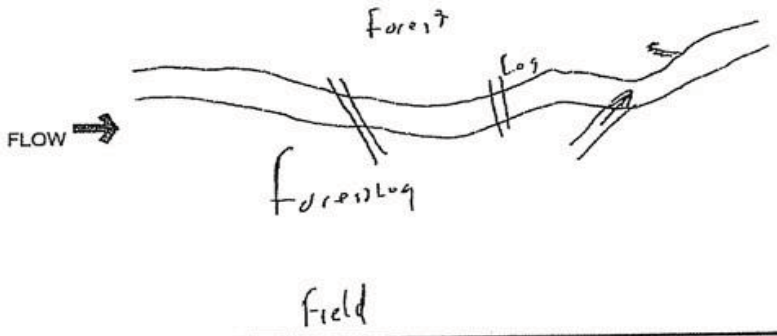
Performed? (Y/N): _____ (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

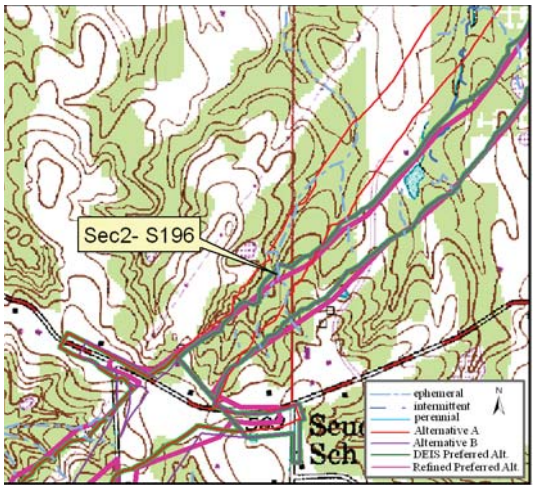
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



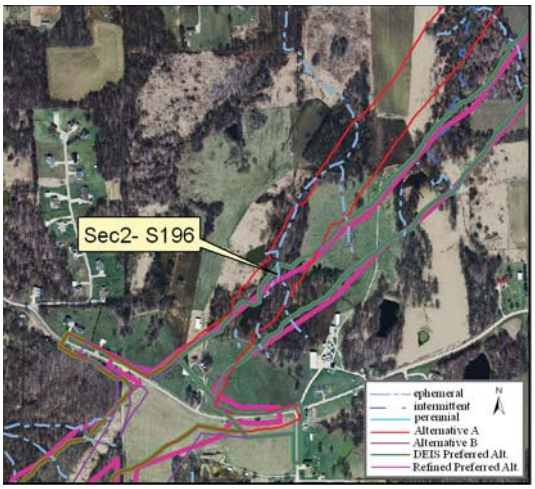
PHWH Form Page - 2

October 24 2002 Rmspon

Stream Id-Section 2 S 196



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 21 T2N R7W	**OHWM Width ft:**	8.2
UTME:	483854	**OHWM Depth ft:**	1.3
UTMN:	4271448	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S196

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	1,403 feet	0.26 acres	A	HHEI 43 / Class II
Unnamed Tributary Veale Creek	279 feet	0.05 acres	B	HHEI 43 / Class II
Unnamed Tributary Veale Creek	279 feet	0.05 acres	DEIS Preferred	HHEI 43 / Class II
Unnamed Tributary Veale Creek	140 feet	0.03 acres	Refined Preferred	HHEI 43 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	43
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-5.79 ac, B-1.19 ac, DP-1.19 ac, RP-0.68 ac

Stream Sec2S 196

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 43

SITE NAME/LOCATION Unnamed Trib Veale Ck SITE NUMBER Sec2-S196 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200' LAT 4271448 LONG 483854 RIVER CODE _____ RIVER MILE _____

DATE 9-21 SCORER RL / BA COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1 SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☒☐	SILT [3 pt]	60
☐☐	BOULDER (>256 mm) [16 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	40
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points — Substrate Max = 40: 8 (A + B)

2 Maximum Pool Depth *(Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes)* (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 6cm

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 5' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 8.2'

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

PHWH Form Page - 1

October 24, 2002 Revision

Stream Sec2S 196

194

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gallia Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 9-20 Quantity: _____

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): _____

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no or Id and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Pond draining into stream. Pond is possibly agriculture related

BIOTIC EVALUATION

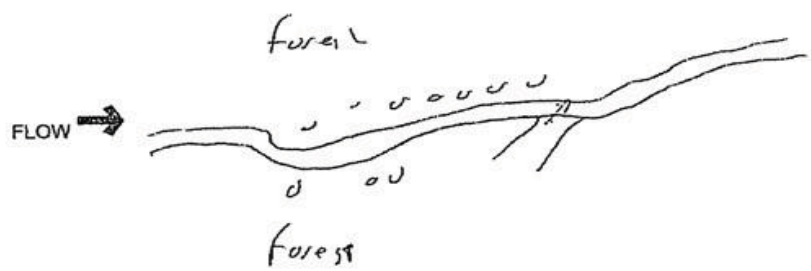
Performed? (Y/N): N (If Yes, Record all observations Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

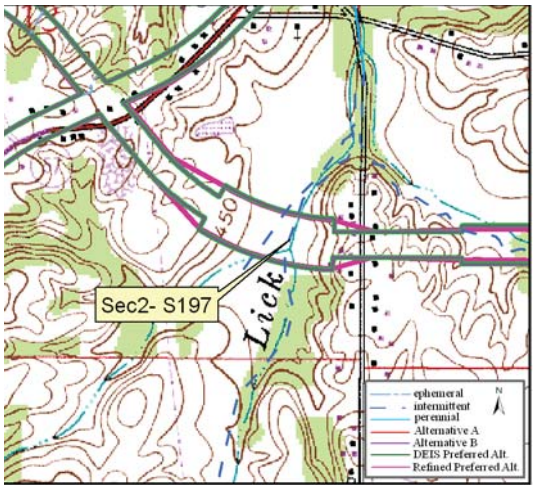
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

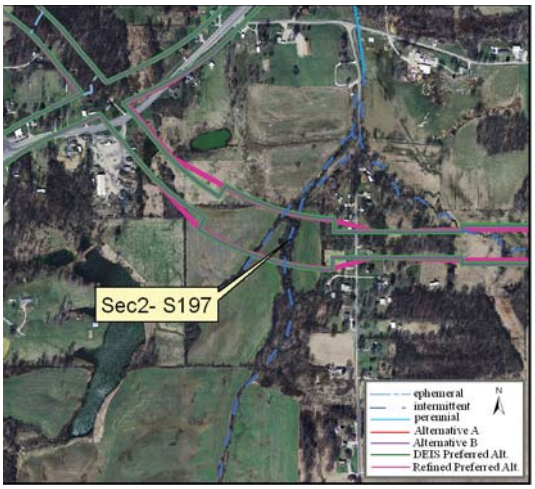


October 24 2002 Revision

Stream Id-Section 2 S 197



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 13 T1N R8W	**OHWM Width ft:**	17.0
UTME:	478891	**OHWM Depth ft:**	0.8
UTMN:	4262708	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S197

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Lick Creek	404 feet	0.16 acres	A	QHEI 59.5 / Warmwater Habitat
Lick Creek	404 feet	0.16 acres	B	QHEI 59.5 / Warmwater Habitat
Lick Creek	404 feet	0.16 acres	DEIS Preferred	QHEI 59.5 / Warmwater Habitat
Lick Creek	384 feet	0.15 acres	Refined Preferred	QHEI 59.5 / Warmwater Habitat

Stream Type:	Intermittent
Evaluation Type:	QHEI
Evaluation Score:	59.5
Watershed Area (square miles):	0.87
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.19 ac, B-1.19 ac, DP-1.19 ac, RP-1.12 ac

Stream Sec2S 197

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 197

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # Sec2-S197 | bioSample # | Stream Name Lick Creek | Location 478891 E 4262708 N

Surveyor JRD/NV | Sample Date 1/10/06 | County Pike | Macro SampleType | Habitat Complete | QHEI Score: 59.5

1-Substrate (20 points maximum)

Substrate Score: 11

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
X	X			Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); X Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); X Moderate(-1); Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 10

Type (check ALL that apply): Undercut banks(1); Deep pools(2); Oxbows(1); X Overhanging vegetation(1); X Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); Rootmats(1)

Comments:

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); X Moderate 25-75% (7); Sparse 5-25% (3); Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 16

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	X None (6)	High (3)	Snagging	Impound
X Moderate (3)	X Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
Low (2)	Fair (3)	Recovering (3)	Low (1)	Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7.5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R	Bank Erosion L	R	(per bank)
X		Wide >50m (4)	X		Forest, Swamp (3)			X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)					Moderate (2)
	X	Narrow 5-10m (2)			Residential, Park, New field (1)					Heavy/Severe (1)
		Very narrow <5m (1)			Fenced pasture (1)		X			
		None (0)								

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 4

Max pool depth (check one): >1m (6); 0.7-1m (4); 0.4-0.7m (2); X 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): X Pool width > riffle width (2); Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle Score: 1

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm (3); Generally 5-10cm (1); X Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); X Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); X Normal/Low (1); None (2); No riffle (0)

Comments:

5-Gradient (10 points maximum)

Gradient Score: 10

Average width: 17 | Gradient: 23.2 ft/mile | Drainage Area: 0.869 square miles

Comments:

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
197		Lick Creek	

Surveyor	Sample Date	County	Macro SampleType	Habitat Complete	QHEI Score: 59.5
	1/14/06	Pike			

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [x] Agricultural
- [ ] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

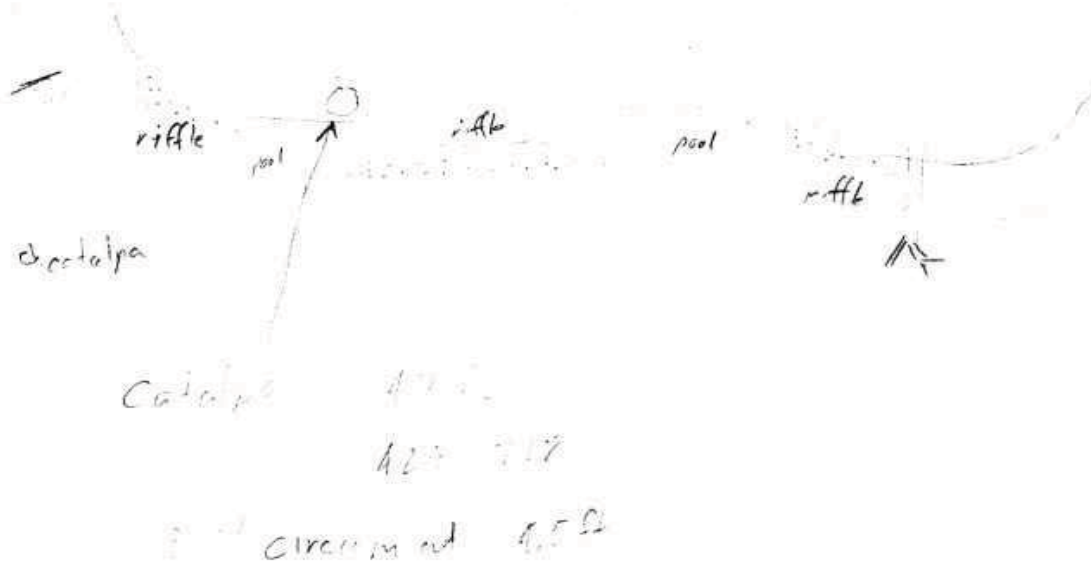
Miscellaneous QHEI Information

Subjective rating (1-10): 7 | % Riffle: | Is reach representative of stream?

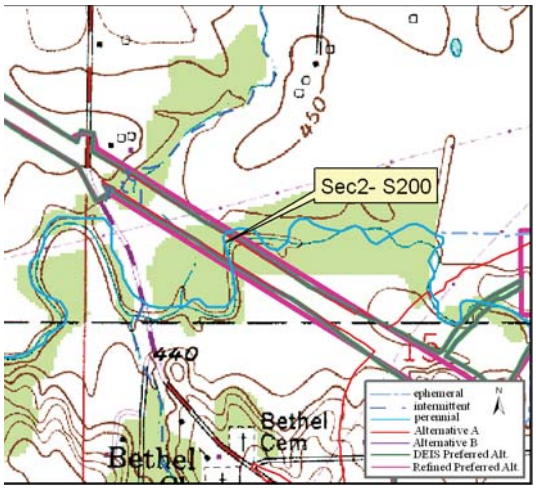
Aesthetic rating (1-10): | % Run:

Canopy Cover (% Open): | % Glide: | % Pool:

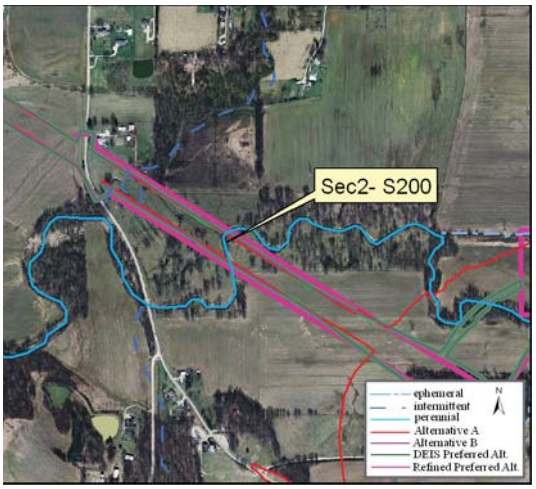
General QHEI Notes:



Stream Id-Section 2 S 200



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 15 T2N R7W	**OHWM Width ft:**	25.0
UTME:	484237	**OHWM Depth ft:**	2.8
UTMN:	4273174	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S200

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Veale Creek	220 feet	0.13 acres	A	QHEI 45 / Modified Warmwater Habitat
Veale Creek	256 feet	0.15 acres	B	QHEI 45 / Modified Warmwater Habitat
Veale Creek	256 feet	0.15 acres	DEIS Preferred	QHEI 45 / Modified Warmwater Habitat
Veale Creek	345 feet	0.20 acres	Refined Preferred	QHEI 45 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	45
Watershed Area (square miles):	8.25
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Sec2S 200

Site Photographs

View Downstream

View Cross stream - upstream left

View Upstream

View Cross stream - upstream right

Stream Sec2S 200

Field Report

IDEM — OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #: Sec2-S200 | bioSample #: | Stream Name: Veale Creek | Location: 484237 E 4273174 N

Surveyor: JRD NV | Sample Date: 1/10/06 | County: Daviess County | Macro SampleType: | Habitat Complete: | QHEI Score: 45

1-Substrate (20 points maximum)

Substrate Score: 12

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present — P=Pool, R=Riffle

Predominant P	Predominant R	Present P	Present R		Predominant P	Predominant R	Present P	Present R	
				Bldrs/Slabs(10)					Hardpan(4)
				Boulders(9)					Detritus(3)
				Cobble(8)					Muck(2)
				Gravel(7)					Silt(2)
X	X			Sand(6)					Sludge(1)
				Bedrock(5)					Artificial(0)

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin: Limestone(1); Hardpan(0); Lacustrine(0); Tills(1); X Sandstone(0); Shale(-1); Wetlands(0); Rip/Rap(0); Coal fines(-2)

Silt Cover: Silt heavy(-2); Silt moderate(-1); X Silt normal(0); Silt free(1)

Embeddedness: Extensive(-2); Moderate(-1); X Low/Normal(0); None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

>4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum

Instream Cover Score: 8

Type (check ALL that apply): Undercut banks(1); X Deep pools(2); Oxbows(1); X Overhanging vegetation(1); X Rootwads(1); Aquatic macrophytes(1); Shallows(in slow water)(1); Boulders(1); X Logs and woody debris(1); Rootmats(1)

Amount (check only 1, or 2 and AVERAGE): Extensive >75% (11); Moderate 25-75% (7); X Sparse 5-25% (3); Nearly absent <5% (1)

Comments:

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity	Development	Channelization	Stability	Modifications/Other	
High (4)	Excellent (7)	None (6)	High (3)	Snagging	Impound
X Moderate (3)	Good (5)	Recovered (4)	X Moderate (2)	Relocation	Islands
Low (2)	X Fair (3)	X Recovering (3)	Low (1)	X Canopy Removal	Leveed
None (1)	Poor (1)	Recent or no recovery (1)		Dredging	Bank shaping
				One side channel modifications	

Comments:

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width L	Riparian width R	(per bank)	Erosion/Runoff-Floodplain quality (past 100 ft Riparian) L	R	(most predominant per bank)	L	R		Bank Erosion L	R	(per bank)
		Wide >50m (4)			Forest, Swamp (3)			Conservation Tillage (1)	X	X	None or little (3)
		Moderate 10-50m (3)			Shrub or Old field (2)			Urban or Industrial (0)			Moderate (2)
		Narrow 5-10m (2)			Residential, Park, New field (1)			Mining, Construction (0)			Heavy/Severe (1)
X	X	Very narrow <5m (1)			Fenced pasture (1)	X	X	Open Pasture/Rowcrop (0)			
		None (0)									

Comments:

5a-Pool/Glide Quality (12 points maximum

Pool/Glide Score: 6

Max pool depth (check one): >1m (6); X 0.7-1m (4); 0.4-0.7m (2); 0.2-0.4m (1); <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE): Pool width > riffle width (2); X Pool width = riffle width (1); Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply): Eddies (1); Fast (1); X Moderate (1); Slow (1); Torrential (-1); Interstitial (-1); Intermittent (-2); No pool (0)

Comments: Slow [illegible]

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one): Generally>10cm, Max>50cm (4); Generally>10cm, Max<50cm(3); Generally 5-10cm (1); Generally<5cm (riffle=0)

Riffle/run substrate: Stable-e.g. cobble, boulder (2); Mod. stable-e.g. pea gravel (1); Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness: Extensive (-1); Moderate (0); Normal/Low (1); None (2); X No riffle (0)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 4

Average width: 15 ft | Gradient: 1.78 (ft/mile) | Drainage Area: 8.253 (square miles)

Comments: oltwn depth 2.5-3 ft

OWQ Biological Studies QHEI

Stream Sec2S 200

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # | bioSample # | Stream Name: Veale Creek | Location

Surveyor | Sample Date: 200 | County: Davies | Macro SampleType | Habitat | QHEI Score: 45

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- [ ] None
- [ ] Industrial
- [ ] WWTP
- [ ] Agricultural
- [x] Livestock
- [ ] Silviculture
- [ ] Construction
- [ ] Urban Runoff
- [ ] Suburban
- [ ] Channelization
- [ ] Riparian Removal
- [ ] Flow Alteration
- [ ] CSOs
- [ ] Mining
- [ ] Landfills
- [ ] Natural

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): 2 | % Riffle: | Is reach representative of stream? Yes

Aesthetic rating (1-10): 2 | % Run: | % Glide:

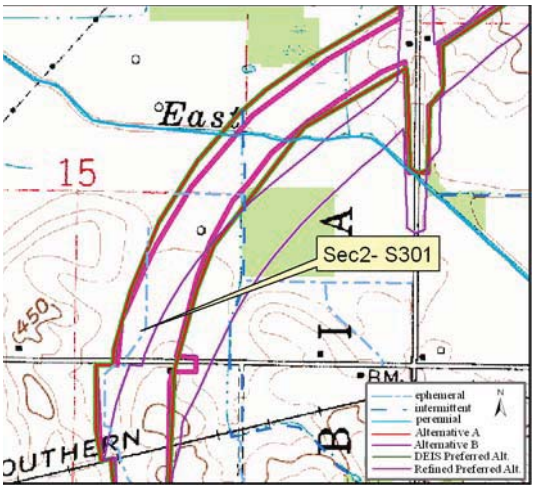
Canopy Cover (% Open): 70 | % Pool: 100

General QHEI Notes:

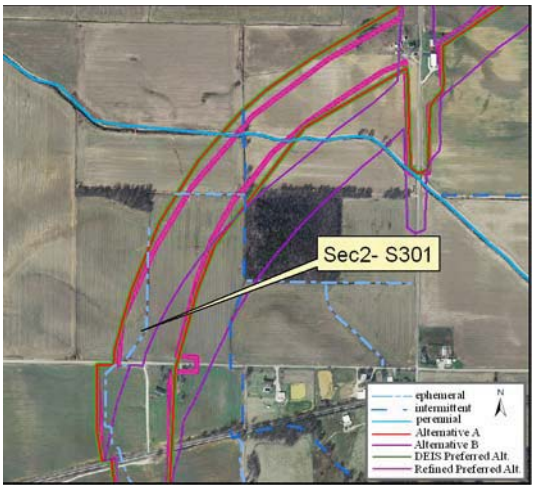
13 UL 14 UP 15 DN 16 UP

OWQ Biological Studies QHEI

Stream Id-Section 2 S 301



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib East Fork Keg Creek	**Channelized:**	No
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2S R9W	**OHWM Width ft:**	4.4
UTME:	465246	**OHWM Depth ft:**	2.0
UTMN:	4243249	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S301

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork Keg Creek	2,547 feet	0.26 acres	A	HHEI 25 / Class I
Unnamed Tributary East Fork Keg Creek	941 feet	0.10 acres	B	HHEI 25 / Class I
Unnamed Tributary East Fork Keg Creek	2,547 feet	0.26 acres	DEIS Preferred	HHEI 25 / Class I
Unnamed Tributary East Fork Keg Creek	2,193 feet	0.22 acres	Refined Preferred	HHEI 25 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.10
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.0, B-0.0, DP- 0.0, RP-0.0

Stream Id-Section 2 S 301

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION Unnamed Trib East Fork Keg Creek

SITE NUMBER S 301 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.10

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 12.137 LONG. 87 23 51.604 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	40%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3.8

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.3

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: 30 NRCS Soil Map Stream Order 1

County: Gibson Township / City: Oakland City

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 1-4

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

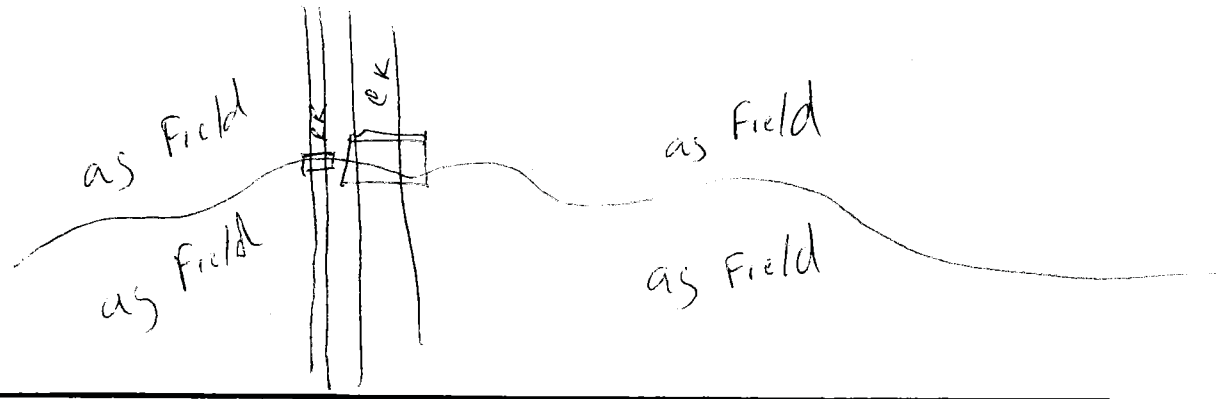
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

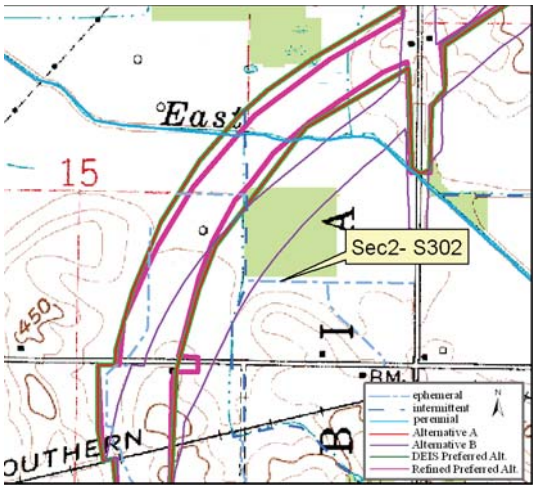
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

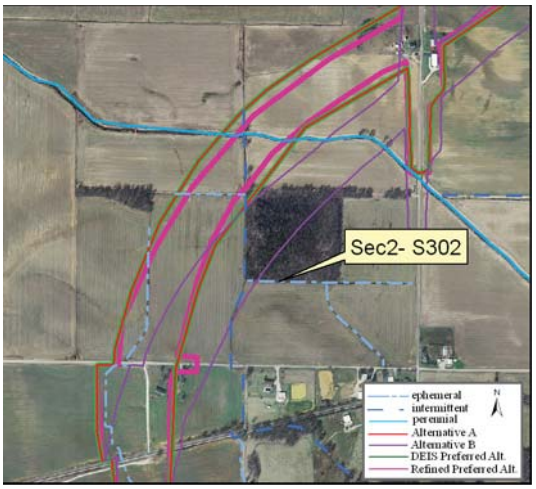
FLOW ➜



Stream Id-Section 2 S 302



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib East Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2S R9W	**OHWM Width ft:**	6.0
UTME:	465682	**OHWM Depth ft:**	2.0
UTMN:	4243545	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S302

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork Keg Creek	0	0	A	HHEI 44 / Modified Class II
Unnamed Tributary East Fork Keg Creek	89 feet	0.01 acres	B	HHEI 44 / Modified Class II
Unnamed Tributary East Fork Keg Creek	0	0	DEIS Preferred	HHEI 44 / Modified Class II
Unnamed Tributary East Fork Keg Creek	0	0	Refined Preferred	HHEI 44 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.07
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.06 ac, DP-0, RP-0

Stream Id-Section 2 S 302

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib East Fork Keg Creek

SITE NUMBER S-302 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.07

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 21.801 LONG. 87 23 33.696 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 30.5

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 10-11

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

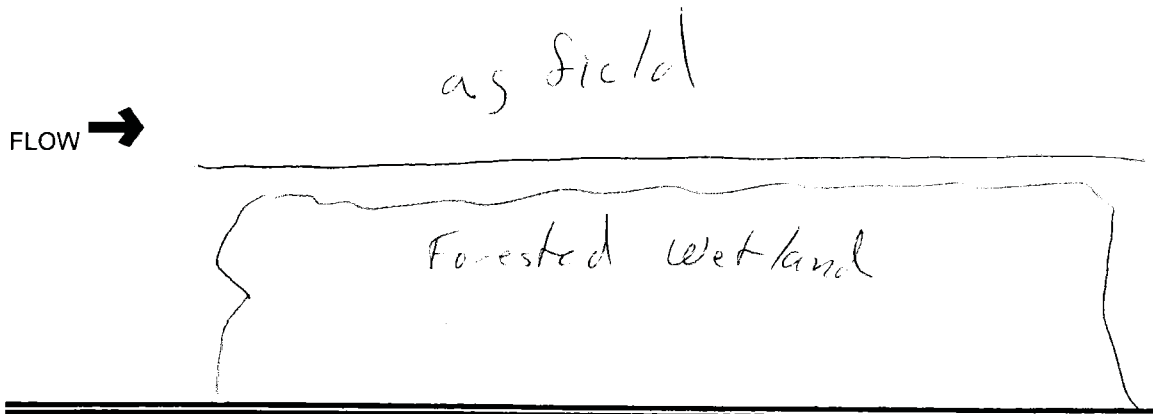
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

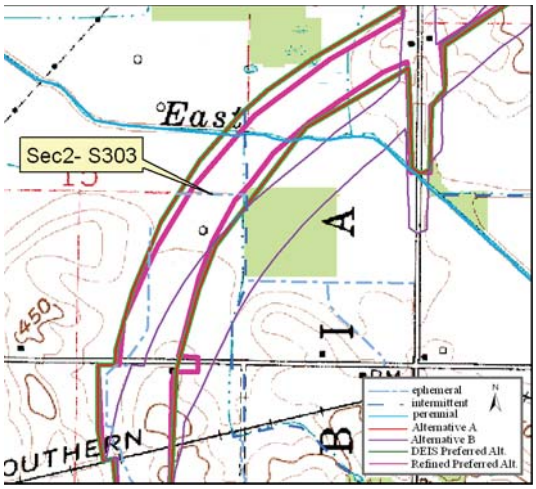
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

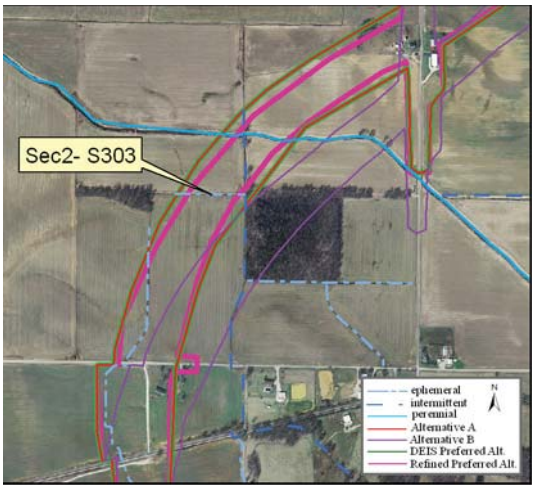
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 303



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib East Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2S R9W	**OHWM Width ft:**	7.0
UTME:	465491	**OHWM Depth ft:**	2.0
UTMN:	4243748	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S303

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork Keg Creek	534 feet	0.09 acres	A	HHEI 39 / Modified Class II
Unnamed Tributary East Fork Keg Creek	0	0	B	HHEI 39 / Modified Class II
Unnamed Tributary East Fork Keg Creek	534 feet	0.09 acres	DEIS Preferred	HHEI 39 / Modified Class II
Unnamed Tributary East Fork Keg Creek	396 feet	0.06 acres	Refined Preferred	HHEI 39 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 303

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Unnamed Trib East Fork Keg Creek

SITE NUMBER S 303 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 28.361 LONG. 87 23 41.600 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1cm

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.1m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 18-19

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

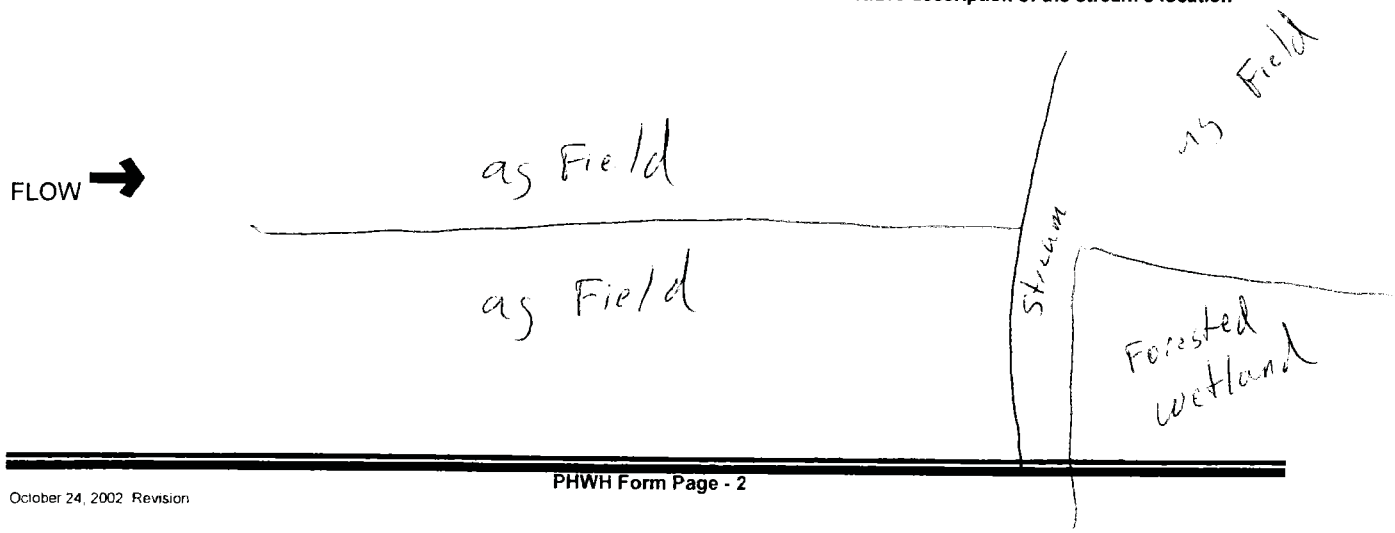
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

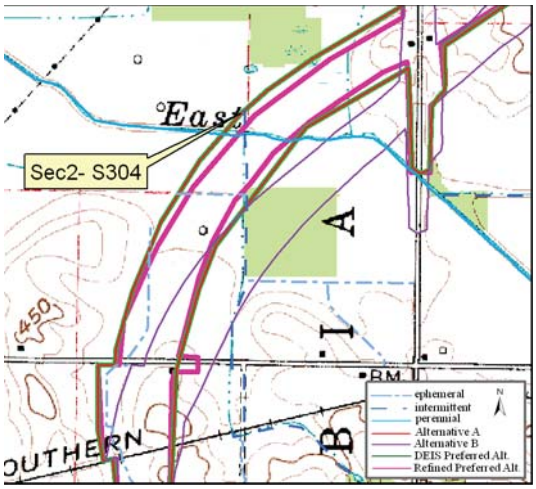
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

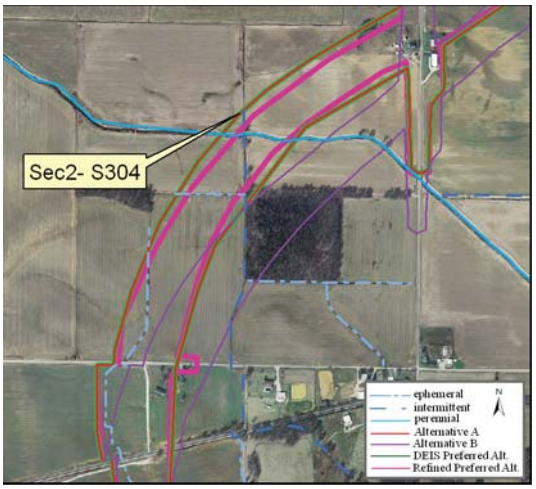
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 304



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib East Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2S R9W	**OHWM Width ft:**	2.0
UTME:	465572	**OHWM Depth ft:**	1.20
UTMN:	4243922	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S304

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork Keg Creek	178 feet	0.01 acres	A	HHEI 25 / Modified Class I
Unnamed Tributary East Fork Keg Creek	0	0	B	HHEI 25 / Modified Class I
Unnamed Tributary East Fork Keg Creek	178 feet	0.01 acres	DEIS Preferred	HHEI 25 / Modified Class I
Unnamed Tributary East Fork Keg Creek	55 feet	0.01 acres	Refined Preferred	HHEI 25 / Modified Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 304

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION East Fork Keg Creek

SITE NUMBER S 304 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 34.017 LONG. 87 23 38.294 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	30%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 1-2

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

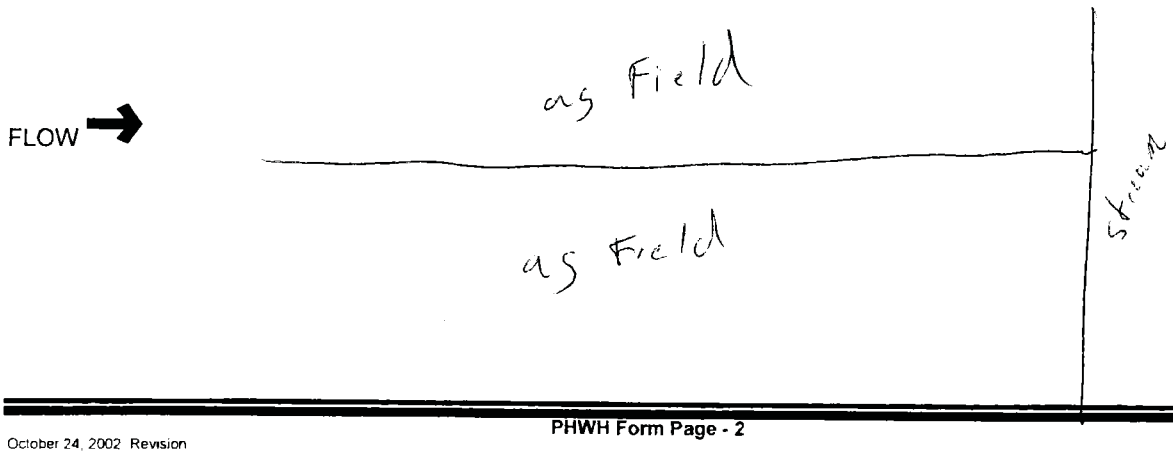
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

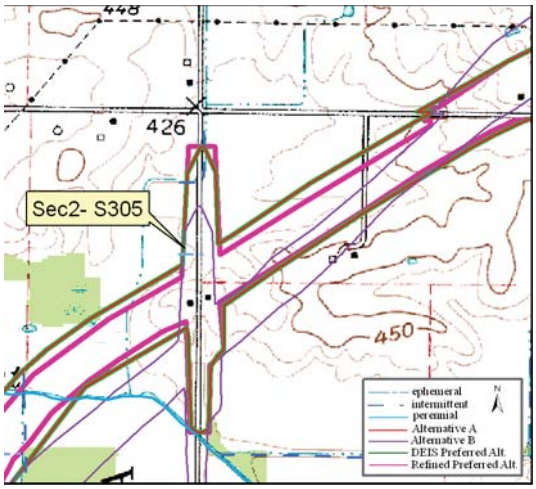
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

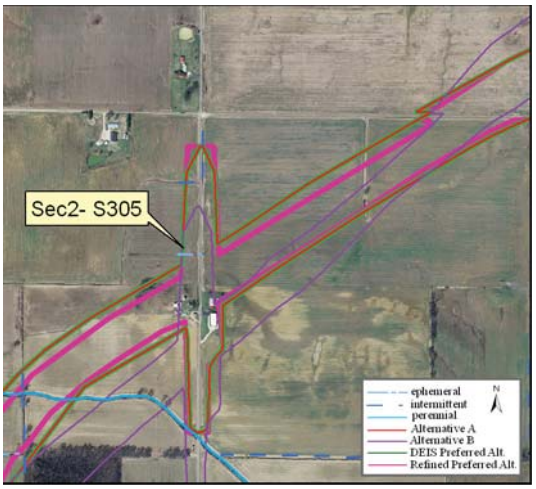
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 305



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib East Fork Keg Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2S R9W	**OHWM Width ft:**	5.0
UTME:	465970	**OHWM Depth ft:**	0.7
UTMN:	4244221	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S305

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork Keg Creek	160 feet	0.02 acres	A	HHEI 30 / Modified Class II
Unnamed Tributary East Fork Keg Creek	160 feet	0.02 acres	B	HHEI 30 / Modified Class II
Unnamed Tributary East Fork Keg Creek	160 feet	0.02 acres	DEIS Preferred	HHEI 30 / Modified Class II
Unnamed Tributary East Fork Keg Creek	160 feet	0.02 acres	Refined Preferred	HHEI 30 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	30
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 305

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 30

SITE NAME/LOCATION Unnamed Trib East Fork Keg Creek

SITE NUMBER S 305 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 43.773 LONG. 87 23 21.950 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3.8

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 22-23

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

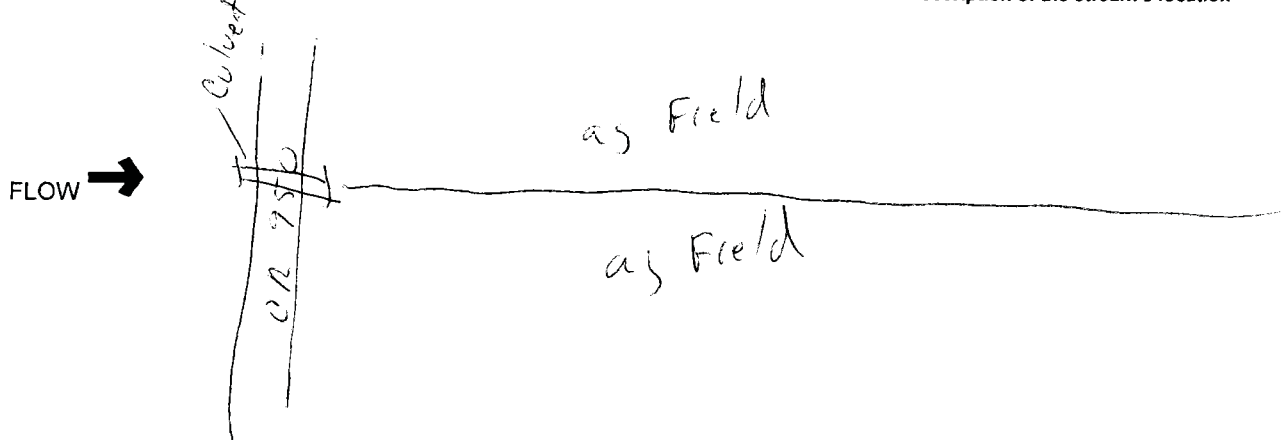
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

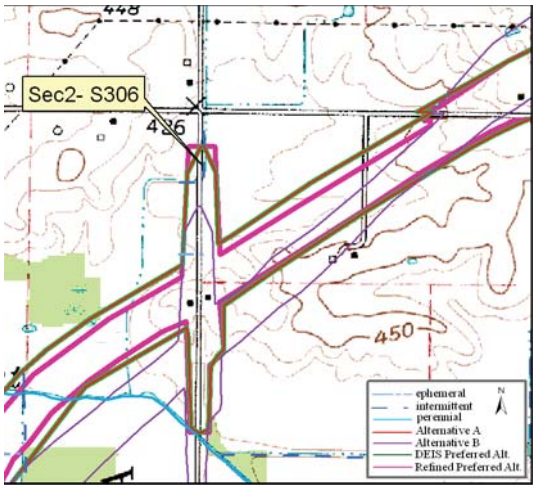
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

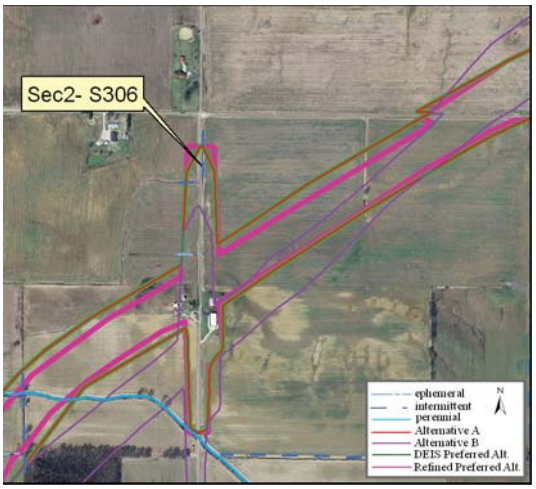
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 306



Site Location on Francisco USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Allen Lateral	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 14 T2S R9W	**OHWM Width ft:**	5.0
UTME:	466001	**OHWM Depth ft:**	1.50
UTMN:	4244401	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Francisco	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S306

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Allen Lateral	431 feet	0.05 acres	A	HHEI 56 / Modified Class II
Allen Lateral	0	0	B	HHEI 56 / Modified Class II
Allen Lateral	431 feet	0.05 acres	DEIS Preferred	HHEI 56 / Modified Class II
Allen Lateral	431 feet	0.05 acres	Refined Preferred	HHEI 56 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	56
Watershed Area (square miles):	0.06
Legal Drain:	Yes
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 306

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 56

SITE NAME/LOCATION Unnamed Trib East Fork Keg Creek

SITE NUMBER S 306 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 20 49.617 LONG. 87 23 20.704 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	90%
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	BEDROCK **[16 pt]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☐	CLAY or HARDPAN **[0 pt]**	
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☒	SAND (<2 mm) **[6 pts]**	10%	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Francisco NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Gibson Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 24-25

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

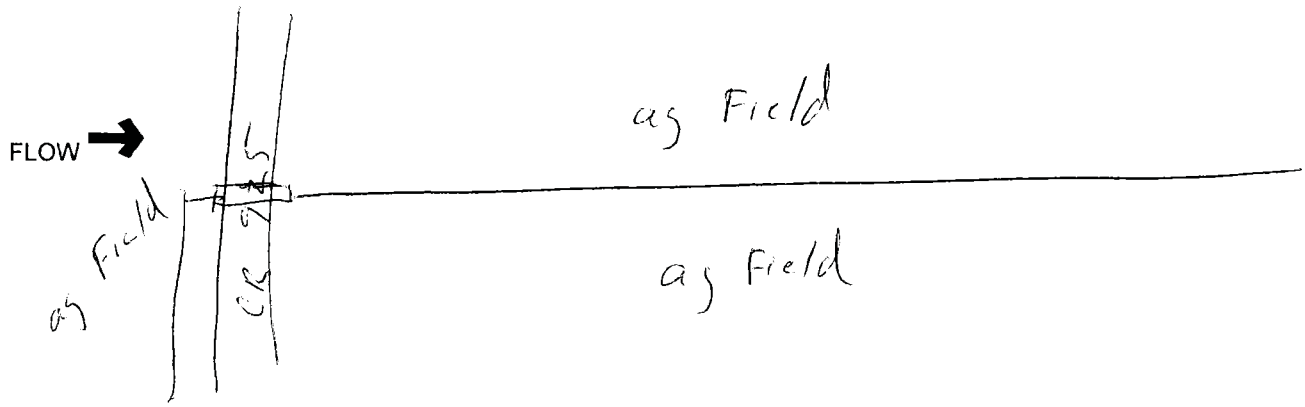
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

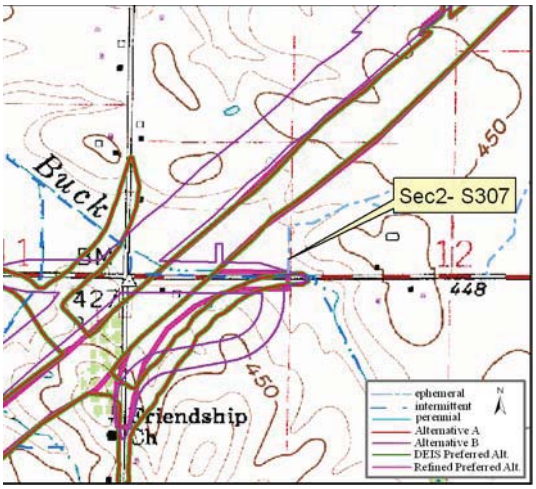
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

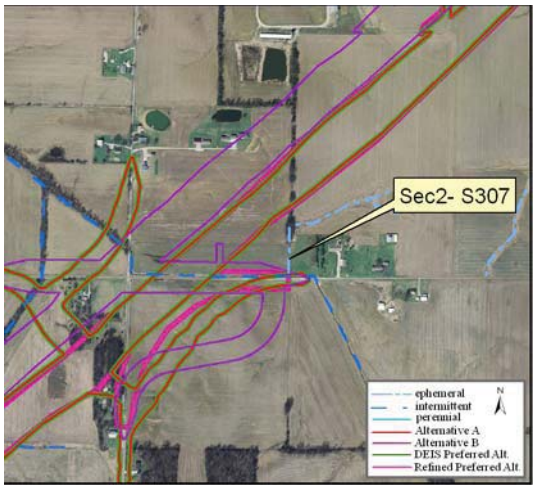
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 307



Site Location on Oakland City USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Buck Creek	**Channelized:**	Yes
County:	Gibson	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2S R9W	**OHWM Width ft:**	4.1
UTME:	467979	**OHWM Depth ft:**	0.50
UTMN:	4245361	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Oakland City	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S307

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Buck Creek	13 feet	0.01 acres	A	HHEI 48 / Modified Class II
Unnamed Tributary Buck Creek	39 feet	0.01 acres	B	HHEI 48 / Modified Class II
Unnamed Tributary Buck Creek	13 feet	0.01 acres	DEIS Preferred	HHEI 48 / Modified Class II
Unnamed Tributary Buck Creek	31 feet	0.01 acres	Refined Preferred	HHEI 48 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Width (feet):	A-0, B-0, DP-0, RP-0

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Buck Creek

SITE NUMBER S 307 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 21 21.025 LONG. 87 21 59.373 RIVER CODE _____ RIVER MILE _____

DATE 3/24/09 SCORER jad COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	90%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☒	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Oakland City NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

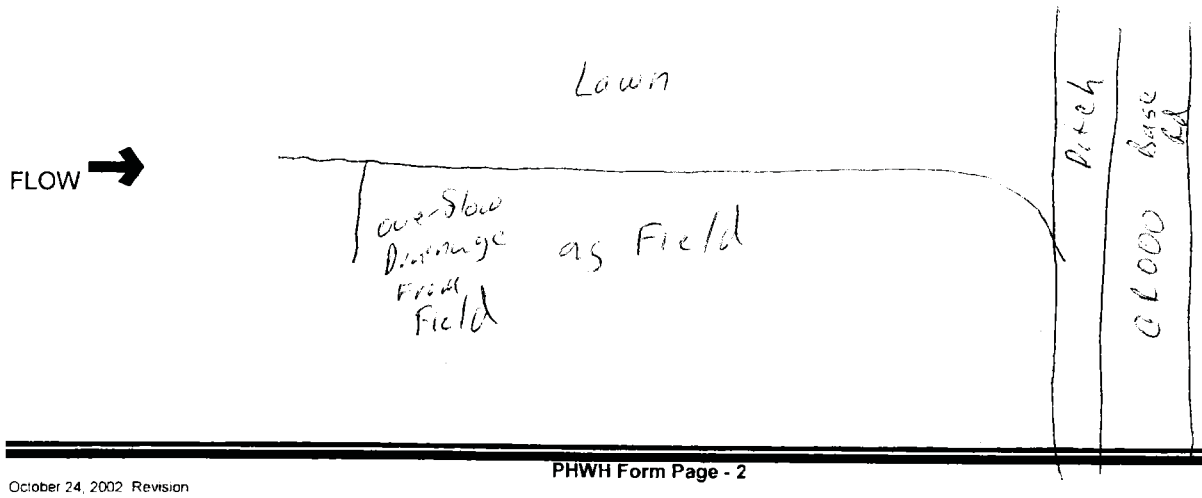
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

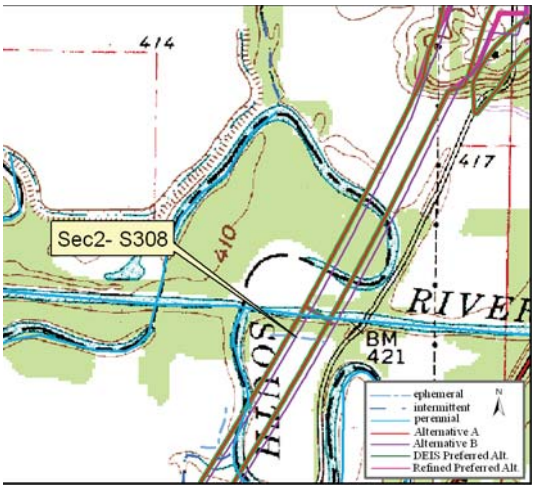
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

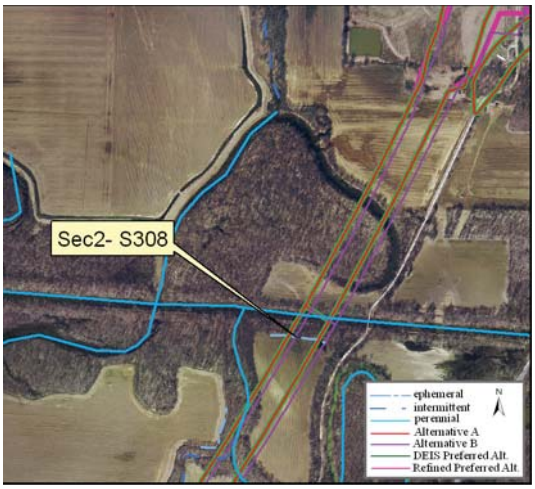
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 308



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un. Trib S. Fork Patoka River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 31 T1S R8W	**OHWM Width ft:**	8.0
UTME:	470327	**OHWM Depth ft:**	0.80
UTMN:	4248314	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S308

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary South Fork Patoka River	239 feet	0.04 acres	A	HHEI 50 / Modified Class II
Unnamed Tributary South Fork Patoka River	236 feet	0.04 acres	B	HHEI 50 / Modified Class II
Unnamed Tributary South Fork Patoka River	239 feet	0.04 acres	DEIS Preferred	HHEI 50 / Modified Class II
Unnamed Tributary South Fork Patoka River	239 feet	0.04 acres	Refined Preferred	HHEI 50 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	50
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Leaf Pack
Estimated Riparian Area (acres):	A-0.42 ac, B-0.45 ac, DP-0.42 ac, RP-0.42 ac

Stream Id-Section 2 S 308

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 50

SITE NAME/LOCATION Unnamed Trib S Fork Patoka River

SITE NUMBER S 308 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 22 57.123 LONG. 87 20 23.077 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	50%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.4m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 42-43

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

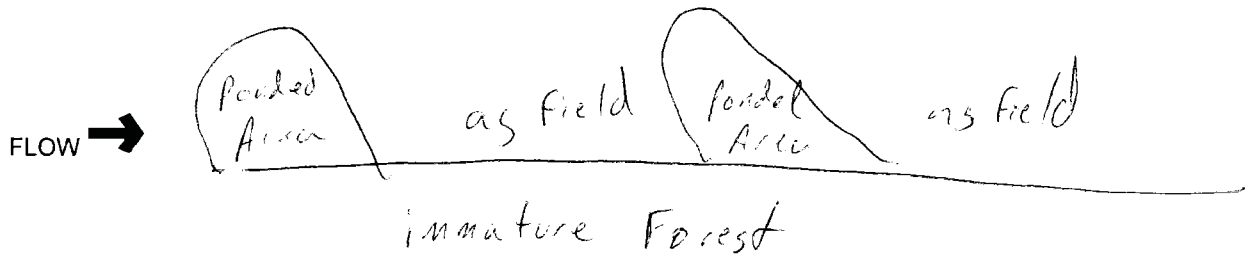
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

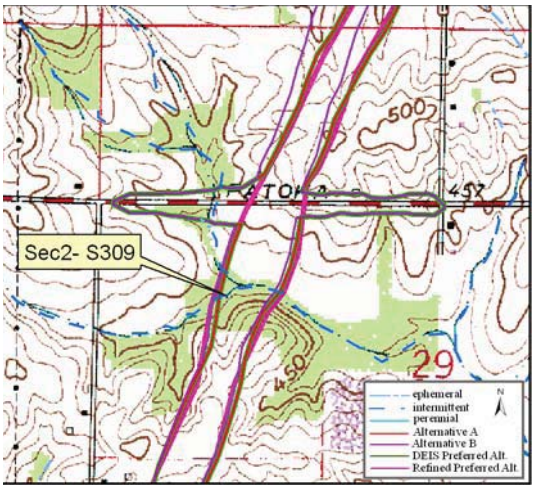
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

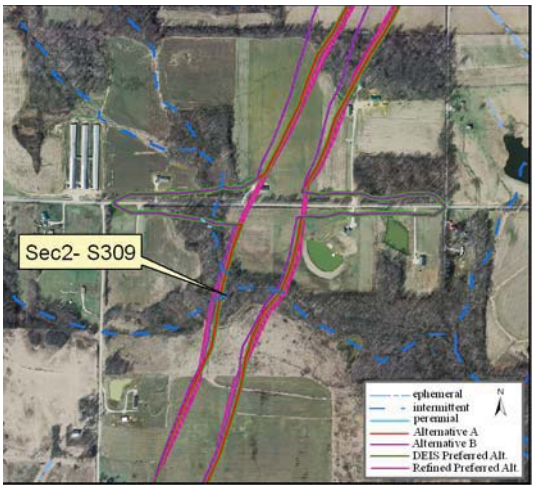
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 309



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 29 T1S R8W	**OHWM Width ft:**	12.5
UTME:	471158	**OHWM Depth ft:**	0.70
UTMN:	4250353	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S309

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	185 feet	0.05 acres	A	HHEI 38 / Class I
Unnamed Tributary Flat Creek	245 feet	0.07 acres	B	HHEI 38 / Class I
Unnamed Tributary Flat Creek	185 feet	0.05 acres	DEIS Preferred	HHEI 38 / Class I
Unnamed Tributary Flat Creek	246 feet	0.07 acres	Refined Preferred	HHEI 38 / Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	38
Watershed Area (square miles):	0.18
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.41 ac, B-0.67ac, DP-0.41 ac, RP-0.67 ac

Stream Id-Section 2 S 309

No Photograph Available

Photograph taken looking upstream

No Photograph Available

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 38

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 309 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.18

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 3.374 LONG. 87 19 49.125 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jkbv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	15%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	35%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☒	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.8m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☒	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☒	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 9 UR, 10 UL, 11 Up, 12 Dn

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

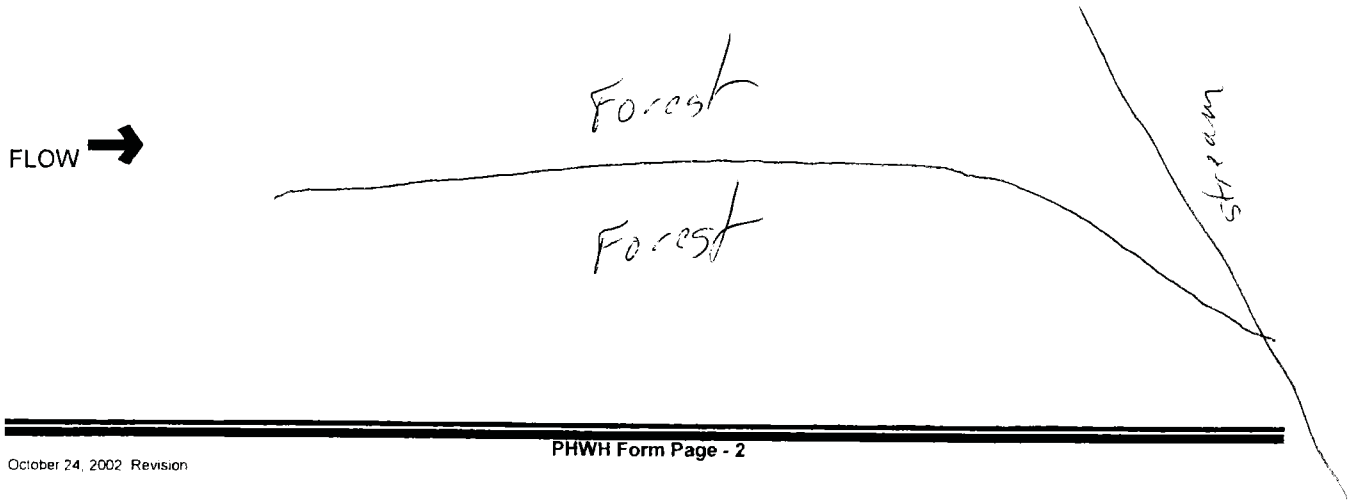
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

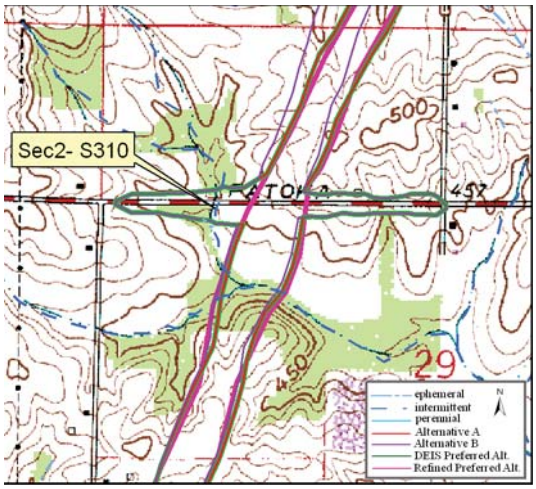
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

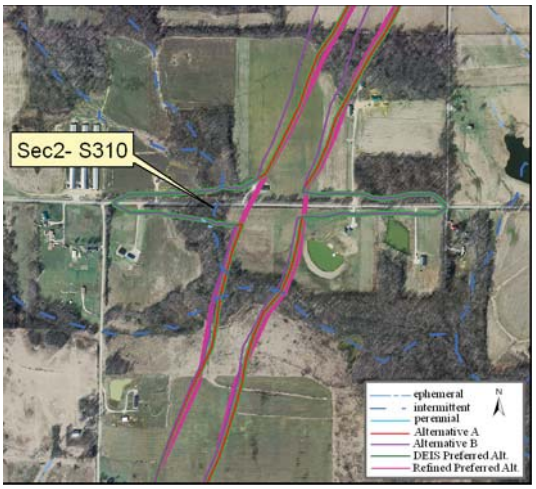
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 310



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 29 T1S R8W	**OHWM Width ft:**	3.0
UTME:	471090	**OHWM Depth ft:**	0.40
UTMN:	4250538	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S310

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	11 feet	0.01 acres	A	HHEI 18 / Class I
Unnamed Tributary Flat Creek	11 feet	0.01 acres	B	HHEI 18 / Class I
Unnamed Tributary Flat Creek	11 feet	0.01 acres	DEIS Preferred	HHEI 18 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 18 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.14
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.19 ac, B-0.19 ac, DP-0.19 ac, RP-0

Stream Id-Section 2 S 310

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 310 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.14

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 9.368 LONG. 87 19 51.956 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	40%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 5-6

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

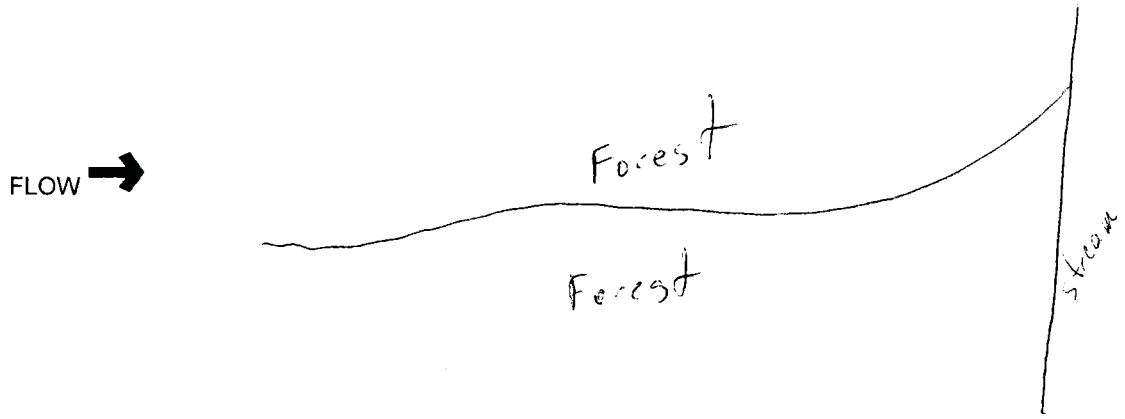
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

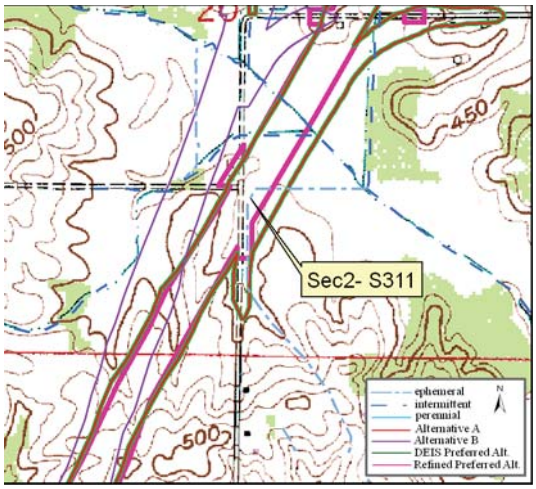
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

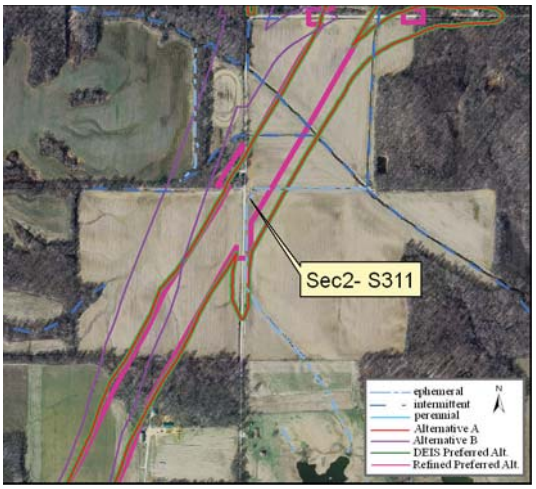
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 311



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 20 T1S R8W	**OHWM Width ft:**	3.0
UTME:	471699	**OHWM Depth ft:**	1.30
UTMN:	4251373	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S311

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	1,070 feet	0.07 acres	A	HHEI 44 / Modified Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 44 / Modified Class II
Unnamed Tributary Flat Creek	1,070 feet	0.07 acres	DEIS Preferred	HHEI 44 / Modified Class II
Unnamed Tributary Flat Creek	683 feet	0.05 acres	Refined Preferred	HHEI 44 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 311

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 311 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 36.529 LONG. 87 19 26.969 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	20%	☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 12 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 14

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☒ ☒ Open Pasture, Row Crop
☒ ☒ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 8-9

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

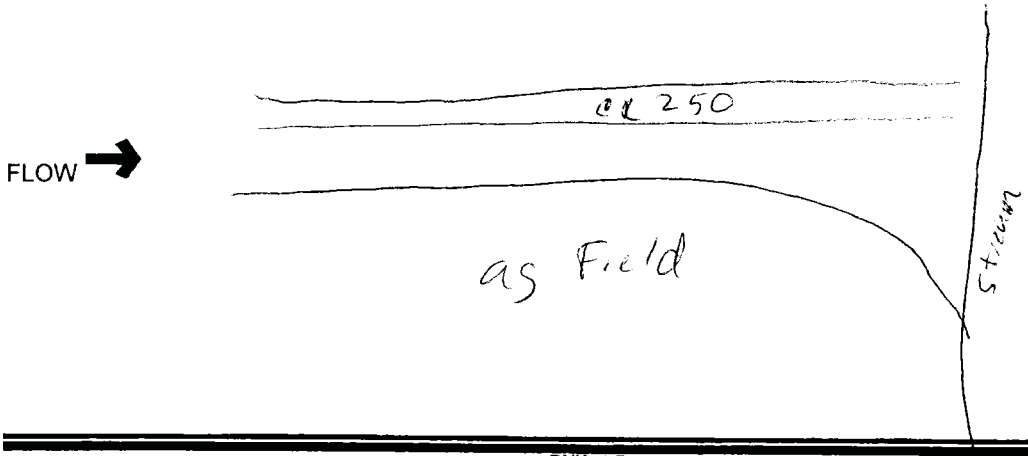
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

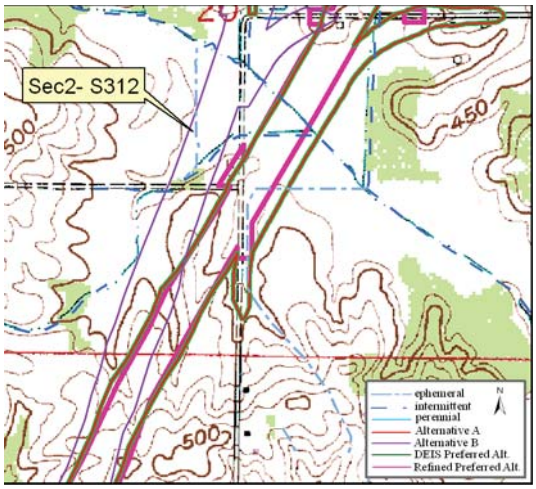
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

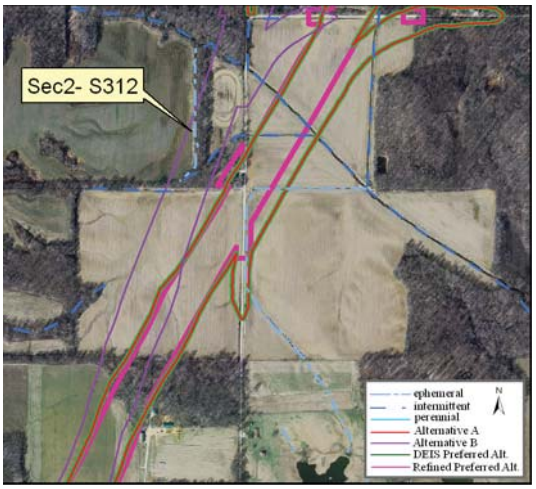
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 312



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 20 T1S R8W	**OHWM Width ft:**	7.0
UTME:	471564	**OHWM Depth ft:**	1.20
UTMN:	4251494	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S312

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 47 / Class II
Unnamed Tributary Flat Creek	618 feet	0.10 acres	B	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 47 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	47
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0, B-1.30 ac, DP-0, RP-0

Stream Id-Section 2 S 312

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 47

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 312 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 40.439 LONG. 87 19 32.553 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	10%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☒	☐	CLAY or HARDPAN **[0 pt]**	90%
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**		☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 2

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.1m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 54-55

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

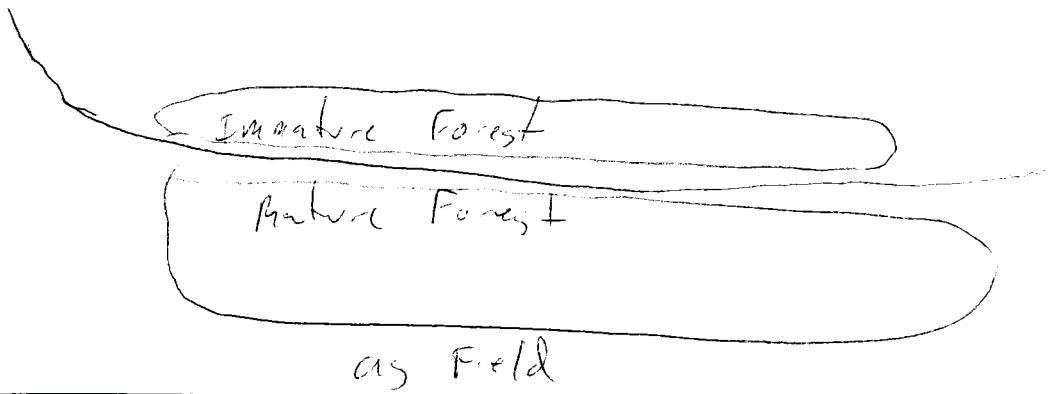
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

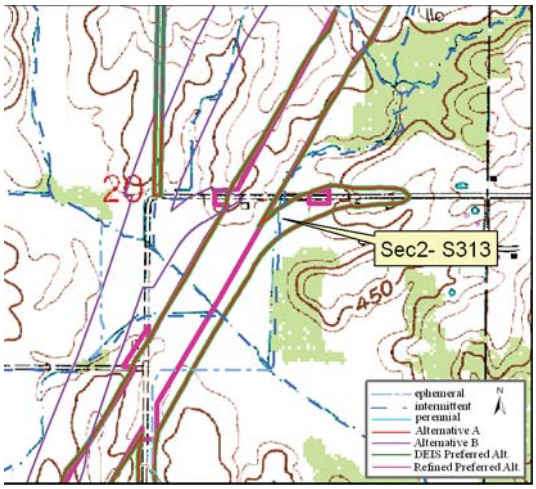
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

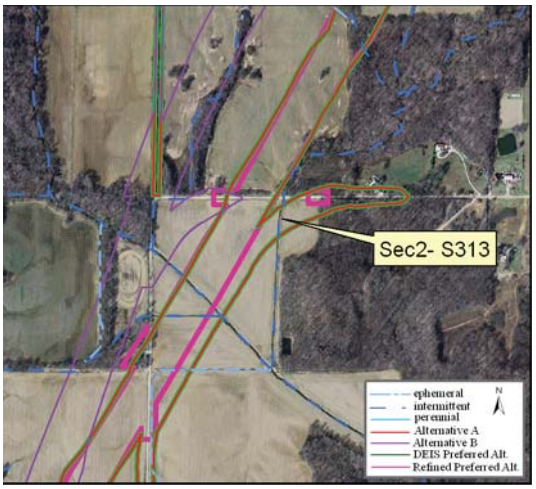
FLOW ➜



Stream Id-Section 2 S 313



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 20 T1S R8W	**OHWM Width ft:**	11.0
UTME:	471995	**OHWM Depth ft:**	1.30
UTMN:	4251739	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S313

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	253 feet	0.06 acres	A	HHEI 67 / Modified Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 67 / Modified Class II
Unnamed Tributary Flat Creek	253 feet	0.06 acres	DEIS Preferred	HHEI 67 / Modified Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 67 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	67
Watershed Area (square miles):	0.45
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0.12, B-0, DP-0.12 ac, RPA*-0.08 ac

*This stream is not impacted by the right-of-way; however, the riparian is within the right-of-way.

Stream Id-Section 2 S 313

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 67

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 313 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.45

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 48.437 LONG. 87 19 14.816 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	50%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.4m

HHEI Metric Points

Substrate Max = 40	17	A + B
Pool Depth Max = 30	25	
Bankfull Width Max=30	25	

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 16-17

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

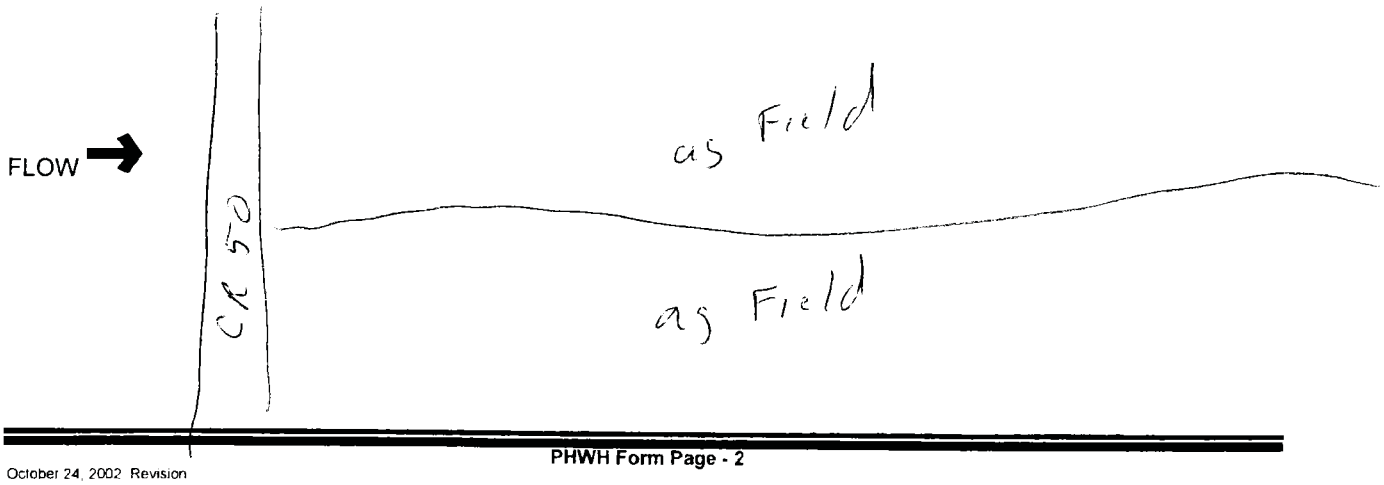
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

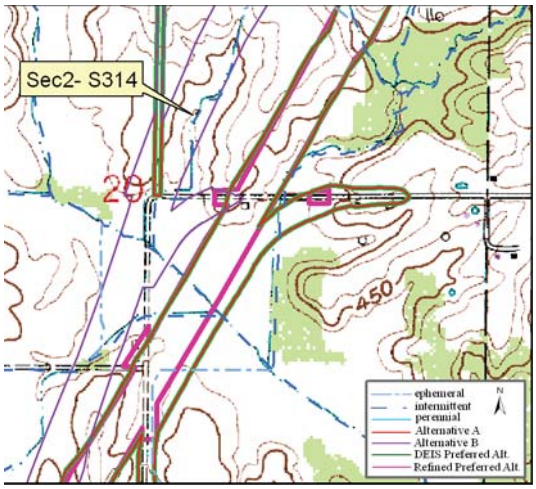
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

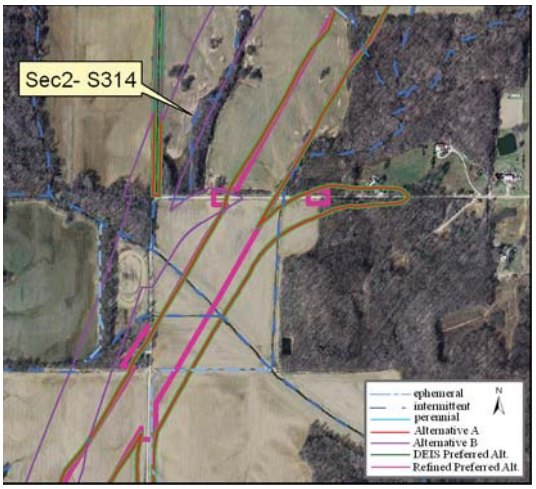
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 314



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	4.0
UTME:	471792	**OHWM Depth ft:**	0.80
UTMN:	4251984	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S314

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 52 / Modified Class II
Unnamed Tributary Flat Creek	1,628 feet	0.15 acres	B	HHEI 52 / Modified Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 52 / Modified Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 52 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	52
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A*-0.08 ac, B-3.49 ac, DP*-0.08 ac, RPA-0

*These streams are not impacted by the right-of-way; however, the riparian is within the right-of-way.

Stream Id-Section 2 S 314

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 52

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 314 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 56.362 LONG. 87 19 23.222 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	45%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	45%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 10-11

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

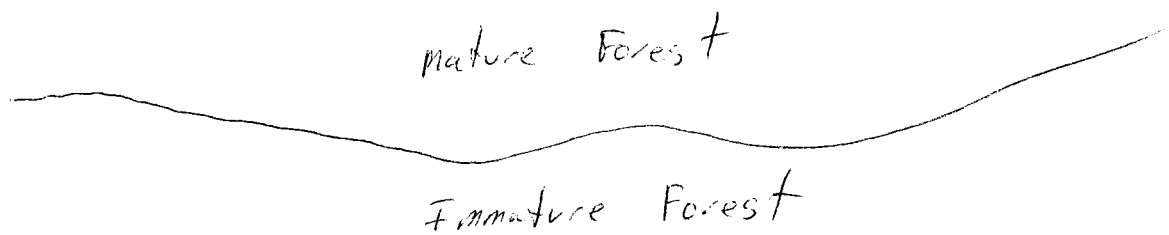
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

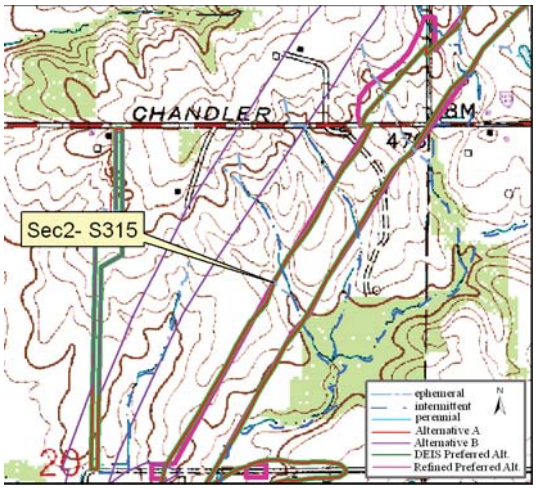
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

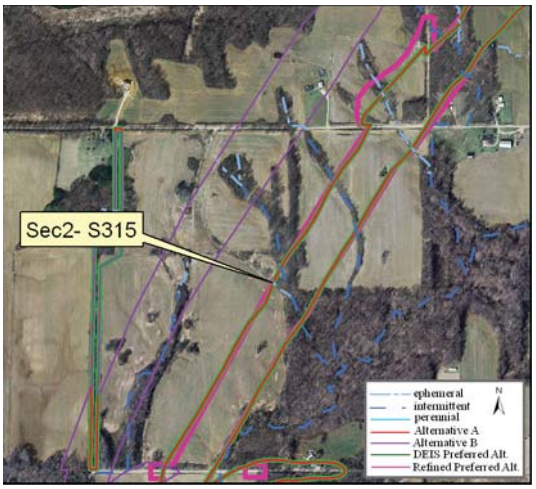
FLOW →



Stream Id-Section 2 S 315



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	2.5
UTME:	472144	**OHWM Depth ft:**	0.50
UTMN:	4252226	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S315

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	178 feet	0.01 acres	A	HHEI 32 / Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 32 / Class I
Unnamed Tributary Flat Creek	178 feet	0.01 acres	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Flat Creek	180 feet	0.01 acres	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 315

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 315 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 38 24 4.253 LONG. 87 19 8.741 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	45%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	45%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.8m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 14-15

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

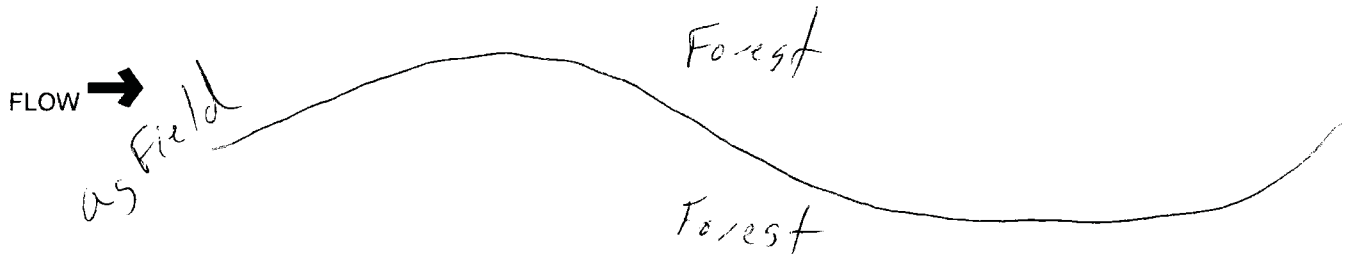
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

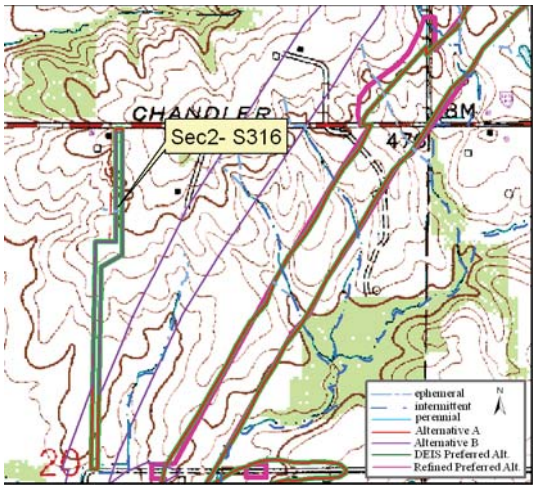
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

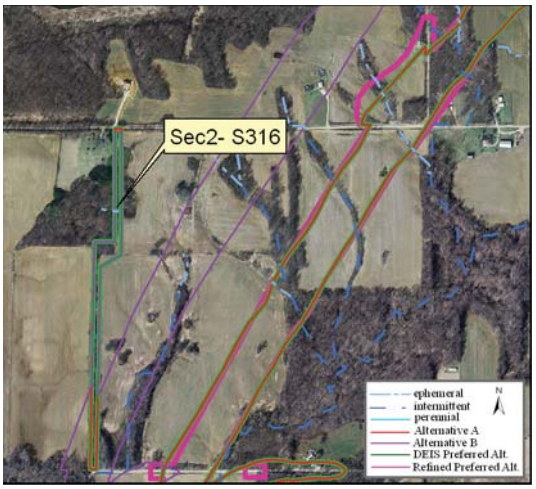
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 316



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 20 T1S R8W	**OHWM Width ft:**	3.5
UTME:	471752	**OHWM Depth ft:**	1.00
UTMN:	4252415	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S316

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	30 feet	0.01 acres	A	HHEI 69 / Class III
Unnamed Tributary Flat Creek	30 feet	0.01 acres	B	HHEI 69 / Class III
Unnamed Tributary Flat Creek	30 feet	0.01 acres	DEIS Preferred	HHEI 69 / Class III
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 69 / Class III

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	69
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Bedrock
Estimated Riparian Area (acres):	A-0.23 ac, B-0.23 ac, DP-0.23 ac, RP-0

Stream Id-Section 2 S 316

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 69

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 316 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 10.341 LONG. 87 19 24.934 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	15%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☒	☐	BEDROCK **[16 pt]**	30%	☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	30%	☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	25%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30%

(A) 25 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 29

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.1m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 58-59

Elevated Turbidity? (Y/N): N Canopy (% open): 35%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

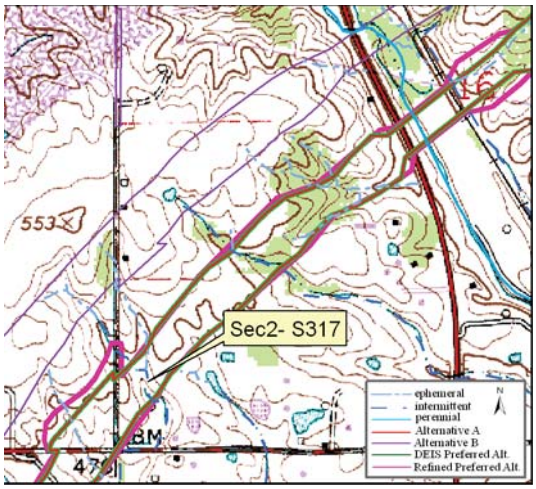
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

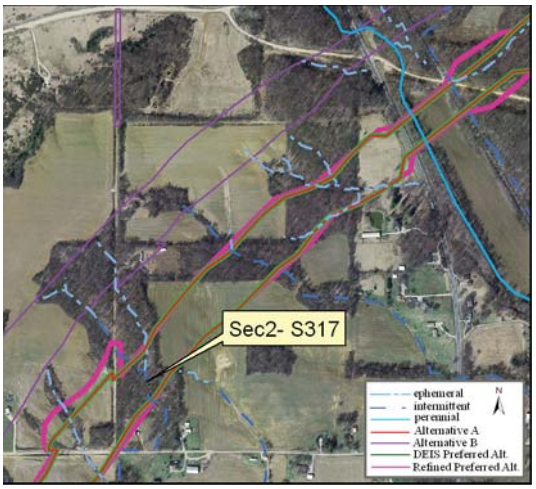
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

Stream Id-Section 2 S 317



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	4.5
UTME:	472570	**OHWM Depth ft:**	1.7
UTMN:	4252831	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S317

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	192 feet	0.02 acres	A	HHEI 58 / Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 58 / Class II
Unnamed Tributary Flat Creek	192 feet	0.02 acres	DEIS Preferred	HHEI 58 / Class II
Unnamed Tributary Flat Creek	213 feet	0.02 acres	Refined Preferred	HHEI 58 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	58
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0.31 ac, B-0, DP-0.31 ac, RP-0.37 ac

Stream Id-Section 2 S 317

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 58

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 317 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 23.929 LONG. 87 18 51.259 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	25%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	35%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.4m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 1-2

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

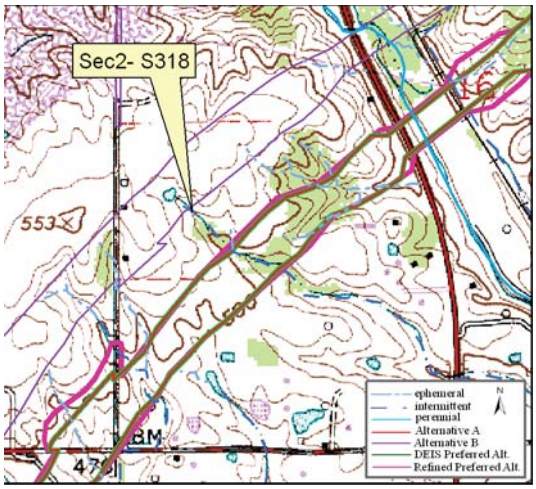
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

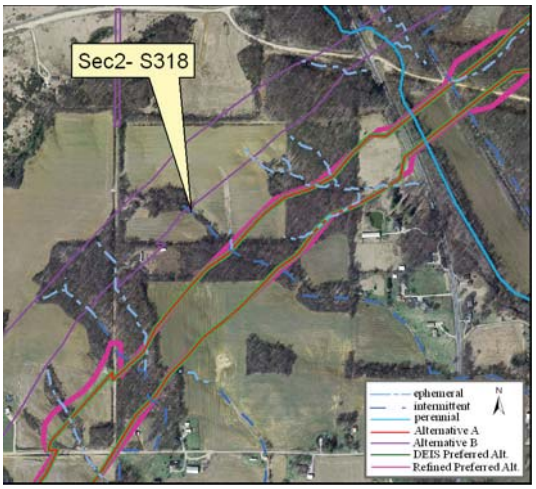
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

Stream Id-Section 2 S 318



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Tributary Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	2.0
UTME:	472640	**OHWM Depth ft:**	0.80
UTMN:	4253203	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S318

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 31/ Class I
Unnamed Tributary Flat Creek	157 feet	0.01 acres	B	HHEI 31/ Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 31/ Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 31/ Class I

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	1.0
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.89 ac, DP-0, RP-0

Stream Id-Section 2 S 318

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 318 RIVER BASIN Patoka DRAINAGE AREA (mi²) 1.00

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 36.006 LONG. 87 18 48.424 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 22-23

Elevated Turbidity? (Y/N): N Canopy (% open): 35%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

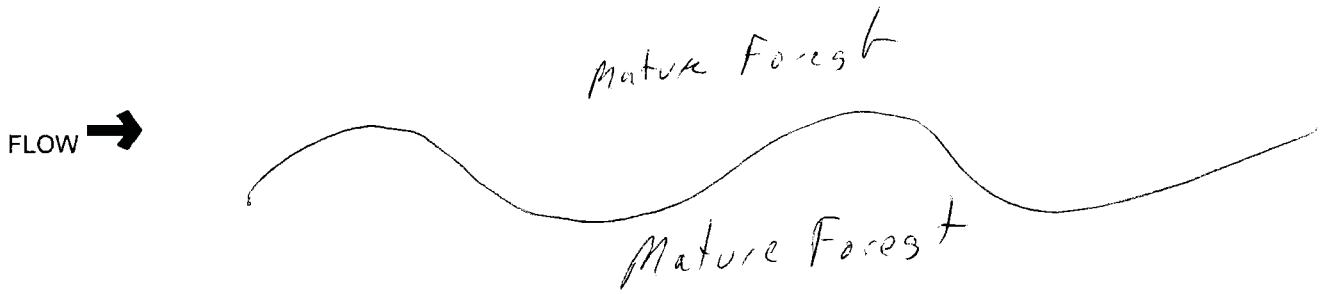
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

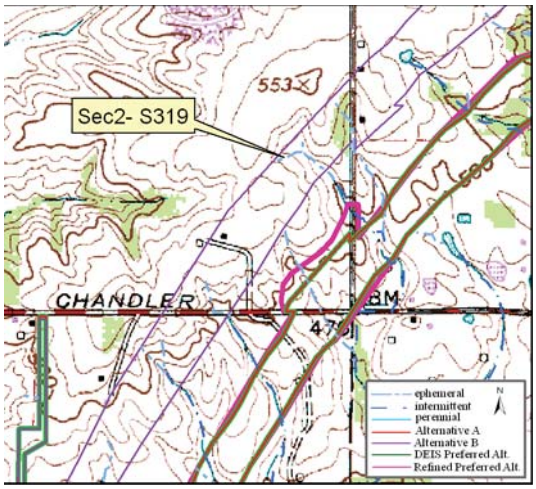
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

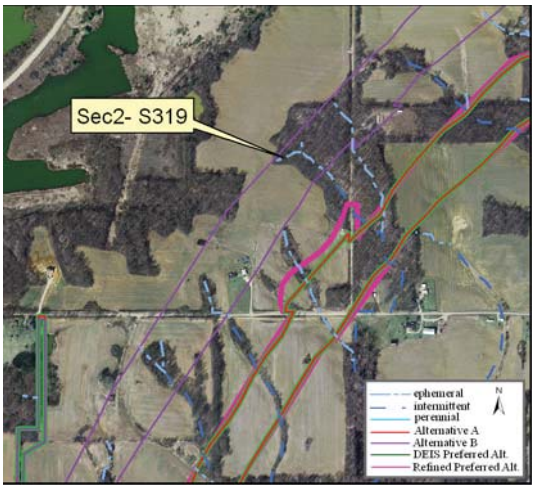
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 319



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 17 T1S R8W	**OHWM Width ft:**	2.0
UTME:	472377	**OHWM Depth ft:**	0.80
UTMN:	4253010	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S319

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 15 / Class I
Unnamed Tributary Flat Creek	326 feet	0.01 acres	B	HHEI 15 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 15 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 15 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	15
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0.0, B-1.74 ac, DP-0, RPA-0.0

Stream Id-Section 2 S 319

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 15

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 319 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 29.715 LONG. 87 18 59.244 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	40%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	60%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 18-19

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

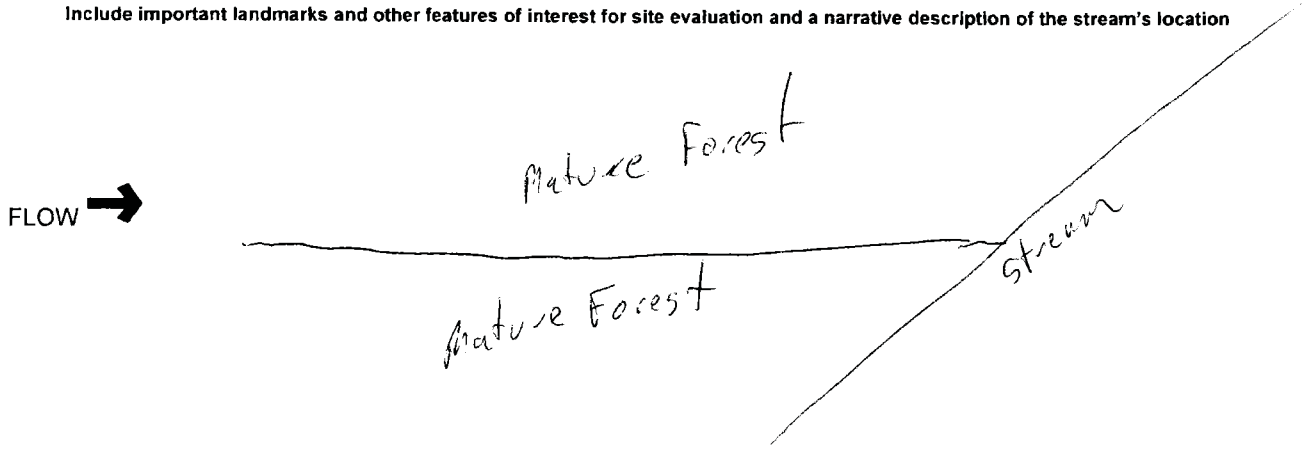
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

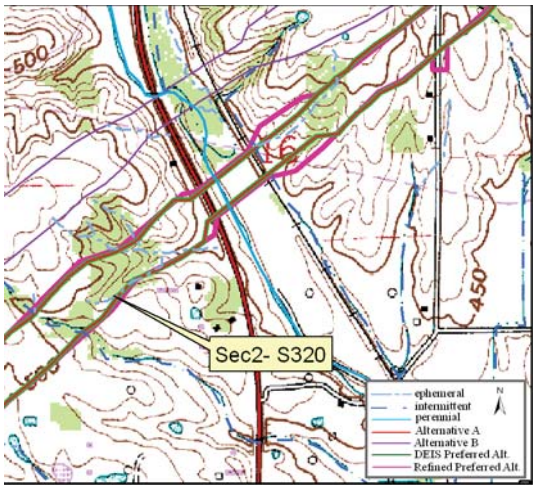
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

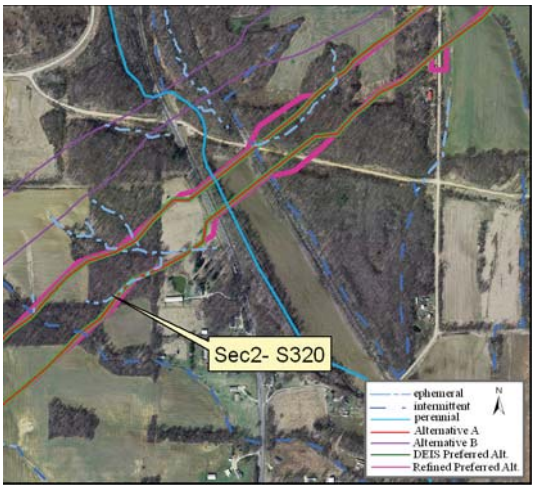
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 320



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	6.0
UTME:	472976	**OHWM Depth ft:**	1.00
UTMN:	4253145	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S320

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	700 feet	0.10 acres	A	HHEI 57 / Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 57 / Class II
Unnamed Tributary Flat Creek	700 feet	0.10 acres	DEIS Preferred	HHEI 57 / Class II
Unnamed Tributary Flat Creek	706 feet	0.10 acres	Refined Preferred	HHEI 57 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	57
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.80 ac, B-0, DP-1.80 ac, RPA-1.96 ac

Stream Id-Section 2 S 320

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 57

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 320 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 34.161 LONG. 87 18 34.559 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	40%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	50%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 4-5

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

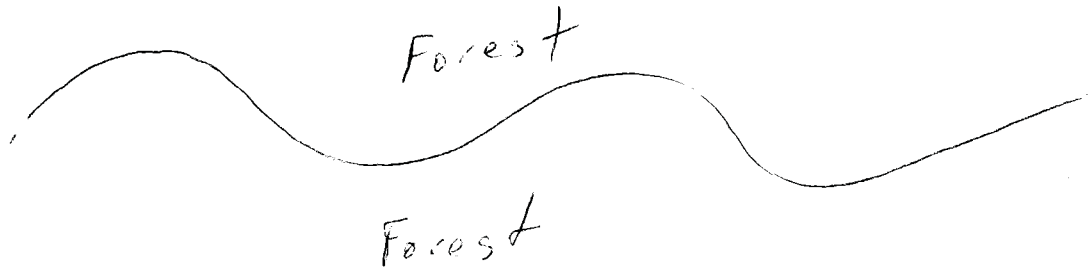
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

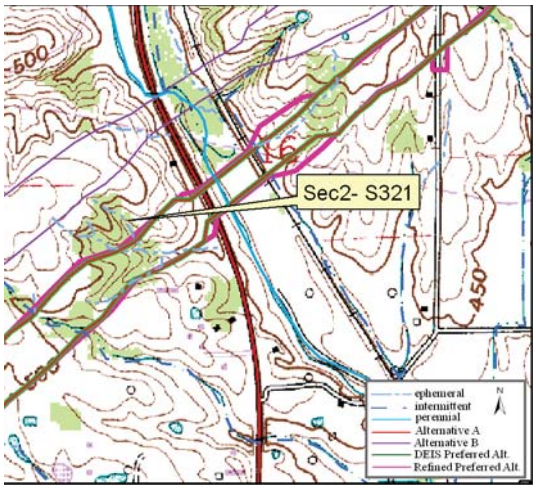
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

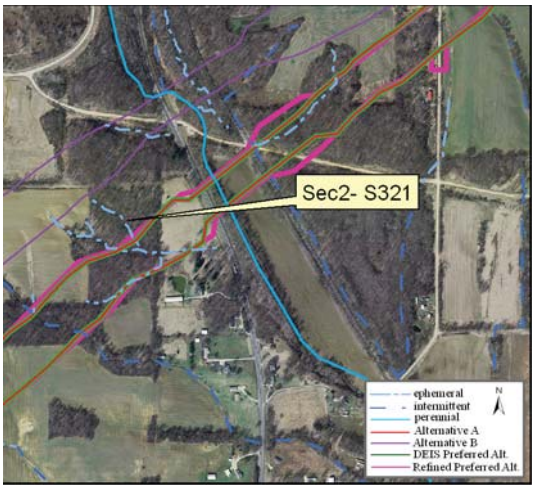
FLOW →



Stream Id-Section 2 S 321



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	2.0
UTME:	473014	**OHWM Depth ft:**	0.40
UTMN:	4253264	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S321

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	82 feet	0.01 acres	A	HHEI 18 / Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 18 / Class I
Unnamed Tributary Flat Creek	82 feet	0.01 acres	DEIS Preferred	HHEI 18 / Class I
Unnamed Tributary Flat Creek	127 feet	0.01 acres	Refined Preferred	HHEI 18 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0.05 ac, B*-0.02 ac, DP-0.05 ac, RP-0.12 ac

Stream Id-Section 2 S 321

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 321 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 38.026 LONG. 87 18 33.008 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	60%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 6 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☒	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☒	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 8-9

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

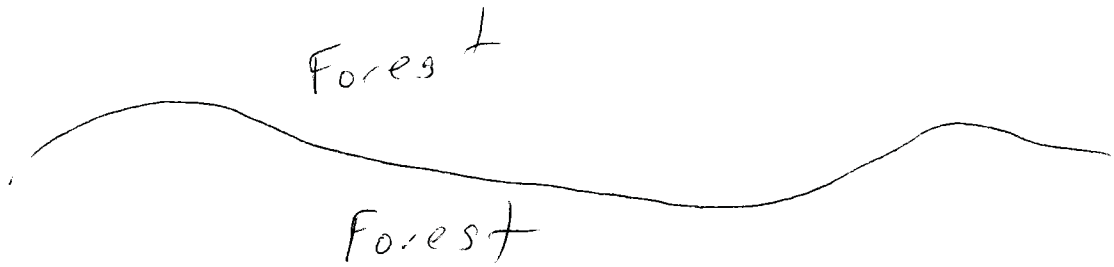
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

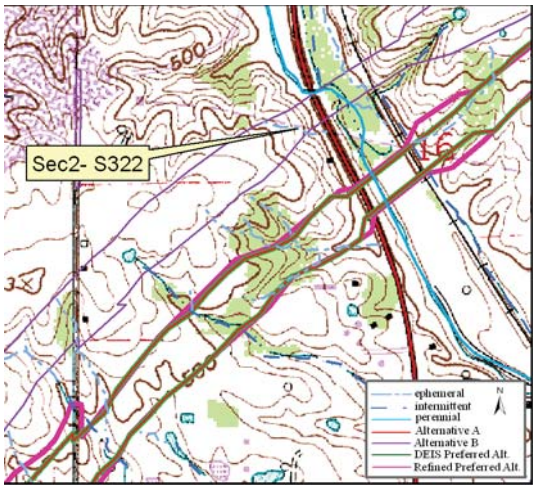
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

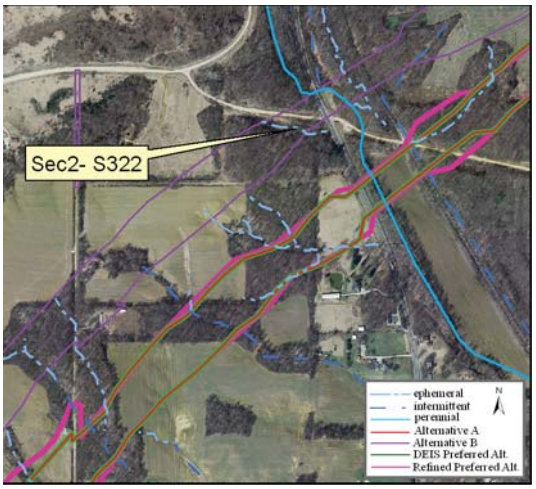
FLOW →



Stream Id-Section 2 S 322



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 16 T1S R8W	**OHWM Width ft:**	2.0
UTME:	472984	**OHWM Depth ft:**	0.30
UTMN:	4253529	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S322

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 39 / Class I
Unnamed Tributary Flat Creek	352 feet	0.02 acres	B	HHEI 39 / Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 39 / Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 39 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0, B-1.36 ac, DP-0, RP-0

Stream Id-Section 2 S 322

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 322 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.50

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 46.620 LONG. 87 18 34.282 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☒	BOULDER (>256 mm) **[16 pts]**	10%	☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☒	BEDROCK **[16 pt]**	10%	☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20%

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 10-11

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

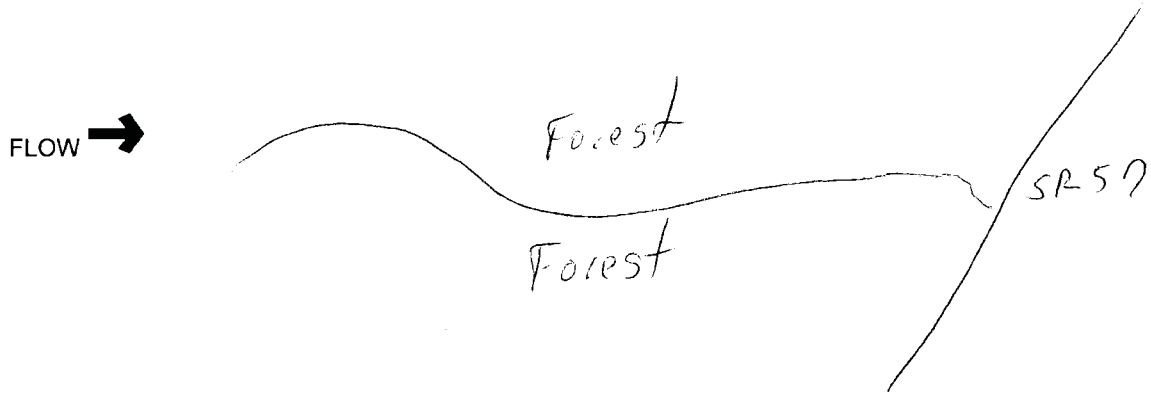
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

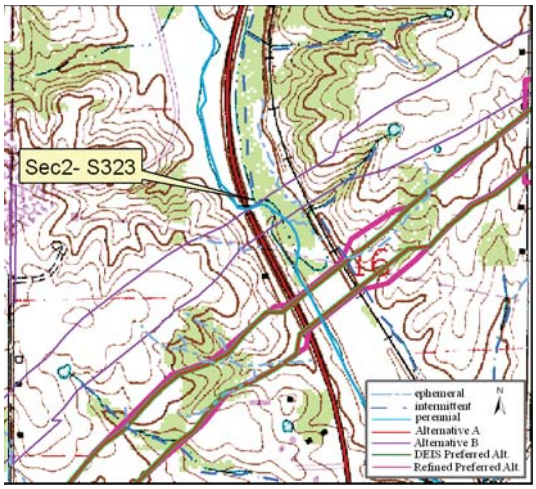
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

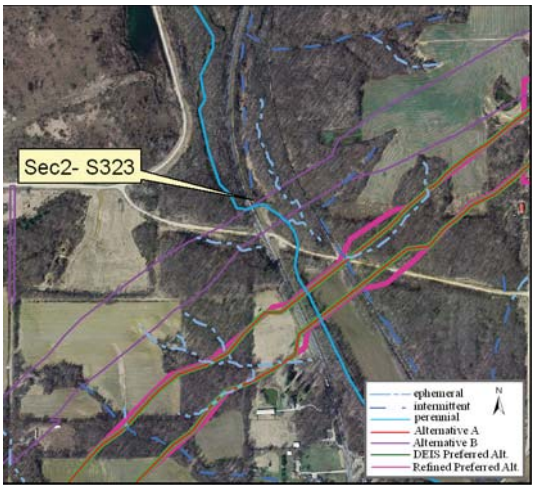
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 323



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 16 T1S R8W	**OHWM Width ft:**	5
UTME:	473084	**OHWM Depth ft:**	0.8
UTMN:	4253622	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S323

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 55 / Modified Class II
Unnamed Tributary Flat Creek	22 feet	0.01 acres	B	HHEI 55 / Modified Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 55 / Modified Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 55 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	55
Watershed Area (square miles):	0.50
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 323

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 55

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 323 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 49.649 LONG. 87 18 30.170 RIVER CODE _____ RIVER MILE _____

DATE 3/25/09 SCORER me COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☒ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 25.4

Pool Depth Max = 30 30

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.0m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☒	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/24/09 Quantity: <1 inch

Photograph Information: P 57-58

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

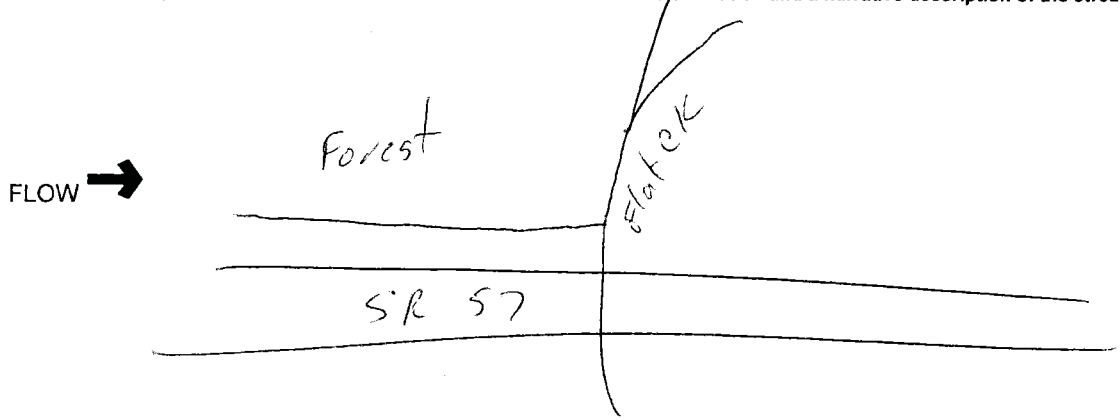
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

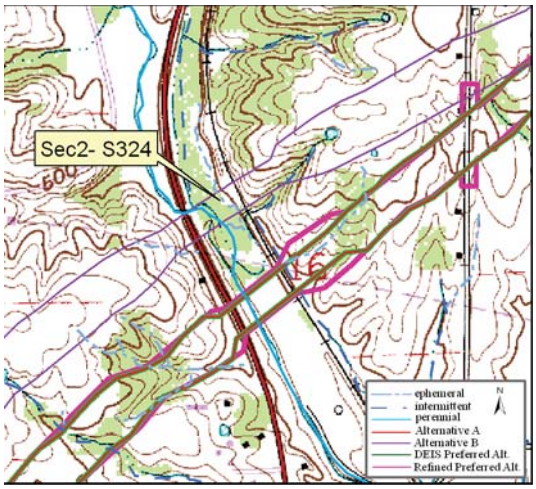
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

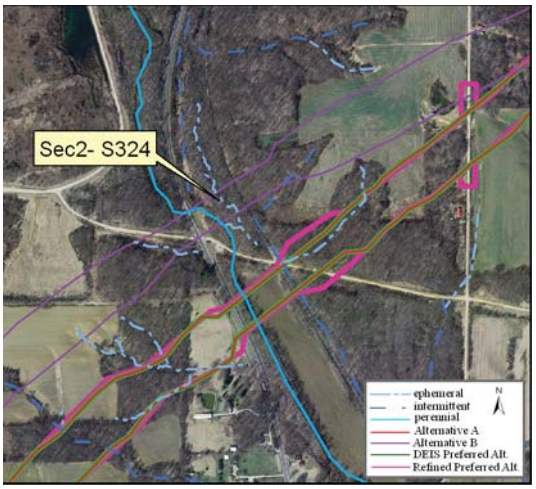
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 324



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 16 T1S R8W	**OHWM Width ft:**	1.7
UTME:	473151	**OHWM Depth ft:**	0.4
UTMN:	4253635	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S324

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 25 / Modified Class I
Unnamed Tributary Flat Creek	270 feet	0.01 acres	B	HHEI 25 / Modified Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 25 / Modified Class I
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 25 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.88 ac, DP-0, RP-0

Stream Id-Section 2 S 324

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 324 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.40

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 50.078 LONG. 87 18 27.409 RIVER CODE _____ RIVER MILE _____

DATE 3/17/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 5-8

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

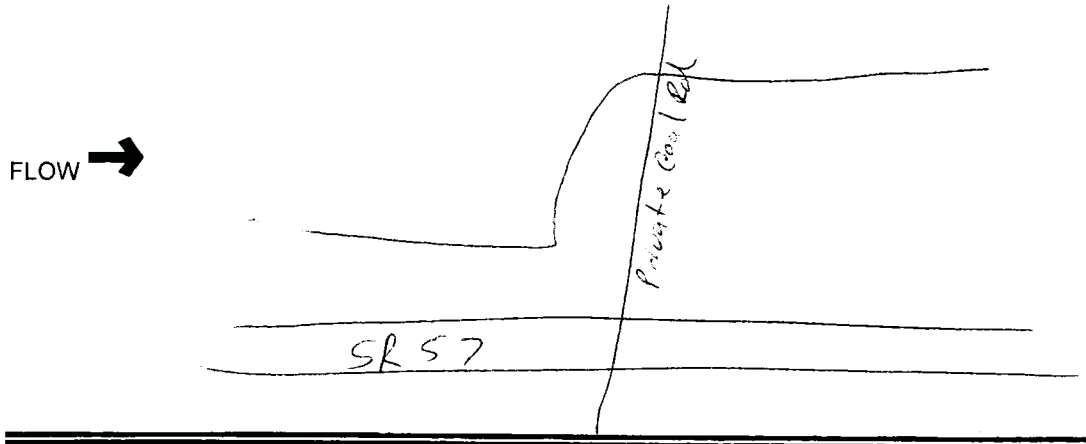
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

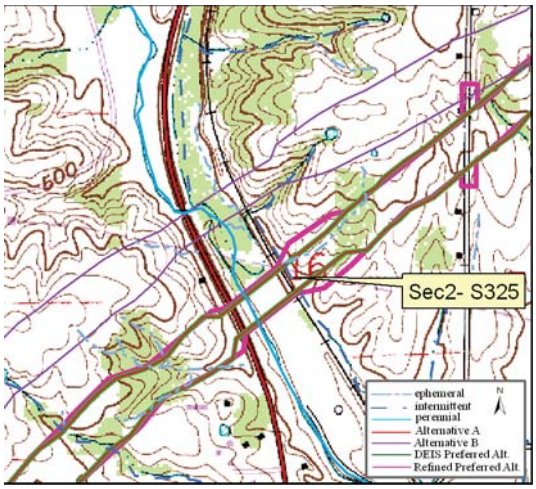
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

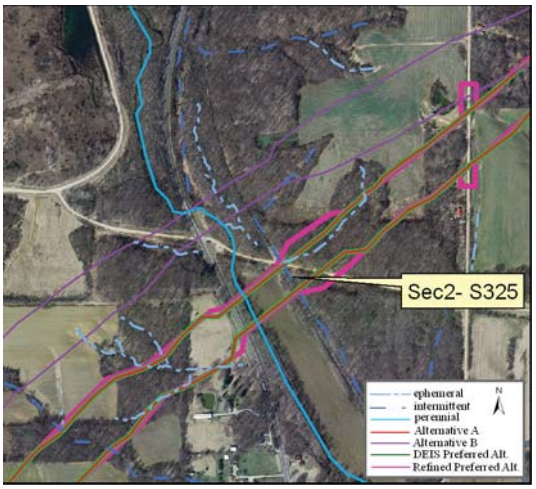
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 325



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 16 T1S R8W	**OHWM Width ft:**	4.0
UTME:	473313	**OHWM Depth ft:**	1.00
UTMN:	4253455	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S325

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	223 feet	0.02 acres	A	HHEI 44 / Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 44 / Class II
Unnamed Tributary Flat Creek	223 feet	0.02 acres	DEIS Preferred	HHEI 44 / Class II
Unnamed Tributary Flat Creek	310 feet	0.03 acres	Refined Preferred	HHEI 44 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.97 ac, B-0.0, DP-0.97 ac, RP-1.34 ac

Stream Id-Section 2 S 325

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 325 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 44.255 LONG. 87 18 20.702 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☒	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 16-17

Elevated Turbidity? (Y/N): N Canopy (% open): 75%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

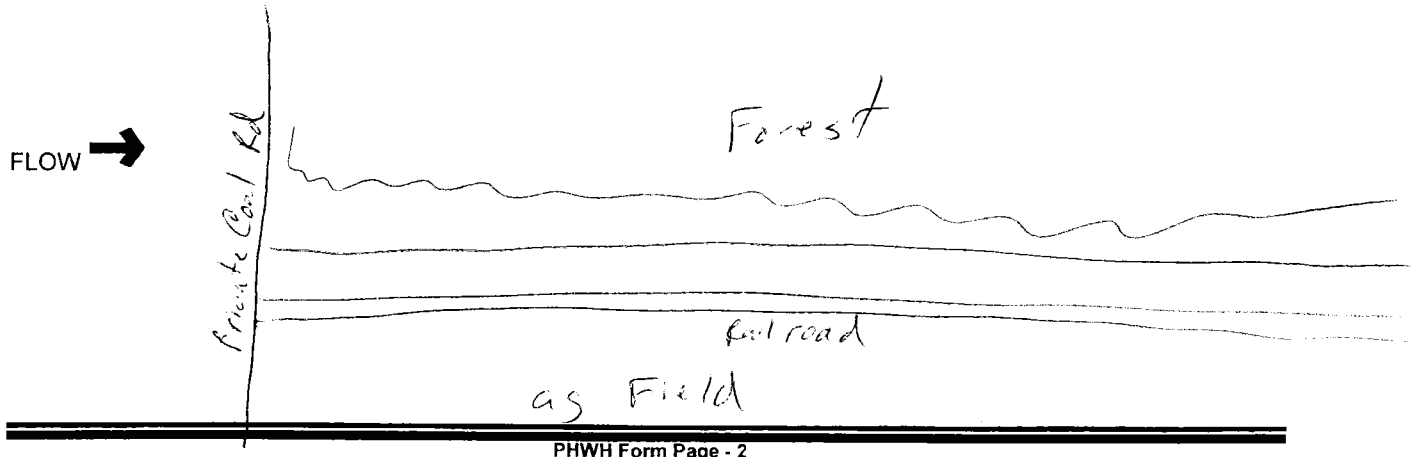
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

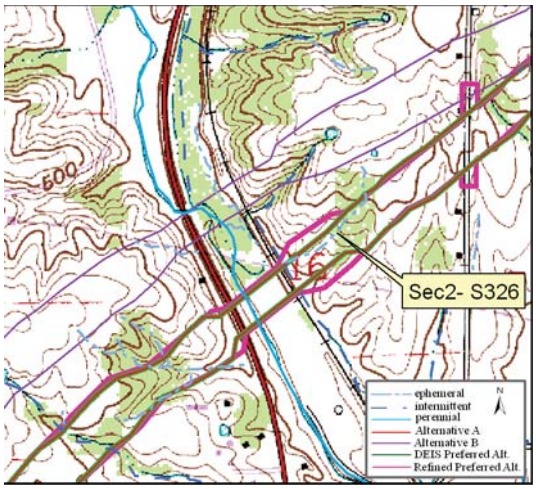
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

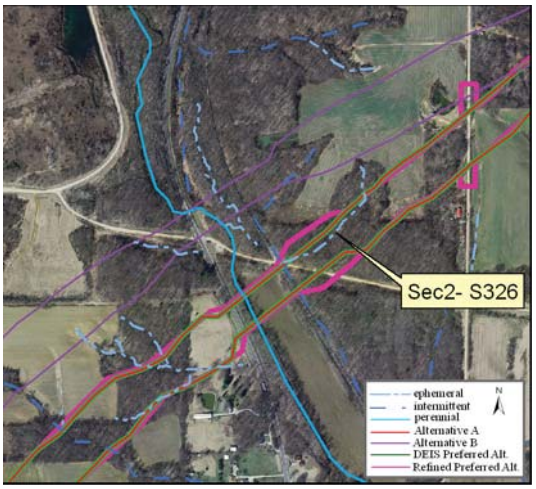
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 326



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 16 T1S R8W	**OHWM Width ft:**	2
UTME:	473462	**OHWM Depth ft:**	0.5
UTMN:	4253611	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S326

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	835 feet	0.04 acres	A	HHEI 48 / Class II
Unnamed Tributary Flat Creek	0	0	B	HHEI 48 / Class II
Unnamed Tributary Flat Creek	835 feet	0.04 acres	DEIS Preferred	HHEI 48 / Class II
Unnamed Tributary Flat Creek	860 feet	0.04 acres	Refined Preferred	HHEI 48 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-2.78 ac, B-0, DP-2.78 ac, RP-3.33 ac

Stream Id-Section 2 S 326

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 326 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 49.332 LONG. 87 18 14.578 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	25%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	35%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 14-15

Elevated Turbidity? (Y/N): N Canopy (% open): 30%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

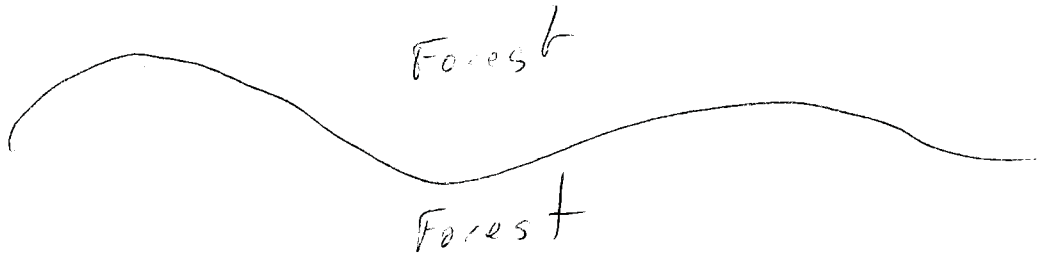
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

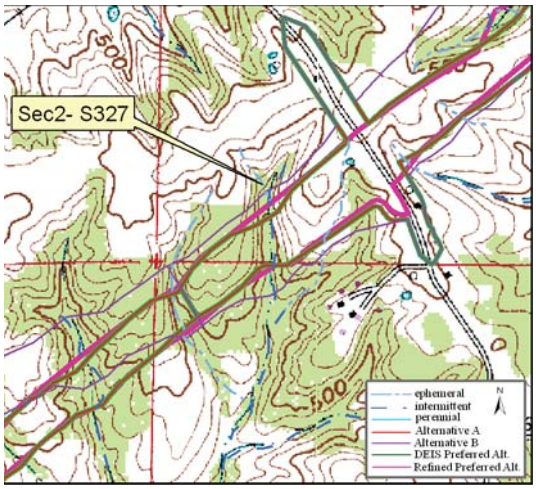
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

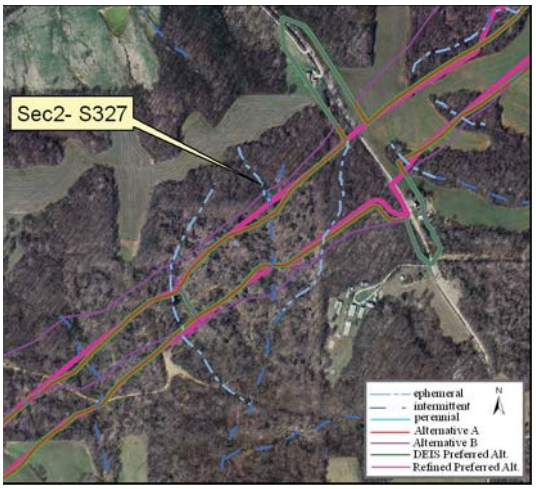
FLOW →



Stream Id-Section 2 S 327



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un Tributary Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	474415	**OHWM Depth ft:**	0.5
UTMN:	4254463	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S327

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 47 / Class II
Unnamed Tributary Flat Creek	84 feet	0.01 acres	B	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 47 / Class II
Unnamed Tributary Flat Creek	0	0	Refined Preferred	HHEI 47 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	47
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0, B-0.01, DP-0, RP-0

Stream Id-Section 2 S 327

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 47

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 327 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 17.075 LONG. 87 17 35.383 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	30%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	40%
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	15%	☐ ☐	MUCK **[0 pts]**	
☐ ☒	SAND (<2 mm) **[6 pts]**	15%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 7

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.1

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☒	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 20-21

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

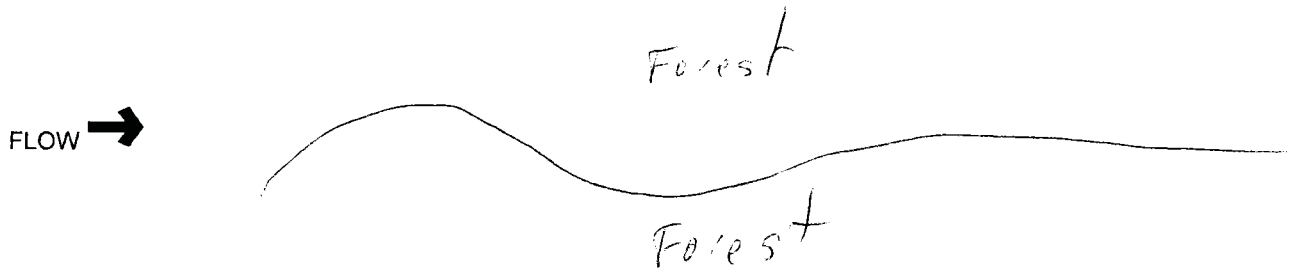
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

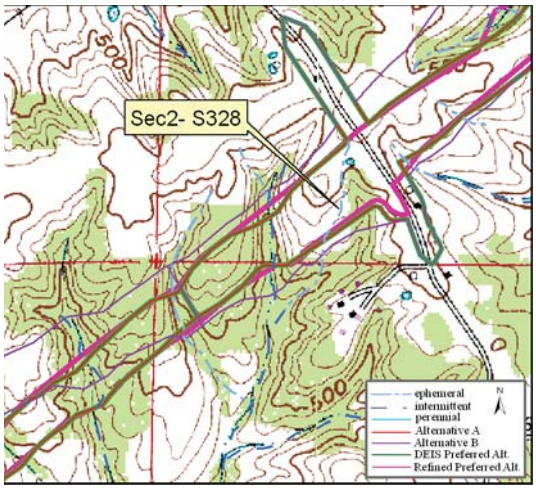
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

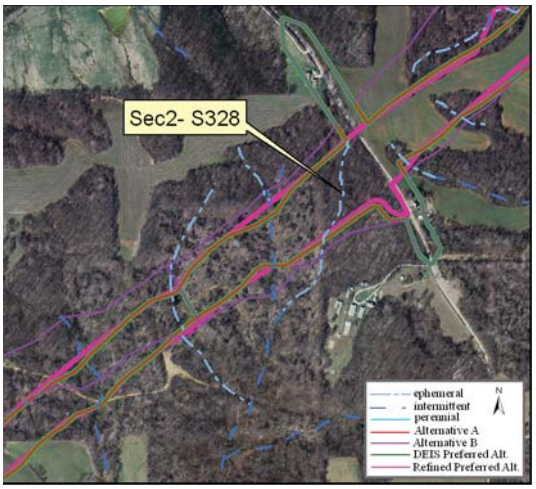
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 328



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Un Tributary Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	4.0
UTME:	474603	**OHWM Depth ft:**	0.8
UTMN:	4254459	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S328

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	852 feet	0.08 acres	A	HHEI 55 / Class II
Unnamed Tributary Flat Creek	970 feet	0.09 acres	B	HHEI 55 / Class II
Unnamed Tributary Flat Creek	852 feet	0.08 acres	DEIS Preferred	HHEI 55 / Class II
Unnamed Tributary Flat Creek	809 feet	0.07 acres	Refined Preferred	HHEI 55 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	55
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-3.89 ac, B-4.69 ac, Dp-3.89 ac, RP-3.49 ac

Stream Id-Section 2 S 328

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 55

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 328 RIVER BASIN Patoka DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 16.964 LONG. 87 17 27.628 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	40%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**		☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 12 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 15

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 22-23

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

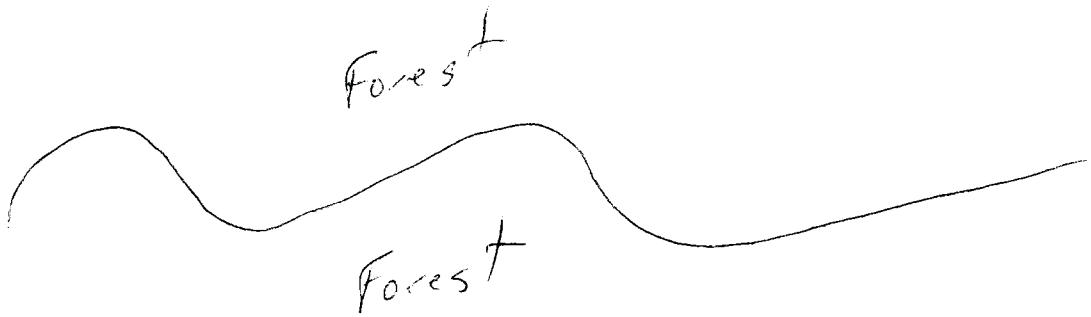
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

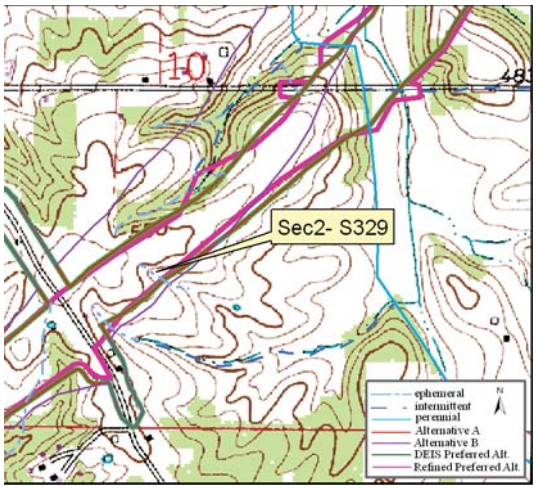
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

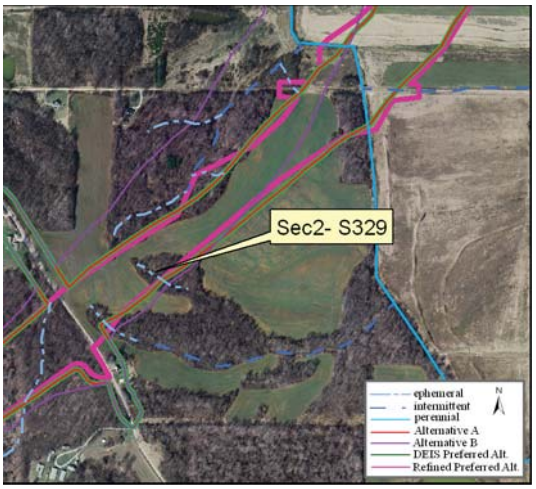
FLOW →



Stream Id-Section 2 S 329



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 10 T1S R8W	**OHWM Width ft:**	2.0
UTME:	474865	**OHWM Depth ft:**	0.5
UTMN:	4254642	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S329

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	239 feet	0.01 acres	A	HHEI 15 / Class I
Unnamed Tributary Prides Creek	288 feet	0.01 acres	B	HHEI 15 / Class I
Unnamed Tributary Prides Creek	239 feet	0.01 acres	DEIS Preferred	HHEI 15 / Class I
Unnamed Tributary Prides Creek	226 feet	0.01 acres	Refined Preferred	HHEI 15 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	15
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-1.13 ac, B-1.37 ac, DP-1.13 ac, RP-1.05 ac

Stream Id-Section 2 S 329

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 15

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 329 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 22.928 LONG. 87 17 16.844 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	80%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 3.8

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 34-35

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

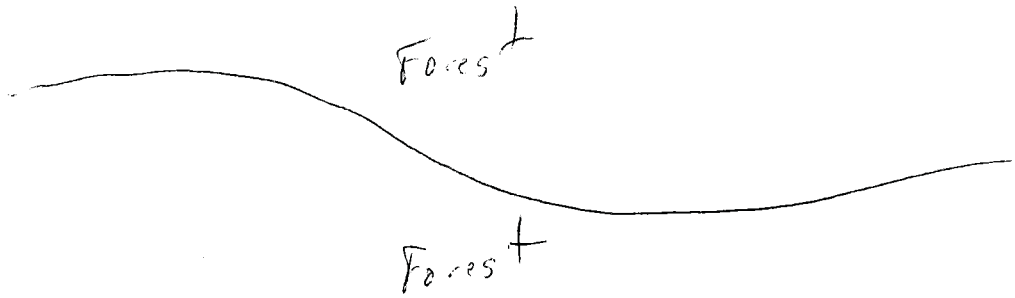
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

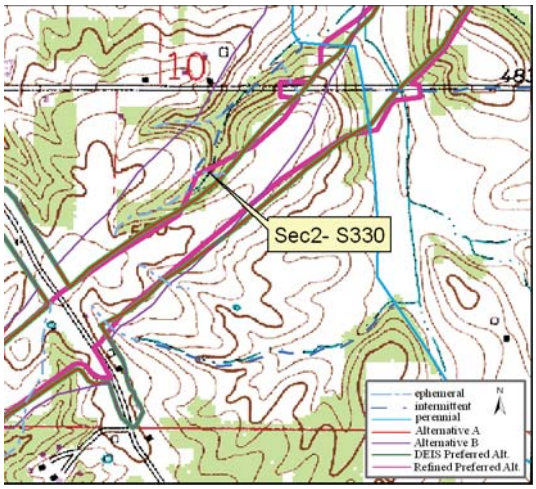
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

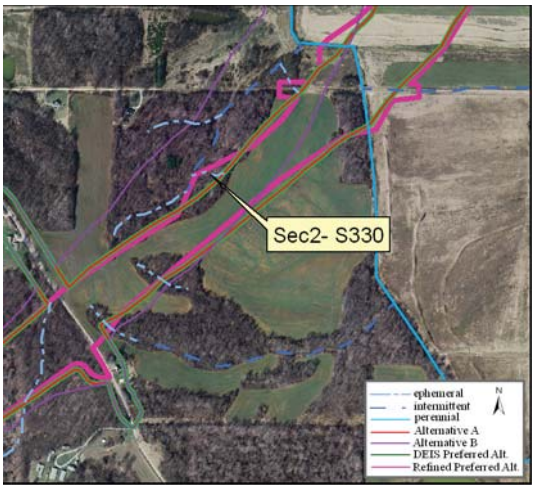
FLOW →



Stream Id-Section 2 S 330



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	474992	**OHWM Depth ft:**	0.4
UTMN:	4254882	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S330

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 37 / Class I
Unnamed Tributary Prides Creek	269 feet	0.03 acres	B	HHEI 37 / Class I
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 37 / Class I
Unnamed Tributary Prides Creek	228 feet	0.03 acres	Refined Preferred	HHEI 37 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	37
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A*-0.28 ac, B-0.80 ac, DP*- 0.28 ac, RP-0.78 ac

*This stream is not impacted within the right-of-way; however, the riparian is impacted within the right-of-way.

Stream Id-Section 2 S 330

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 37

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 330 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 30.727 LONG. 87 17 11.636 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☒	BLDR SLABS **[16 pts]**	15%	☒	☐	SILT **[3 pt]**	30%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☒	BEDROCK **[16 pt]**	15%	☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	30%	☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 17

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 32-33

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

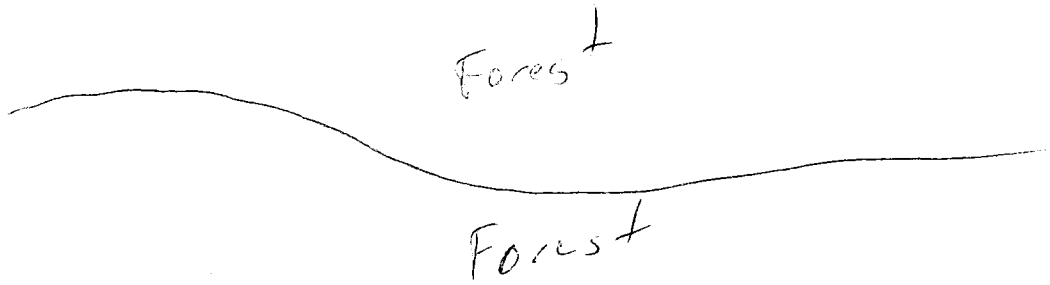
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

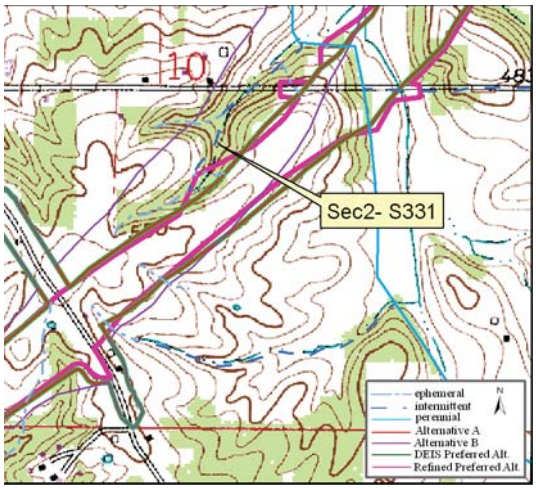
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

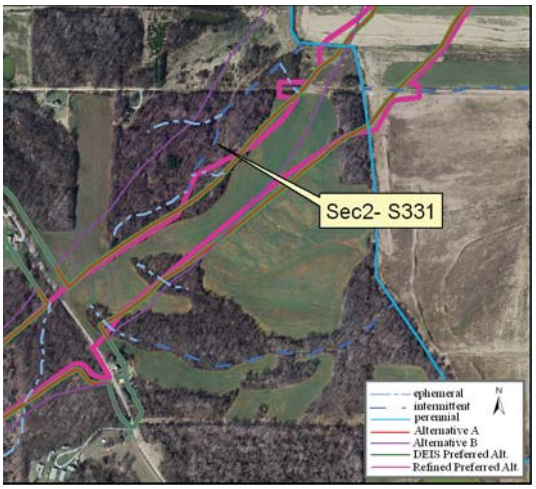
FLOW →



Stream Id-Section 2 S 331



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 10 T1S R8W	**OHWM Width ft:**	8.0
UTME:	475048	**OHWM Depth ft:**	1.0
UTMN:	4255045	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S331

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 60 / Class II
Unnamed Tributary Prides Creek	1,534 feet	0.28 acres	B	HHEI 60 / Class II
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 60 / Class II
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 60 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	60
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A*-0.02 ac, B-5.91 ac, DP*-0.02 ac, RP*-0.55 ac

*This stream is not impacted within the right-of-way; however, the riparian is impacted within the right-of-way.

Stream Id-Section 2 S 331

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 60

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 331 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 36.021 LONG. 87 17 9.347 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	25%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	65%	☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 12 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 15

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.4m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☒ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 24-25

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

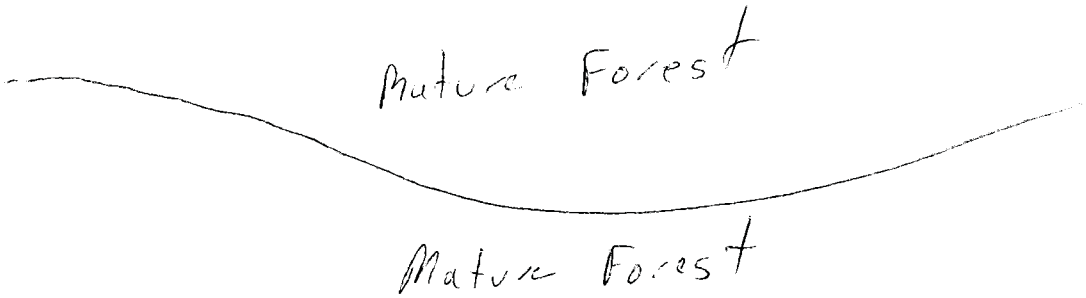
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

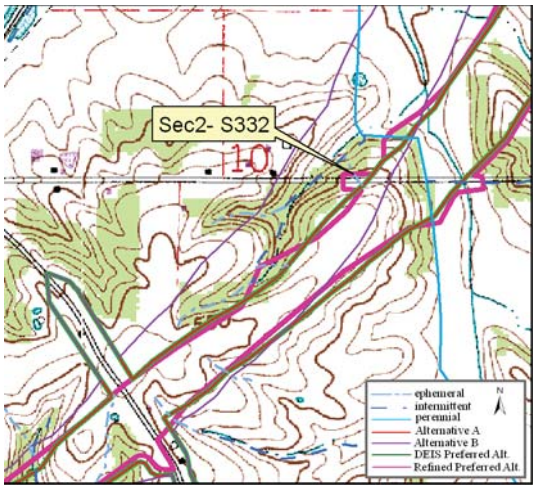
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

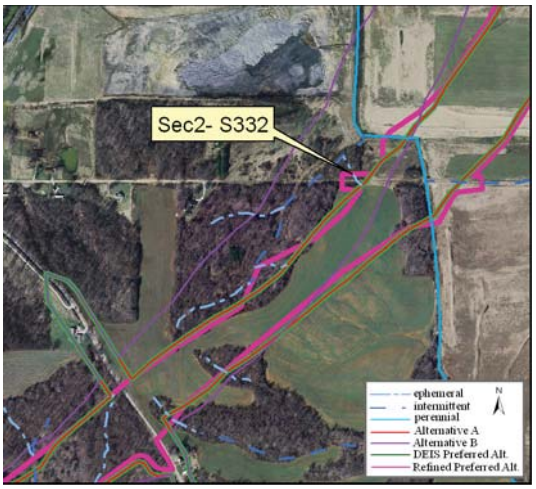
FLOW →



Stream Id-Section 2 S 332



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 10 T1S R8W	**OHWM Width ft:**	5.0
UTME:	475184	**OHWM Depth ft:**	1.0
UTMN:	4255109	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S332

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 39 / Class I
Unnamed Tributary Prides Creek	276 feet	0.03 acres	B	HHEI 39 / Class I
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 39 / Class I
Unnamed Tributary Prides Creek	112 feet	0.01 acres	Refined Preferred	HHEI 39 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A*-0.01 ac, B-0.63 ac, DP*-0.01 ac, RP-0.39 ac

*This stream is not impacted within the right-of-way; however, the riparian of this stream is within the right-of-way.

Stream Id-Section 2 S 332

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 332 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 26 38.111 LONG. 87 17 3.745 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	15%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	15%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	30%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 36-37

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

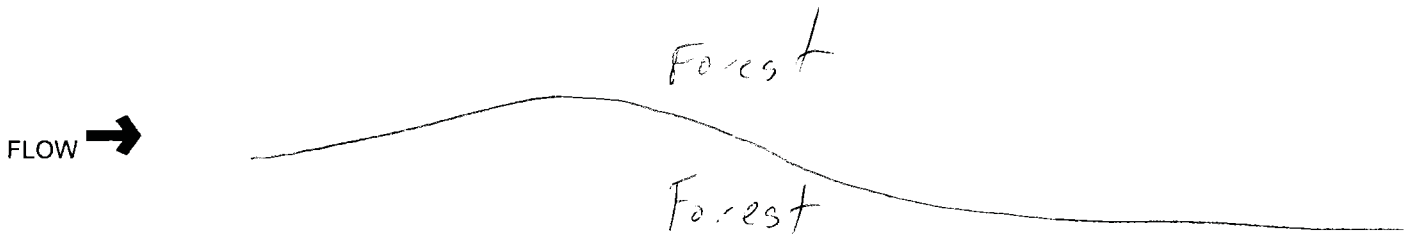
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

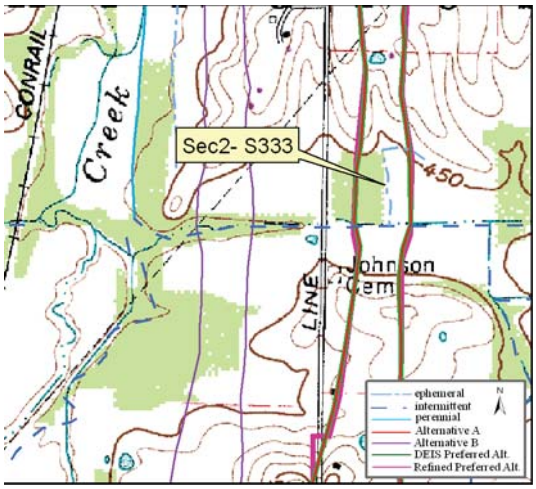
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

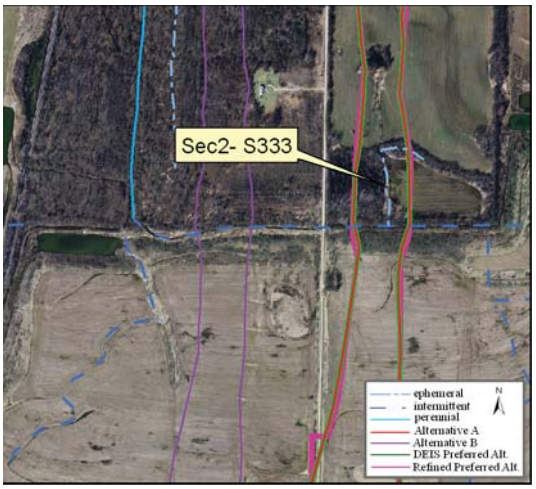
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 333



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 2 T1S R8W	**OHWM Width ft:**	3.0
UTME:	475961	**OHWM Depth ft:**	0.3
UTMN:	4256798	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S333

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	607 feet	0.04 acres	A	HHEI 24 / Modified Class I
Unnamed Tributary Prides Creek	0	0	B	HHEI 24 / Modified Class I
Unnamed Tributary Prides Creek	607 feet	0.04 acres	DEIS Preferred	HHEI 24 / Modified Class I
Unnamed Tributary Prides Creek	607 feet	0.04 acres	Refined Preferred	HHEI 24 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-2.18 ac, B-0, DP-2.18 ac, RP-2.18 ac

Stream Id-Section 2 S 333

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 333 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 27 32.985 LONG. 87 16 31.899 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 40-41

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

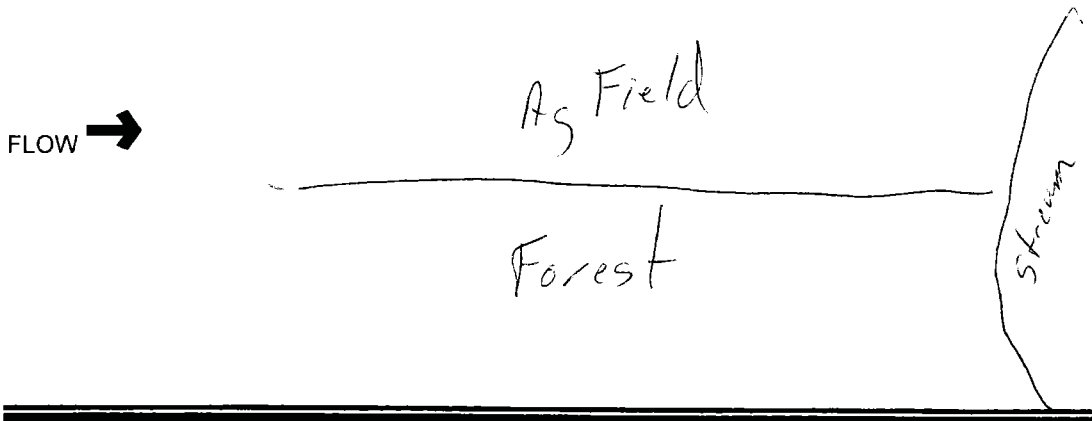
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

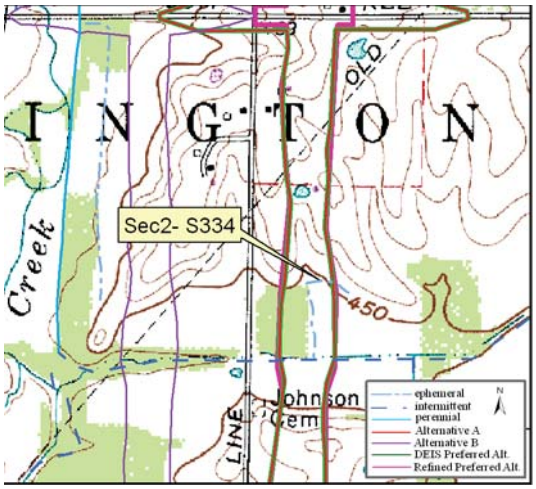
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

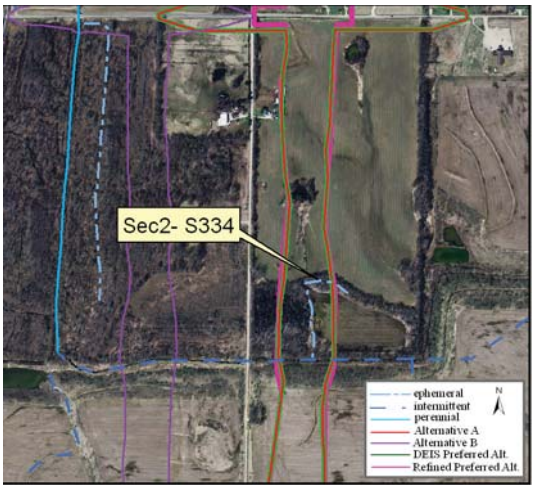
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 334



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 2 T1S R8W	**OHWM Width ft:**	1.5
UTME:	475994	**OHWM Depth ft:**	0.3
UTMN:	4256877	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S334

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	205 feet	0.01 acres	A	HHEI 34 / Class I
Unnamed Tributary Prides Creek	0	0	B	HHEI 34 / Class I
Unnamed Tributary Prides Creek	205 feet	0.01 acres	DEIS Preferred	HHEI 34 / Class I
Unnamed Tributary Prides Creek	224feet	0.01 acres	Refined Preferred	HHEI 34 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.33 ac, B-0, DP-0.33 ac, RP-0.38 ac

Stream Id-Section 2 S 334

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 334 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 27 35.551 LONG. 87 16 30.547 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40: 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☒ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 38-39

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

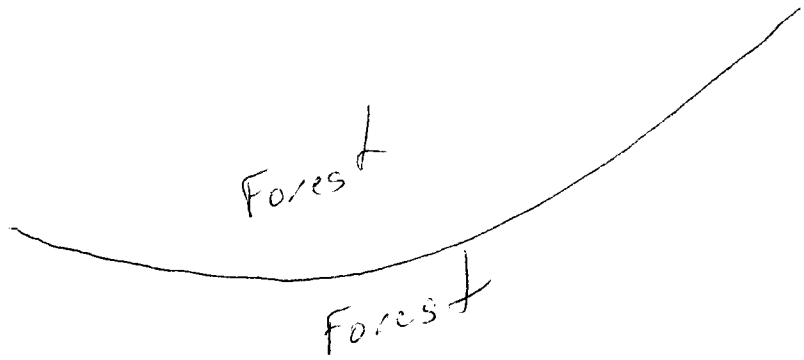
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

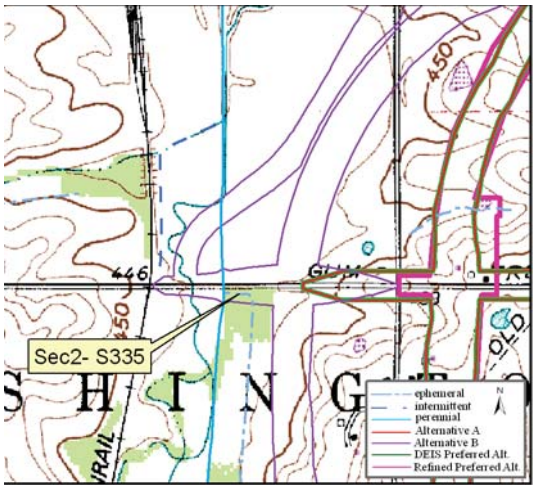
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

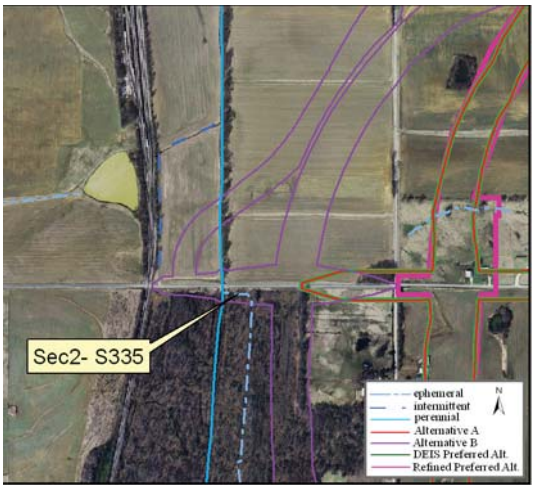
FLOW →



Stream Id-Section 2 S 335



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 3 T1S R8W	**OHWM Width ft:**	12.0
UTME:	475456	**OHWM Depth ft:**	2.0
UTMN:	4257487	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S335

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	0	0	A	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	269 feet	0.07 acres	B	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	0	0	DEIS Preferred	HHEI 54 / Modified Class II
Unnamed Tributary Prides Creek	0	0	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0. B-0.62 ac, DP-0, RP-0

Stream Id-Section 2 S 335

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 335 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 27 55.289 LONG. 87 16 52.823 RIVER CODE _____ RIVER MILE _____

DATE 3/25/09 SCORER me COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☒ ☐	FINE DETRITUS **[3 pts]**	10%
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	10%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 30.5

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.7m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/24/09 Quantity: <1 inch

Photograph Information: P 83-84

Elevated Turbidity? (Y/N): N Canopy (% open): 30%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

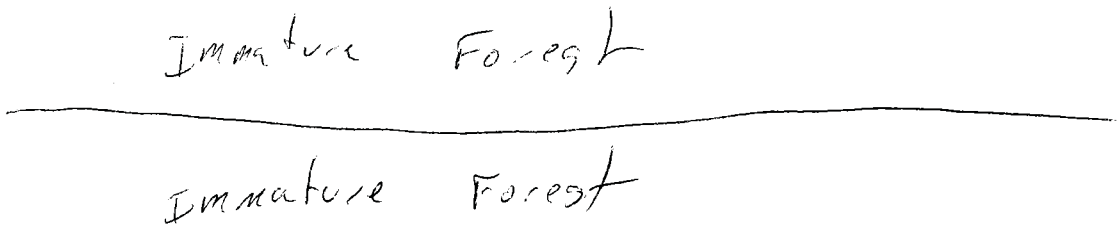
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

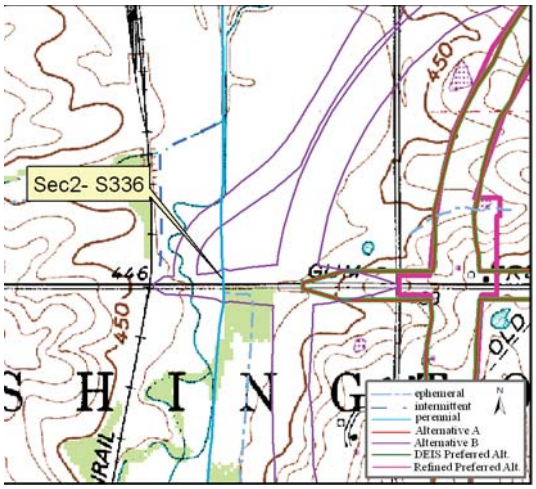
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

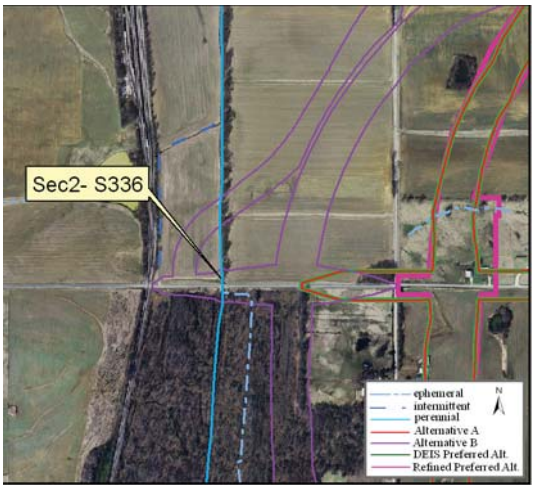
FLOW →



Stream Id-Section 2 S 336



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 34 T1N R8W	**OHWM Width ft:**	20.0
UTME:	475409	**OHWM Depth ft:**	7.0
UTMN:	4257516	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S336

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Prides Creek	0	0	A	QHEI 24.5 / Modified Warmwater Habitat
Prides Creek	487 feet	0.22 acres	B	QHEI 24.5 / Modified Warmwater Habitat
Prides Creek	0	0	DEIS Preferred	QHEI 24.5 / Modified Warmwater Habitat
Prides Creek	0	0	Refined Preferred	QHEI 24.5 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	21.5
Watershed Area (square miles):	3.50
Legal Drain:	No
Predominate Substrate:	cobble
Estimated Riparian Area (acres):	A-0, B-0.84 ac, DP-0, RP-0

Stream Id-Section 2 S 336

Photograph taken looking upstream

Photograph taken looking downstream

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 24.5

Stream & Location: Prides Creek (S 336) **RM:** _ _ _._ **Date:** 03 / 26 / 09

Scorers Full Name & Affiliation: Jeremy Kieffner - BLA

River Code: _ _ _ - _ _ _ - _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal º) 38 . 27 56.225 /8 7 . 16 54.766 **Office verified location** ☐

1] *SUBSTRATE* Check *ONLY* Two substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]			☐ ☒ MUCK [2]	x	x
☐ ☐ GRAVEL [7]			☒ ☐ SILT [2]	x	x
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

ORIGIN		QUALITY
☐ LIMESTONE [1]	SILT	☐ HEAVY [-2]
☐ TILLS [1]		☒ MODERATE [-1]
☐ WETLANDS [0]		☐ NORMAL [0]
☐ HARDPAN [0]		☐ FREE [1]
☐ SANDSTONE [0]	EMBEDDEDNESS	☐ EXTENSIVE [-2]
☐ RIP/RAP [0]		☐ MODERATE [-1]
☒ LACUSTURINE [0]		☒ NORMAL [0]
☐ SHALE [-1]		☐ NONE [1]
☐ COAL FINES [-2]		

Comments

Substrate 3 *Maximum 20*

2] *INSTREAM COVER* Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	1	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	1	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
1	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	1	LOGS OR WOODY DEBRIS [1]
2	ROOTMATS [1]				

AMOUNT Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☒ NEARLY ABSENT <5% [1]

Comments

Cover 8 *Maximum 20*

3] *CHANNEL MORPHOLOGY* Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☐ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☒ LOW [1]
☒ NONE [1]	☒ POOR [1]	☒ RECENT OR NO RECOVERY [1]	

Comments

Channel 4 *Maximum 20*

4] *BANK EROSION AND RIPARIAN ZONE* Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☐ ☐ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☒ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☒ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☒ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	☐ ☒ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☒ ☐ NONE [0]	☒ ☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 3.5 *Maximum 10*

5] *POOL / GLIDE AND RIFFLE / RUN QUALITY*

MAXIMUM DEPTH Check **ONE** (*ONLY!*)

☐ > 1m [6]
☐ 0.7-<1m [4]
☒ 0.4-<0.7m [2]
☐ 0.2-<0.4m [1]
☐ < 0.2m [0]

CHANNEL WIDTH Check ONE (*Or 2 & average*)

☐ POOL WIDTH > RIFFLE WIDTH [2]
☒ POOL WIDTH = RIFFLE WIDTH [1]
☐ POOL WIDTH > RIFFLE WIDTH [0]

CURRENT VELOCITY Check ALL that apply

☐ TORRENTIAL [-1] ☐ SLOW [1]
☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ FAST [1] ☒ INTERMITTENT [-2]
☒ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 2 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☒ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☒ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run 1 *Maximum 8*

6] *GRADIENT* (5 ft/mi)

☒ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (3.5 mi²)

%POOL: 35 **%GLIDE:** 25 **%RUN:** 15 **%RIFFLE:** 25

Gradient 3 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☒ OTHER

STAGE

1st -sample pass- 2nd

- ☐ HIGH ☐
- ☐ UP ☐
- ☒ NORMAL ☒
- ☐ LOW ☐
- ☐ DRY ☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☒ OTHER

100 meters

CLARITY

1st --sample pass-- 2nd

- ☒ < 20 cm ☒
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ☐ > 70 cm/ CTB ☐
- ☐ SECCHI DEPTH ☐

CANOPY

- ☐ > 85%- OPEN
- ☒ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

1st pass _____ cm

2nd _____ cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

The sampling reach is consistent with a typical reach of this stream. No recreational activities were observed.

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

POOL: AREA ☐ >100ft² DEPTH ☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

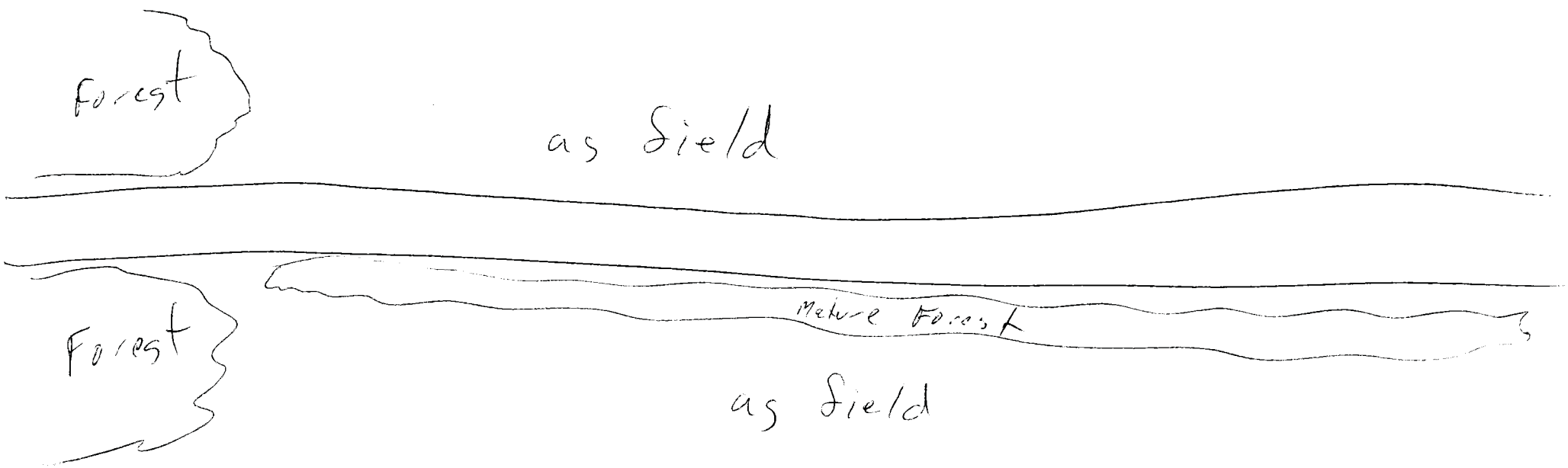
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

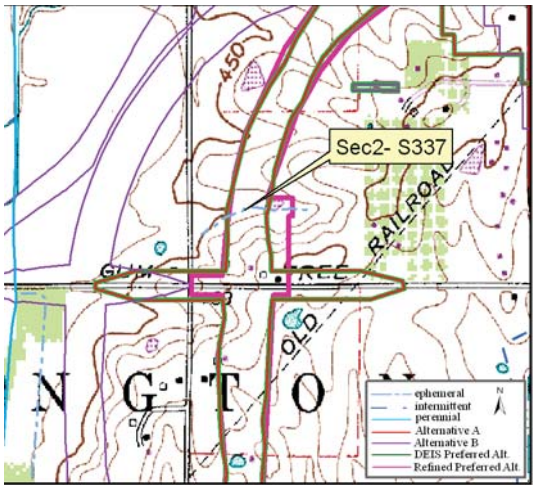
- $\bar{x}$ width 20'
- $\bar{x}$ depth 18"
- max. depth 24"
- $\bar{x}$ bankfull width 20'
- bankfull $\bar{x}$ depth 7'
- W/D ratio
- bankfull max. depth 11'
- floodprone x^2 width 6'
- entrench. ratio

Legacy Tree:

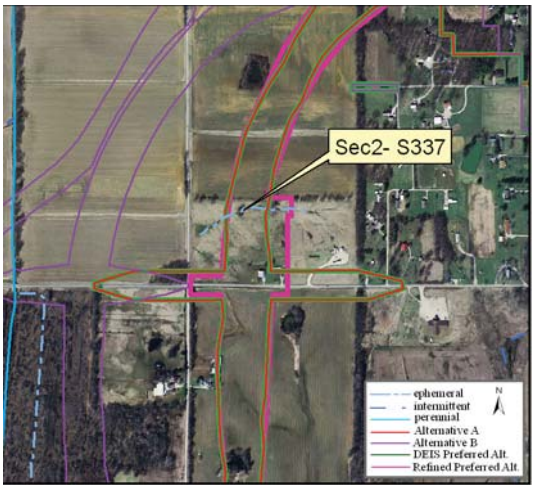
Stream Drawing:



Stream Id-Section 2 S 337



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 35 T1N R8W	**OHWM Width ft:**	2.0
UTME:	475969	**OHWM Depth ft:**	0.5
UTMN:	4257693	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S337

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	345 feet	0.02 acres	A	HHEI 34 / Modified Class II
Unnamed Tributary Prides Creek	0	0	B	HHEI 34 / Modified Class II
Unnamed Tributary Prides Creek	345 feet	0.02 acres	DEIS Preferred	HHEI 34 / Modified Class II
Unnamed Tributary Prides Creek	522 feet	0.02 acres	Refined Preferred	HHEI 34 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 337

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 337 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 28 2.023 LONG. 87 16 31.680 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.8m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☒ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 29-30

Elevated Turbidity? (Y/N): N Canopy (% open): 80%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

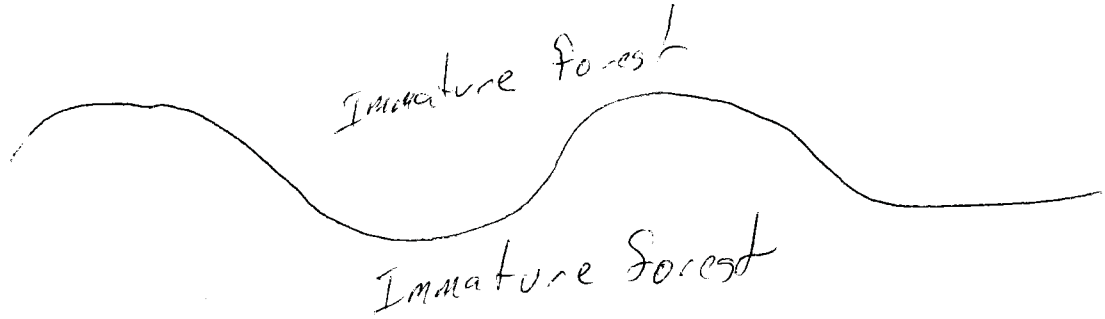
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

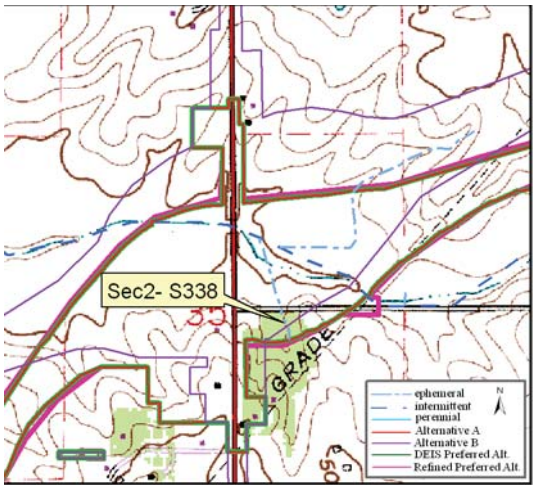
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

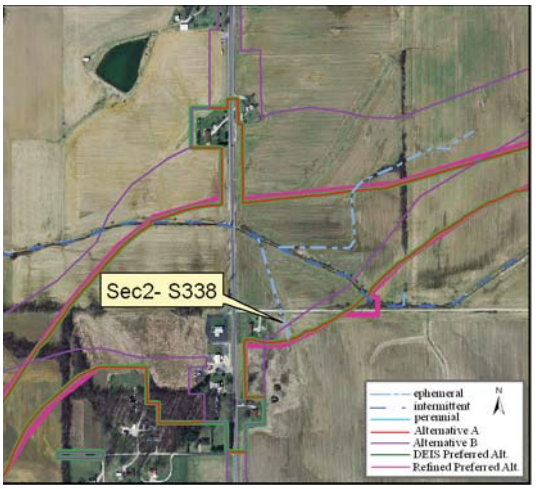
FLOW →



Stream Id-Section 2 S 338



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 35 T1N R8W	**OHWM Width ft:**	2.0
UTME:	476751	**OHWM Depth ft:**	1.0
UTMN:	4258290	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S338

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	254 feet	0.01 acres	A	HHEI 31 / Modified Class II
Unnamed Tributary Prides Creek	139 feet	0.01 acres	B	HHEI 31 / Modified Class II
Unnamed Tributary Prides Creek	254 feet	0.01 acres	DEIS Preferred	HHEI 31 / Modified Class II
Unnamed Tributary Prides Creek	257 feet	0.01 acres	Refined Preferred	HHEI 31 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0,B-0, DP-0, RP-0

Stream Id-Section 2 S 338

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 338 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 27 35.551 LONG. 87 16 30.547 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	20%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☒ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 1-2

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

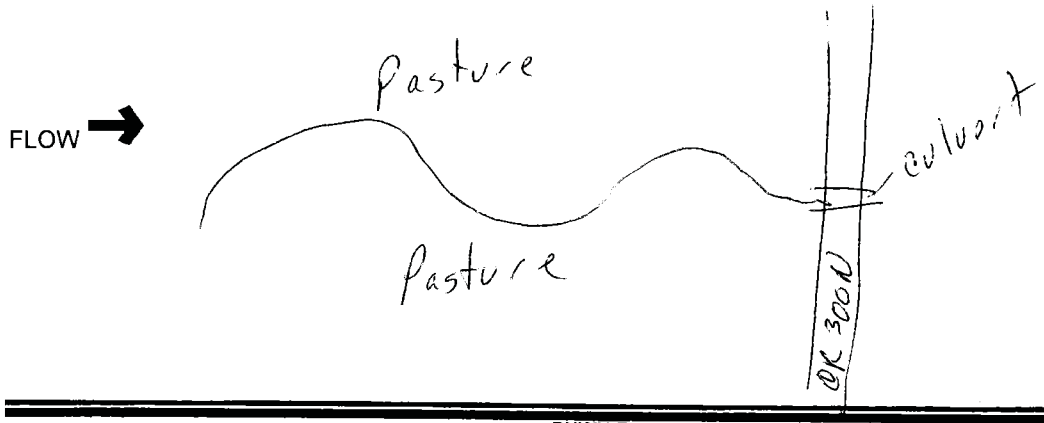
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

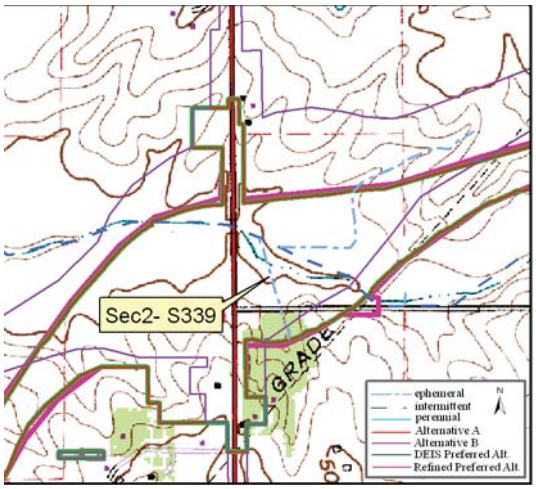
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

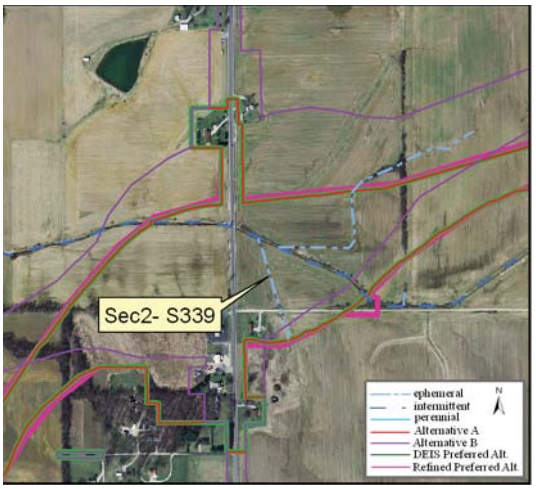
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 339



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Prides Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 35 T1N R8W	**OHWM Width ft:**	3.5
UTME:	476719	**OHWM Depth ft:**	1.5
UTMN:	4258396	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S339

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Prides Creek	601 feet	0.05 acres	A	HHEI 46 / Modified Class II
Unnamed Tributary Prides Creek	601 feet	0.05 acres	B	HHEI 46 / Modified Class II
Unnamed Tributary Prides Creek	601 feet	0.05 acres	DEIS Preferred	HHEI 46 / Modified Class II
Unnamed Tributary Prides Creek	601 feet	0.05 acres	Refined Preferred	HHEI 46 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	46
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0,B-0, DP-0, RP-0

Stream Id-Section 2 S 339

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 46

SITE NAME/LOCATION Unnamed Trib Prides Creek

SITE NUMBER S 339 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 28 24.902 LONG. 87 16 0.814 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	30%
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.1m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☒ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 3-4

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

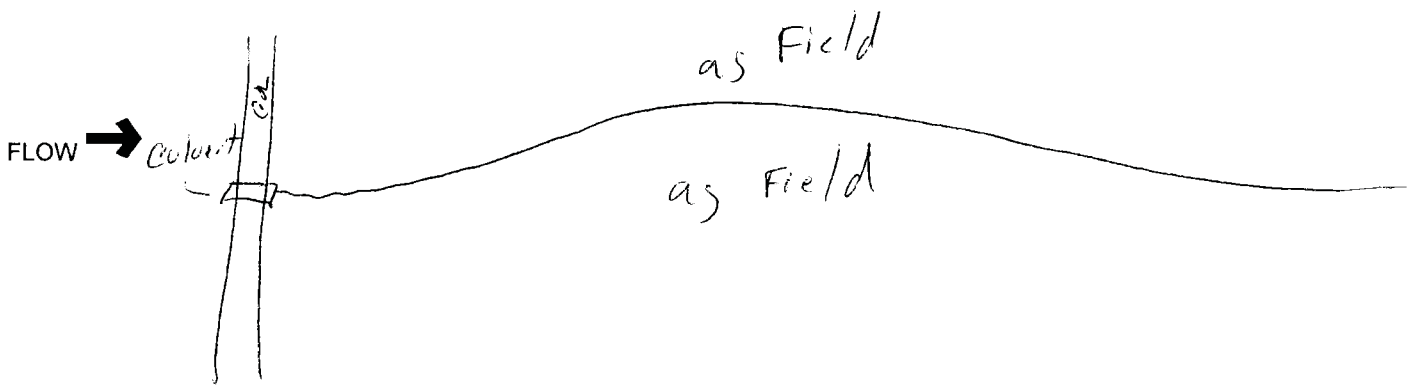
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

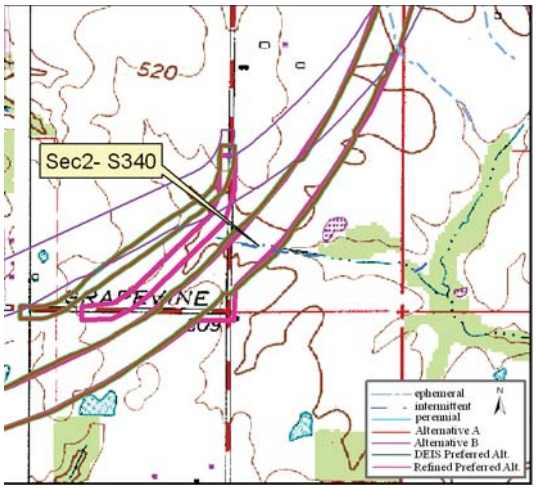
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

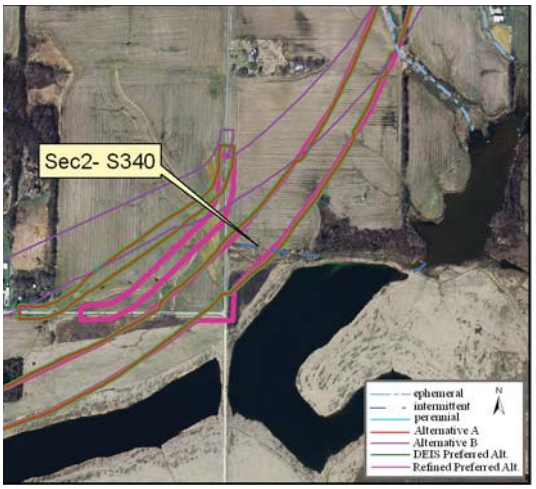
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 340



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 25 T1N R8W	**OHWM Width ft:**	4.0
UTME:	478729	**OHWM Depth ft:**	0.6
UTMN:	4259297	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S340

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	384 feet	0.04 acres	A	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	0	0	B	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	384 feet	0.04 acres	DEIS Preferred	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	335 feet	0.03 acres	Refined Preferred	HHEI 51 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	51
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 340

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 51

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 340 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 28 54.315 LONG. 87 14 37.960 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	70%
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	BEDROCK **[16 pt]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☐	CLAY or HARDPAN **[0 pt]**	
☐	GRAVEL (2-64 mm) **[9 pts]**		☐	MUCK **[0 pts]**	
☒	SAND (<2 mm) **[6 pts]**	30%	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 28-29

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

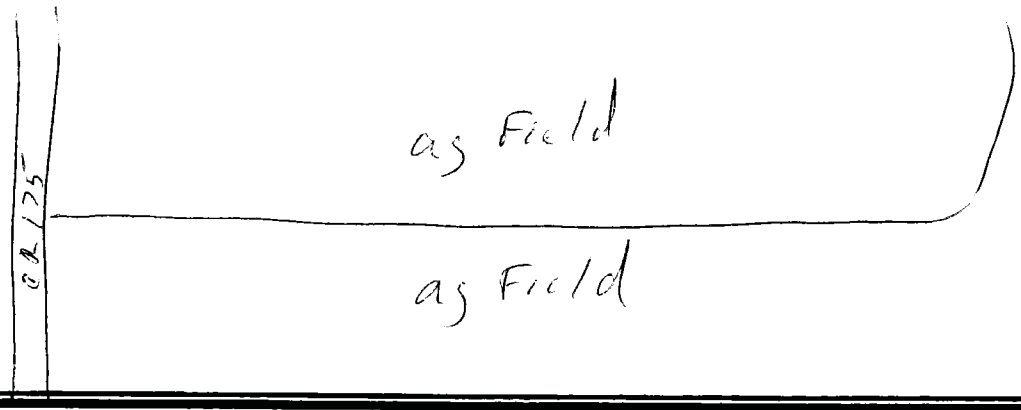
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

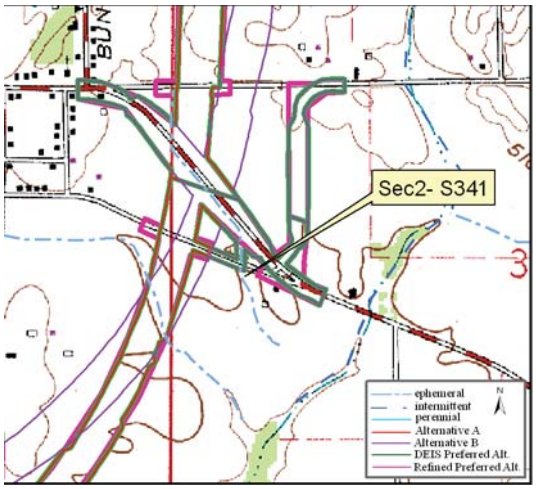
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

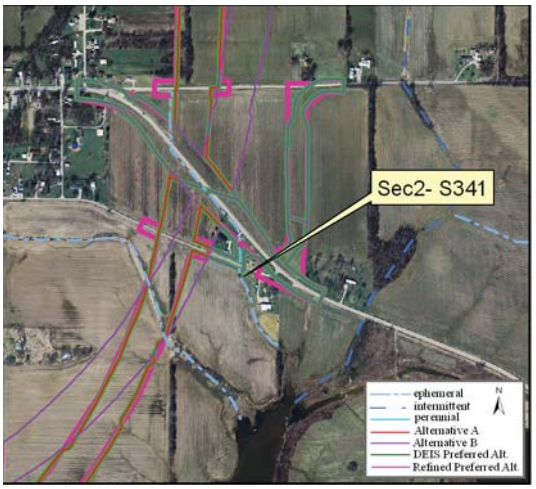
FLOW →



Stream Id-Section 2 S 341



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 30 T1N R7W	**OHWM Width ft:**	4.0
UTME:	479249	**OHWM Depth ft:**	0.9
UTMN:	4259930	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S341

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	24 feet	0.01 acres	A	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	24 feet	0.01 acres	B	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	24 feet	0.01 acres	DEIS Preferred	HHEI 51 / Modified Class II
Unnamed Tributary Mud Creek	0	0	Refined Preferred	HHEI 51 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	51
Watershed Area (square miles):	0.12
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 341

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 51

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 341 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.12

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 14.904 LONG. 87 14 12.437 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☒	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 34-35

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

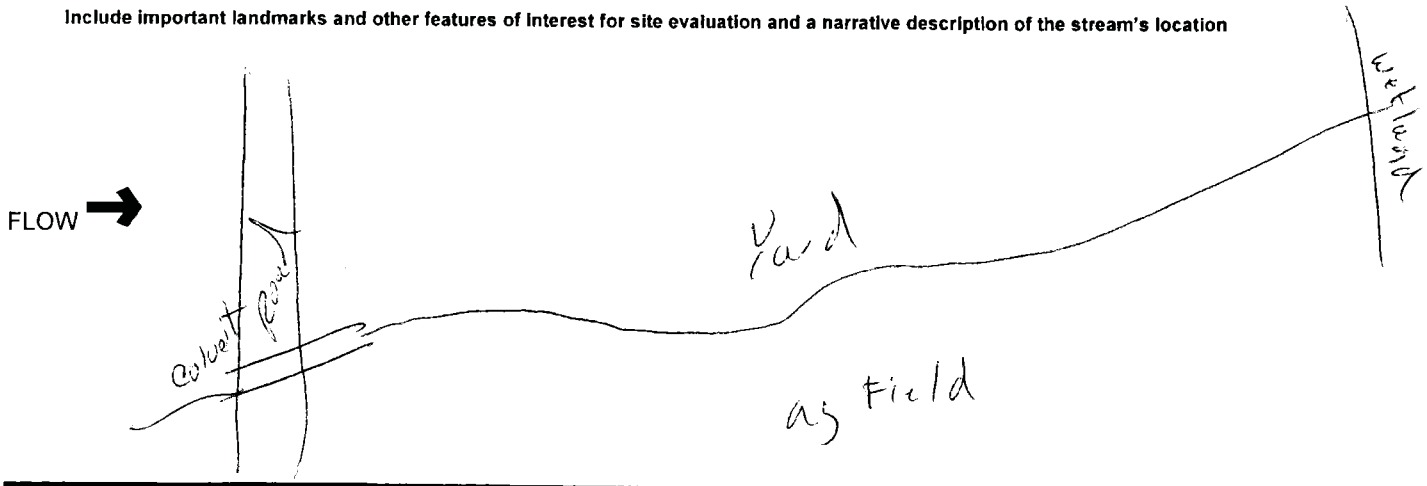
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

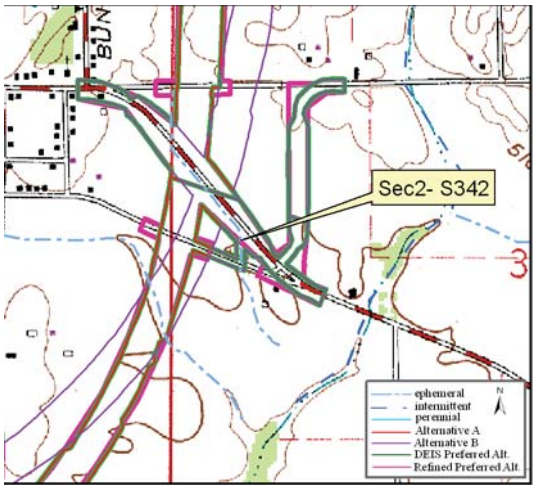
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

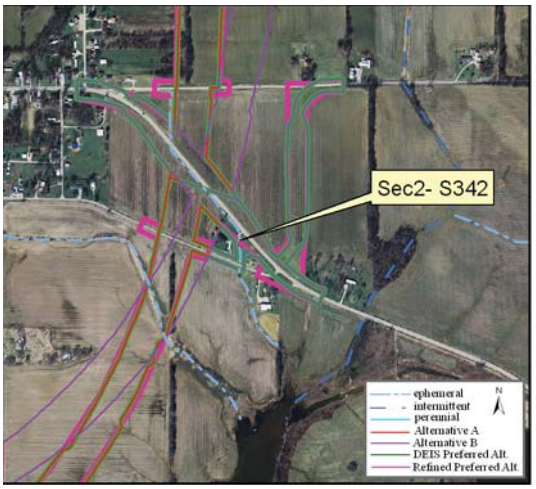
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 342



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 30 T1N R7W	**OHWM Width ft:**	2.5
UTME:	479252	**OHWM Depth ft:**	0.7
UTMN:	4259992	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S342

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	490 feet	0.03 acres	A	HHEI 49 / Modified Class II
Unnamed Tributary Mud Creek	490 feet	0.03 acres	B	HHEI 49 / Modified Class II
Unnamed Tributary Mud Creek	490 feet	0.03 acres	DEIS Preferred	HHEI 49 / Modified Class II
Unnamed Tributary Mud Creek	299 feet	0.02 acres	Refined Preferred	HHEI 49 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	49
Watershed Area (square miles):	0.11
Legal Drain:	No
Predominate Substrate:	Cobble
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RPA0

Stream Id-Section 2 S 342

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 49

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 342 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.70

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 16.907 LONG. 87 14 16.447 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	30%
☐	☒	BOULDER (>256 mm) **[16 pts]**	20%	☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☒	☐	COBBLE (65-256 mm) **[12 pts]**	40%	☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**		☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 60% riprap **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.7m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 32-33

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

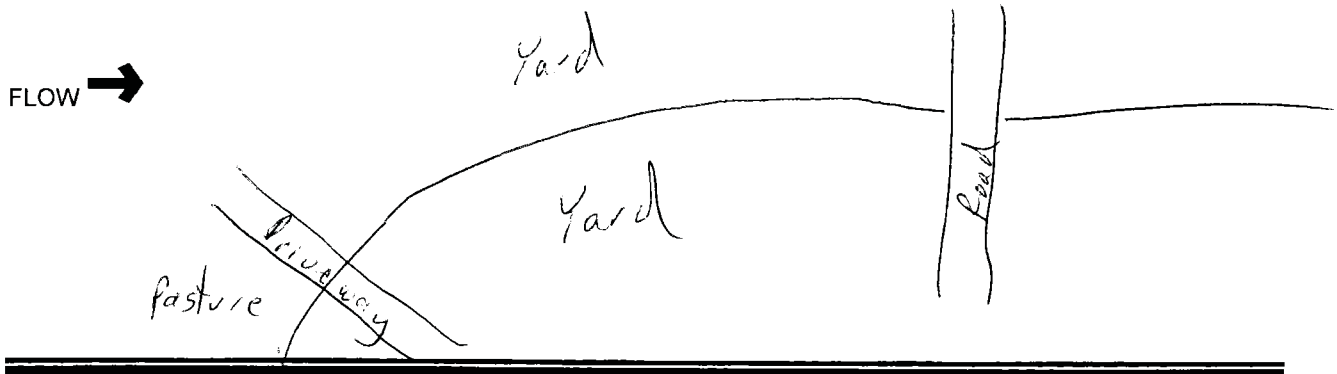
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

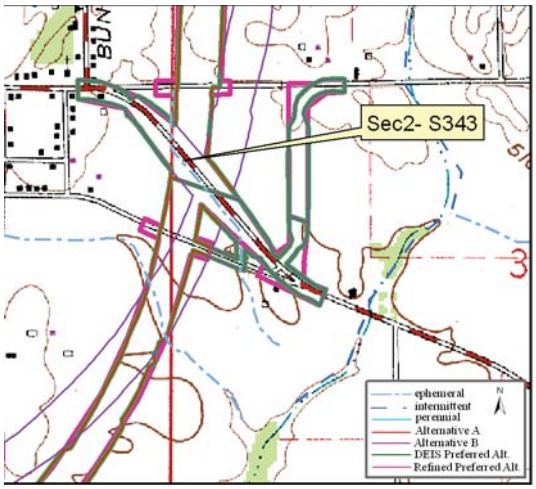
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

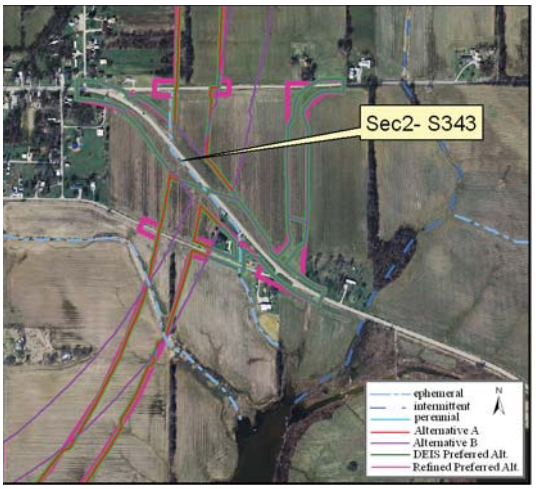
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 343



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 30 T1N R7W	**OHWM Width ft:**	3.3
UTME:	479131	**OHWM Depth ft:**	0.8
UTMN:	4260157	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S343

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	838 feet	0.06 acres	A	HHEI 31 / Modified Class II
Unnamed Tributary Mud Creek	838 feet	0.06 acres	B	HHEI 31 / Modified Class II
Unnamed Tributary Mud Creek	838 feet	0.06 acres	DEIS Preferred	HHEI 31 / Modified Class II
Unnamed Tributary Mud Creek	869 feet	0.07 acres	Refined Preferred	HHEI 31 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.06
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Width (feet):	A-0, B-0, DP-0, RP-0.01 ac

Stream Id-Section 2 S 343

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 343 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 22.250 LONG. 87 14 21.460 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	20%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8.9

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.0m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

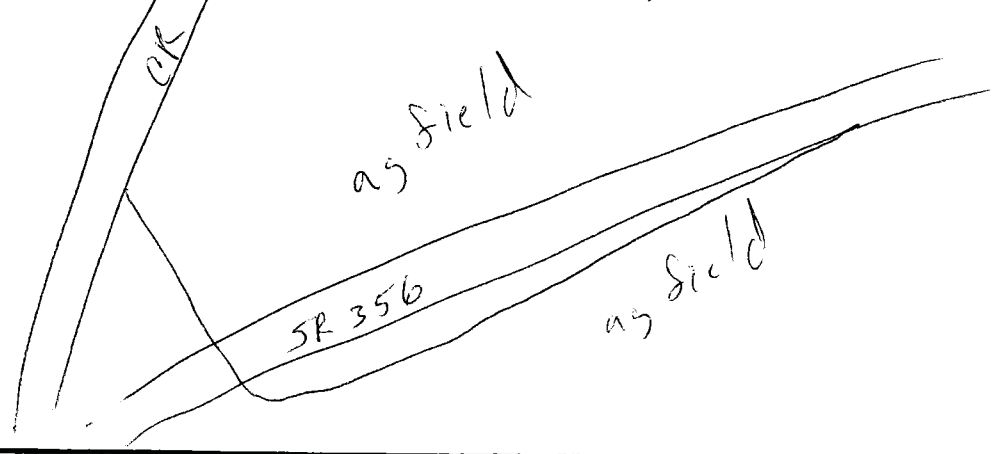
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

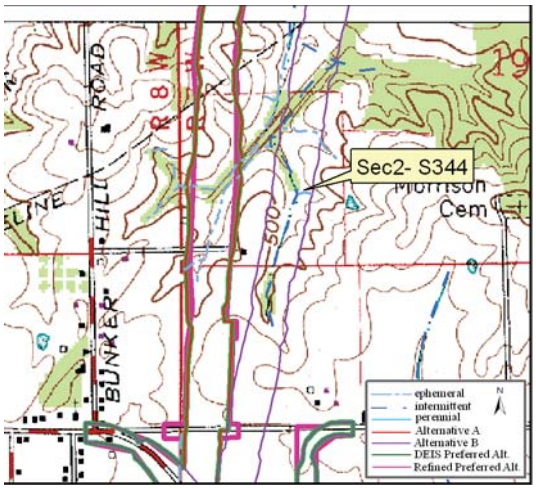
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

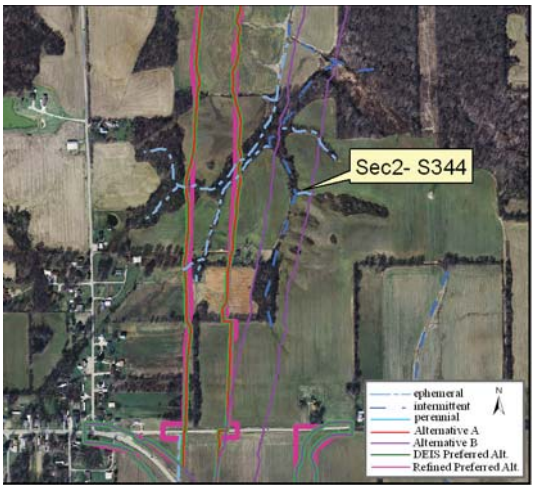
FLOW



Stream Id-Section 2 S 344



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	2.0
UTME:	479384	**OHWM Depth ft:**	0.2
UTMN:	4260921	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S344

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 21 / Modified Class I
Unnamed Tributary Lick Creek	122 feet	0.01 acres	B	HHEI 21 / Modified Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 21 / Modified Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 21 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	21
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.02 ac, DP-0, RP-0

Stream Id-Section 2 S 344

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 21

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 344 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 47.058 LONG. 87 14 11.097 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 33-34

Elevated Turbidity? (Y/N): N Canopy (% open): 75%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

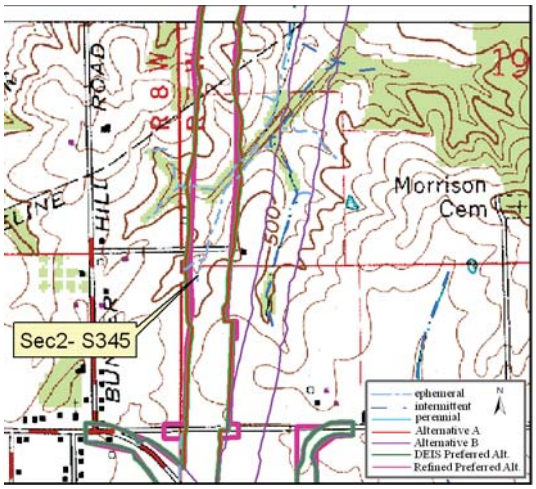
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

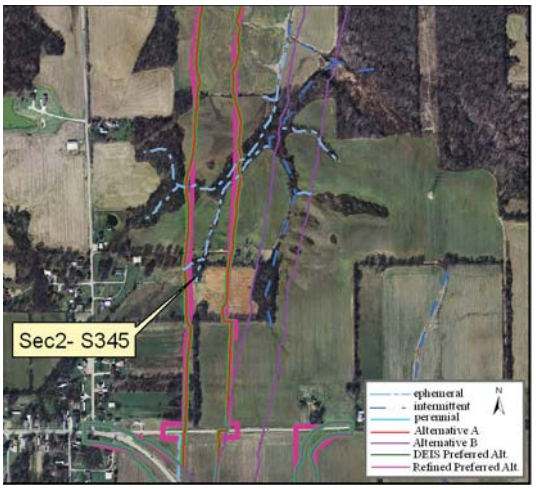
Immature Forest

Immature Forest

Stream Id-Section 2 S 345



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 30 T1N R7W	**OHWM Width ft:**	5.0
UTME:	479131	**OHWM Depth ft:**	0.5
UTMN:	4260742	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S345

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	200 feet	0.02 acres	A	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	0	0	B	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	200 feet	0.02 acres	DEIS Preferred	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	200 feet	0.02 acres	Refined Preferred	HHEI 31 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.07 ac,B-0, DP-0.07 ac, RP-0.07 ac

Stream Id-Section 2 S 345

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 345 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 41.230 LONG. 87 14 21.523 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	90%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 36-37

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

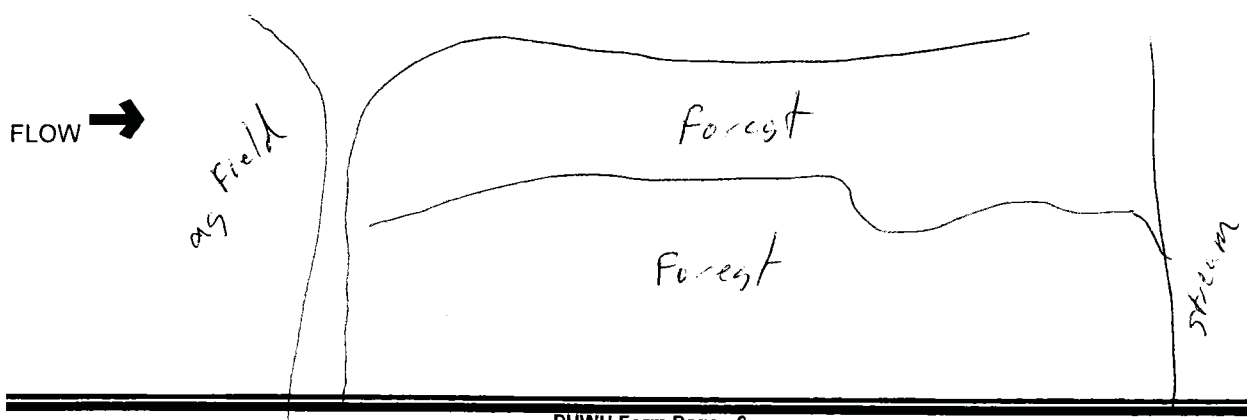
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

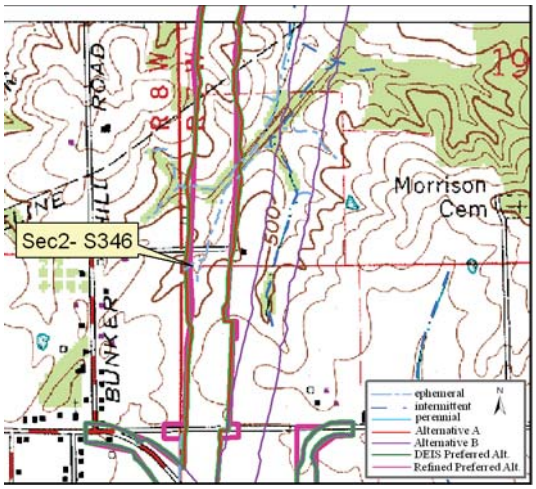
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

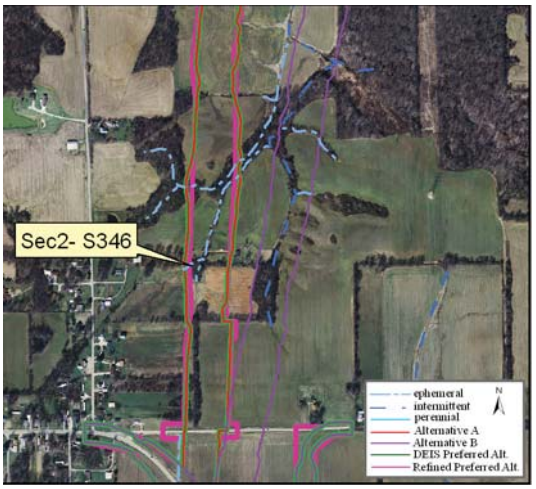
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 346



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	1.8
UTME:	479115	**OHWM Depth ft:**	0.4
UTMN:	4260754	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S346

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	174 feet	0.01 acres	A	HHEI 18 / Modified Class I
Unnamed Tributary Lick Creek	0	0	B	HHEI 18 / Modified Class I
Unnamed Tributary Lick Creek	174 feet	0.01 acres	DEIS Preferred	HHEI 18 / Modified Class I
Unnamed Tributary Lick Creek	131 feet	0.01 acres	Refined Preferred	HHEI 18 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.23 ac, B-0.0, DP-0.23 ac, RP-0.15 ac

Stream Id-Section 2 S 346

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 346 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 41.618 LONG. 87 14 22.184 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☒	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	20%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☐	SAND (<2 mm) **[6 pts]**		☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☐	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 38-39

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

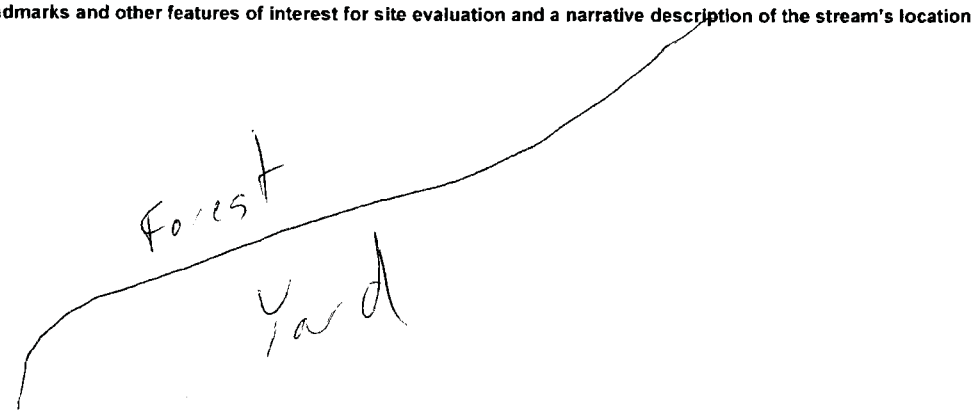
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

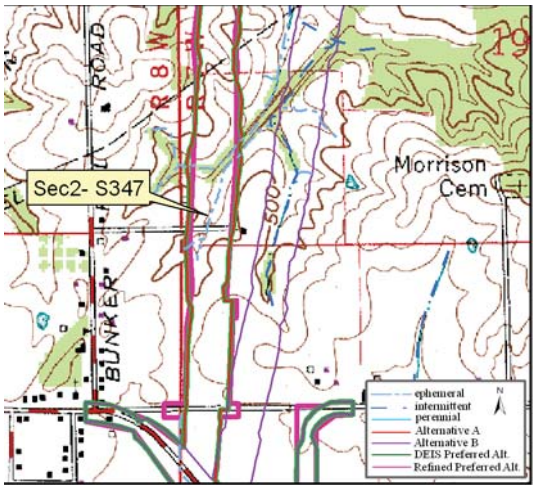
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

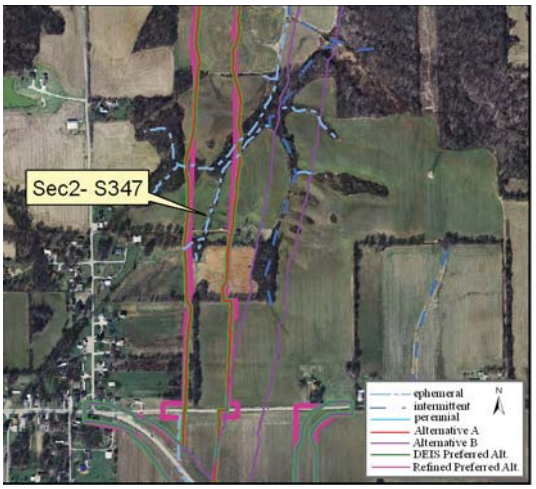
FLOW →



Stream Id-Section 2 S 347



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	3.0
UTME:	479157	**OHWM Depth ft:**	0.6
UTMN:	4260818	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S347

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	461 feet	0.03 acres	A	HHEI 31 / Class I
Unnamed Tributary Lick Creek	0	0	B	HHEI 31 / Class I
Unnamed Tributary Lick Creek	461 feet	0.03 acres	DEIS Preferred	HHEI 31 / Class I
Unnamed Tributary Lick Creek	461 feet	0.03 acres	Refined Preferred	HHEI 31 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.75 ac, B-0, DP-0.75 ac, RP-0.75 ac

Stream Id-Section 2 S 347

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 347 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 43.697 LONG. 87 14 20.457 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☒ ☒	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☒ ☒	Narrow <5m	☐ ☐	Residential, Park, New Field	☐ ☐	Open Pasture, Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P

Elevated Turbidity? (Y/N): N Canopy (% open): 75%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

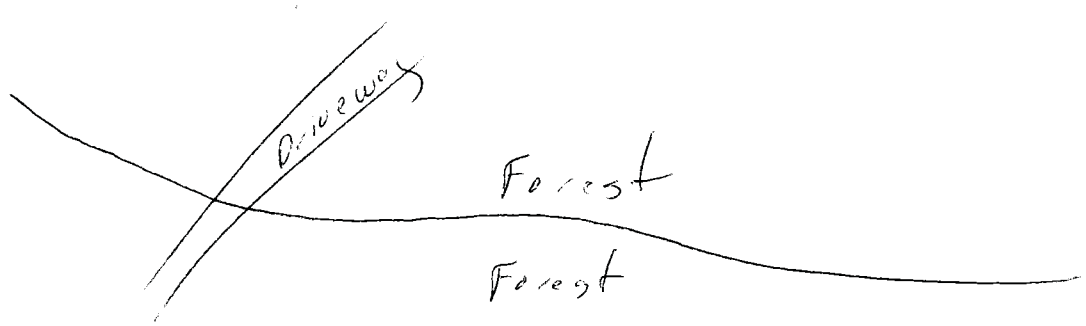
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

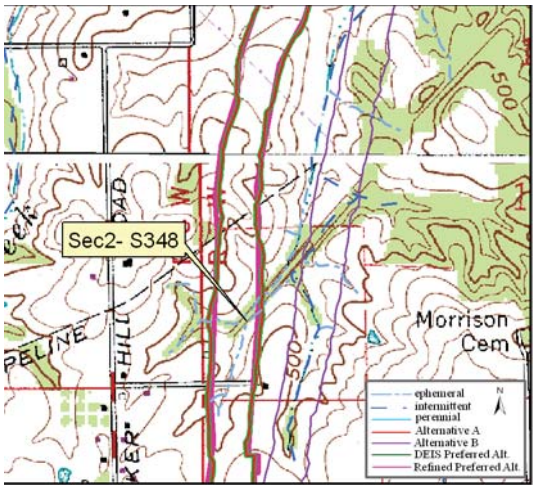
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

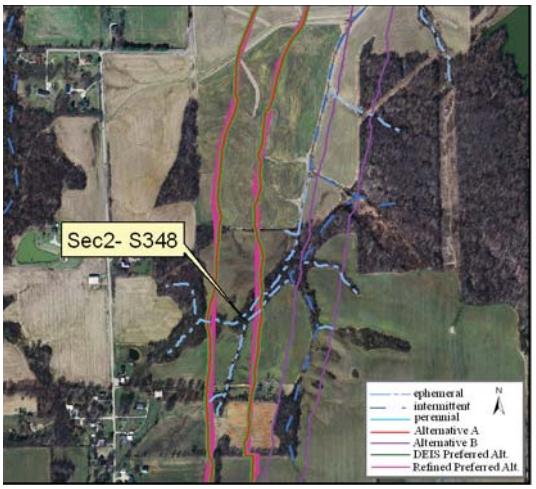
FLOW



Stream Id-Section 2 S 348



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	2.0
UTME:	479196	**OHWM Depth ft:**	0.3
UTMN:	4260929	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S348

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	275 feet	0.01 acres	A	HHEI 31 / Class I
Unnamed Tributary Lick Creek	0	0	B	HHEI 31 / Class I
Unnamed Tributary Lick Creek	275 feet	0.01 acres	DEIS Preferred	HHEI 31 / Class I
Unnamed Tributary Lick Creek	231 feet	0.01 acres	Refined Preferred	HHEI 31 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B*-0.01 ac, DP-0, RP-0

*This stream is not impacted within the right-of-way; however, the riparian is impacted within the right-of-way.

Stream Id-Section 2 S 348

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 348 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 47.302 LONG. 87 14 18.859 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	90%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	10%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 40-41

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

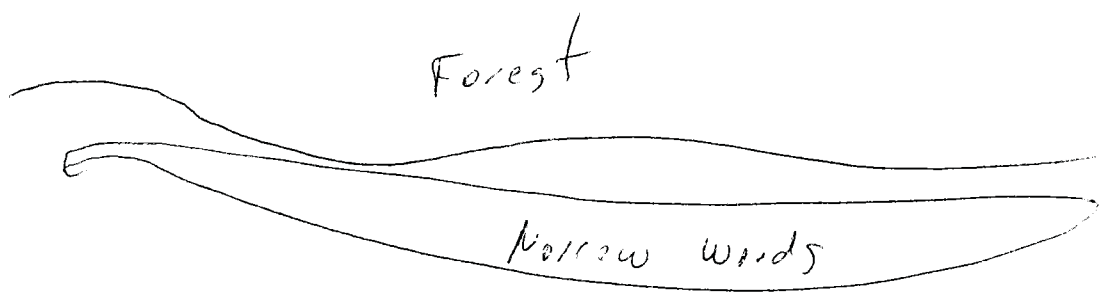
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

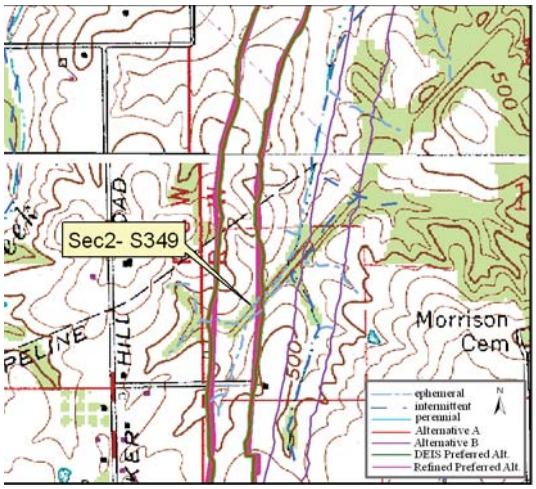
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

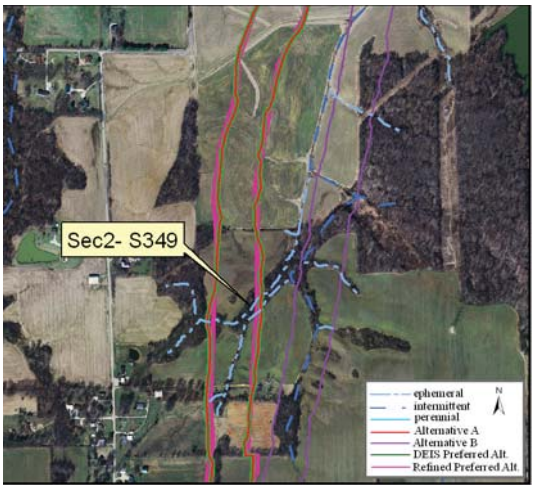
FLOW →



Stream Id-Section 2 S 349



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	3.3
UTME:	479204	**OHWM Depth ft:**	0.3
UTMN:	4260968	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S349

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	347 feet	0.03 acres	A	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	0	0	B	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	347 feet	0.03 acres	DEIS Preferred	HHEI 31 / Modified Class II
Unnamed Tributary Lick Creek	306 feet	0.02 acres	Refined Preferred	HHEI 31 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.32 ac, B-0, DP-1.32 ac, RP-1.18 ac

Stream Id-Section 2 S 349

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 349 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 48.568 LONG. 87 14 18.533 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.0m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☒ Wide >10m	☐ ☒ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☒ ☐ Moderate 5-10m	☒ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☐ ☐ Open Pasture, Row Crop
☐ ☐ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☒ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

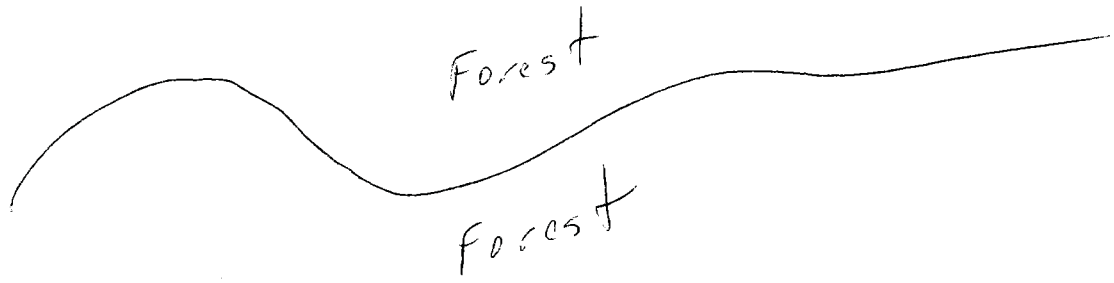
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

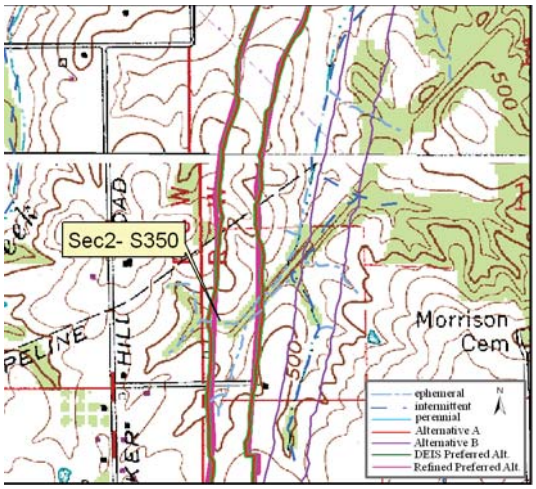
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

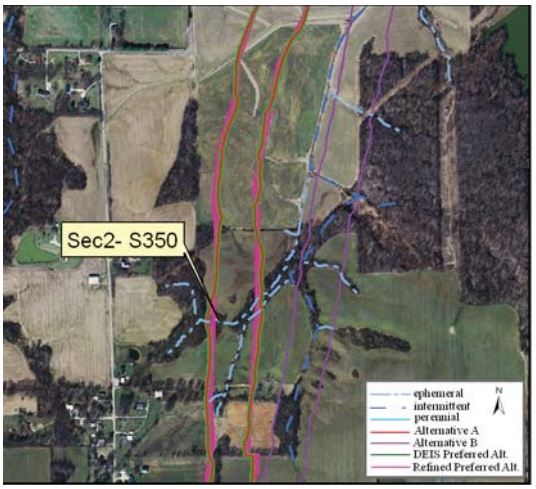
FLOW →



Stream Id-Section 2 S 350



Site Location on Winslow USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	3.4
UTME:	479128	**OHWM Depth ft:**	0.3
UTMN:	4260934	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Winslow	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S350

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	200 feet	0.02 acres	A	HHEI 32 / Class I
Unnamed Tributary Lick Creek	0	0	B	HHEI 32 / Class I
Unnamed Tributary Lick Creek	200 feet	0.02 acres	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Lick Creek	151 feet	0.01 acres	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.28 ac, B-0, DP-0.28 ac, 0.12 ac

Stream Id-Section 2 S 350

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 350 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 29 47.458 LONG. 87 14 21.667 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	55%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	35%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.0m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Winslow NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 52-53

Elevated Turbidity? (Y/N): N Canopy (% open): 35%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

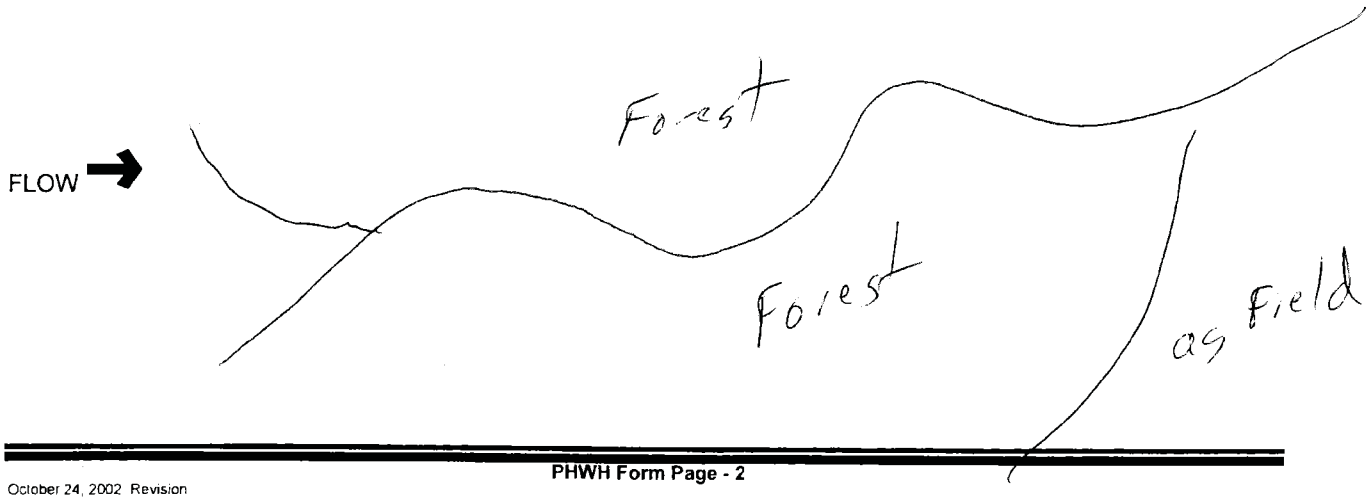
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

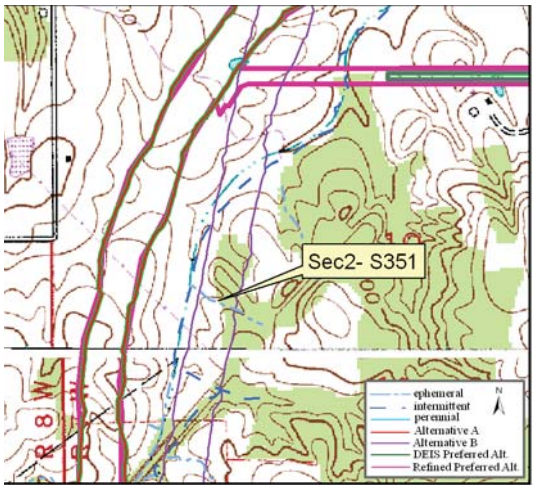
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

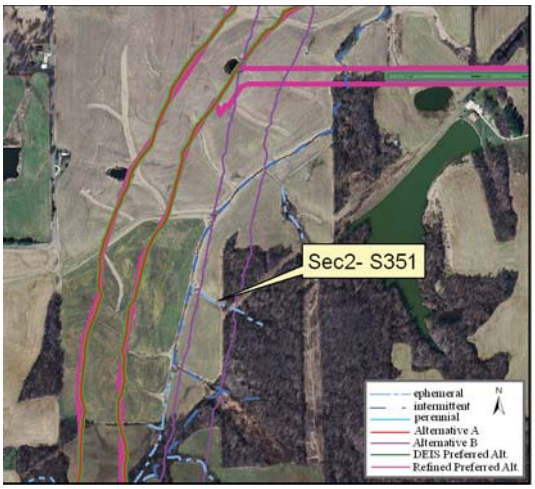
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 351



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 19 T1N R7W	**OHWM Width ft:**	1.3
UTME:	479450	**OHWM Depth ft:**	0.5
UTMN:	4261443	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S351

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 29 / Class I
Unnamed Tributary Lick Creek	326 feet	0.01 acres	B	HHEI 29 / Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 29 / Class I
Unnamed Tributary Lick Creek	0	0	Refined Preferred	HHEI 29 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.57 ac, DP-0, RP-0

Stream Id-Section 2 S 351

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 351 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 3.999 LONG. 87 14 8.428 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	25
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	15
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.08

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.3m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS Slight Flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 67-68

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

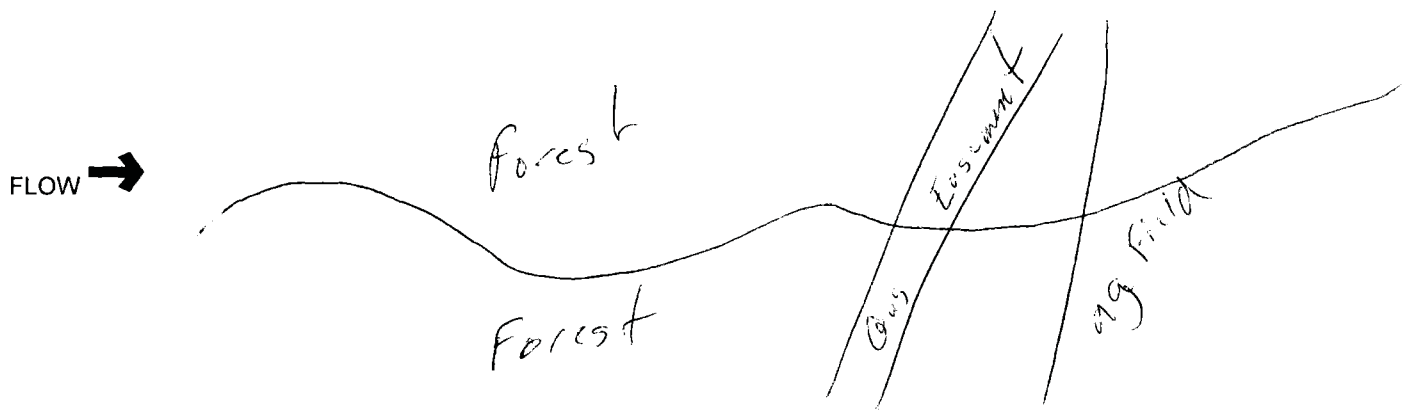
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

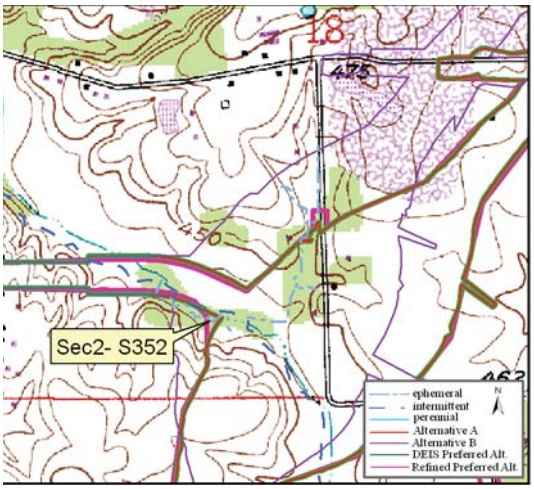
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

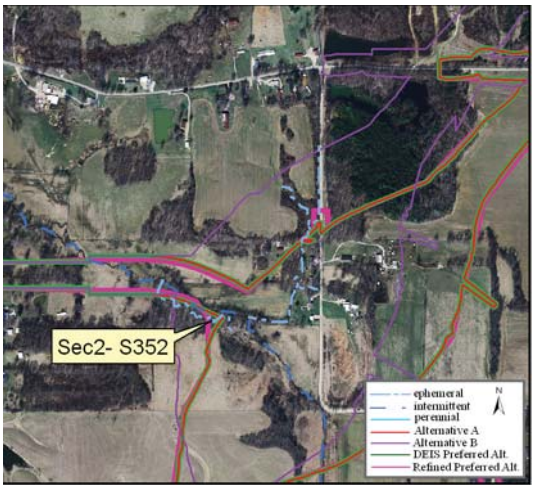
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 352



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	2.0
UTME:	479596	**OHWM Depth ft:**	0.5
UTMN:	4262583	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S352

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	350 feet	0.02 acres	A	HHEI 32 / Class I
Unnamed Tributary Lick Creek	850 feet	0.04 acres	B	HHEI 32 / Class I
Unnamed Tributary Lick Creek	350 feet	0.02 acres	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Lick Creek	478 feet	0.02 acres	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.47 ac, B-1.04 ac, DP-0.47 ac, RP-0.57 ac

Stream Id-Section 2 S 352

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 352 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 40.997 LONG. 87 14 2.520 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☒	SAND (<2 mm) **[6 pts]**	30	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8.9

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 13-14

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

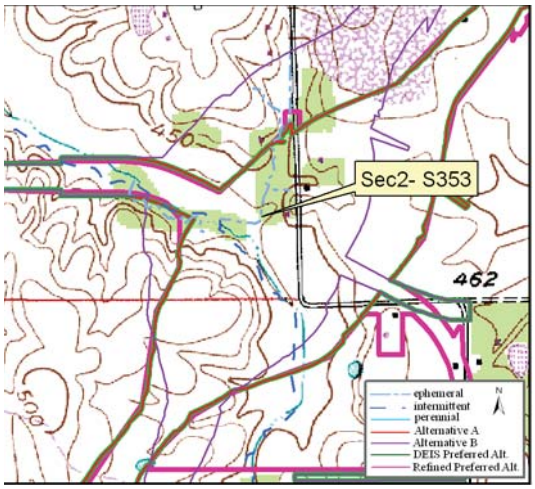
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

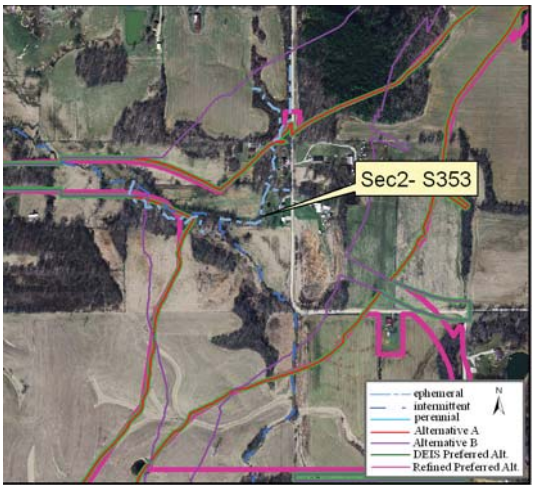
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

Stream Id-Section 2 S 353



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	4.0
UTME:	479771	**OHWM Depth ft:**	0.5
UTMN:	4262596	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S353

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	585 feet	0.05 acres	A	HHEI 42 / Modified Class II
Unnamed Tributary Lick Creek	585 feet	0.05 acres	B	HHEI 42 / Modified Class II
Unnamed Tributary Lick Creek	585 feet	0.05 acres	DEIS Preferred	HHEI 42 / Modified Class II
Unnamed Tributary Lick Creek	585 feet	0.05 acres	Refined Preferred	HHEI 42 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	42
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.30 ac, B 0.30 ac, DP-0.30 ac, RP-0.30 ac

Stream Id-Section 2 S 353

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 42

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 353 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 41.433 LONG. 87 13 55.295 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	35
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	15	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	50	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8.9

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 11-12

Elevated Turbidity? (Y/N): N Canopy (% open): 60%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

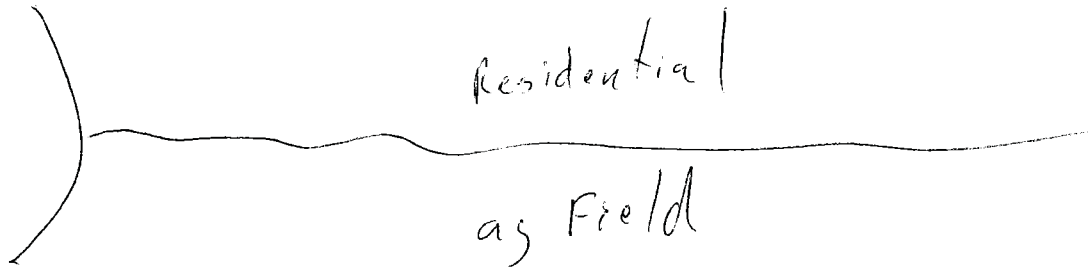
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

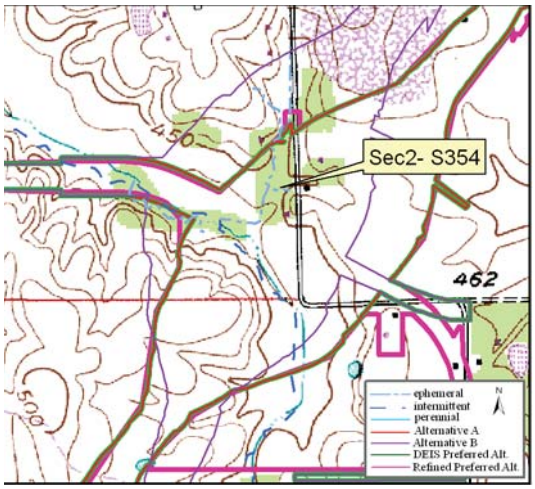
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

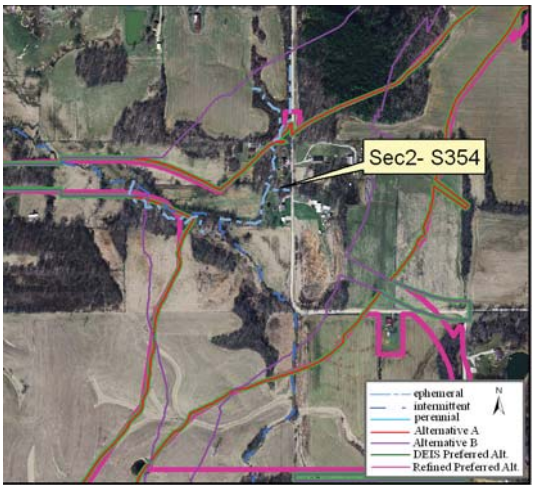
FLOW →



Stream Id-Section 2 S 354



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	1.8
UTME:	479816	**OHWM Depth ft:**	0.3
UTMN:	4262662	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S354

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	184 feet	0.01 acres	A	HHEI 33 / Class I
Unnamed Tributary Lick Creek	184 feet	0.01 acres	B	HHEI 33 / Class I
Unnamed Tributary Lick Creek	184 feet	0.01 acres	DEIS Preferred	HHEI 33 / Class I
Unnamed Tributary Lick Creek	184 feet	0.01 acres	Refined Preferred	HHEI 33 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	33
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.29 ac, B-0.29 ac, DP-0.29 ac, RP-0.29 ac

Stream Id-Section 2 S 354

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 33

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 354 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 43.578 LONG. 87 13 53.444 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS **[16 pts]**		☒	SILT **[3 pt]**	45
☐	BOULDER (>256 mm) **[16 pts]**		☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	BEDROCK **[16 pt]**		☐	FINE DETRITUS **[3 pts]**	
☐	COBBLE (65-256 mm) **[12 pts]**		☐	CLAY or HARDPAN **[0 pt]**	
☐	GRAVEL (2-64 mm) **[9 pts]**	15	☐	MUCK **[0 pts]**	
☒	SAND (<2 mm) **[6 pts]**	30	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.08

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.5m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 17-18

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

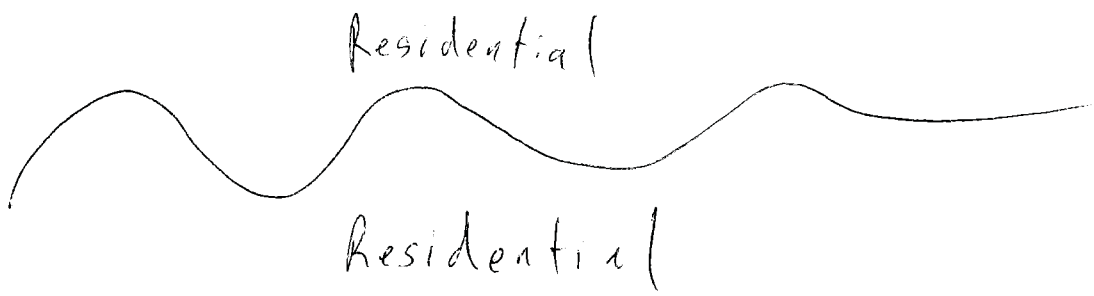
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

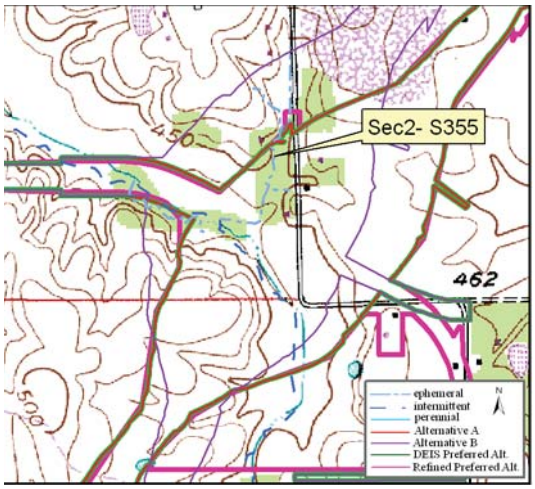
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

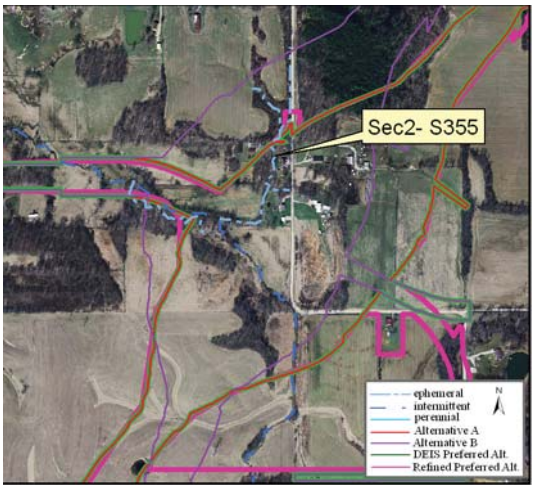
FLOW →



Stream Id-Section 2 S 355



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	2.1
UTME:	479805	**OHWM Depth ft:**	0.6
UTMN:	4262705	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S355

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	428 feet	0.02 acres	A	HHEI 42 / Class II
Unnamed Tributary Lick Creek	1,019 feet	0.05 acres	B	HHEI 42 / Class II
Unnamed Tributary Lick Creek	428 feet	0.02 acres	DEIS Preferred	HHEI 42 / Class II
Unnamed Tributary Lick Creek	481 feet	0.02 acres	Refined Preferred	HHEI 42 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	42
Watershed Area (square miles):	0.07
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.81 ac, B-3.70 ac, DP-1.81 ac, RP-1.97 ac

Stream Id-Section 2 S 355

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 42

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 355 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.07

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 44.972 LONG. 87 13 53.902 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	50
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 21-22

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

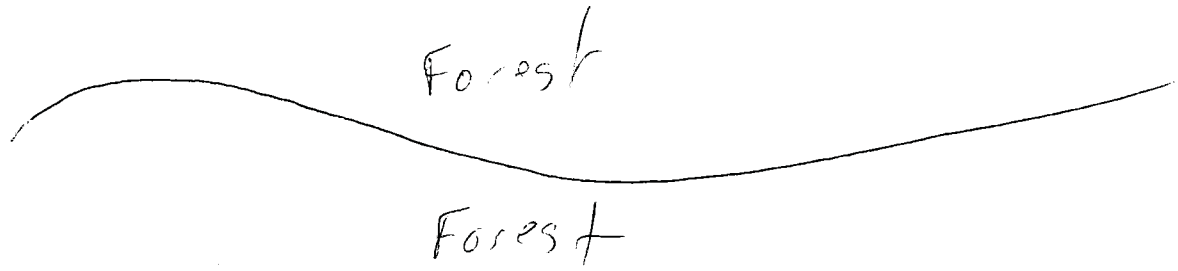
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

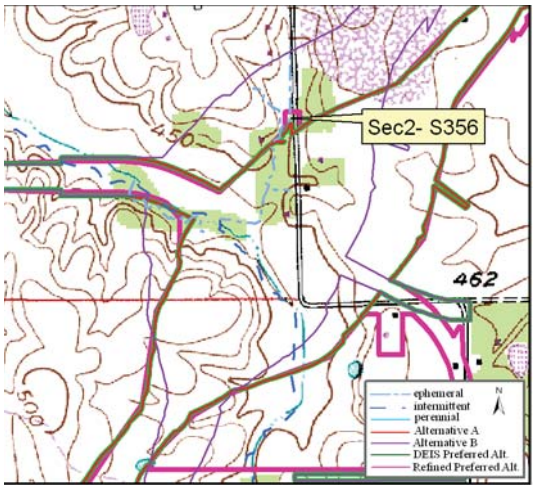
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

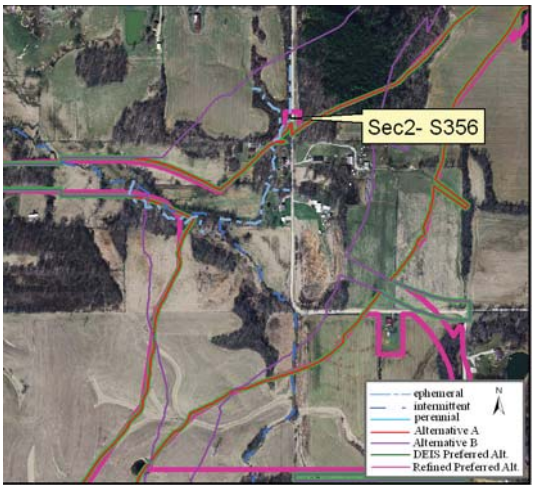
FLOW →



Stream Id-Section 2 S 356



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 18 T1N R7W	**OHWM Width ft:**	4.0
UTME:	479843	**OHWM Depth ft:**	0.4
UTMN:	4262829	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S356

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 48 / Class II
Unnamed Tributary Lick Creek	657 feet	0.06 acres	B	HHEI 48 / Class II
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 48 / Class II
Unnamed Tributary Lick Creek	117 feet	0.01 acres	Refined Preferred	HHEI 48 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A*-0.01 ac, B-1.39 ac, DP*-0.01 ac, RP-0.14 ac

*This stream is not impacted within the right-of-way; however, the riparian of the stream is within the right-of-way.

Stream Id-Section 2 S 356

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 356 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 48.998 LONG. 87 13 52.346 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	25
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	30	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	45	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.0

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS Road on partial left

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 19-20

Elevated Turbidity? (Y/N): N Canopy (% open): 60%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

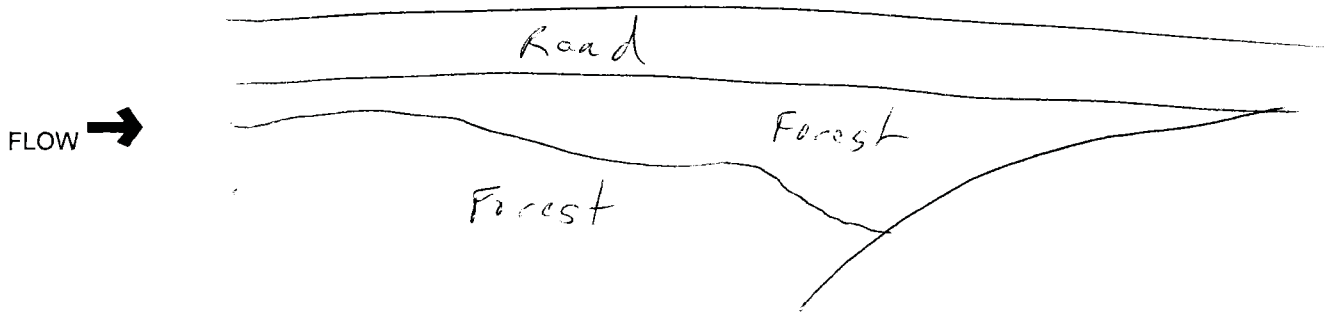
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

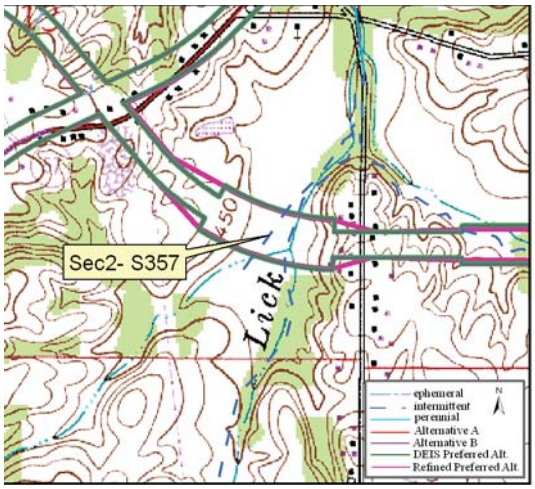
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

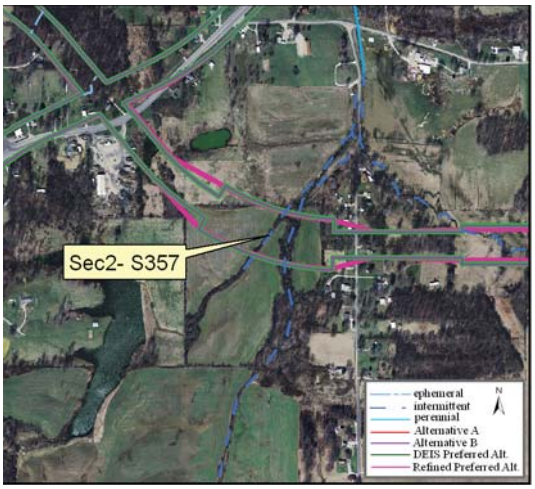
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 357



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 13 T1N R8W	**OHWM Width ft:**	4.7
UTME:	478843	**OHWM Depth ft:**	0.8
UTMN:	4262720	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S357

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	426 feet	0.05 acres	A	HHEI 52 / Class II
Unnamed Tributary Lick Creek	426 feet	0.05 acres	B	HHEI 52 / Class II
Unnamed Tributary Lick Creek	426 feet	0.05 acres	DEIS Preferred	HHEI 52 / Class II
Unnamed Tributary Lick Creek	405 feet	0.04 acres	Refined Preferred	HHEI 52 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	52
Watershed Area (square miles):	0.24
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.44 ac, B-0.44 ac, DP-0.44 ac, RP-0.41 ac

Stream Id-Section 2 S 357

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 52

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 357 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.24

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 45.378 LONG. 87 14 33.627 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 17.8

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.4m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 24-25

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

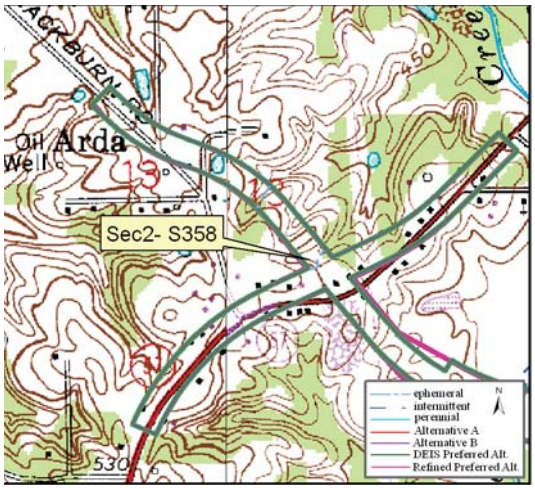
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

as field

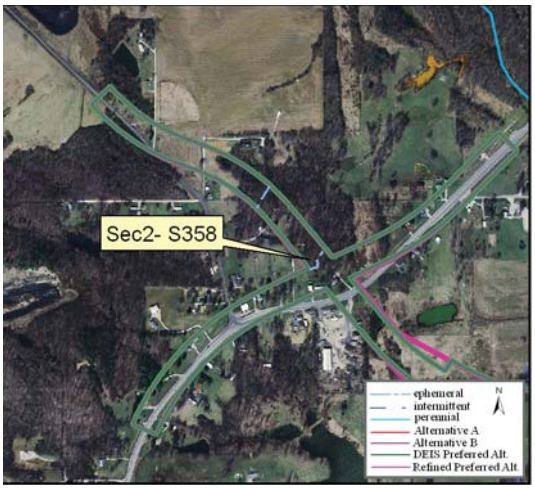
FLOW ➜

as field

Stream Id-Section 2 S 358



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 13 T1N R8W	**OHWM Width ft:**	2.2
UTME:	478421	**OHWM Depth ft:**	0.3
UTMN:	4263068	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S358

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	244 feet	0.01 acres	A	HHEI 39 / Class I
Unnamed Tributary Lick Creek	244 feet	0.01 acres	B	HHEI 39 / Class I
Unnamed Tributary Lick Creek	244 feet	0.01 acres	DEIS Preferred	HHEI 39 / Class I
Unnamed Tributary Lick Creek	239 feet	0.01 acres	Refined Preferred	HHEI 39 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	39
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-1.25 ac, B-1.25 ac, DP-1.25 ac, RP-1.26 ac

Stream Id-Section 2 S 358

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 358 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 56.632 LONG. 87 14 51.091 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	20
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	30	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	30	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.7m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 26-27

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

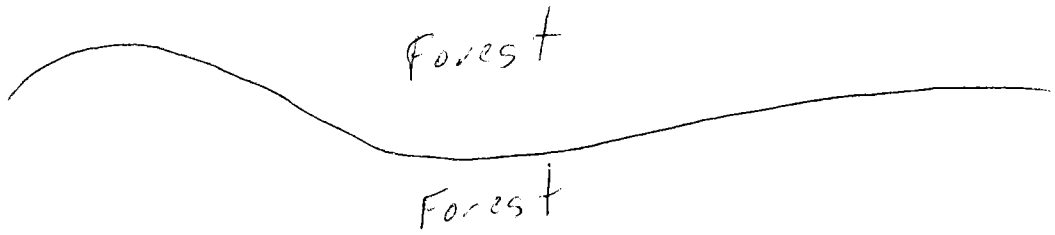
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

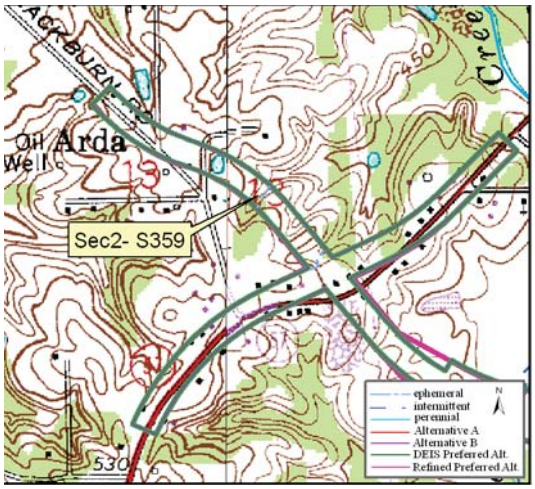
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

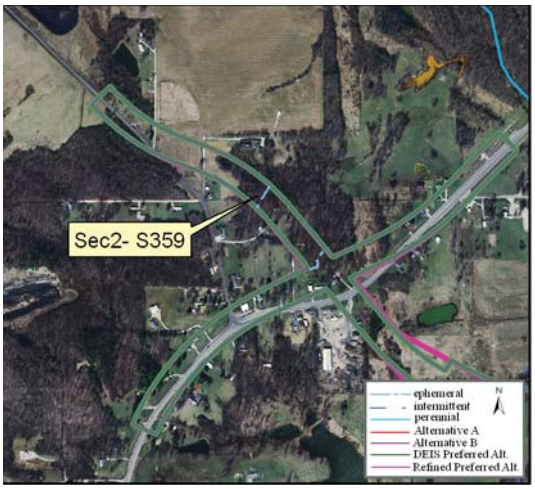
FLOW →



Stream Id-Section 2 S 359



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 13 T1N R8W	**OHWM Width ft:**	2.6
UTME:	478283	**OHWM Depth ft:**	0.2
UTMN:	4263224	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S359

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	205 feet	0.01 acres	A	HHEI 22 / Class I
Unnamed Tributary Lick Creek	205 feet	0.01 acres	B	HHEI 22 / Class I
Unnamed Tributary Lick Creek	205 feet	0.01 acres	DEIS Preferred	HHEI 22 / Class I
Unnamed Tributary Lick Creek	209 feet	0.01 acres	Refined Preferred	HHEI 22 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	22
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.95 ac, B-0.95 ac, DP-0.95 ac, RP-0.96 ac

Stream Id-Section 2 S 359

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Unnamed Trib Lick Creek

SITE NUMBER S 359 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 31 1.681 LONG. 87 14 56.807 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	40
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	20	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.8m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 28-29

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

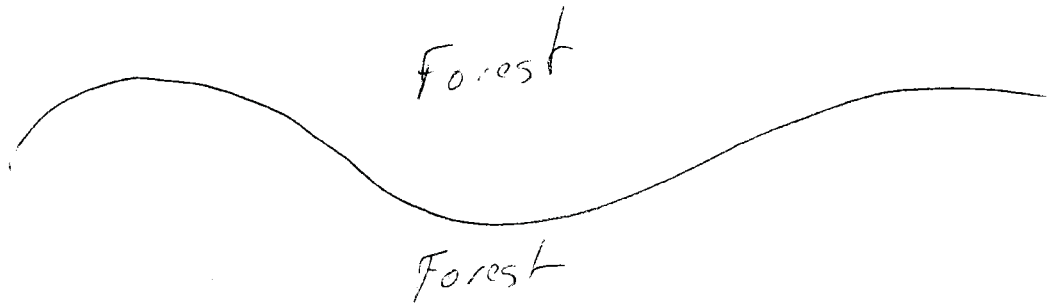
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

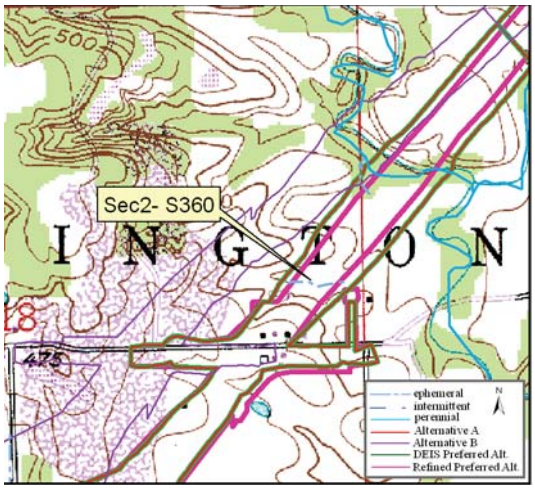
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

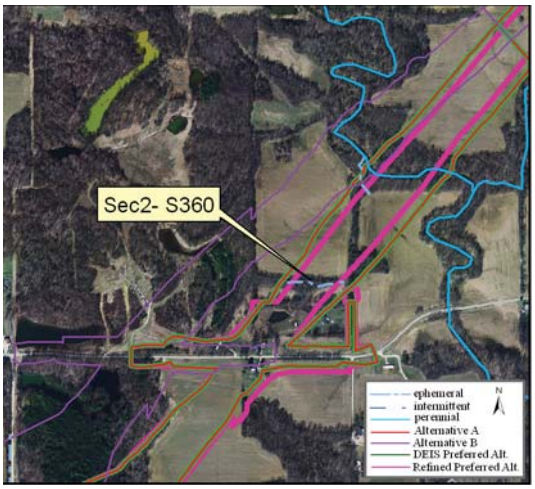
FLOW →



Stream Id-Section 2 S 360



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 18 T1N R7W	**OHWM Width ft:**	2.4
UTME:	480558	**OHWM Depth ft:**	0.4
UTMN:	4263357	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S360

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	507 feet	0.03 acres	A	HHEI 32 / Class I
Unnamed Tributary Mud Creek	0	0	B	HHEI 32 / Class I
Unnamed Tributary Mud Creek	507 feet	0.03 acres	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Mud Creek	379 feet	0.02 acres	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.33 ac, B-0, DP-1.33 ac, RP-0.88 ac

Stream Id-Section 2 S 360

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 360 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 31 6.185 LONG. 87 13 22.875 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	50
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	30	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.7m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R		L	R	
Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐		☐	☐	Conservation Tillage
Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☒	☒		☐	☐	Urban or Industrial
Narrow <5m	☒	☒	Residential, Park, New Field	☐	☐		☐	☐	Open Pasture, Row Crop
None	☐	☐	Fenced Pasture	☐	☐		☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 33-34

Elevated Turbidity? (Y/N): N Canopy (% open): 70 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

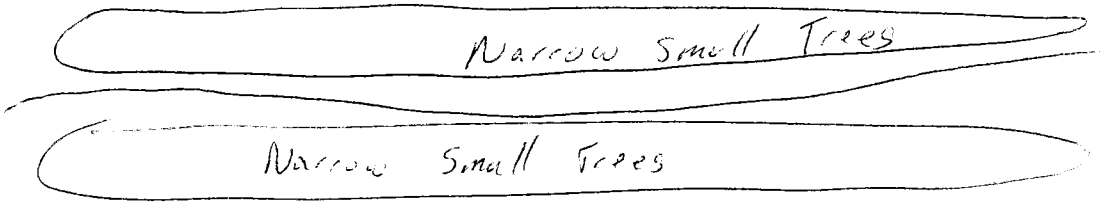
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

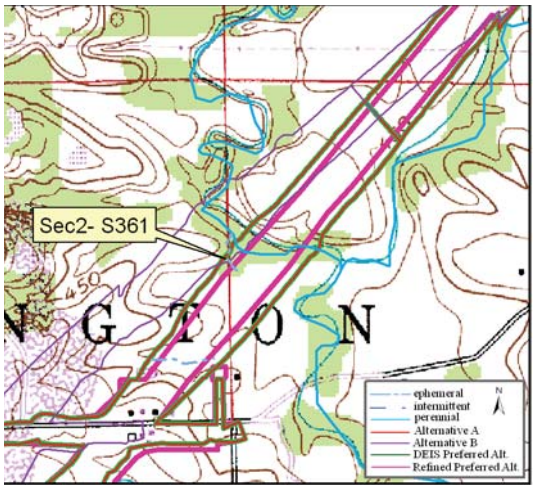
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

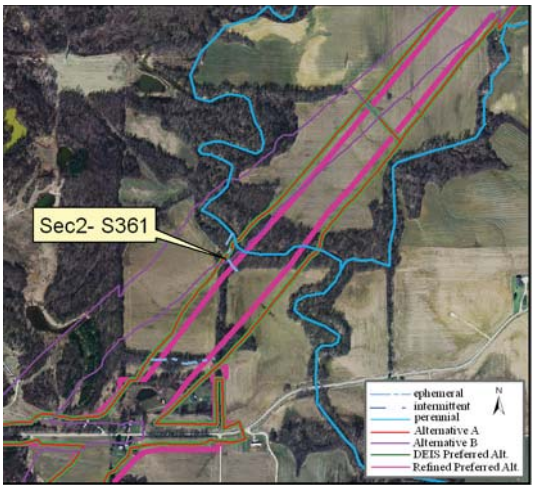
FLOW →



Stream Id-Section 2 S 361



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Mud Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 17 T1N R7W	**OHWM Width ft:**	2.3
UTME:	480688	**OHWM Depth ft:**	0.3
UTMN:	4263576	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S361

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Mud Creek	188 feet	0.01 acres	A	HHEI 32 / Class I
Unnamed Tributary Mud Creek	245 feet	0.01 acres	B	HHEI 32 / Class I
Unnamed Tributary Mud Creek	188 feet	0.01 acres	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Mud Creek	62 feet	0.01 acres	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.53 ac, B-0.38 ac, DP-0.53 ac, RP-0.26 ac

Stream Id-Section 2 S 361

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Mud Creek

SITE NUMBER S 361 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 31 13.301 LONG. 87 13 17.528 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	55
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	15	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40: 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.7m

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 31-32

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

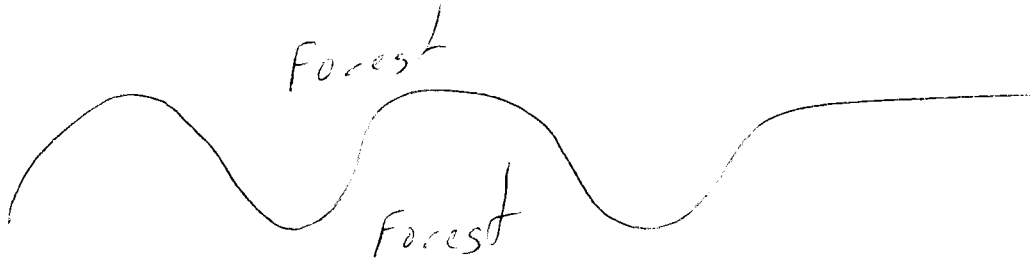
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

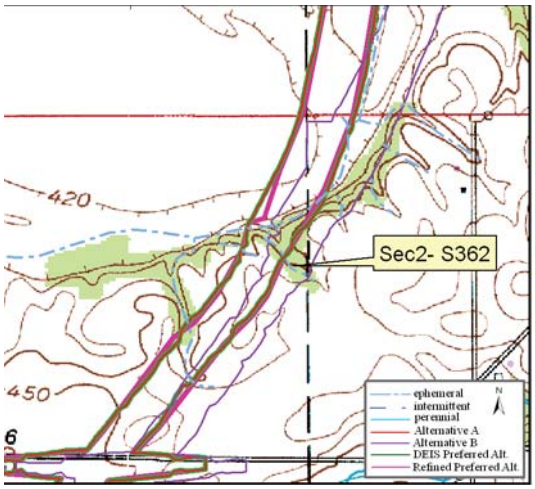
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

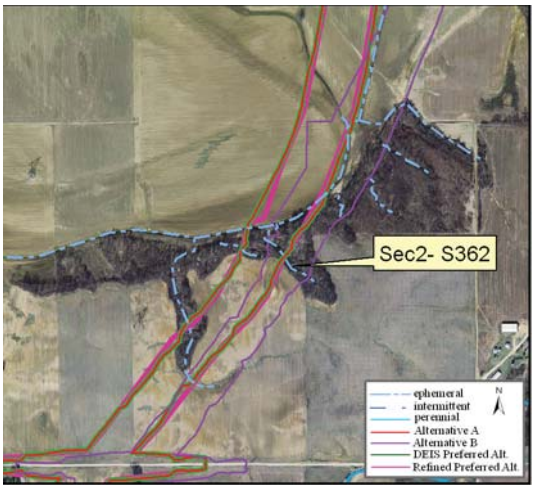
FLOW ➜



Stream Id-Section 2 S 362



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 8 T1N R7W	**OHWM Width ft:**	3.3
UTME:	482228	**OHWM Depth ft:**	0.4
UTMN:	4265268	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S362

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	400 feet	0.03 acres	A	HHEI 21 / Class I
Unnamed Tributary East Fork White River	493 feet	0.04 acres	B	HHEI 21 / Class I
Unnamed Tributary East Fork White River	400 feet	0.03 acres	DEIS Preferred	HHEI 21 / Class I
Unnamed Tributary East Fork White River	401 feet	0.03 acres	Refined Preferred	HHEI 21 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	21
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.88 ac, B-1.59 ac, DP-0.88 ac, RP-0.87 ac

Stream Id-Section 2 S 362

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 21

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 362 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 8.310 LONG. 87 12 14.086 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 42-43

Elevated Turbidity? (Y/N): N Canopy (% open): 75 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

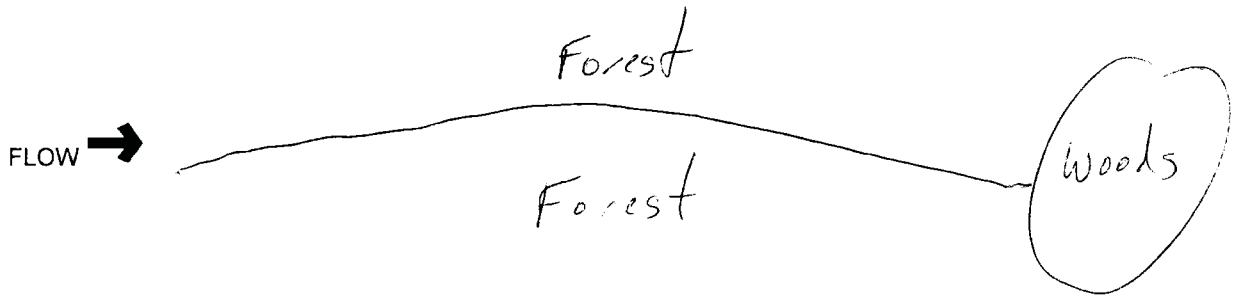
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

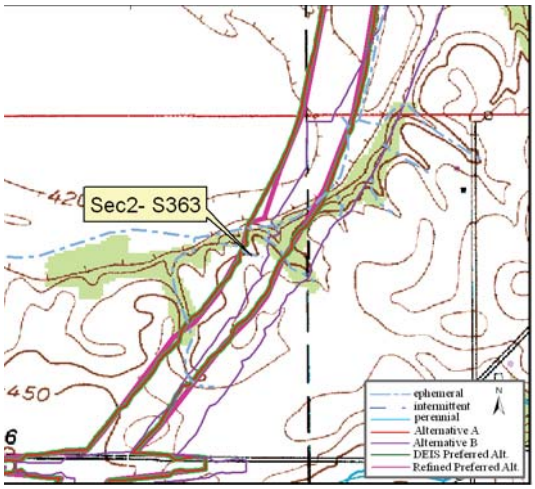
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

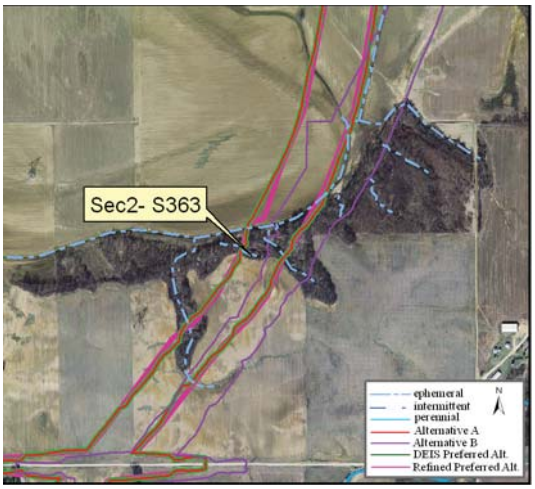
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 363



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 8 T1N R7W	**OHWM Width ft:**	3.3
UTME:	482132	**OHWM Depth ft:**	0.3
UTMN:	4265303	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S363

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	178 feet	0.01 acres	A	HHEI 26 / Class I
Unnamed Tributary East Fork White River	0	0	B	HHEI 26 / Class I
Unnamed Tributary East Fork White River	178 feet	0.01 acres	DEIS Preferred	HHEI 26 / Class I
Unnamed Tributary East Fork White River	181 feet	0.01 acres	Refined Preferred	HHEI 26 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	26
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.41 ac, B*-0.01 ac, DP-0.41 ac, RP-0.43 ac

*This stream is not impacted by the right-of-way; however, the riparian of this stream is within the right-of-way.

Stream Id-Section 2 S 363

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 26

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 363 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 9.439 LONG. 87 12 18.054 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	30
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	70	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☒ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.0m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page:_____ NRCS Soil Map Stream Order _____

County: Pike Township / City:_____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation:_____ Quantity:_____

Photograph Information: P 44-45

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:_____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain:_____

Additional comments/description of pollution impacts:_____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

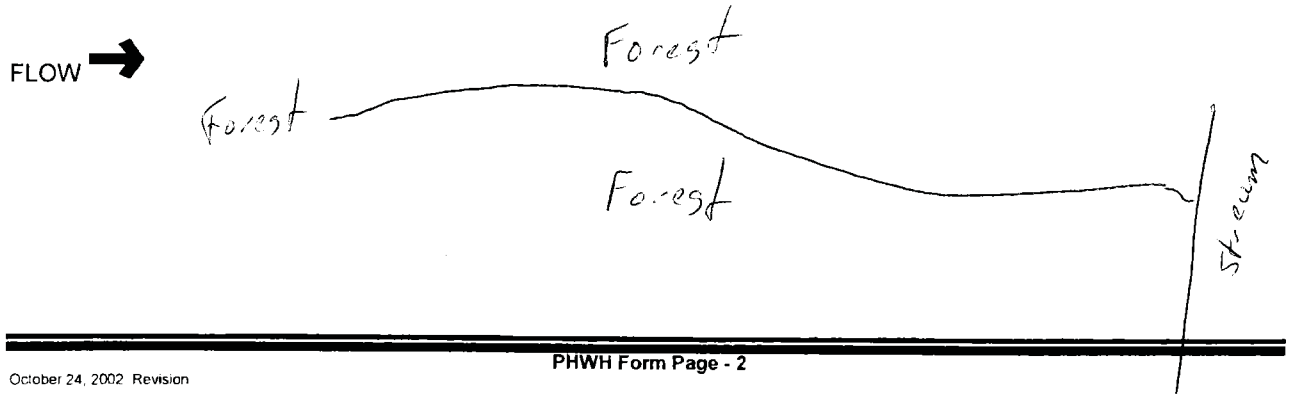
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

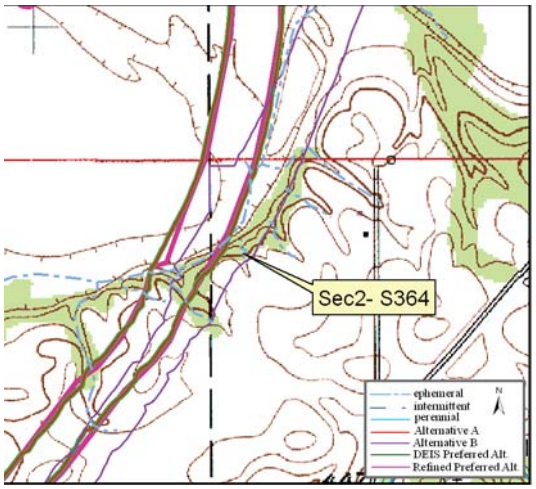
Comments Regarding Biology:_____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

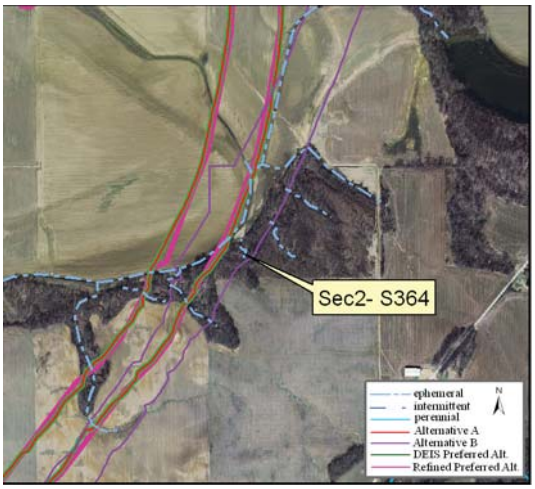
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 364



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 9 T1N R7W	**OHWM Width ft:**	3.2
UTME:	482345	**OHWM Depth ft:**	0.4
UTMN:	4265413	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S364

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	0	0	A	HHEI 22 / Class I
Unnamed Tributary East Fork White River	209 feet	0.02 acres	B	HHEI 22 / Class I
Unnamed Tributary East Fork White River	0	0	DEIS Preferred	HHEI 22 / Class I
Unnamed Tributary East Fork White River	0	0	Refined Preferred	HHEI 22 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	22
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.75 ac, DP-0, RP-0

Stream Id-Section 2 S 364

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 364 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 13.023 LONG. 87 12 9.266 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9 **(B)** 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 40-41

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

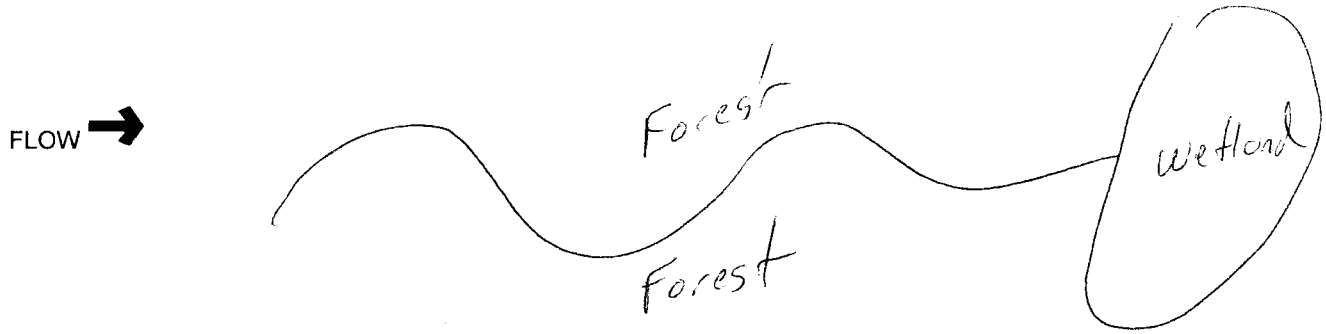
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

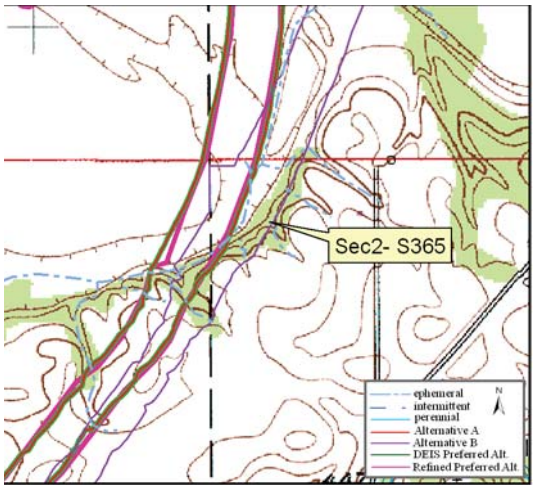
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

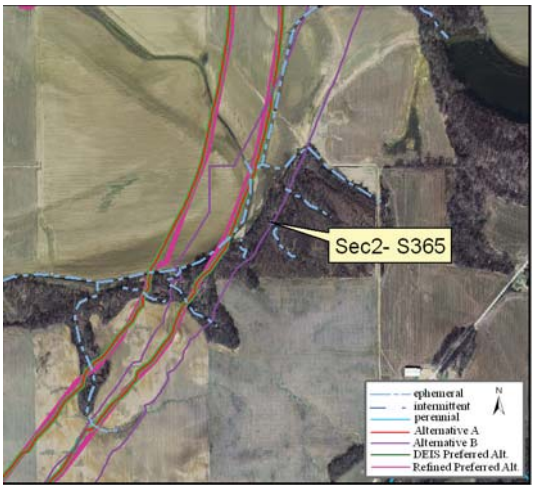
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 365



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 9 T1N R7W	**OHWM Width ft:**	5.4
UTME:	482410	**OHWM Depth ft:**	0.6
UTMN:	4265483	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S365

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	0	0	A	HHEI 58 / Class II
Unnamed Tributary East Fork White River	28 feet	0.01 acres	B	HHEI 58 / Class II
Unnamed Tributary East Fork White River	0	0	DEIS Preferred	HHEI 58 / Class II
Unnamed Tributary East Fork White River	0	0	Refined Preferred	HHEI 58 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	58
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.45ac, DP-0, RP-0

Stream Id-Section 2 S 365

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 58

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 365 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 15.298 LONG. 87 12 6.588 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	30
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 4

HHEI Metric Points

Substrate Max = 40 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.6m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☒ ☒	Wide >10m	☒ ☒	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☐ ☐	Open Pasture, Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 38-39

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

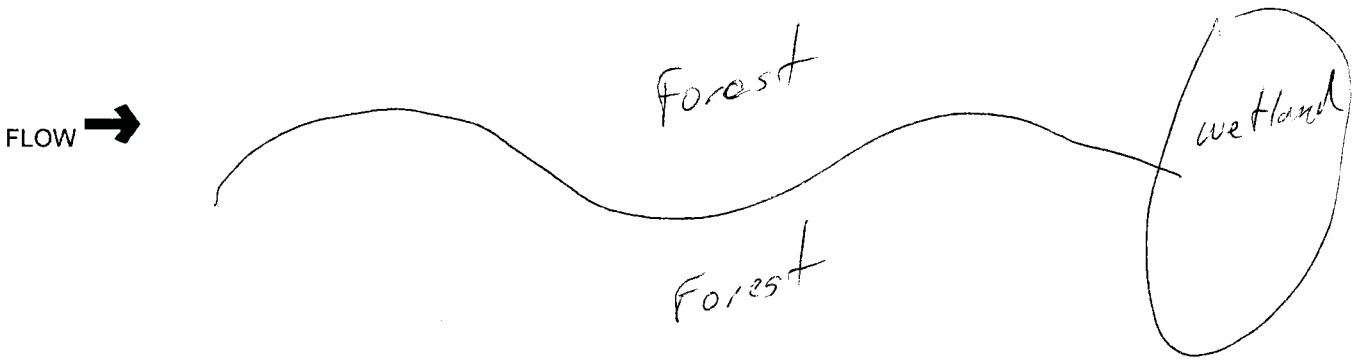
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

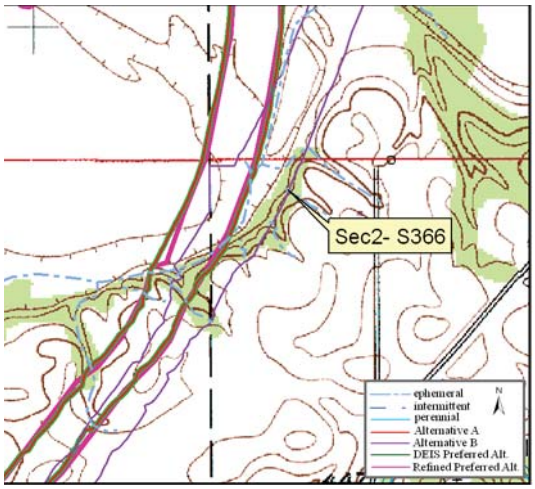
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

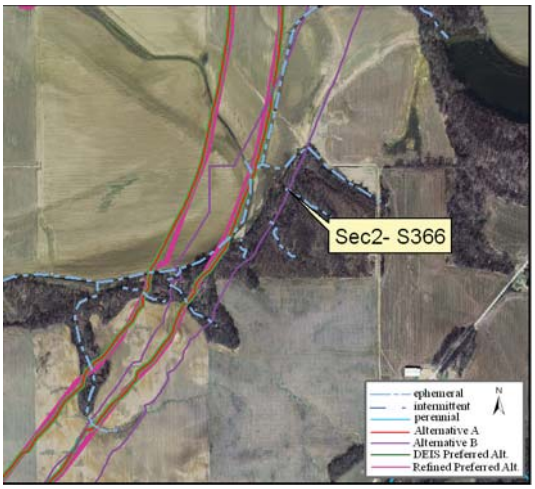
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 366



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 9 T1N R7W	**OHWM Width ft:**	2.6
UTME:	482446	**OHWM Depth ft:**	0.5
UTMN:	4265562	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S366

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	0	0	A	HHEI 21 / Class I
Unnamed Tributary East Fork White River	28 feet	0.01 acres	B	HHEI 21 / Class I
Unnamed Tributary East Fork White River	0	0	DEIS Preferred	HHEI 21 / Class I
Unnamed Tributary East Fork White River	0	0	Refined Preferred	HHEI 21 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	16
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.34 ac, DP-0, RP-0

Stream Id-Section 2 S 366

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 21

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 366 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 17.864 LONG. 87 12 5.108 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	40
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	30	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 2

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.8m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 36-37

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

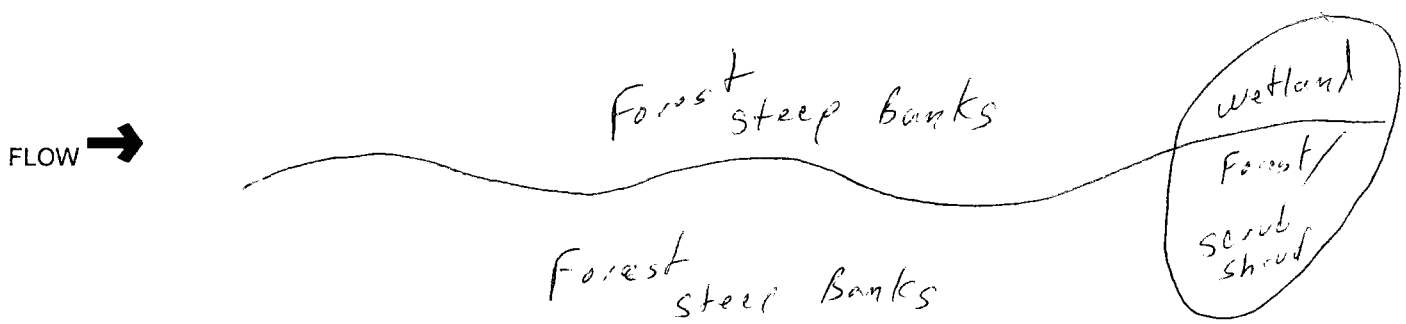
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

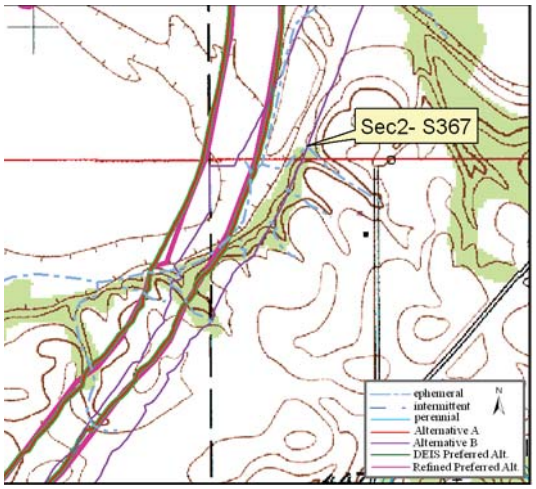
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

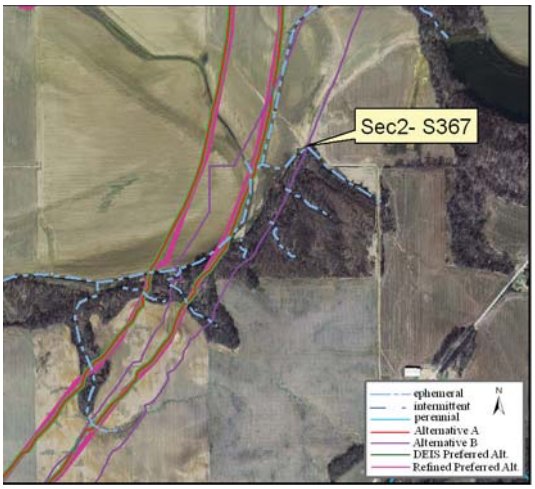
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 367



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 4 T1N R7W	**OHWM Width ft:**	2.8
UTME:	482466	**OHWM Depth ft:**	0.4
UTMN:	4265646	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S367

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	0	0	A	HHEI 22 / Modified Class I
Unnamed Tributary East Fork White River	415 feet	0.03 acres	B	HHEI 22 / Modified Class I
Unnamed Tributary East Fork White River	0	0	DEIS Preferred	HHEI 22 / Modified Class I
Unnamed Tributary East Fork White River	0	0	Refined Preferred	HHEI 22 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	22
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.39 ac, DP-0, RP-0

Stream Id-Section 2 S 367

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 367 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 32 20.591 LONG. 87 12 4.289 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	35
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	15	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☒ ☐ Wide >10m	☒ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☐ ☒ Open Pasture, Row Crop
☐ ☒ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 48-49

Elevated Turbidity? (Y/N): N Canopy (% open): 90 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: Last 50 feet - no woods on left side, only scrub / shrub

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

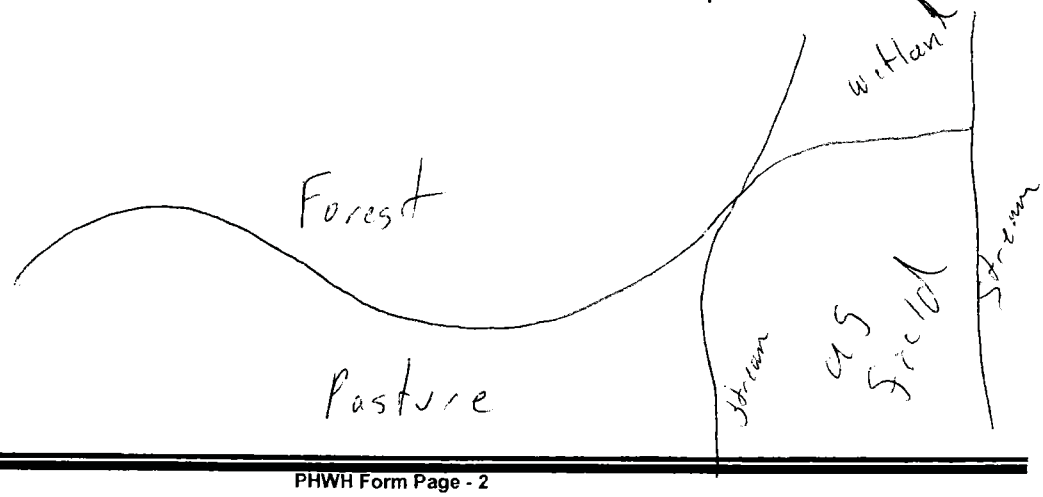
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

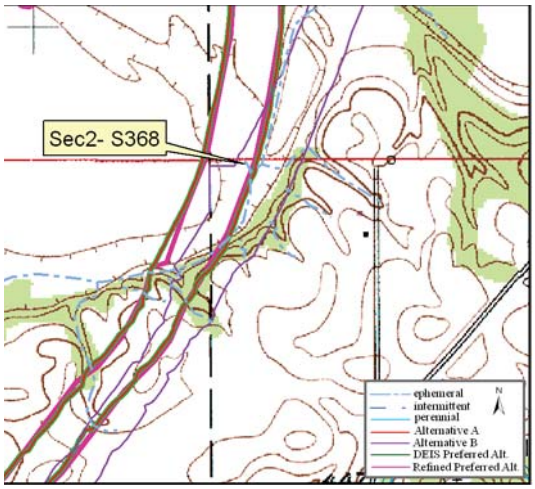
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

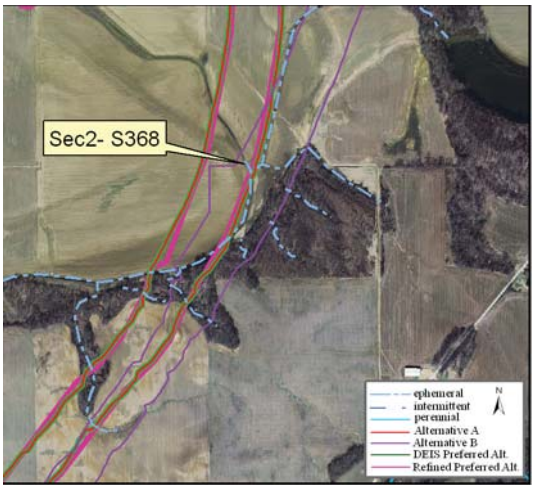
FLOW



Stream Id-Section 2 S 368



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Un Trib East Fork White River	**Channelized:**	Yes
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 9 T1N R7W	**OHWM Width ft:**	1.3
UTME:	482353	**OHWM Depth ft:**	0.3
UTMN:	4265620	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S368

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary East Fork White River	92 feet	0.01 acres	A	HHEI 15 / Modified Class I
Unnamed Tributary East Fork White River	92 feet	0.01 acres	B	HHEI 15 / Modified Class I
Unnamed Tributary East Fork White River	92 feet	0.01 acres	DEIS Preferred	HHEI 15 / Modified Class I
Unnamed Tributary East Fork White River	92 feet	0.01 acres	Refined Preferred	HHEI 15 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	15
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0,B-0, DP-0, RP-0

Stream Id-Section 2 S 368

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 15

SITE NAME/LOCATION Unnamed Trib East Fork White River

SITE NUMBER S 368 RIVER BASIN Lower E Fork White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 50 LAT. 38 32 19.739 LONG. 87 12 8.955 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.4m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Pike Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 46-47

Elevated Turbidity? (Y/N): N Canopy (% open): 100 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

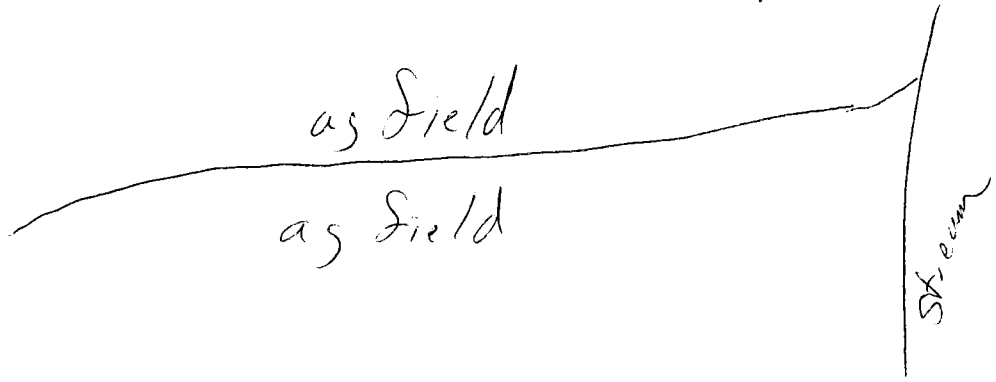
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

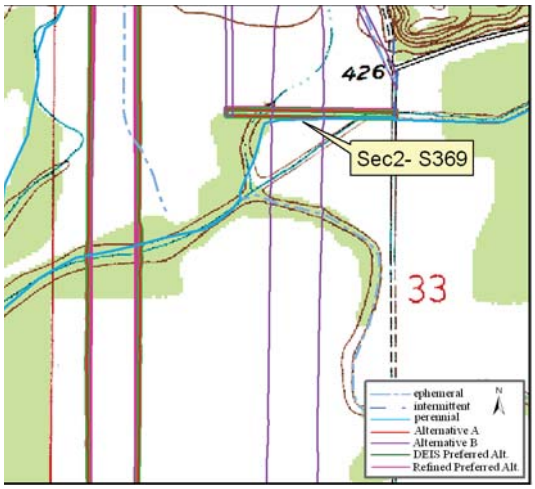
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

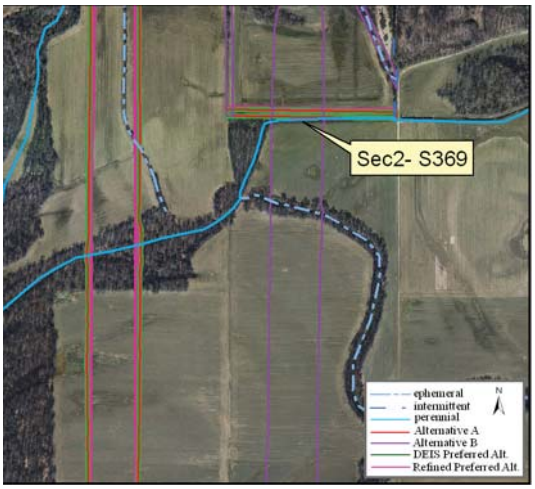
FLOW →



Stream Id-Section 2 S 369



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower East Fork White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	14.0
UTME:	482831	**OHWM Depth ft:**	0.7
UTMN:	4268494	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S369

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	208 feet	0.07 acres	A	QHEI 18.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	416 feet	0.13 acres	B	QHEI 18.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	208 feet	0.07 acres	DEIS Preferred	QHEI 18.5 / Modified Warmwater Habitat
Unnamed Tributary Jackson Pond	208 feet	0.07 acres	Refined Preferred	QHEI 18.5 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	18.5
Watershed Area (square miles):	28.25
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0,B-0, DP-0, RP-0

Stream Id-Section 2 S 369

Photograph taken looking upstream

Photograph taken looking downstream

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 18.5

Stream & Location: Unnamed Trib Jackson Pond (S 369) **RM:** _ _ _._ **Date:** 3 / 12 / 09

Scorers Full Name & Affiliation: Matt Riehle , Joe Dabkowski

River Code: _ _ _- _ _ _- _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 38 . 33 53.015 /8 7.11 49.464 **Office verified location** ☐

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☒ HARDPAN [4]	X	
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]			☒ ☐ SILT [2]	X	
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY
☐ LIMESTONE [1]	☒ HEAVY [-2]
☐ TILLS [1]	☐ MODERATE [-1]
☐ WETLANDS [0]	☐ NORMAL [0]
☐ HARDPAN [0]	☐ FREE [1]
☐ SANDSTONE [0]	SILT
☐ RIP/RAP [0]	☐ EXTENSIVE [-2]
☒ LACUSTURINE [0]	☐ MODERATE [-1]
☐ SHALE [-1]	☐ NORMAL [0]
☐ COAL FINES [-2]	☒ NONE [1]

EMBEDDEDNESS

Substrate 5 (Maximum 20)

Comments

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
0	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
1	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☐ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☒ NEARLY ABSENT <5% [1]

Comments Farm field - no instream cover

Cover 2 (Maximum 20)

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☒ MODERATE [2]
☐ LOW [2]	☐ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☒ NONE [1]	☒ POOR [1]	☒ RECENT OR NO RECOVERY [1]	

Comments

Channel 5 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☒ ☒ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☐ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☐ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	☐ ☐ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☒ ☒ NONE [0]	☒ ☒ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 3 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY
Check **ONE** (*ONLY!*)	Check ONE (*Or 2 & average*)	Check ALL that apply
☐ > 1m [6]	☒ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1] ☐ SLOW [1]
☐ 0.7-<1m [4]	☒ POOL WIDTH = RIFFLE WIDTH [1]	☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ 0.4-<0.7m [2]	☐ POOL WIDTH > RIFFLE WIDTH [0]	☐ FAST [1] ☐ INTERMITTENT [-2]
☐ 0.2-<0.4m [1]		☐ MODERATE [1] ☐ EDDIES [1]
☒ < 0.2m [0]		*Indicate for reach - pools and riffles.*

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 1.5 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☒ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run 0 (Maximum 8)

6] GRADIENT

(10 ft/mi) ☒ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (28.25 mi²)

%POOL: 100 **%GLIDE:** 0 **%RUN:** 0 **%RIFFLE:** 0

Gradient 2 (Maximum 10)

A] SAMPLED REACH

Check ALL that apply

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

200 meters

STAGE

1st -sample pass-	2nd
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[x]
[ ] LOW	[ ]
[ ] DRY	[ ]

CLARITY

1st --sample pass--	2nd
[ ] < 20 cm	[ ]
[x] 20-<40 cm	[x]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

pass 1st 20 cm; 2nd 20 cm

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

Reach is typical of stream. Stream is somewhat stagnant with very slow flow. No recreational activities were observed as this stream is located between farm fields.

B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	[ ] >100ft²	[ ] >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

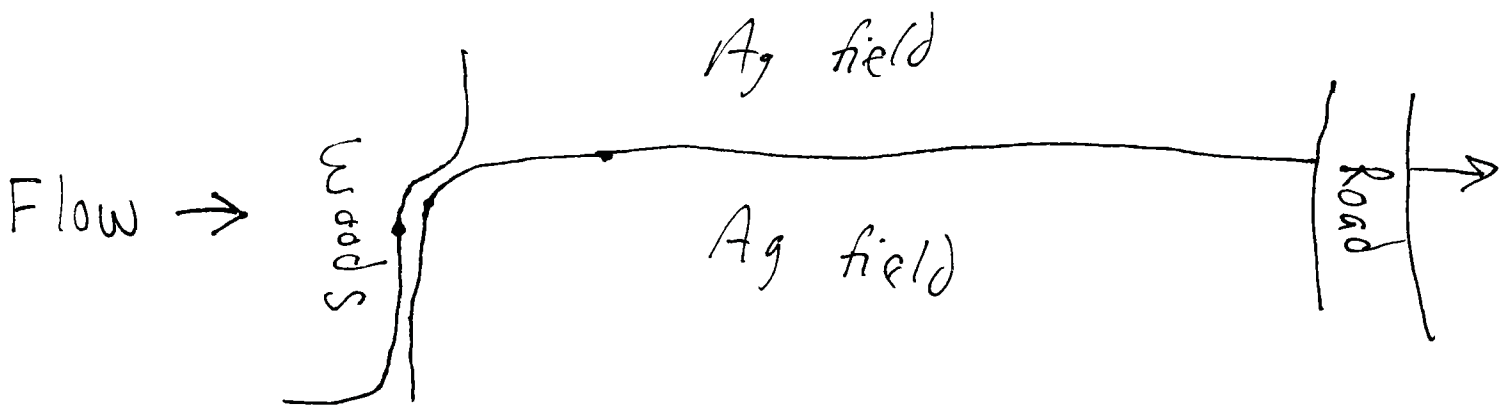
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

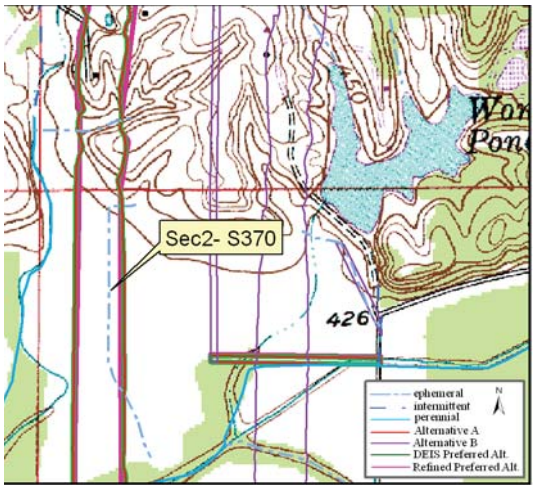
- $\bar{x}$ width 14'
- $\bar{x}$ depth 8"
- max. depth 2'
- $\bar{x}$ bankfull width 14'
- bankfull $\bar{x}$ depth 8"
- W/D ratio 20.9
- bankfull max. depth 2'
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

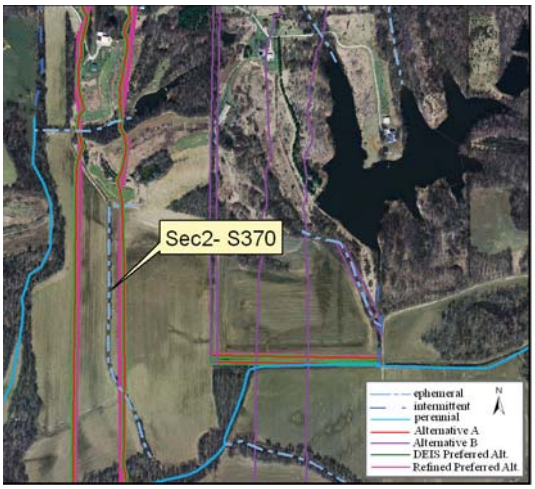
Stream Drawing:



Stream Id-Section 2 S 370



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	5.5
UTME:	482410	**OHWM Depth ft:**	0.6
UTMN:	4268666	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S370

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	1,589 feet	0.20 acres	A	HHEI 54 / Modified Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 54 / Modified Class II
Unnamed Tributary Jackson Pond	1,589 feet	0.20 acres	DEIS Preferred	HHEI 54 / Modified Class II
Unnamed Tributary Jackson Pond	1,533 feet	0.19 acres	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.98 ac, B-0, DP-0.98 ac, RP-0.95 ac

Stream Id-Section 2 S 370

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 370 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200 LAT. 38 33 58.565 LONG. 87 12 6.876 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	20
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.7m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS narrow forested riparian area recently cut down

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS slow flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 50-51

Elevated Turbidity? (Y/N): N Canopy (% open): 100 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

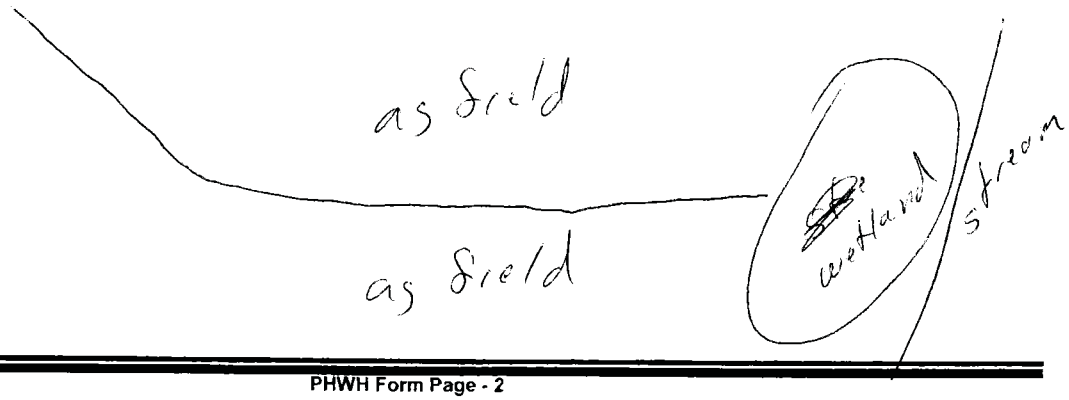
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

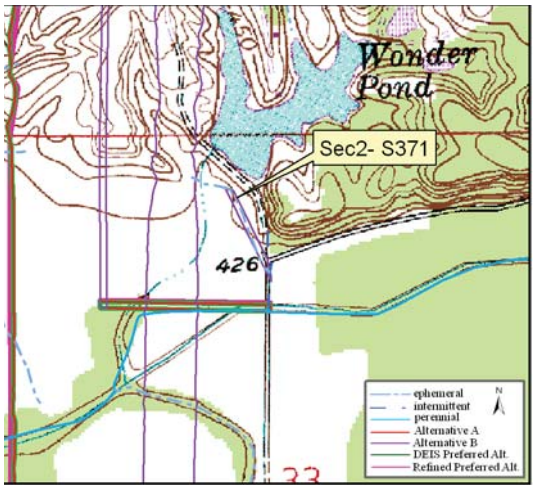
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

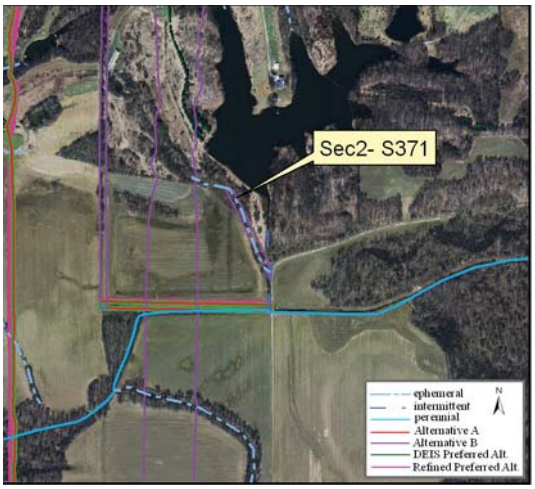
FLOW →



Stream Id-Section 2 S 371



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 33 T2N R7W	**OHWM Width ft:**	4.0
UTME:	482973	**OHWM Depth ft:**	0.4
UTMN:	4268763	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S371

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 49 / Class II
Unnamed Tributary Jackson Pond	723 feet	0.07 acres	B	HHEI 49 / Class II
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 49 / Class II
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 49 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	49
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.21 ac, DP-0, RP-0

Stream Id-Section 2 S 371

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 49

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 371 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 1.752 LONG. 87 11 43.620 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	30
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	20
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS slow flow

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 53-54

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

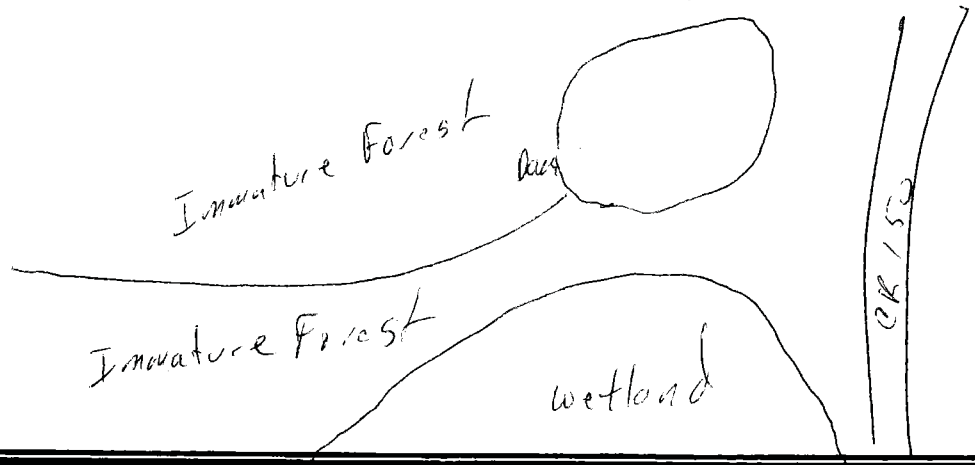
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

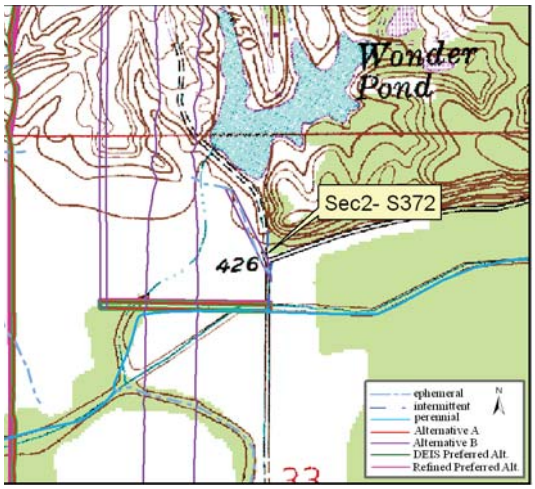
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

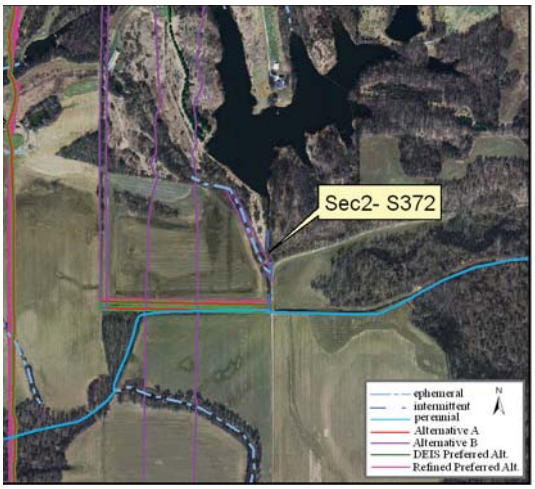
FLOW



Stream Id-Section 2 S 372



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 33 T2N R7W	**OHWM Width ft:**	3.5
UTME:	483048	**OHWM Depth ft:**	0.7
UTMN:	4268640	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S372

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	43 feet	0.01 acres	A	HHEI 58 / Class II
Unnamed Tributary Jackson Pond	74 feet	0.01 acres	B	HHEI 58 / Class II
Unnamed Tributary Jackson Pond	43 feet	0.01 acres	DEIS Preferred	HHEI 58 / Class II
Unnamed Tributary Jackson Pond	55 feet	0.01 acres	Refined Preferred	HHEI 58 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	58
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 372

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 58

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 372 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 33 57.766 LONG. 87 11 40.510 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	25
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	35	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.1m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 75-76

Elevated Turbidity? (Y/N): N Canopy (% open): 35 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

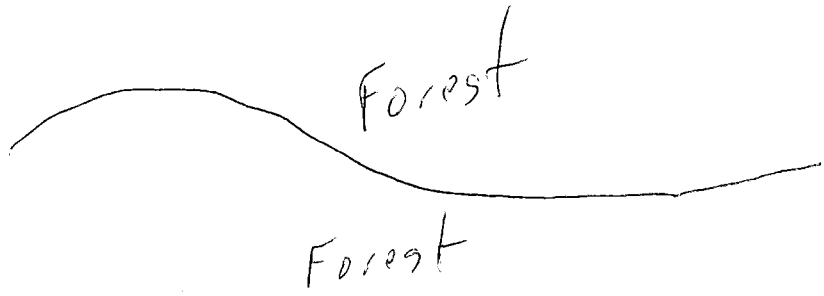
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

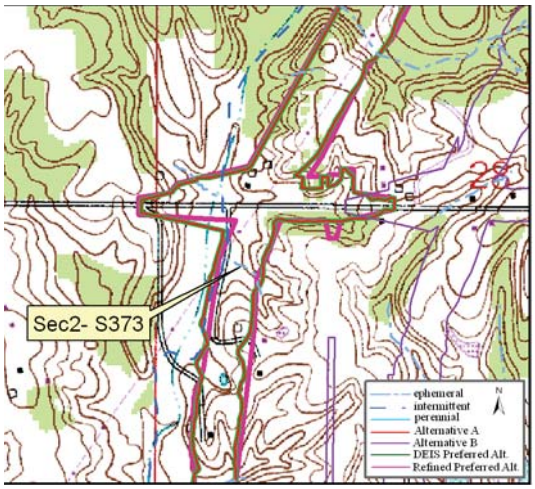
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

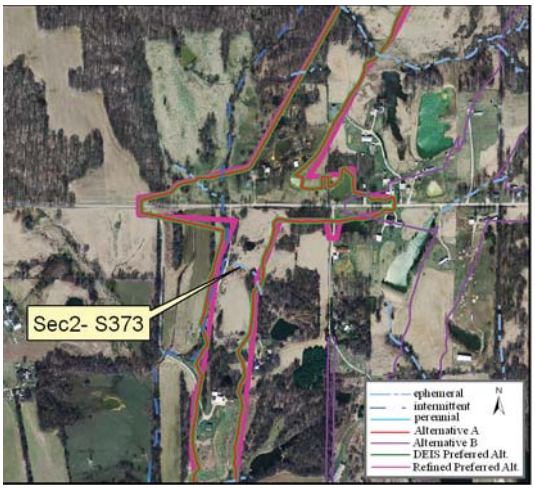
FLOW ➜



Stream Id-Section 2 S 373



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 28 T2N R7W	**OHWM Width ft:**	1.4
UTME:	482454	**OHWM Depth ft:**	0.3
UTMN:	4269585	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S373

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	369 feet	0.01 acres	A	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	0	0	B	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	369 feet	0.01 acres	DEIS Preferred	HHEI 27 / Class I
Unnamed Tributary Jackson Pond	300 feet	0.01 acres	Refined Preferred	HHEI 27 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	27
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0.34 ac, B-0, DP-0.34 ac, RP-0.34 ac

Stream Id-Section 2 S 373

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 373 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 28.383 LONG. 87 12 5.142 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	25
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☒	☐	CLAY or HARDPAN **[0 pt]**	40
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	15	☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	20	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 7

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.4m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 65-66

Elevated Turbidity? (Y/N): N Canopy (% open): 95 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

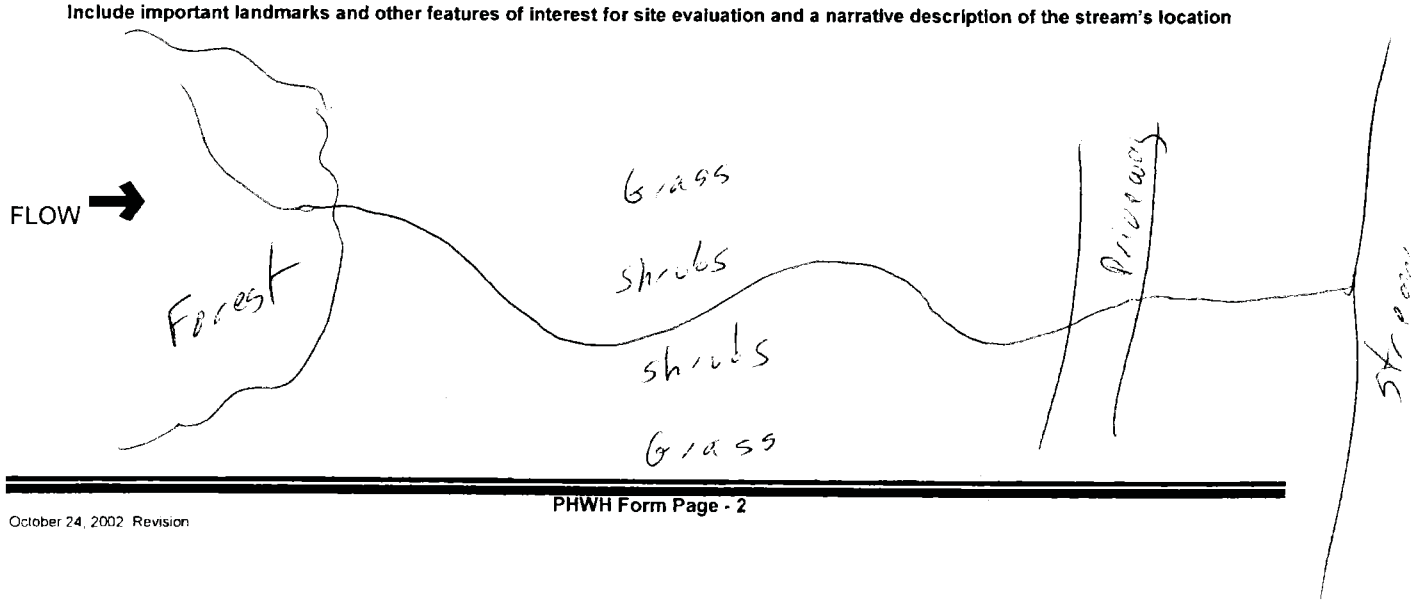
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

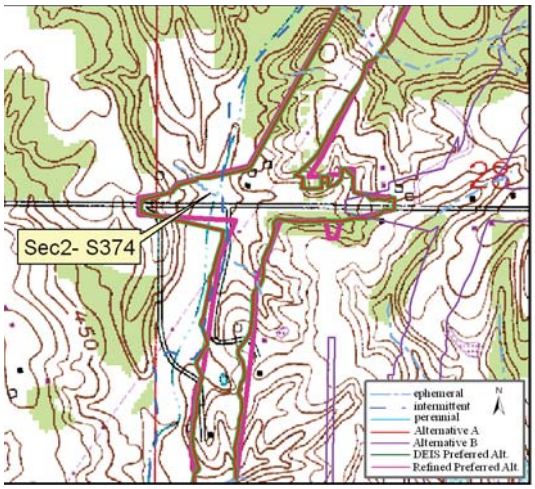
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

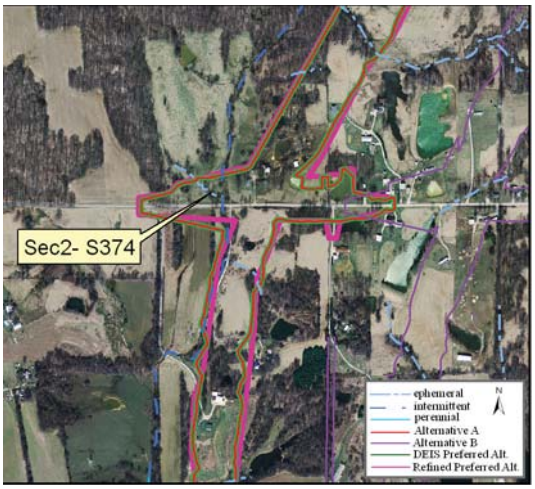
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 374



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 28 T2N R7W	**OHWM Width ft:**	2.8
UTME:	482378	**OHWM Depth ft:**	0.5
UTMN:	4269761	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S374

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	266 feet	0.02 acres	A	HHEI 41 / Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 41 / Class II
Unnamed Tributary Jackson Pond	266 feet	0.02 acres	DEIS Preferred	HHEI 41 / Class II
Unnamed Tributary Jackson Pond	281 feet	0.02 acres	Refined Preferred	HHEI 41 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	41
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 374

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 374 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 34.088 LONG. 87 12 8.298 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☒ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L R	RIPARIAN WIDTH (Per Bank)	L R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☒ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 59-60

Elevated Turbidity? (Y/N): N Canopy (% open): 80 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

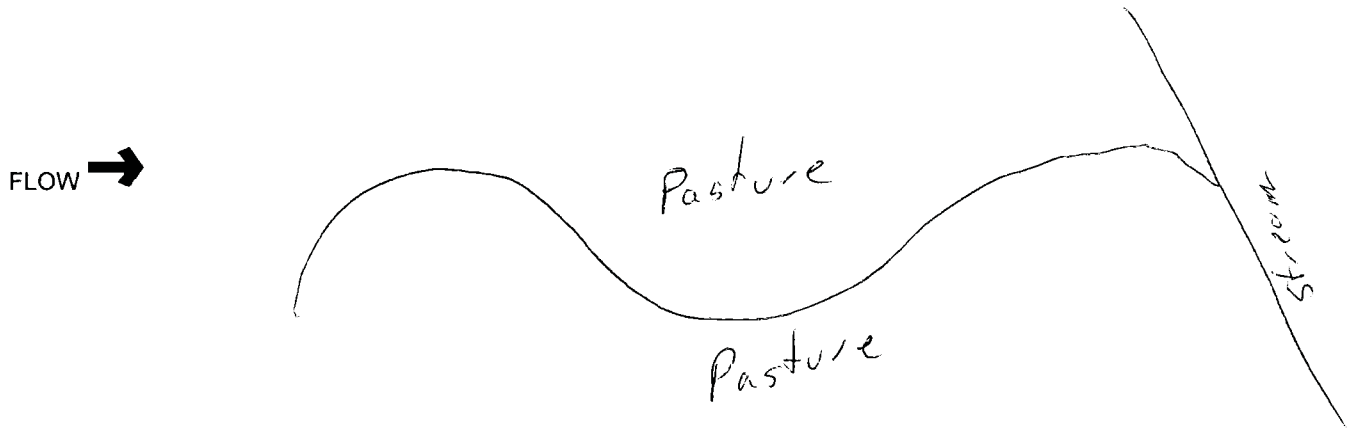
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

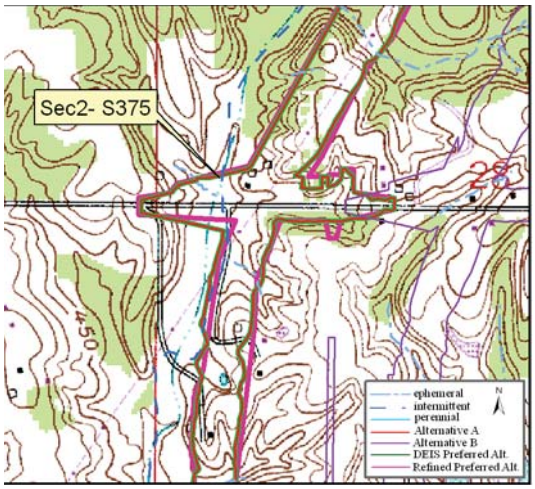
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

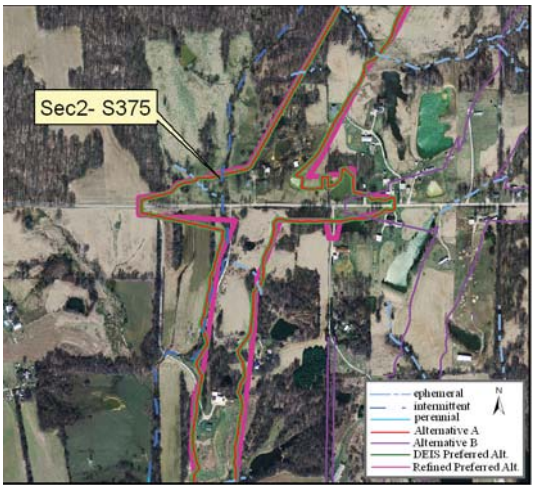
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 375



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 28 T2N R7W	**OHWM Width ft:**	5.8
UTME:	482406	**OHWM Depth ft:**	1.8
UTMN:	4269776	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S375

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	1,269 feet	0.17 acres	A	HHEI 52 / Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 52 / Class II
Unnamed Tributary Jackson Pond	1,269 feet	0.17 acres	DEIS Preferred	HHEI 52 / Class II
Unnamed Tributary Jackson Pond	698 feet	0.09 acres	Refined Preferred	HHEI 52 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	52
Watershed Area (square miles):	0.71
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.33 ac, B-0, DP-1.33 ac, RP-0.81 ac

Stream Id-Section 2 S 375

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 52

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 375 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.71

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 34.577 LONG. 87 12 7.143 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	20	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 40.6

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.0m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS narrow to none - two rows of trees in pasture

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 63-64

Elevated Turbidity? (Y/N): N Canopy (% open): 75 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

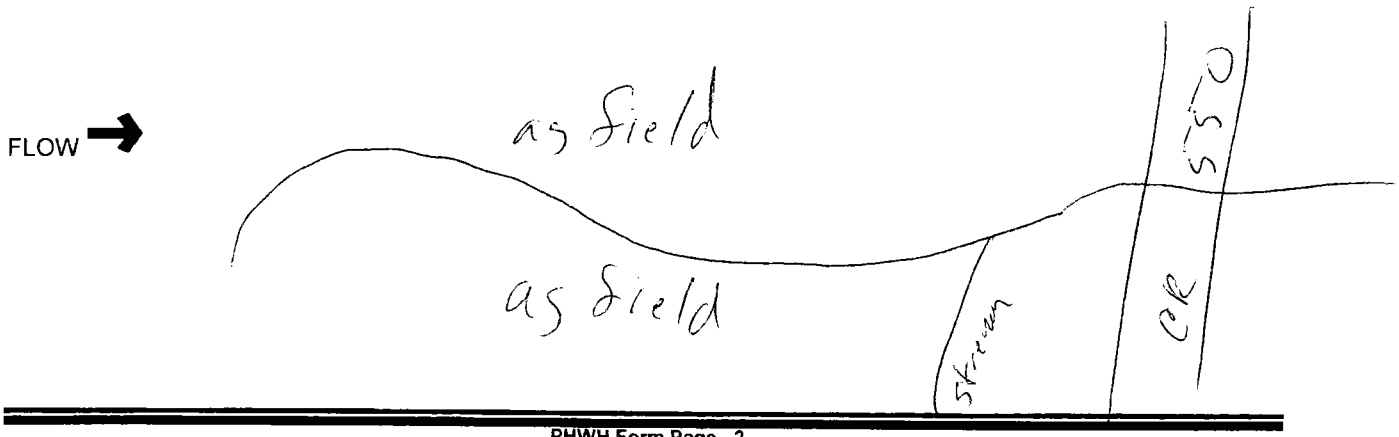
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

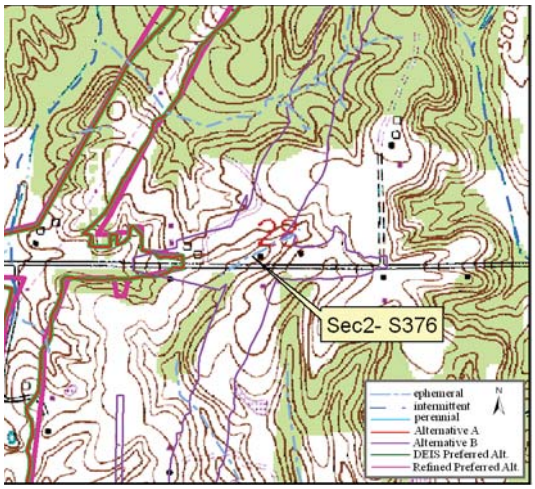
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

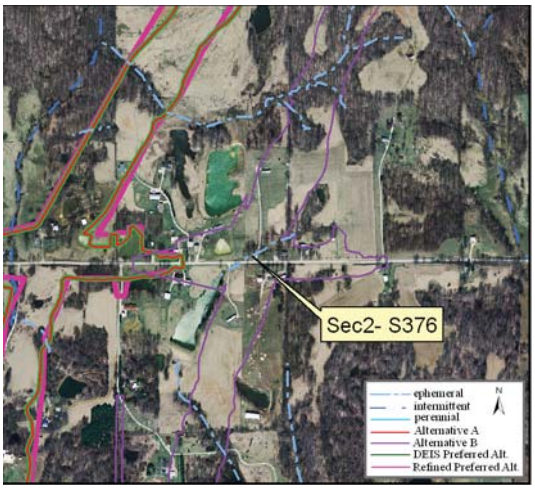
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 376



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 28 T2N R7W	**OHWM Width ft:**	1.8
UTME:	482981	**OHWM Depth ft:**	0.2
UTMN:	4269748	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S376

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	662 feet	0.03 acres	B	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 22 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	22
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 376

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 376 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 33.709 LONG. 87 11 43.376 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	30
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	60	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.5m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 67-68

Elevated Turbidity? (Y/N): N Canopy (% open): 100 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

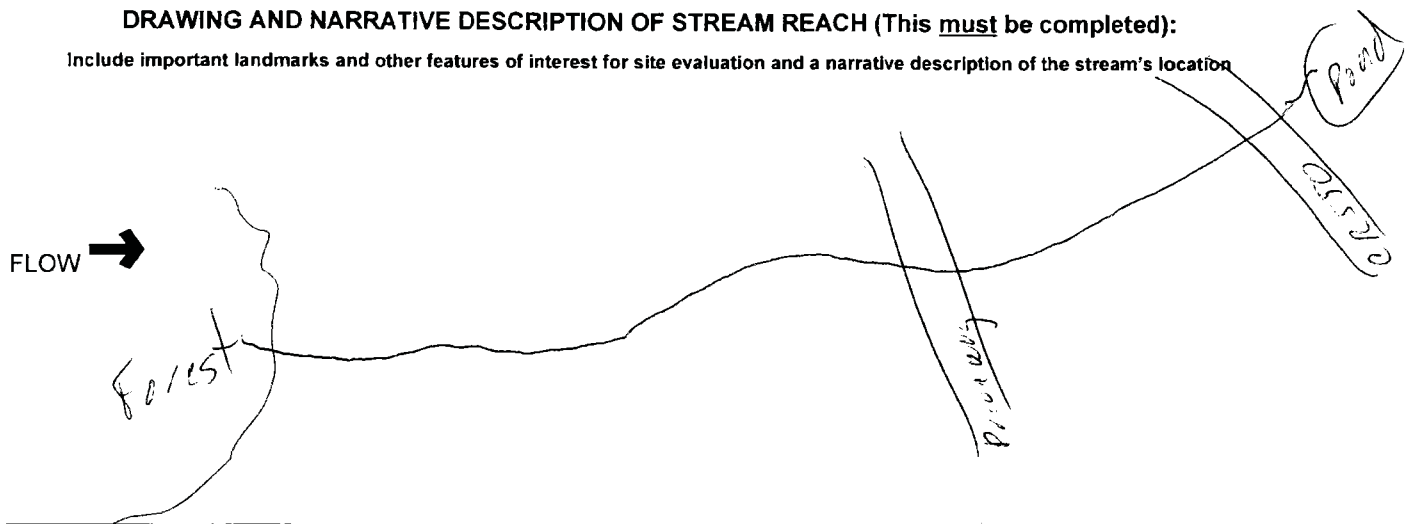
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

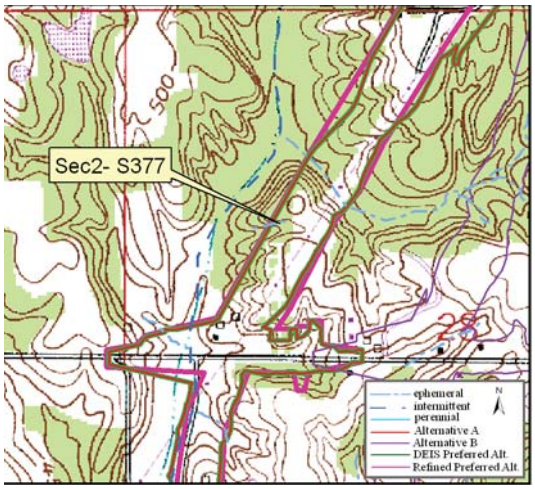
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

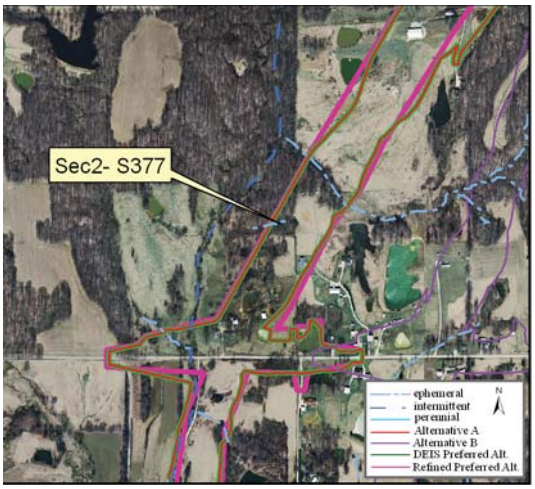
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 377



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 28 T2N R7W	**OHWM Width ft:**	1.1
UTME:	482618	**OHWM Depth ft:**	0.3
UTMN:	4270048	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S377

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	164 feet	0.01	A	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	0	0	B	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	164 feet	0.01	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	180 feet	0.01	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.87, B-0, DP-0.87 ac, RP-0.95 ac

Stream Id-Section 2 S 377

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 377 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 43.416 LONG. 87 11 58.405 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	40
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	20
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 9

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:** (B) 3

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.3m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☒ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 61-62

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

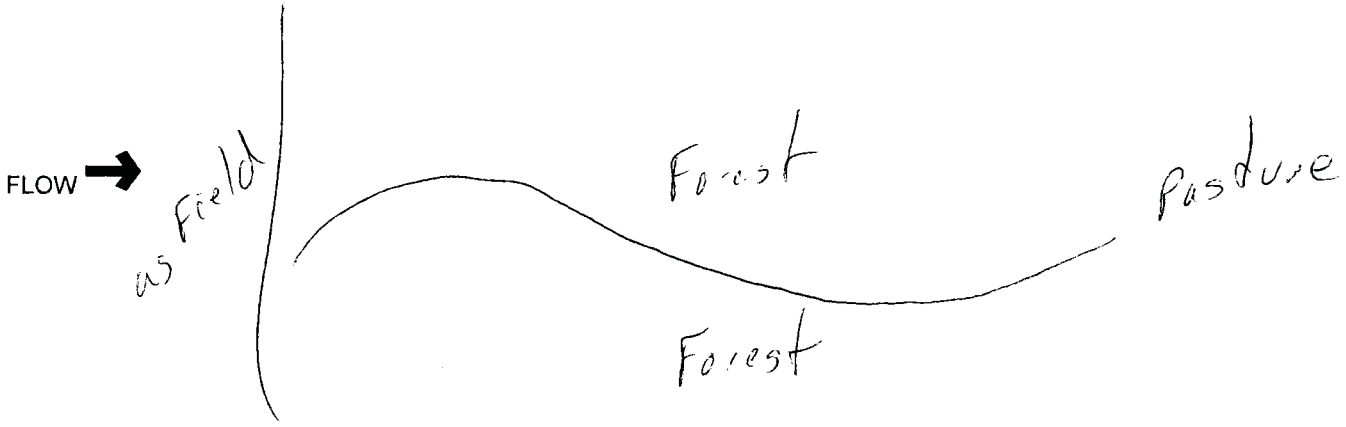
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

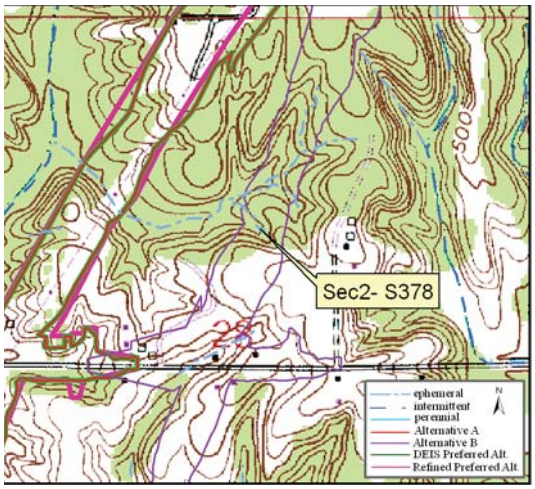
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

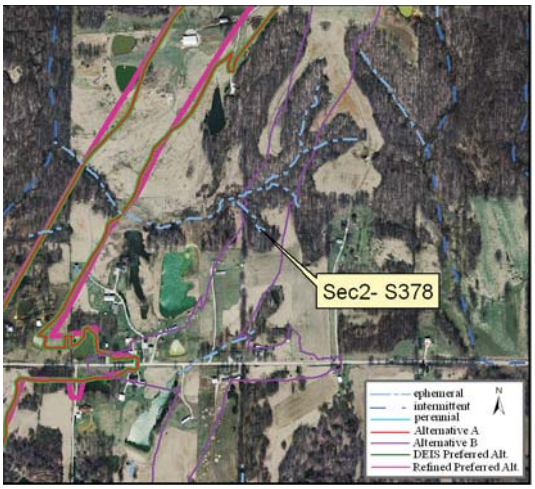
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 378



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 28 T2N R7W	**OHWM Width ft:**	1.6
UTME:	483114	**OHWM Depth ft:**	0.3
UTMN:	4270050	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S378

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	45 feet	0.01 acres	B	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 22 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 22 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	22
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.08 ac, DP-0, RP-0

Stream Id-Section 2 S 378

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 22

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 378 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 50 LAT. 38 34 43.515 LONG. 87 11 37.906 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	40
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.5m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 73-74

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

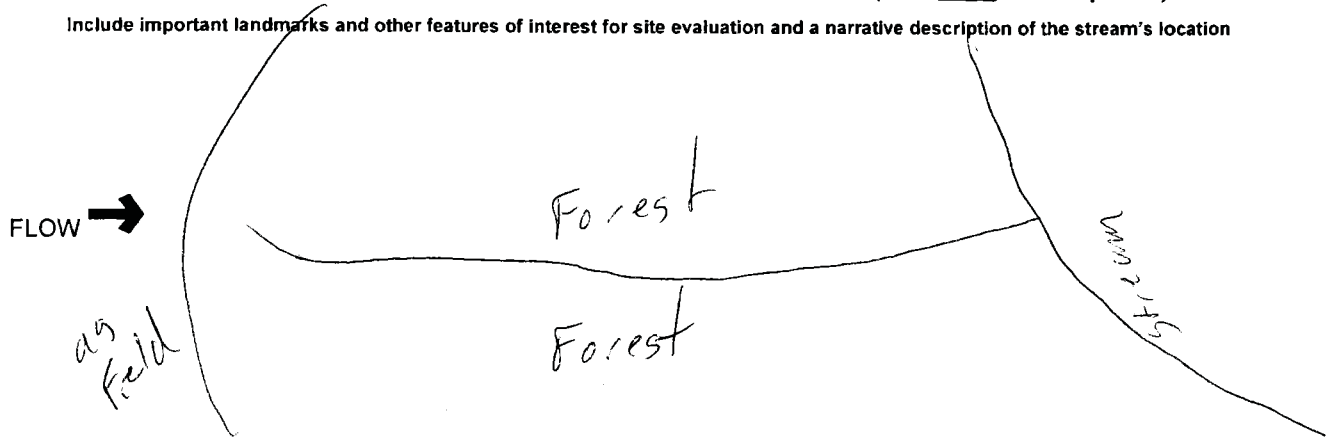
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

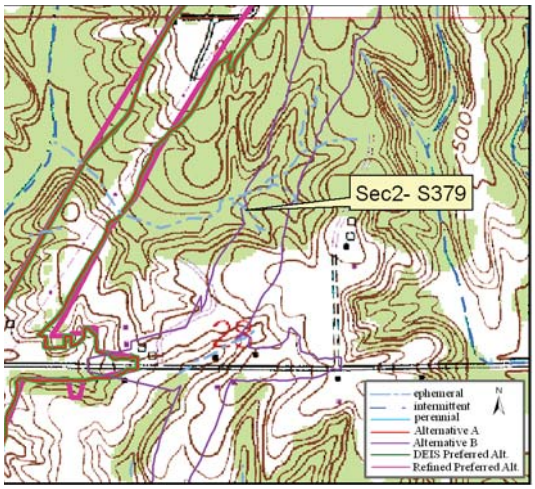
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

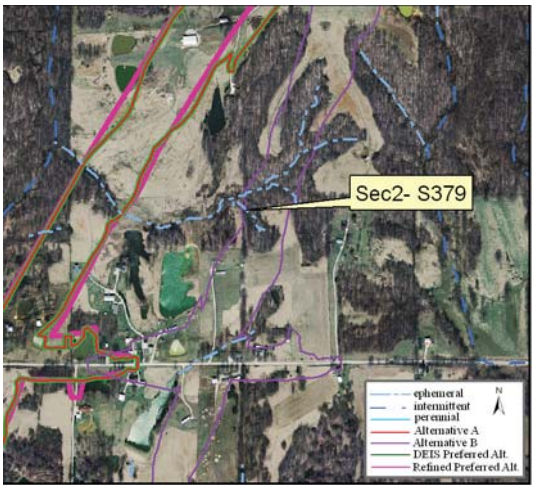
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 379



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 28 T2N R7W	**OHWM Width ft:**	3.8
UTME:	483089	**OHWM Depth ft:**	0.4
UTMN:	4270081	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S379

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	259 feet	0.02 acres	B	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 32 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 32 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-1.19, DP-0, RP-0

Stream Id-Section 2 S 379

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 379 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 44.520 LONG. 87 11 38.942 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	40
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. **Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.1m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 71-72

Elevated Turbidity? (Y/N): N Canopy (% open): 50 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

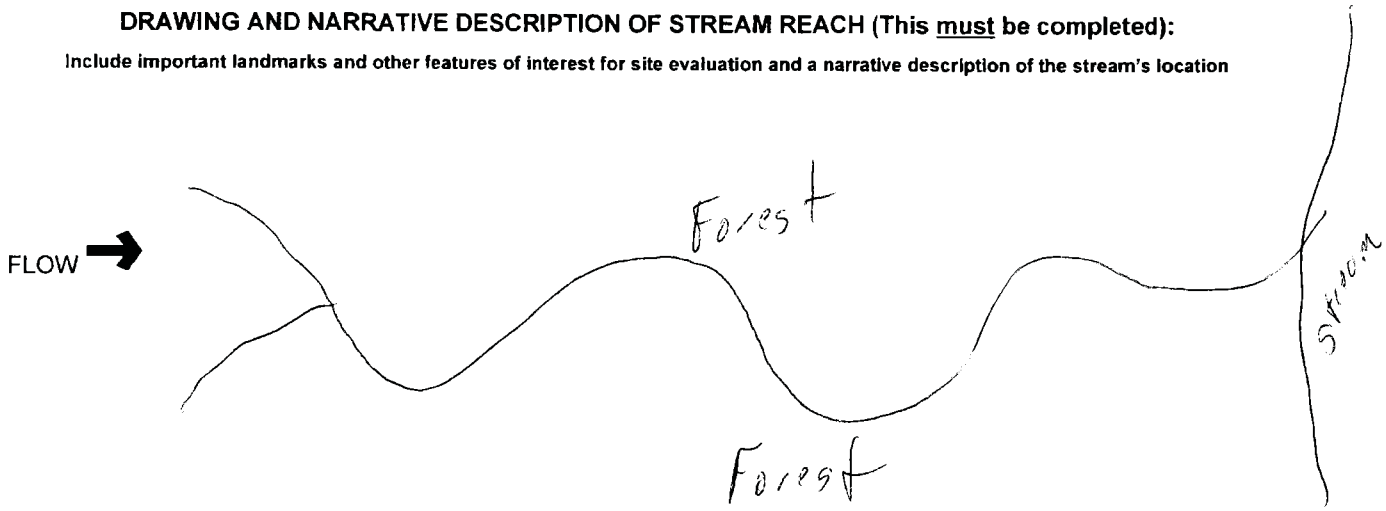
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

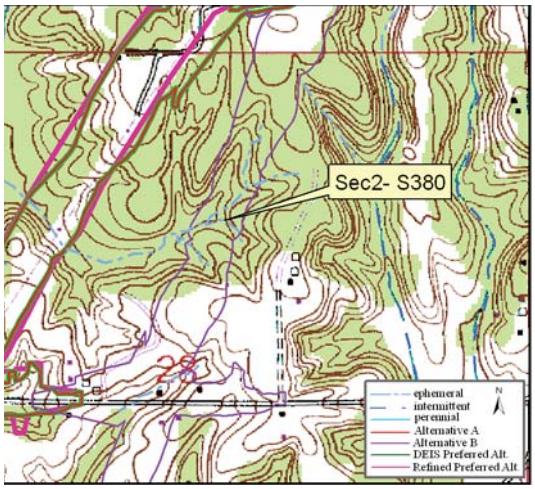
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

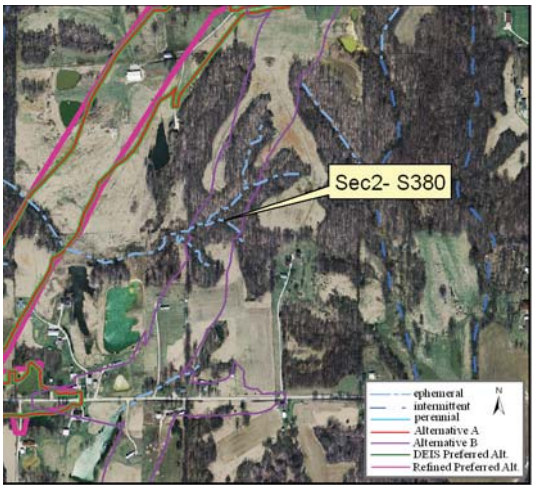
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 380



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 28 T2N R7W	**OHWM Width ft:**	3.3
UTME:	483159	**OHWM Depth ft:**	0.5
UTMN:	4270154	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S380

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 37 / Class I
Unnamed Tributary Jackson Pond	339 feet	0.03 acres	B	HHEI 37 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 37 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 37 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	37
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0.57 ac, DP-0, RP-0

Stream Id-Section 2 S 380

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 37

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 380 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 46.893 LONG. 87 11 36.055 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER mr/jd COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	30
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	20	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 10

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.1m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☒	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 69-70

Elevated Turbidity? (Y/N): N Canopy (% open): 25 %

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

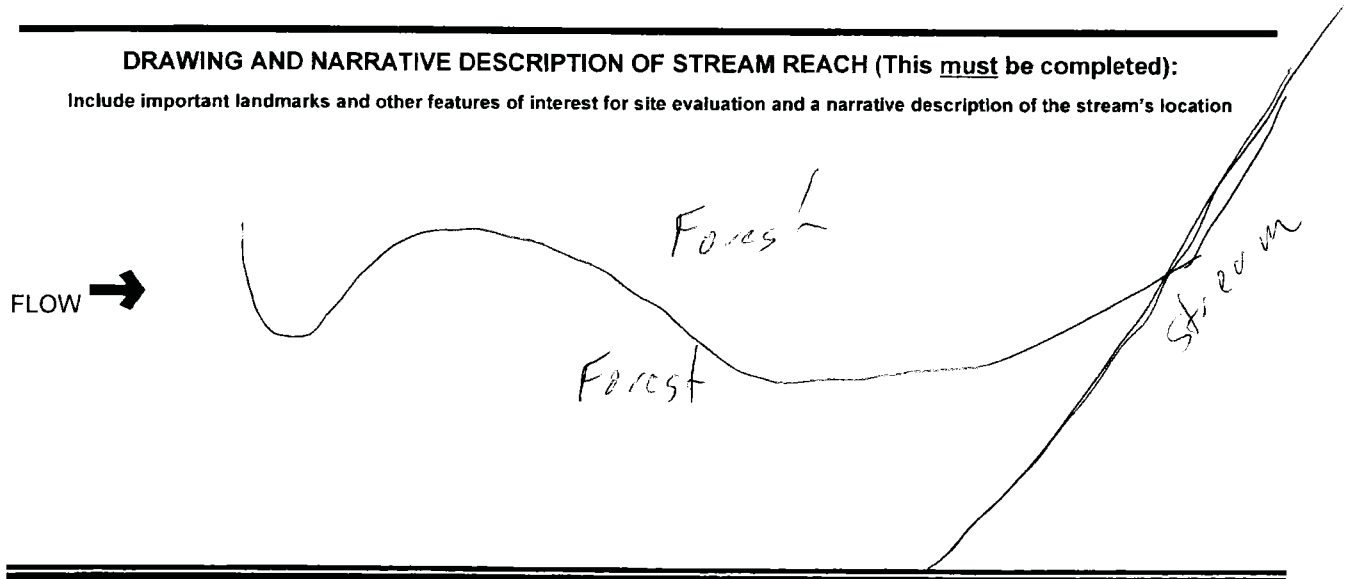
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

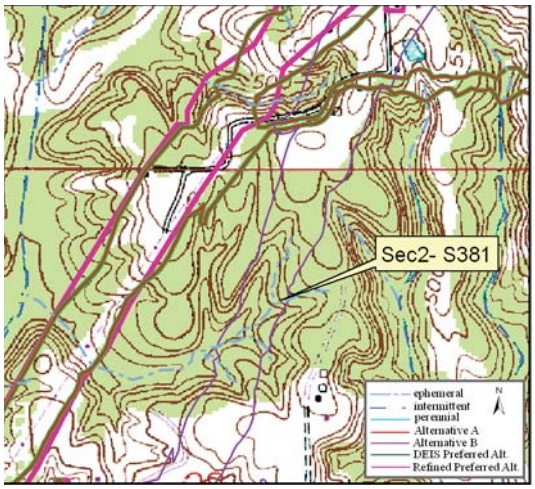
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

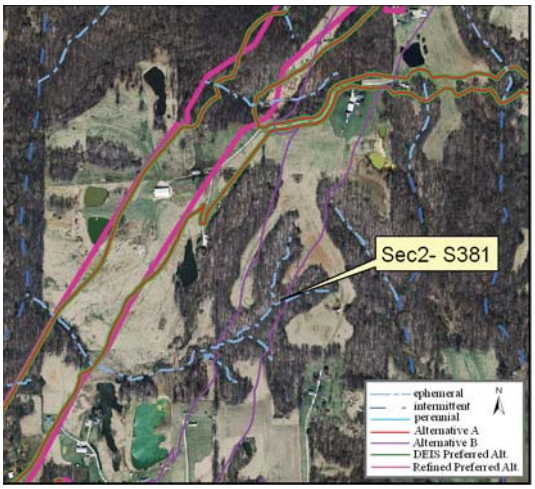
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 381



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 28 T2N R7W	**OHWM Width ft:**	3.0
UTME:	483222	**OHWM Depth ft:**	0.4
UTMN:	4270241	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S381

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 38 / Class I
Unnamed Tributary Jackson Pond	720 feet	0.05 acres	B	HHEI 38 / Class I
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 38 / Class I
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 38 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	38
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0, B-3.03 ac, DP-0, RP-0

Stream Id-Section 2 S 381

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 38

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 381 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 34 49.719 LONG. 87 11 33.459 RIVER CODE _____ RIVER MILE _____

DATE 3/26/09 SCORER jk COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	20%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	40%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/24/09 Quantity: <1 inch

Photograph Information: P 15-16

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

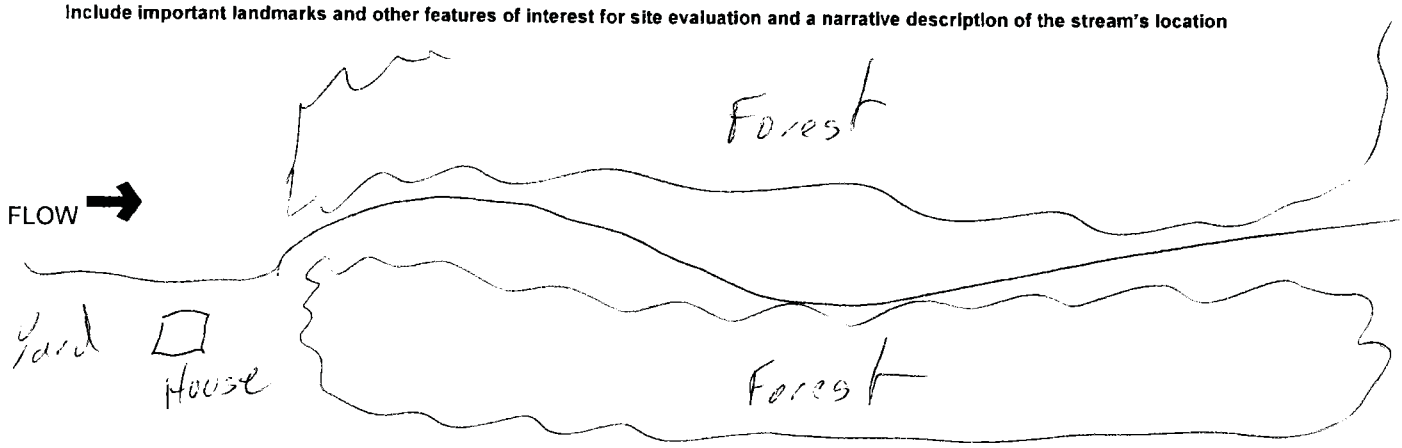
Fish Observed? (Y/N)____ Voucher? (Y/N)____ Salamanders Observed? (Y/N)____ Voucher? (Y/N)____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

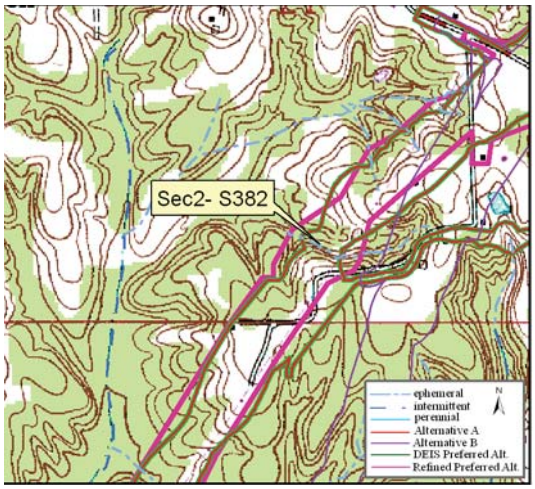
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

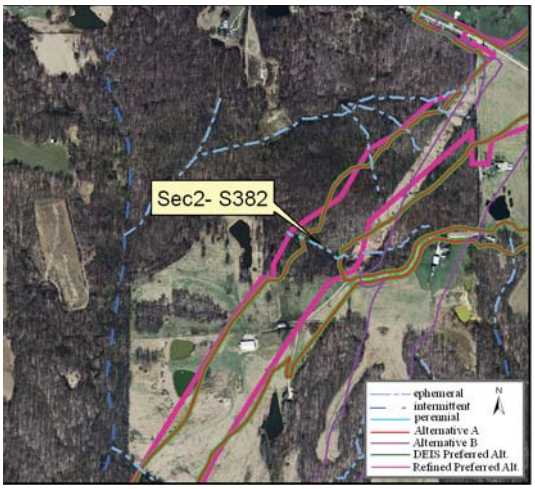
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 382



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	5.5
UTME:	483112	**OHWM Depth ft:**	1.3
UTMN:	4270730	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S382

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	366 feet	0.05 acres	A	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	366 feet	0.05 acres	DEIS Preferred	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	653 feet	0.08 acres	Refined Preferred	HHEI 53 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	53
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-1.58 ac, B-0, DP-1.58 ac, RP-2.36 ac

Stream Id-Section 2 S 382

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 53

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 382 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 5.577 LONG. 87 11 38.048 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☐	SILT **[3 pt]**	
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	35%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	60%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.7m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 42-43

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

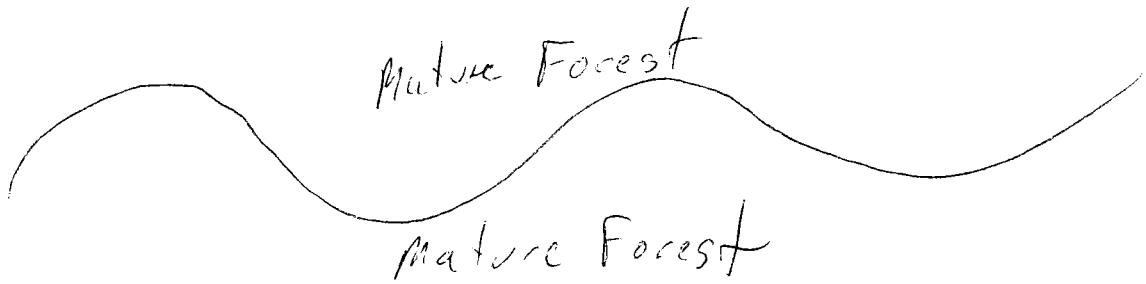
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

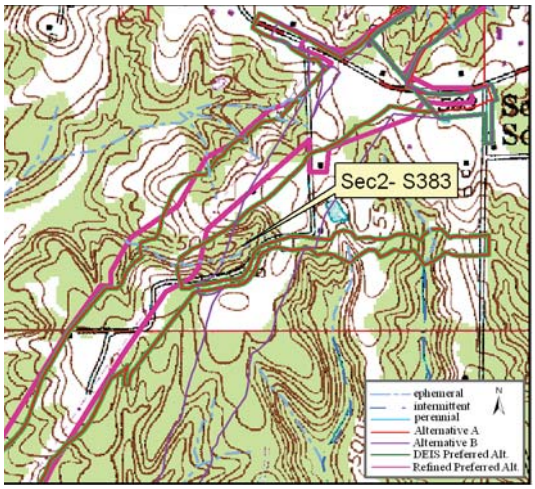
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

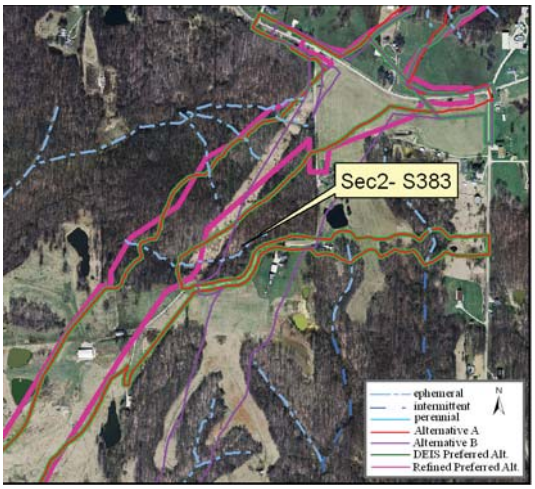
FLOW →



Stream Id-Section 2 S 383



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	5.0
UTME:	483311	**OHWM Depth ft:**	0.7
UTMN:	4270745	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S383

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	0	0	A	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	431 feet	0.05 acres	B	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	0	0	DEIS Preferred	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 48 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A*-0.13 ac, B-2.31 ac, DP*-0.13 ac, RP-0

*This stream is not impacted within the right-of-way; however, the riparian of this stream is within the right-of-way.

Stream Id-Section 2 S 383

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 383 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 6.077 LONG. 87 11 29.824 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☐	SILT **[3 pt]**	
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	35%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	60%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 44-45

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

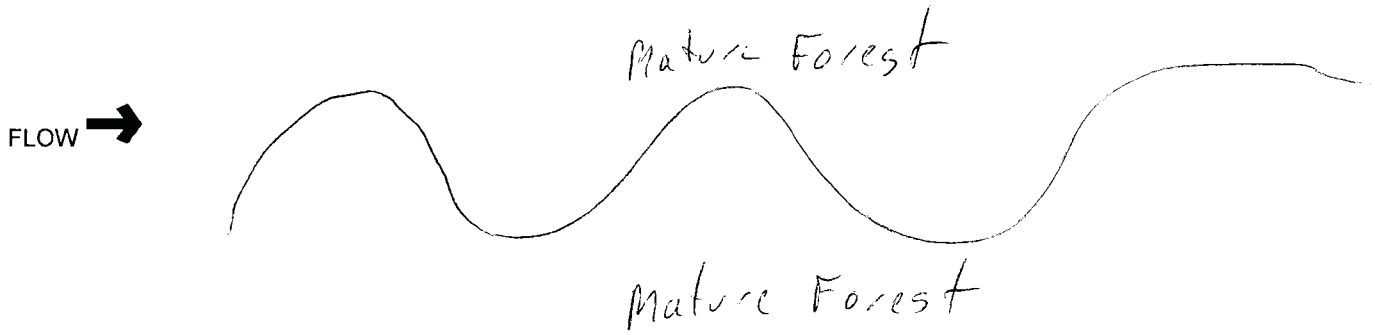
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

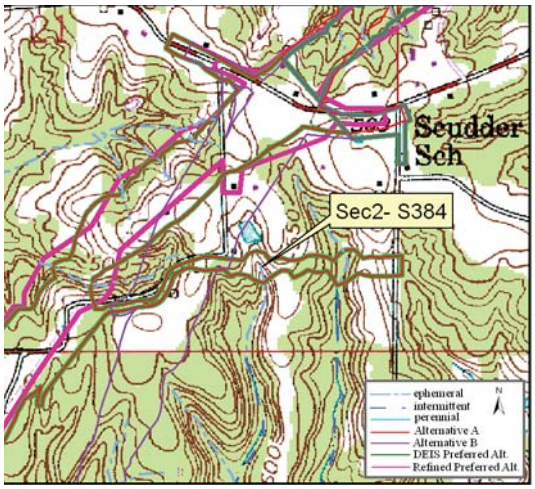
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

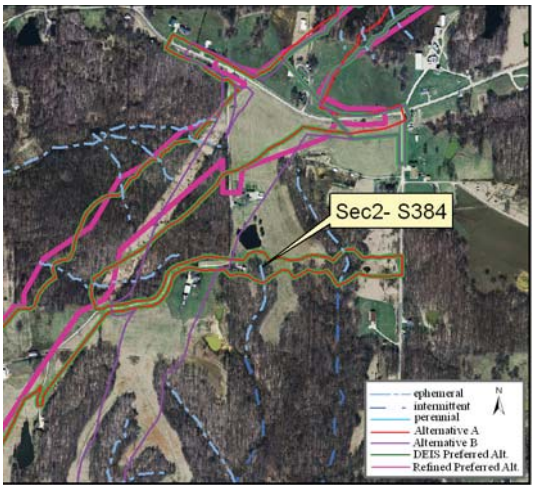
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 384



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	6.0
UTME:	483563	**OHWM Depth ft:**	0.4
UTMN:	4270734	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S384

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	145 feet	0.02 acres	A	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	145 feet	0.02 acres	DEIS Preferred	HHEI 53 / Class II
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 53 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	53
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0.50 ac, B-0, DP-0.50 ac, RP-0

Stream Id-Section 2 S 384

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 53

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 384 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 5.737 LONG. 87 11 19.407 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☐	SILT **[3 pt]**	
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	15%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	75%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 46-47

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

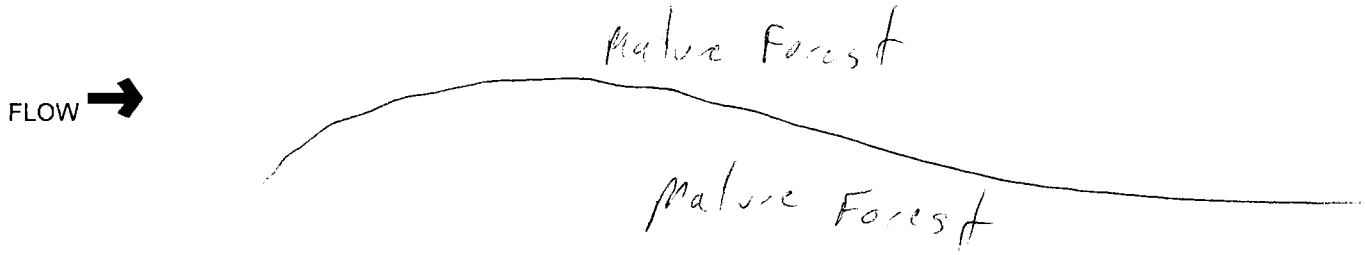
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

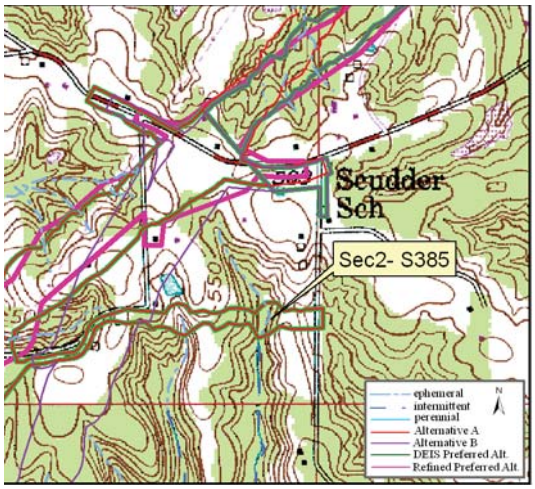
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

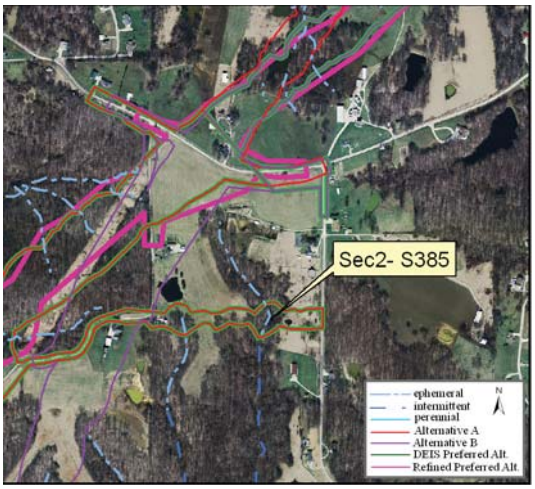
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 385



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	12.0
UTME:	483766	**OHWM Depth ft:**	1.3
UTMN:	4270752	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S385

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	286 feet	0.08 acres	A	HHEI 68 / Class III
Unnamed Tributary Jackson Pond	0	0	B	HHEI 68 / Class III
Unnamed Tributary Jackson Pond	286 feet	0.08 acres	DEIS Preferred	HHEI 68 / Class III
Unnamed Tributary Jackson Pond	0	0	Refined Preferred	HHEI 68 / Class III

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	68
Watershed Area (square miles):	0.13
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-1.06, B-0, DP-1.06 ac, RP-0

Stream Id-Section 2 S 385

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 68

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 385 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.13

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 6.334 LONG. 87 11 11.017 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☐	SILT **[3 pt]**	
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	60%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	35%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 15 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.7m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 48-49

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

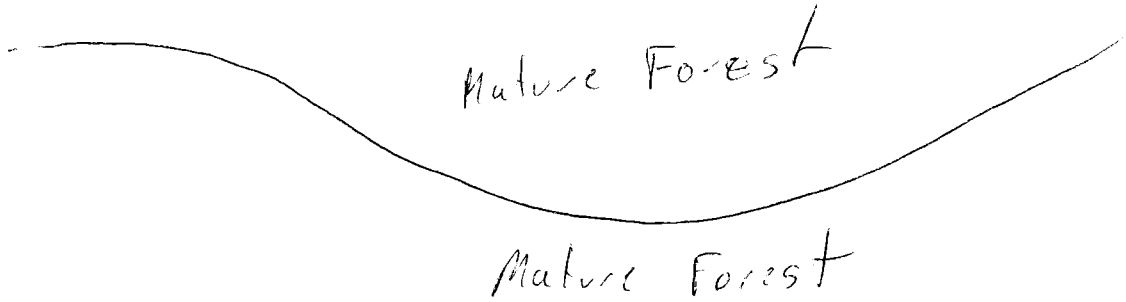
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

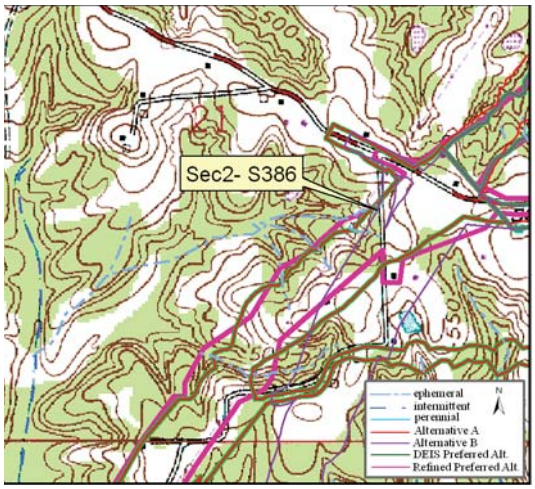
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

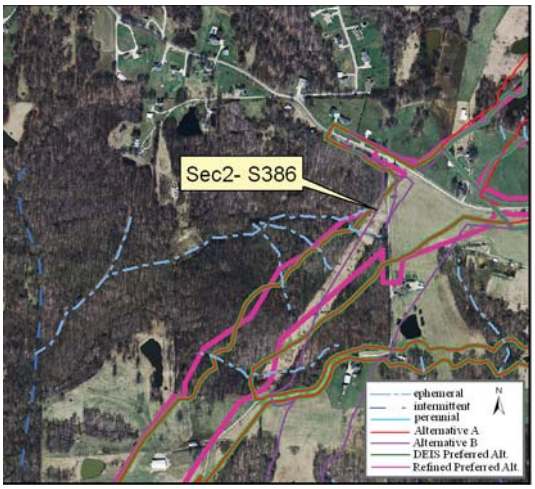
FLOW →



Stream Id-Section 2 S 386



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Jackson Pond	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	3.0
UTME:	483455	**OHWM Depth ft:**	1.7
UTMN:	4271105	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S386

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Jackson Pond	56 feet	0.01 acres	A	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	0	0	B	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	56 feet	0.01 acres	DEIS Preferred	HHEI 48 / Class II
Unnamed Tributary Jackson Pond	90 feet	0.01 acres	Refined Preferred	HHEI 48 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-0.02 ac, B-0, DP-0.02 ac, RP-0.07 ac

Stream Id-Section 2 S 386

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Jackson Pond

SITE NUMBER S 386 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 17.766 LONG. 87 11 23.902 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☐	SILT **[3 pt]**	
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	55%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 39-40

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

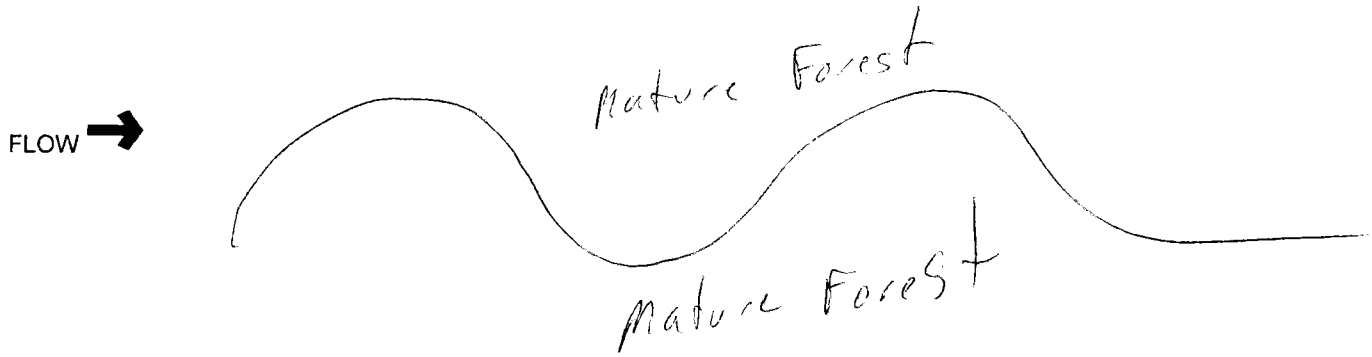
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

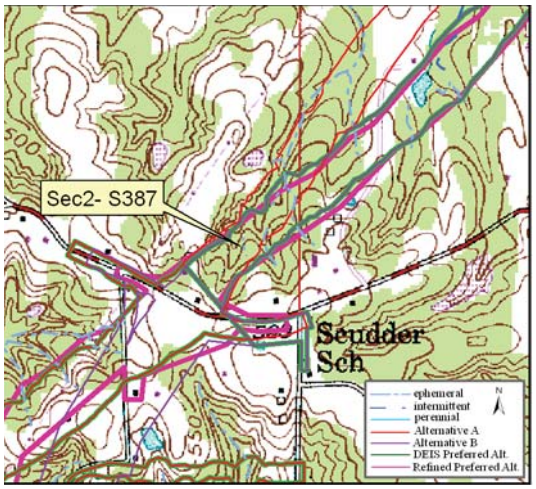
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

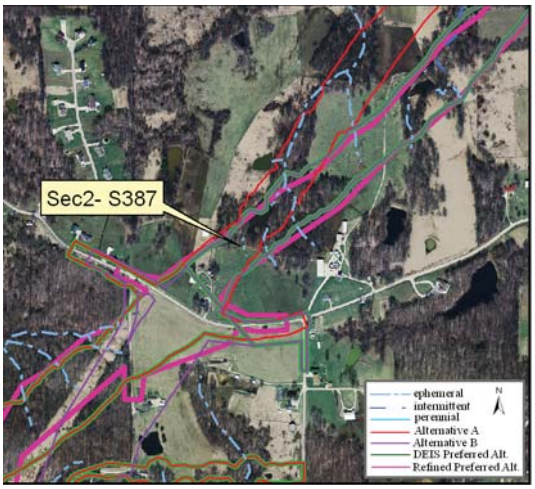
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 387



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	4.0
UTME:	483752	**OHWM Depth ft:**	1.3
UTMN:	4271291	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S387

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	155 feet	0.01 acres	A	HHEI 35 / Class I
Unnamed Tributary Veale Creek	155 feet	0.01 acres	B	HHEI 35 / Class I
Unnamed Tributary Veale Creek	155 feet	0.01 acres	DEIS Preferred	HHEI 35 / Class I
Unnamed Tributary Veale Creek	155 feet	0.01 acres	Refined Preferred	HHEI 35 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	35
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.61 ac, B-0.61 ac, DP-0.61 ac, RP-0.61 ac

Stream Id-Section 2 S 387

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 35

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 387 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 23.820 LONG. 87 11 11.641 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 62-63

Elevated Turbidity? (Y/N): N Canopy (% open): 95%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

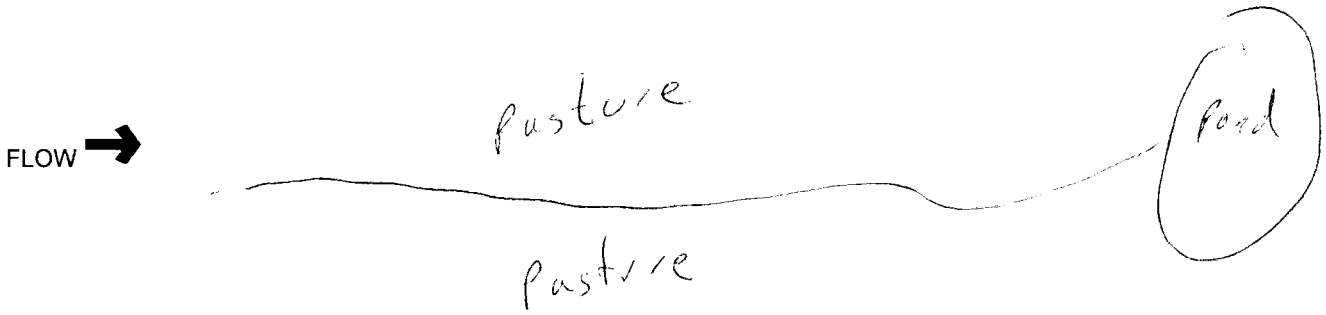
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

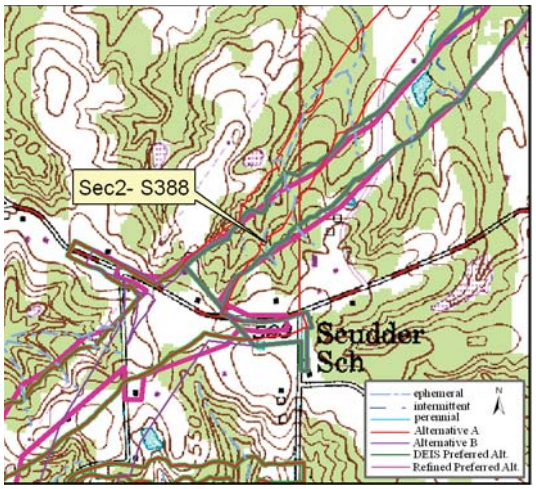
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

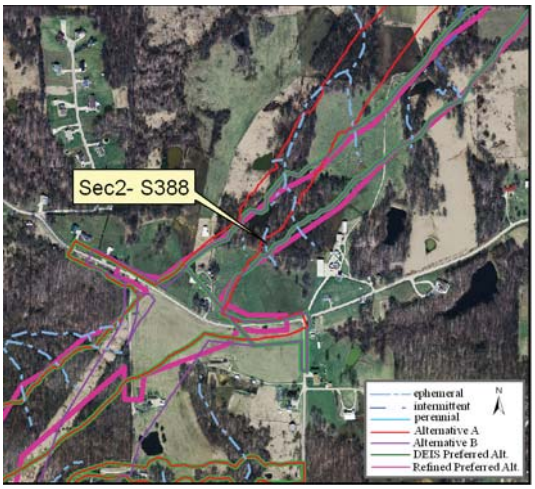
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 388



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 21 T2N R7W	**OHWM Width ft:**	2.0
UTME:	483805	**OHWM Depth ft:**	1.2
UTMN:	4271304	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S388

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	96 feet	0.01 acres	A	HHEI 31 / Class I
Unnamed Tributary Veale Creek	221 feet	0.01 acres	B	HHEI 31 / Class I
Unnamed Tributary Veale Creek	221 feet	0.01 acres	DEIS Preferred	HHEI 31 / Class I
Unnamed Tributary Veale Creek	232 feet	0.01 acres	Refined Preferred	HHEI 31 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	31
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.65 ac, B-1.03 ac, DP-1.03 ac, RP-1.11 ac

Stream Id-Section 2 S 388

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 31

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 388 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 24.245 LONG. 87 11 9.451 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	20%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☒	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 60-61

Elevated Turbidity? (Y/N): N Canopy (% open): 60%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

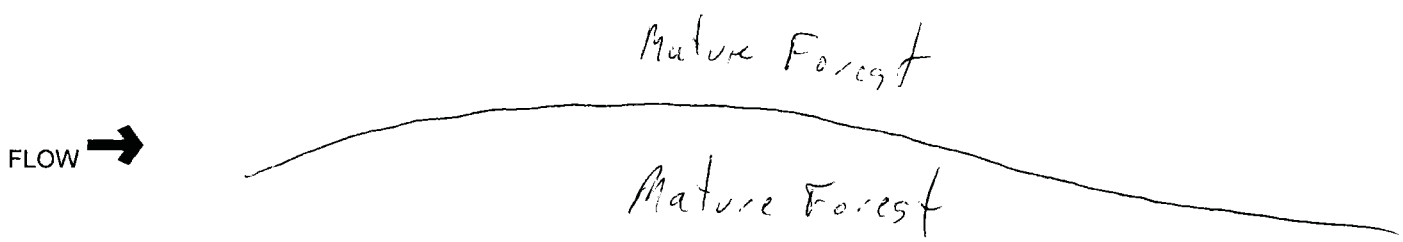
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

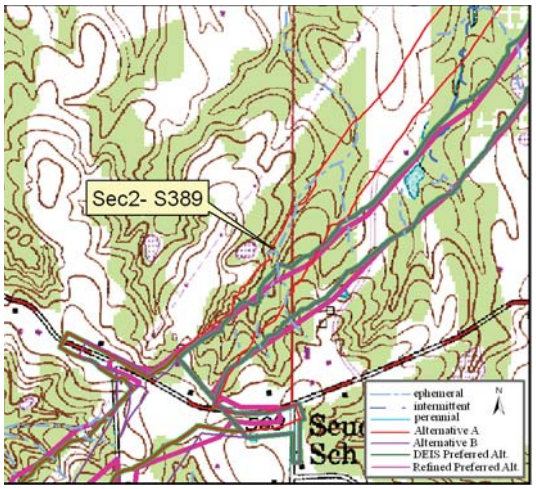
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

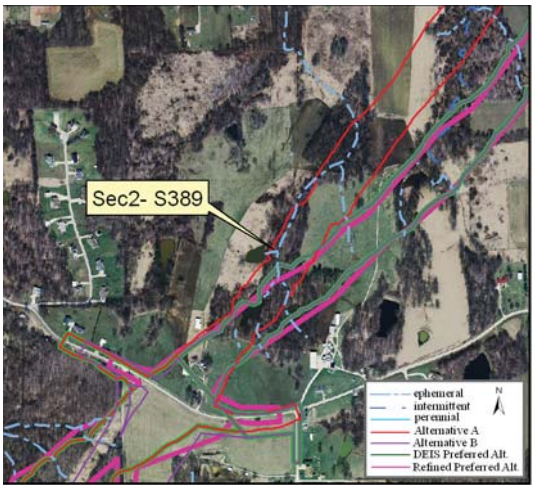
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 389



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 21 T2N R7W	**OHWM Width ft:**	7.0
UTME:	483840	**OHWM Depth ft:**	0.8
UTMN:	4271500	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S389

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	82 feet	0.01 acres	A	HHEI 47 / Class II
Unnamed Tributary Veale Creek	0	0	B	HHEI 47 / Class II
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 47 / Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 47 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	47
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 389

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 47

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 389 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 30.606 LONG. 87 11 8.021 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	30%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	20%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	50%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.1m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 58-59

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

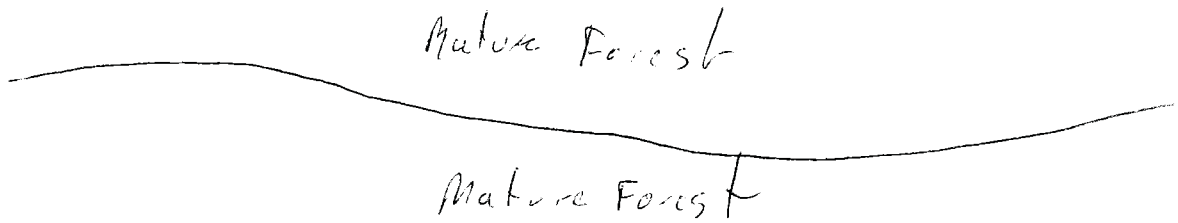
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

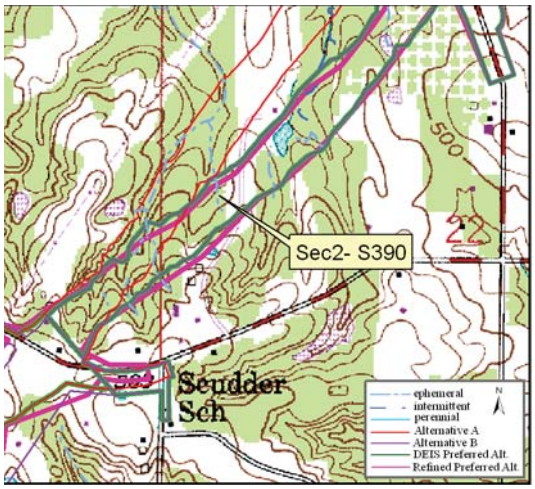
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

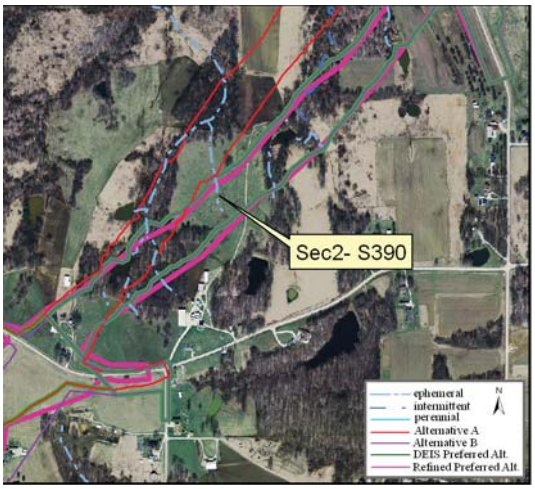
FLOW →



Stream Id-Section 2 S 390



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	3.0
UTME:	484018	**OHWM Depth ft:**	1.2
UTMN:	4271523	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S390

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	427 feet	0.03 acres	A	HHEI 57 / Class II
Unnamed Tributary Veale Creek	285 feet	0.02 acres	B	HHEI 57 / Class II
Unnamed Tributary Veale Creek	285 feet	0.02 acres	B	HHEI 57 / Class II
Unnamed Tributary Veale Creek	228 feet	0.02 acres	B	HHEI 57 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	57
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.48, B-0, DP-0, RP-0

Stream Id-Section 2 S 390

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 57

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 390 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 31.364 LONG. 87 11 0.665 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	75%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	5%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	20%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☒	☒	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 56-57

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

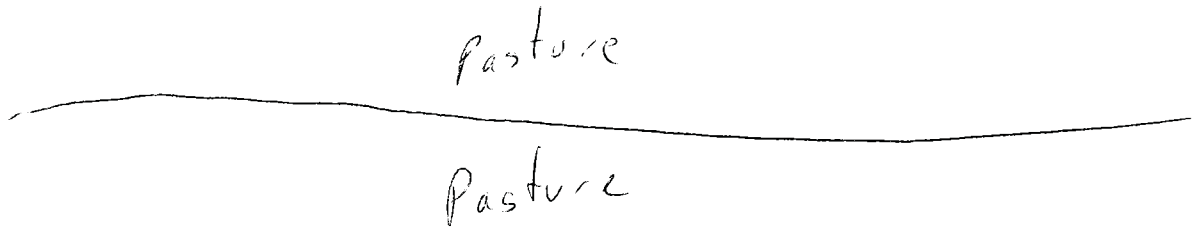
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

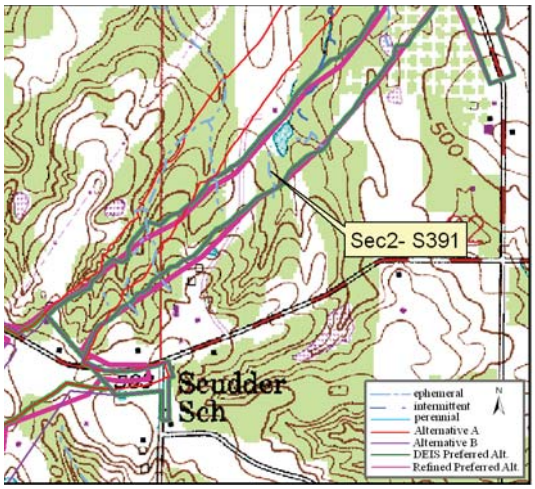
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

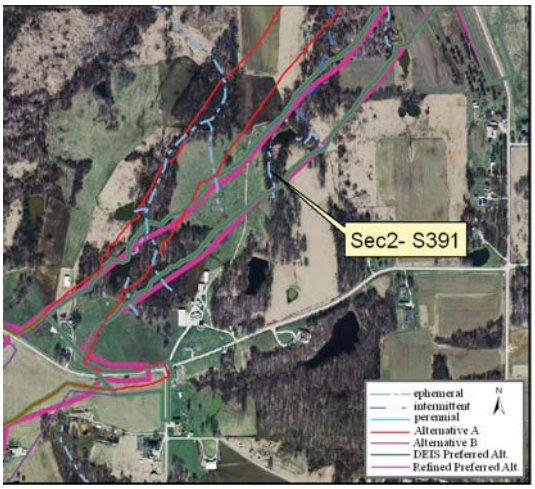
FLOW →



Stream Id-Section 2 S 391



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	3.0
UTME:	484143	**OHWM Depth ft:**	0.7
UTMN:	4271587	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S391

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 42 / Class II
Unnamed Tributary Veale Creek	357 feet	0.02 acres	B	HHEI 42 / Class II
Unnamed Tributary Veale Creek	357 feet	0.02 acres	DEIS Preferred	HHEI 42 / Class II
Unnamed Tributary Veale Creek	350 feet	0.02 acres	Refined Preferred	HHEI 42 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	42
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Width (feet):	155
Estimated	A-0, B-1.42 ac, DP-1.42 ac, RP-1.41 ac

Stream Id-Section 2 S 391

Riparian Area (acres):

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 42

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 391 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 33.449 LONG. 87 10 55.503 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	75%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	20%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 54-55

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

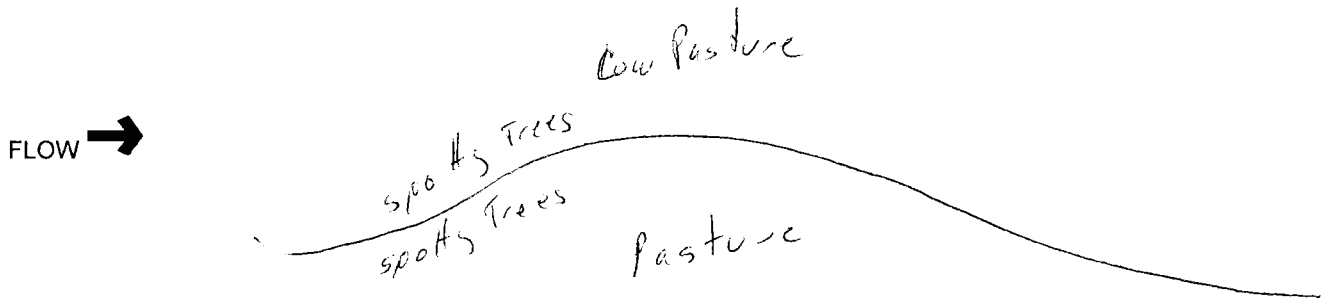
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

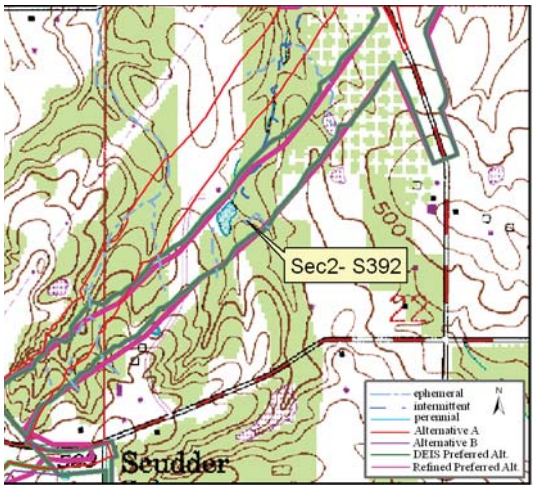
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

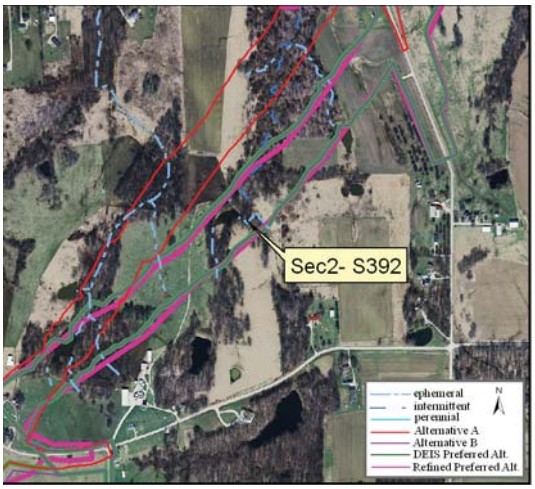
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 392



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	2.0
UTME:	484228	**OHWM Depth ft:**	1.0
UTMN:	4271661	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S392

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 34 / Class I
Unnamed Tributary Veale Creek	206 feet	0.01 acres	B	HHEI 34 / Class I
Unnamed Tributary Veale Creek	206 feet	0.01 acres	DEIS Preferred	HHEI 34 / Class I
Unnamed Tributary Veale Creek	206 feet	0.01 acres	Refined Preferred	HHEI 34 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.49 ac, DP-0.49 ac, RP-0.49 ac

Stream Id-Section 2 S 392

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 392 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 35.855 LONG. 87 10 51.995 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☒	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 7-8

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

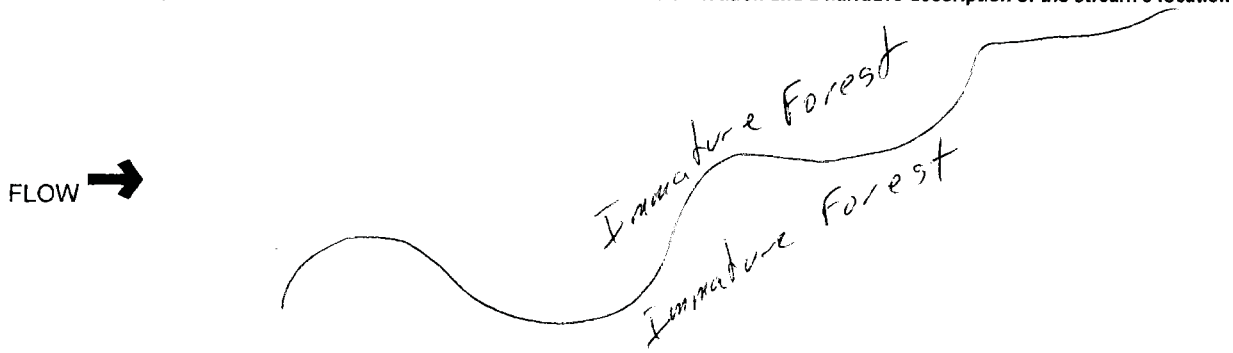
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

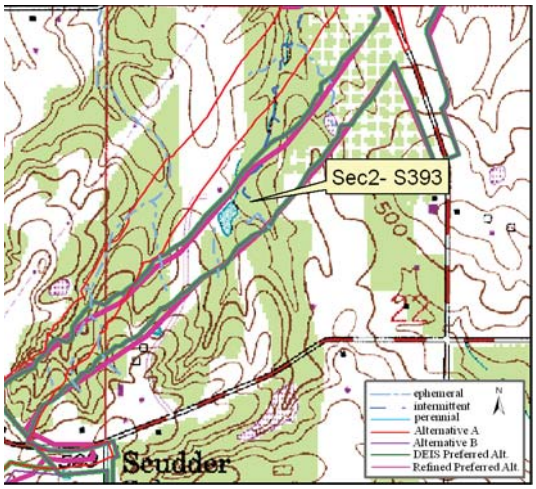
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

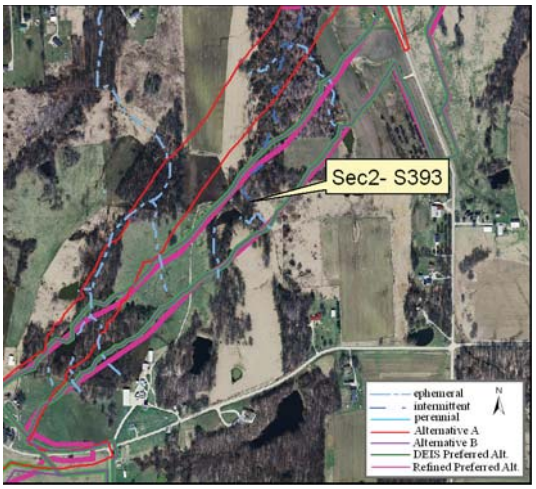
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 393



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	3.5
UTME:	484236	**OHWM Depth ft:**	0.5
UTMN:	4271692	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S393

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 57 / Class II
Unnamed Tributary Veale Creek	614 feet	0.05 acres	B	HHEI 57 / Class II
Unnamed Tributary Veale Creek	614 feet	0.05 acres	DEIS Preferred	HHEI 57 / Class II
Unnamed Tributary Veale Creek	515 feet	0.04 acres	Refined Preferred	HHEI 57 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	57
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-2.53 ac, DP-2.53 ac, RP-1.93 ac

Stream Id-Section 2 S 393

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 57

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 393 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 36.861 LONG. 87 10 51.667 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 20.3

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 5-6

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

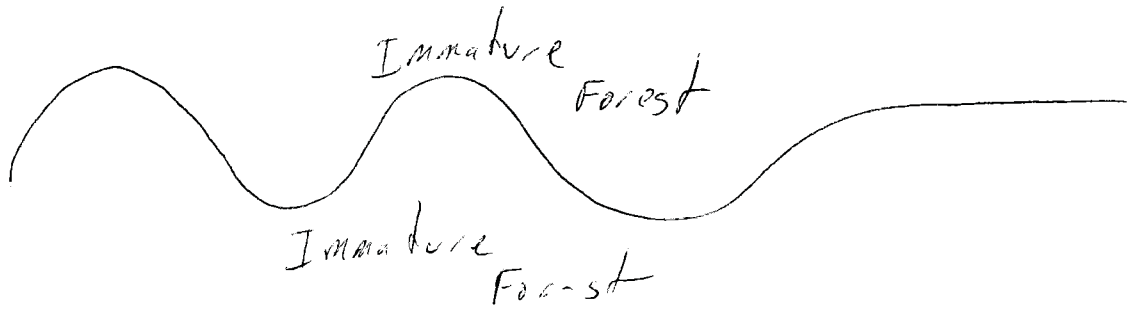
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

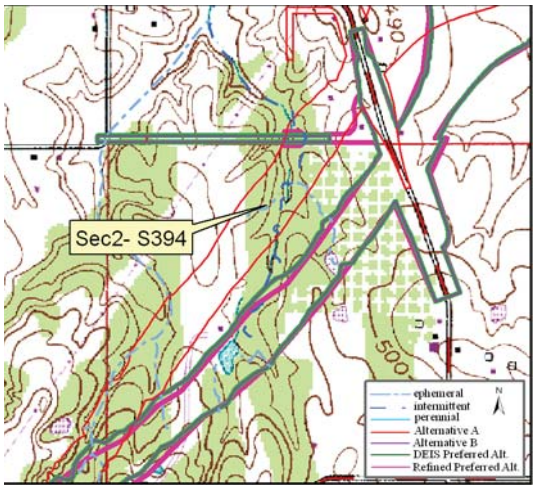
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

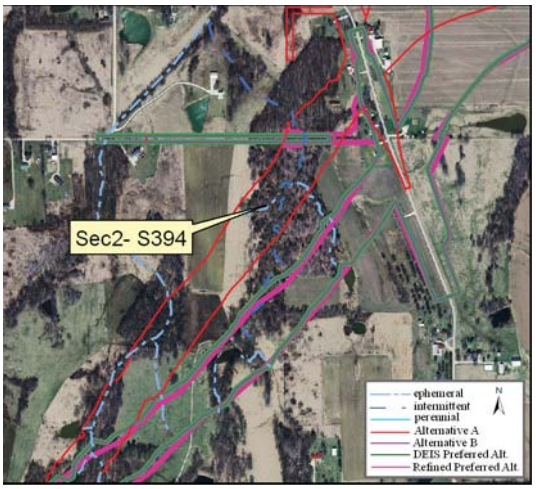
FLOW →



Stream Id-Section 2 S 394



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	3.0
UTME:	484266	**OHWM Depth ft:**	0.5
UTMN:	4272023	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S394

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	356 feet	0.02 acres	A	HHEI 52/ Class II
Unnamed Tributary Veale Creek	0	0	B	HHEI 52 / Class II
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 52 / Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 52 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	46
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.76 ac, B-0, DP-0, RP-0

Stream Id-Section 2 S 394

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 52

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 394 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 33.449 LONG. 87 10 55.503 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☒	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 1-4

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

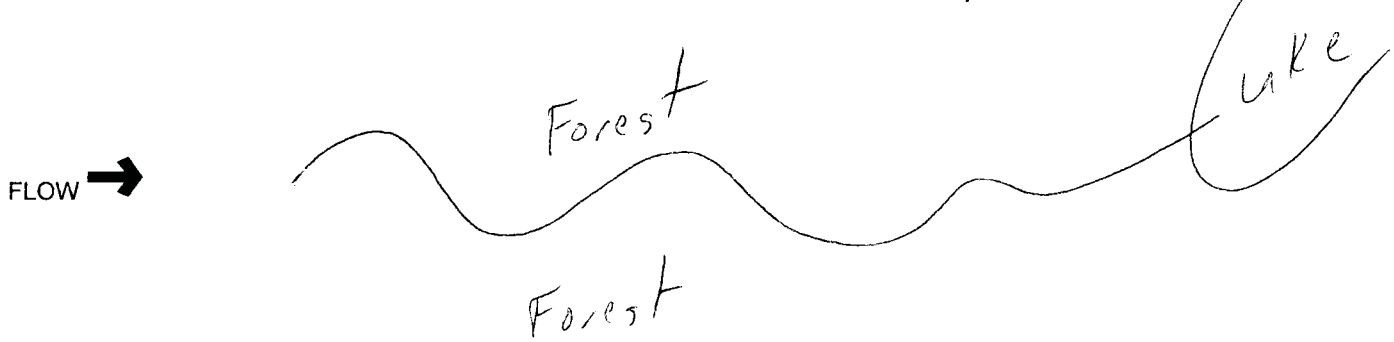
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

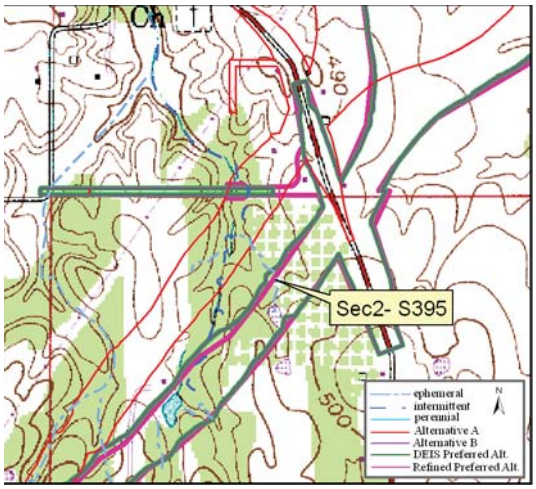
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

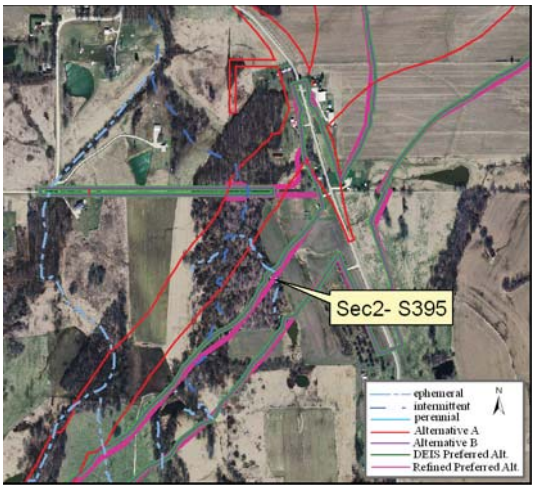
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 395



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	4.0
UTME:	484424	**OHWM Depth ft:**	0.5
UTMN:	4271981	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S395

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	190 feet	0.02 acres	A	HHEI 41 / Modified Class II
Unnamed Tributary Veale Creek	403 feet	0.04 acres	B	HHEI 41 /Modified Class II
Unnamed Tributary Veale Creek	403 feet	0.04 acres	DEIS Preferred	HHEI 41 /Modified Class II
Unnamed Tributary Veale Creek	350 feet	0.03 acres	Refined Preferred	HHEI 41 /Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	41
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.24 ac, B -1.31 ac, DP-1.31 ac, RP-1.15 ac

Stream Id-Section 2 S 395

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 395 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 46.247 LONG. 87 10 43.919 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	90%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	10%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 9 **(B)** 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☐	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 13-16

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

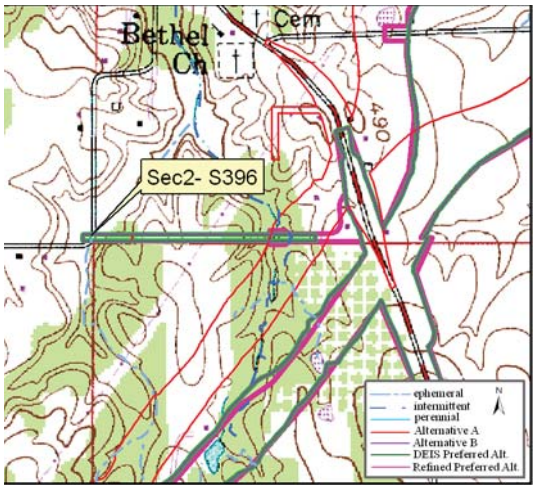
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

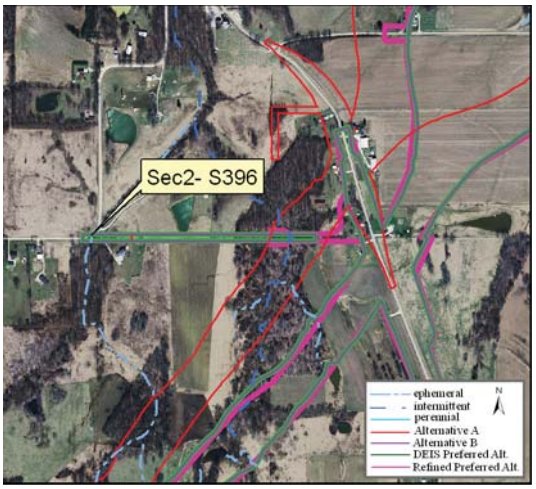
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

Stream Id-Section 2 S 396



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 16 T2N R7W	**OHWM Width ft:**	5.0
UTME:	483888	**OHWM Depth ft:**	2.0
UTMN:	4272183	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S396

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	53 feet	0.01 acres	A	HHEI 56 / Modified Class II
Unnamed Tributary Veale Creek	53 feet	0.01 acres	B	HHEI 56 / Modified Class II
Unnamed Tributary Veale Creek	53 feet	0.01 acres	DEIS Preferred	HHEI 56 / Modified Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 56 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	56
Watershed Area (square miles):	0.21
Legal Drain:	No
Predominate Substrate:	Sand
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 396

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 56

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 396 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.21

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 52.768 LONG. 87 11 6.094 RIVER CODE _____ RIVER MILE _____

DATE 3/25/09 SCORER me COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	20%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	10%
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	20%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	50%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 16

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☐	Wide >10m	☒	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☒	Narrow <5m	☐	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☒	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/24/09 Quantity: <1 inch

Photograph Information: P 128-129

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

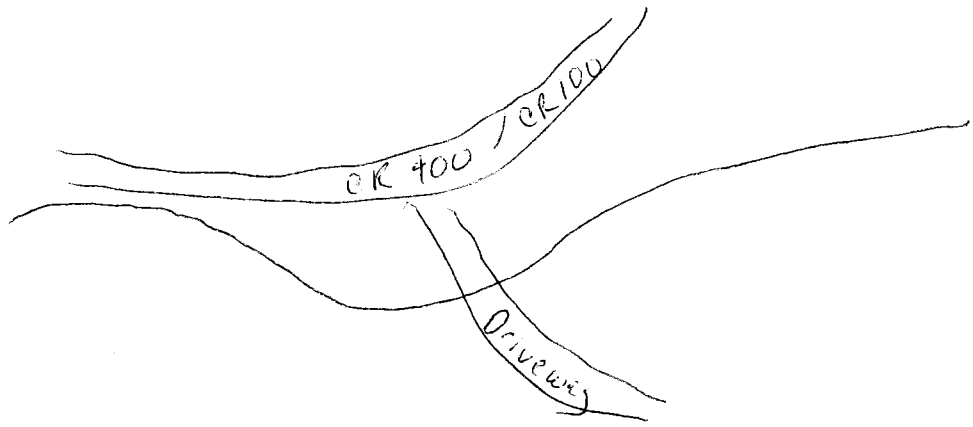
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

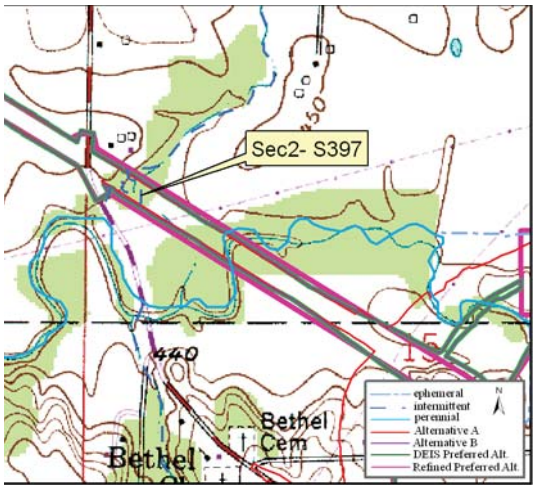
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

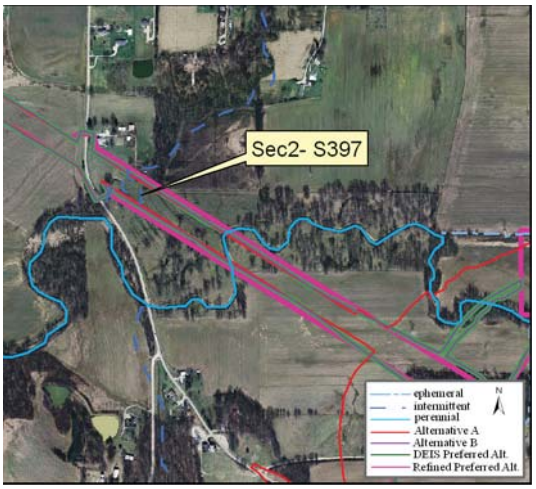
FLOW ➜



Stream Id-Section 2 S 397



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 15 T2N R7W	**OHWM Width ft:**	7.0
UTME:	484033	**OHWM Depth ft:**	2.0
UTMN:	4273291	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S397

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	651 feet	0.10 acres	A	HHEI 49 / Class II
Unnamed Tributary Veale Creek	722 feet	0.12 acres	B	HHEI 49 / Class II
Unnamed Tributary Veale Creek	722 feet	0.12 acres	DEIS Preferred	HHEI 49 / Class II
Unnamed Tributary Veale Creek	797 feet	0.13 acres	Refined Preferred	HHEI 49 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	49
Watershed Area (square miles):	0.5
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.01 ac, B-0.01 ac, DP-0.01 ac, RP-0.01 ac

Stream Id-Section 2 S 397

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 49

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 397 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.50

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 28.724 LONG. 87 11 0.191 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 45.7

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.0m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☐ ☐ Open Pasture, Row Crop
☒ ☒ None	☒ ☒ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☒ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 23-24

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

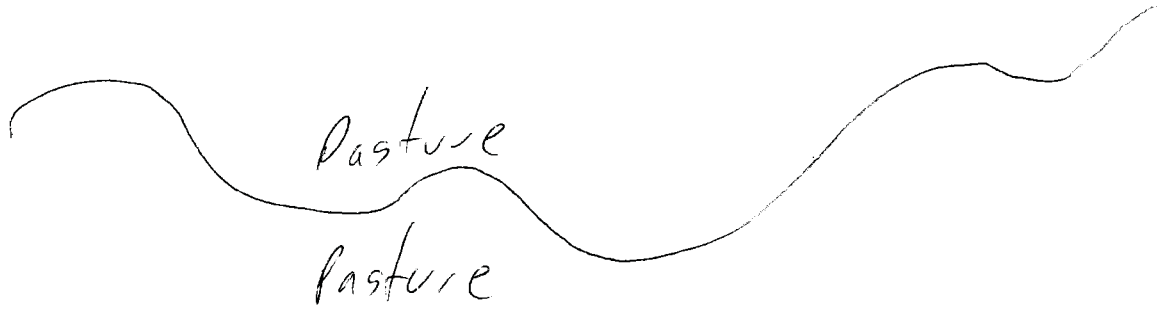
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

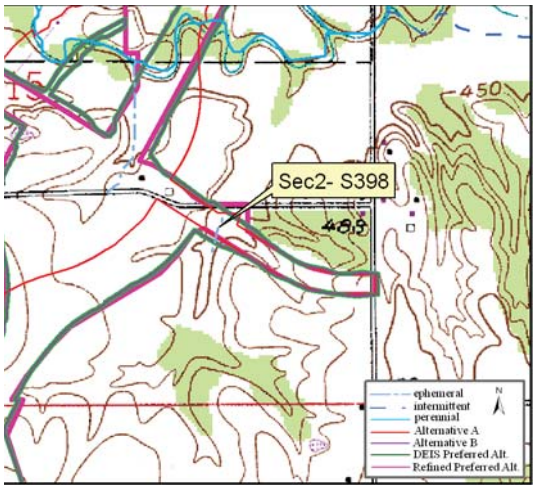
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

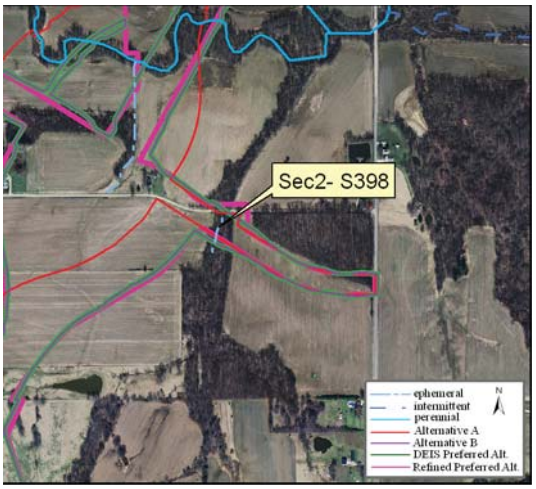
FLOW →



Stream Id-Section 2 S 398



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 15 T2N R7W	**OHWM Width ft:**	8.0
UTME:	485164	**OHWM Depth ft:**	1.0
UTMN:	4272596	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S398

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	191 feet	0.04 acres	A	HHEI 55 / Class II
Unnamed Tributary Veale Creek	274 feet	0.05 acres	B	HHEI 55 / Class II
Unnamed Tributary Veale Creek	274 feet	0.05 acres	DEIS Preferred	HHEI 55 / Class II
Unnamed Tributary Veale Creek	262 feet	0.05 acres	Refined Preferred	HHEI 55 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	46
Watershed Area(square miles):	0.15
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.77 ac, B – 1.06 ac, DP-1.06, RP-0.99 ac

Stream Id-Section 2 S 398

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 55

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 398 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.15

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 6.247 LONG. 87 10 13.374 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ **(A)** 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 15

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☒ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 45.7

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.7m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 25-26

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

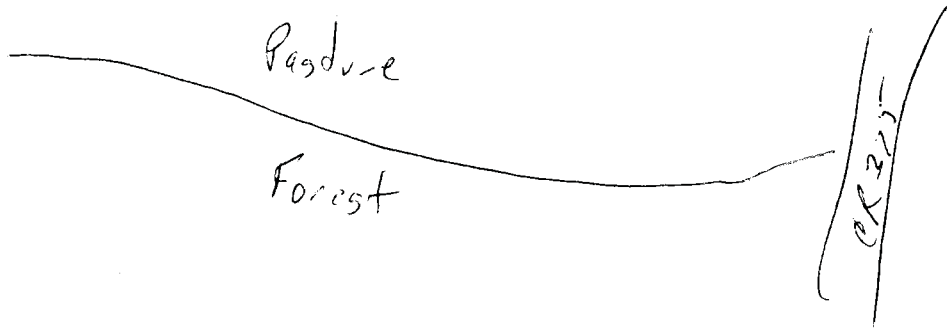
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

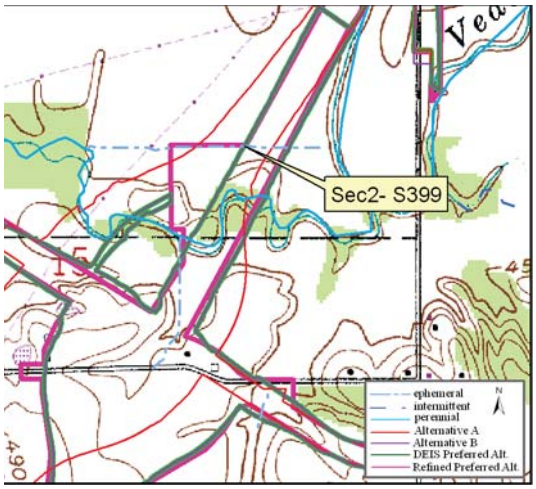
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

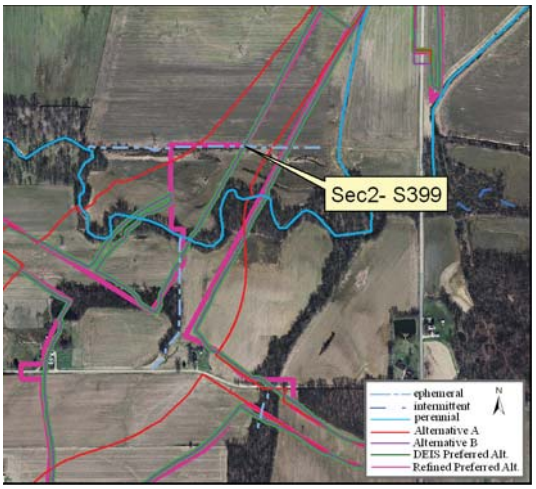
FLOW →



Stream Id-Section 2 S 399



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	6.0
UTME:	485114	**OHWM Depth ft:**	0.8
UTMN:	4273204	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S399

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	606 feet	0.08 acres	A	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	351 feet	0.05 acres	B	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	351 feet	0.05 acres	DEIS Preferred	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	903 feet	0.12 acres	Refined Preferred	HHEI 44 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A – 0.23 ac, B – 0, DP-0, RP-0.23 ac

Stream Id-Section 2 S 399

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 399 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 25.970 LONG. 87 10 15.488 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 31.5

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.7m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 6-7

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

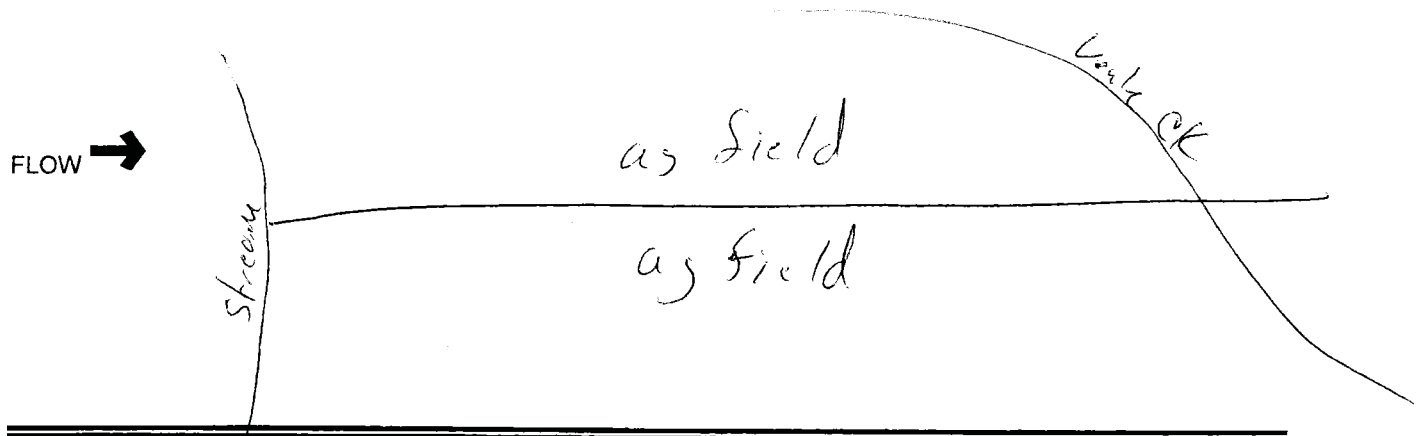
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

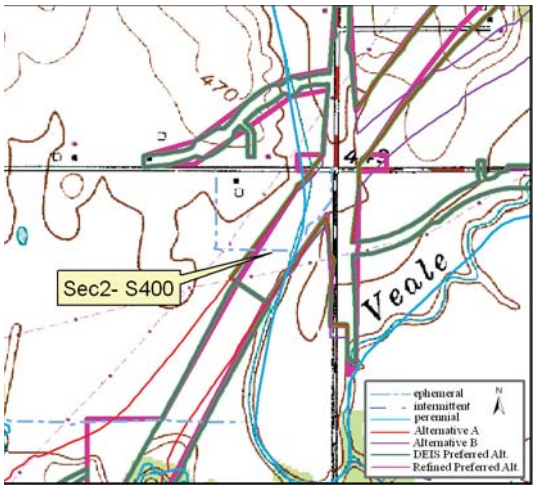
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

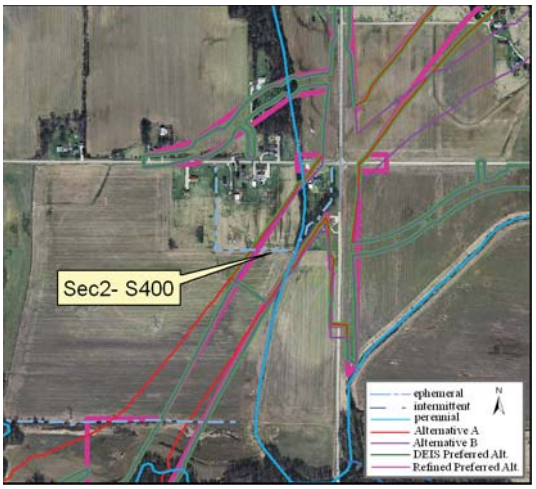


October 24, 2002 Revision

Stream Id-Section 2 S 400



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	2.5
UTME:	485382	**OHWM Depth ft:**	0.8
UTMN:	4273603	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S400

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	338 feet	0.02 acres	A	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	313 feet	0.02 acres	B	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	338 feet	0.02 acres	DEIS Preferred	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	289 feet	0.02 acres	Refined Preferred	HHEI 24 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A -0, B-0, DP-0, RP-0

Stream Id-Section 2 S 400

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 400 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 38.930 LONG. 87 10 4.437 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☒	☒	None	☒	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐	Stream Flowing	☒	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 8-9

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Sandy Hook

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

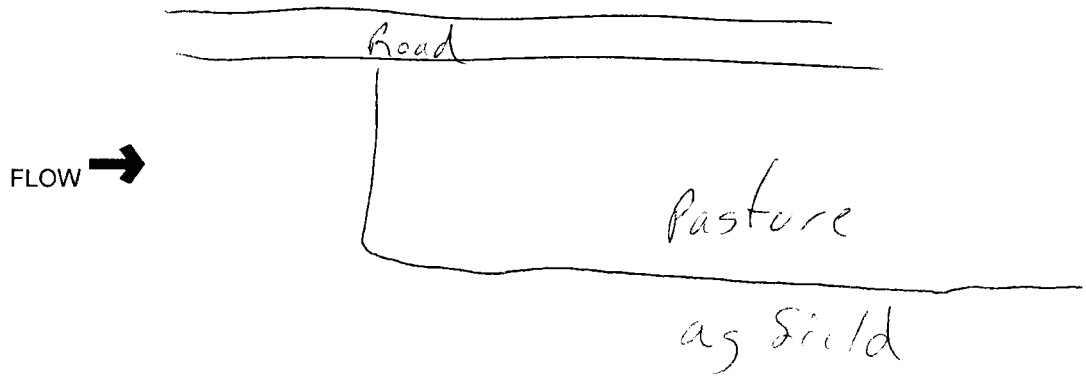
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

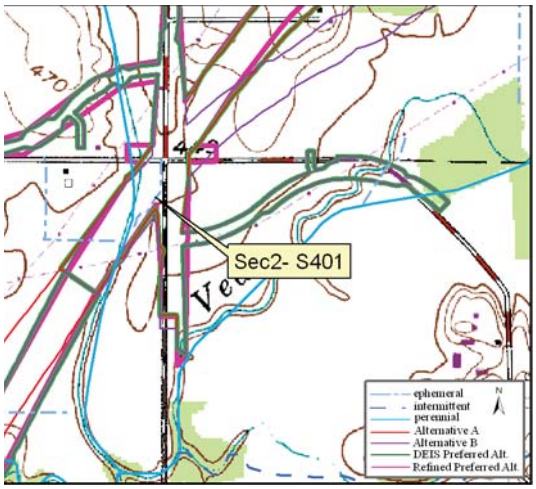
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

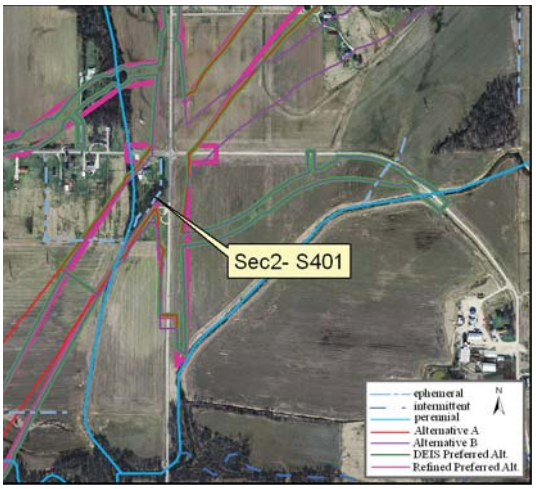
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 401



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 15 T2N R7W	**OHWM Width ft:**	3.5
UTME:	485509	**OHWM Depth ft:**	0.3
UTMN:	4273707	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S401

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	682 feet	0.05 acres	A	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	682 feet	0.05 acres	B	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	682 feet	0.05 acres	DEIS Preferred	HHEI 44 / Modified Class II
Unnamed Tributary Veale Creek	682 feet	0.05 acres	Refined Preferred	HHEI 44 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.89 ac, B-0.89 ac, DP-0.89 ac, RP-0.89 ac

Stream Id-Section 2 S 401

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 401 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 42.312 LONG. 87 9 59.194 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 1 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☒	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☒	☒	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☒	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 10-12

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

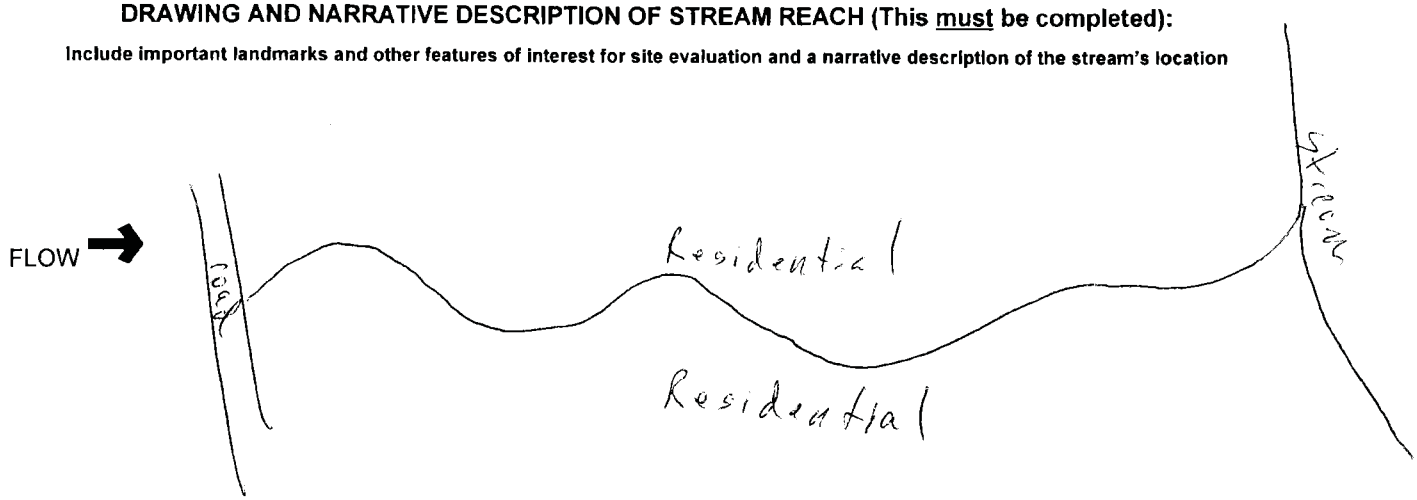
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

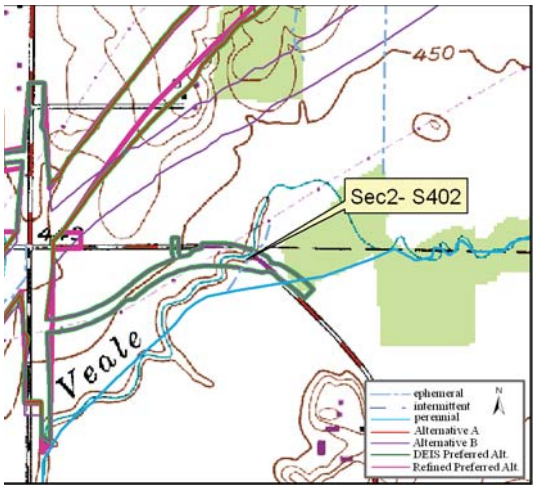
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

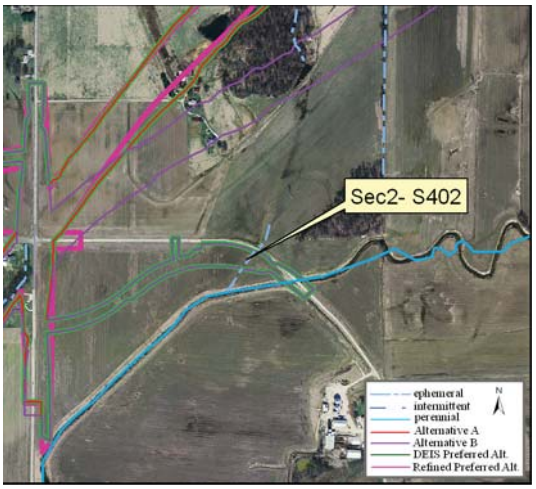


October 24, 2002 Revision

Stream Id-Section 2 S 402



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 14 T2N R7W	**OHWM Width ft:**	3.0
UTME:	486046	**OHWM Depth ft:**	0.7
UTMN:	4273767	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S402

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	166 feet	0.01 acres	A	HHEI 35 / Modified Class II
Unnamed Tributary Veale Creek	166 feet	0.01 acres	B	HHEI 35 / Modified Class II
Unnamed Tributary Veale Creek	166 feet	0.01 acres	DEIS Preferred	HHEI 35 / Modified Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 35 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	35
Watershed Area (square miles):	0.04
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 402

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 35

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 402 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 38 36 44.289 LONG. 87 9 36.993 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER jsk / bcv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	50%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 12.7

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 37-38

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

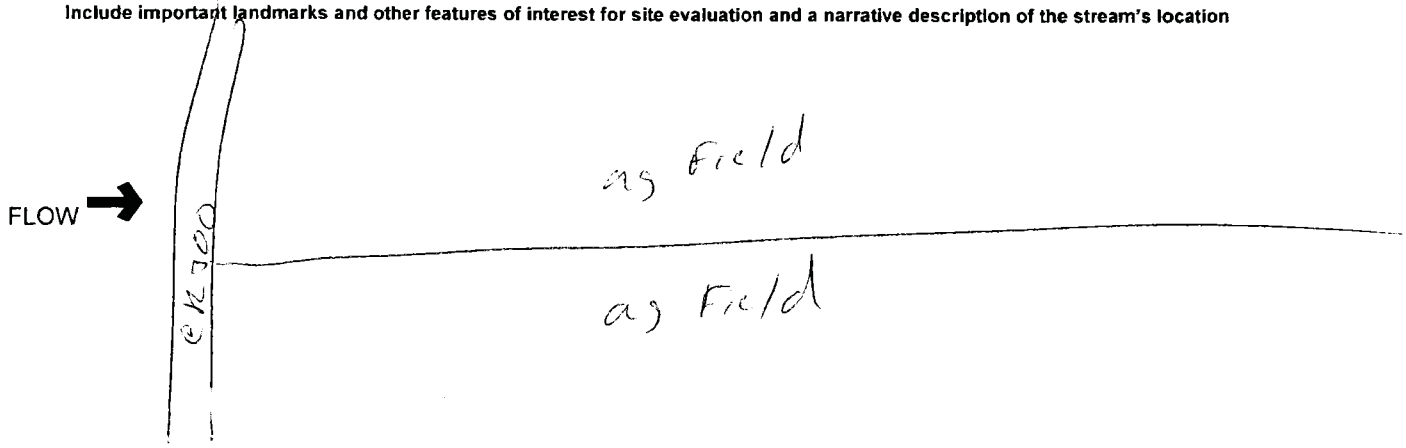
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

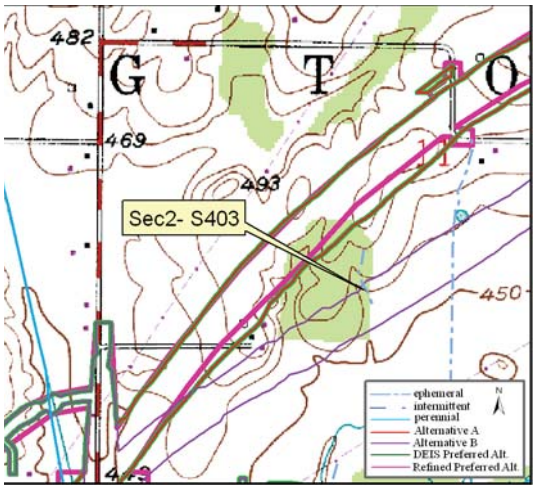
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

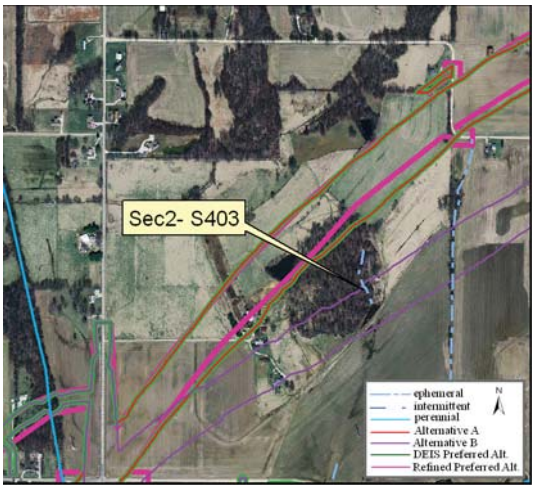
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 403



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 11 T2N R7W	**OHWM Width ft:**	1.5
UTME:	486170	**OHWM Depth ft:**	0.3
UTMN:	4274257	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S403

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 24 / Class I
Unnamed Tributary Veale Creek	180 feet	0.01 acres	B	HHEI 24 / Class I
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 24 / Class I
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 24 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.81 ac, DP-0, RP-0

Stream Id-Section 2 S 403

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 403 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 0.193 LONG. 87 9 31.901 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☒	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 19-20

Elevated Turbidity? (Y/N): N Canopy (% open): 25%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

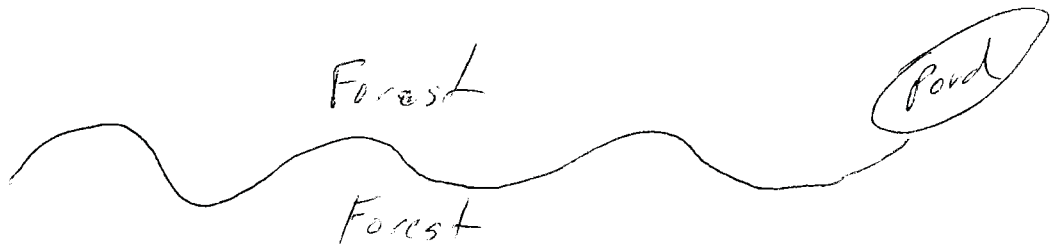
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

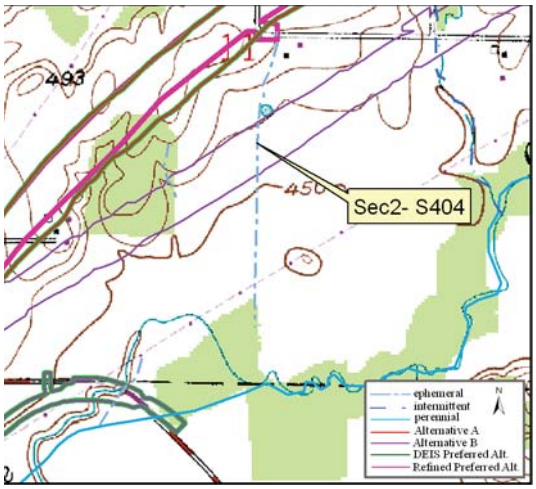
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

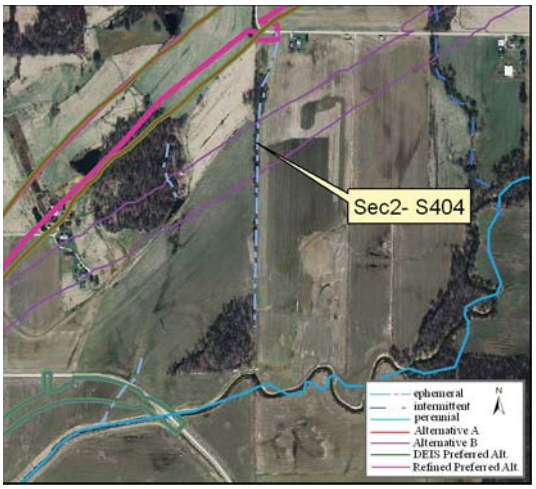
FLOW ➜



Stream Id-Section 2 S 404



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 11 T2N R7W	**OHWM Width ft:**	3.8
UTME:	486374	**OHWM Depth ft:**	0.8
UTMN:	4274360	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S404

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 44 / Class II
Unnamed Tributary Veale Creek	419 feet	0.04 acres	B	HHEI 44 / Class II
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 44 / Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 44 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	44
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.36 ac, DP-0, RP-0

Stream Id-Section 2 S 404

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 44

SITE NAME/LOCATION Unnamed Trib to Veale Creek

SITE NUMBER S 404 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 3.546 LONG. 87 9 23.473 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 21-22

Elevated Turbidity? (Y/N): N Canopy (% open): 60%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

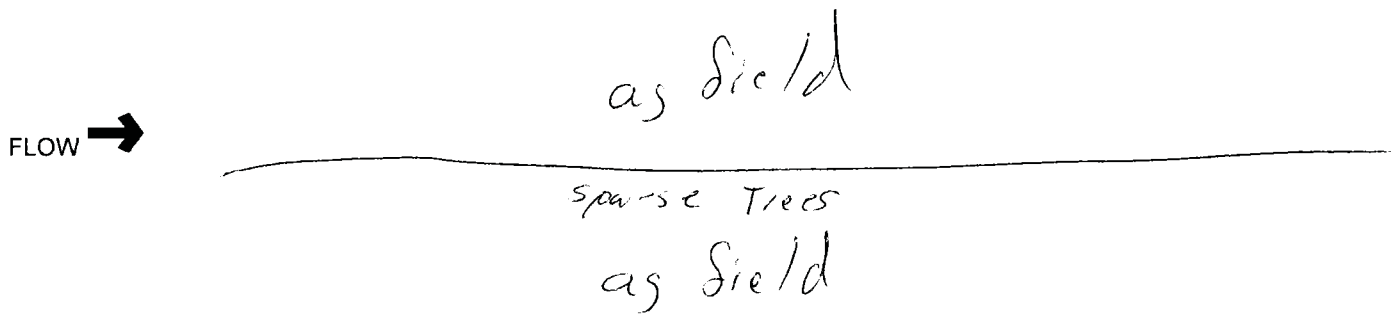
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

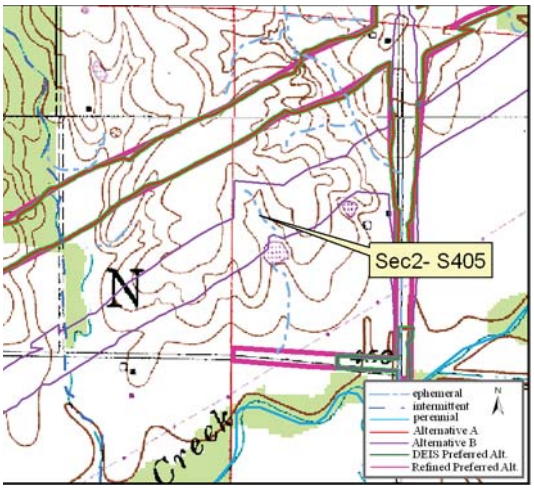
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

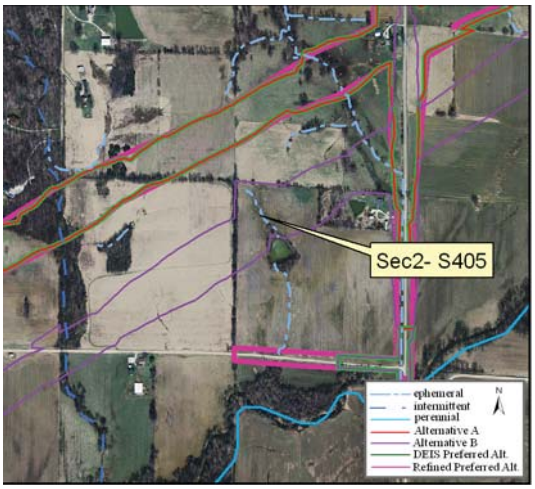
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 405



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2N R7W	**OHWM Width ft:**	1.2
UTME:	487260	**OHWM Depth ft:**	0.3
UTMN:	4274946	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S405

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 14 / Modified Class I
Unnamed Tributary Veale Creek	462 feet	0.01 acres	B	HHEI 14 / Modified Class I
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 14 / Modified Class I
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 14 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	14
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 405

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 14

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 405 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 22.605 LONG. 87 8 46.873 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.5m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☒ ☒ Open Pasture, Row Crop
☒ ☒ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☒ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 27-28

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

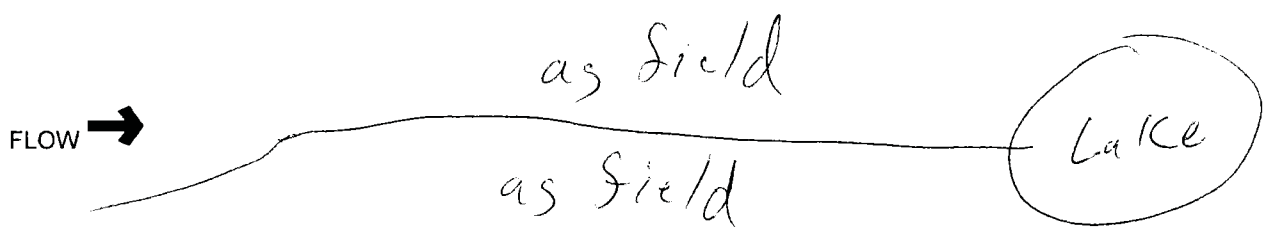
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

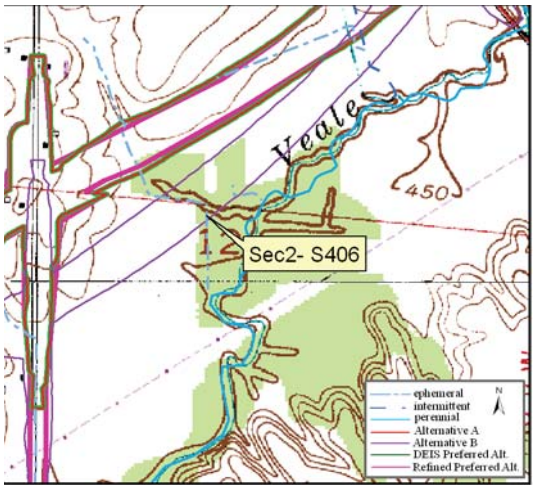
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

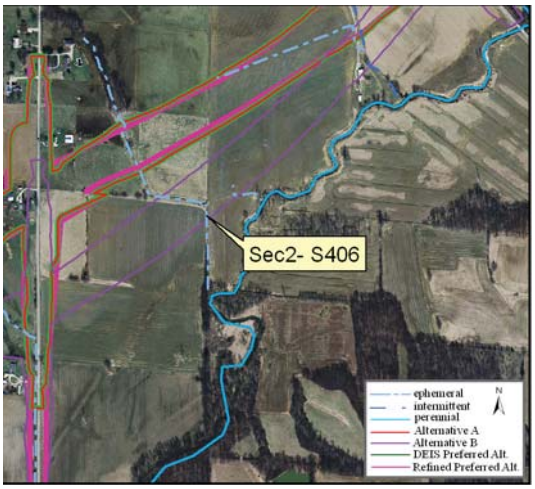
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 406



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 12 T2N R7W	**OHWM Width ft:**	5.0
UTME:	488002	**OHWM Depth ft:**	2.5
UTMN:	4275340	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S406

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 54 / Modified Class II
Unnamed Tributary Veale Creek	130 feet	0.01 acres	B	HHEI 54 / Modified Class II
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 54 / Modified Class II
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 54 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	54
Watershed Area (square miles):	0.14
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 406

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 406 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.14

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 35.425 LONG. 87 8 16.211 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.0m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☒ ☒ Open Pasture, Row Crop
☒ ☒ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 37-38

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

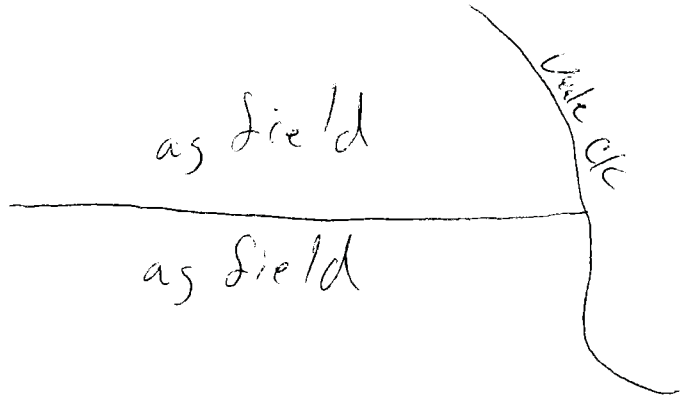
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

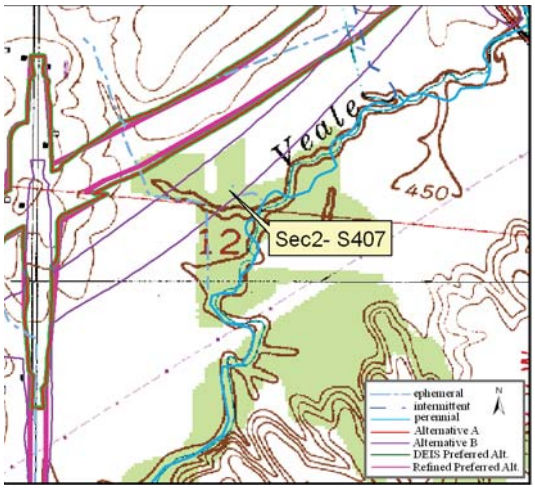
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

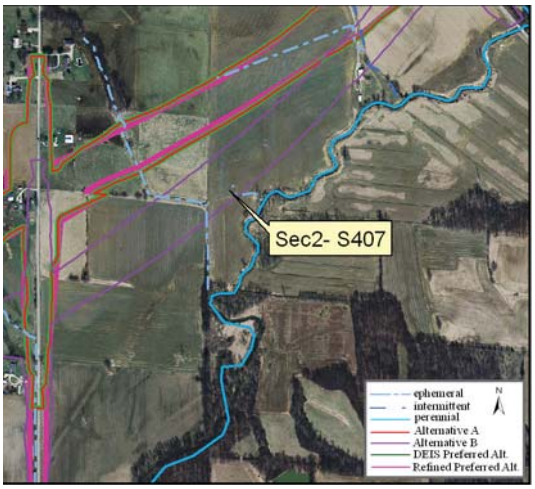
FLOW →



Stream Id-Section 2 S 407



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2N R7W	**OHWM Width ft:**	2.0
UTME:	488063	**OHWM Depth ft:**	2.0
UTMN:	4275397	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S407

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	112 feet	0.01 acres	B	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 24 / Modified Class I
Unnamed Tributary Veale Creek	0	0	Refined Preferred	HHEI 24 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 407

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 407 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 37.277 LONG. 87 8 13.692 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 41-42

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

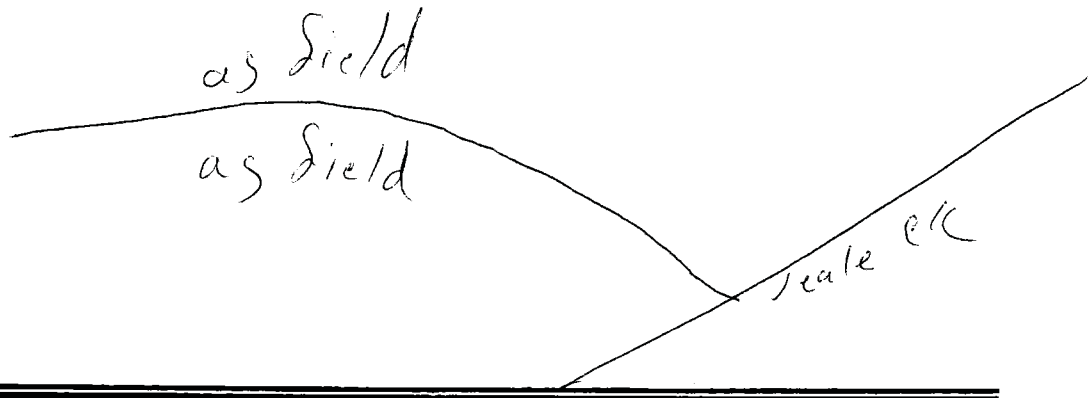
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

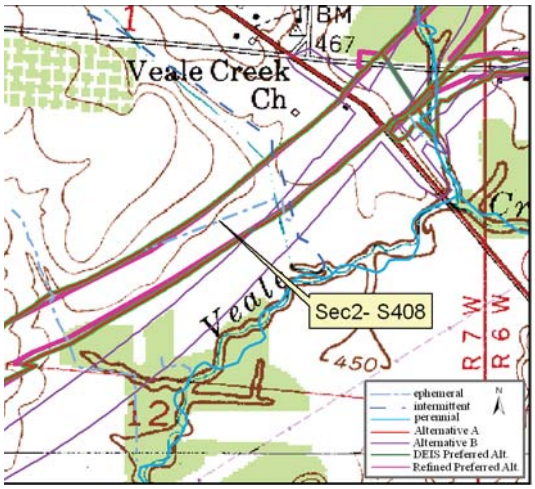
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

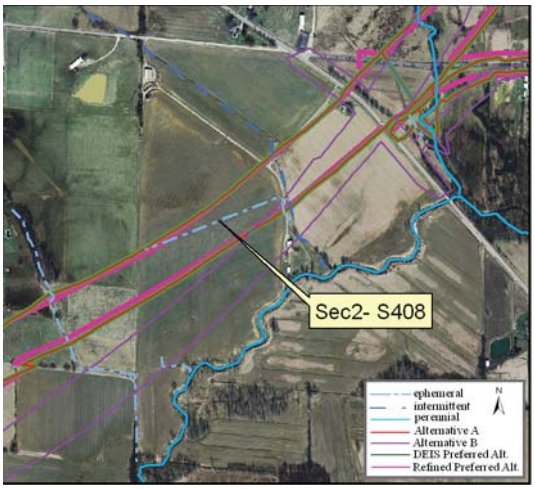
FLOW →



Stream Id-Section 2 S 408



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2N R7W	**OHWM Width ft:**	1.0
UTME:	488192	**OHWM Depth ft:**	0.5
UTMN:	4275732	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S408

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	1,245 feet	0.03 acres	A	HHEI 29 / Class I
Unnamed Tributary Veale Creek	223 feet	0.01 acres	B	HHEI 29 / Class I
Unnamed Tributary Veale Creek	1,245 feet	0.03 acres	DEIS Preferred	HHEI 29 / Class I
Unnamed Tributary Veale Creek	1,092 feet	0.03 acres	Refined Preferred	HHEI 29 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 408

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 408 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 48.152 LONG. 87 8 8.377 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	L R
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☐ ☐ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☒ ☒ Open Pasture, Row Crop
☒ ☒ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 47-48

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

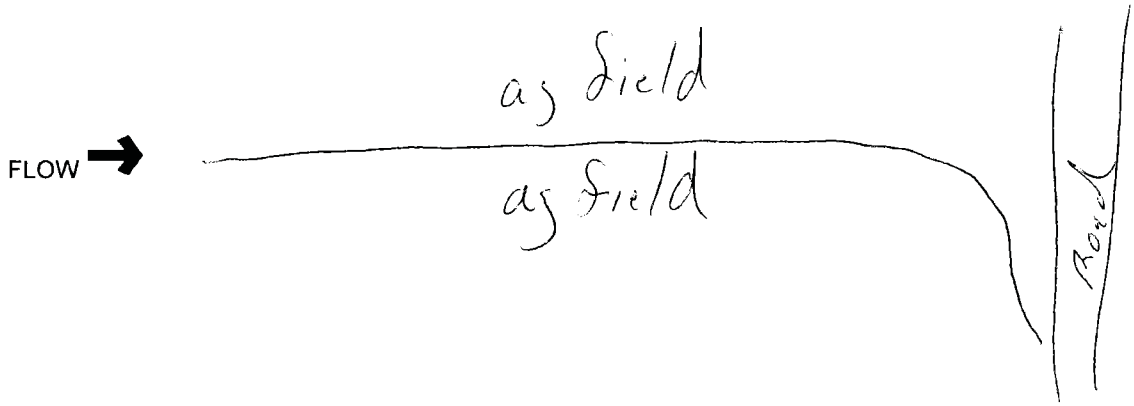
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

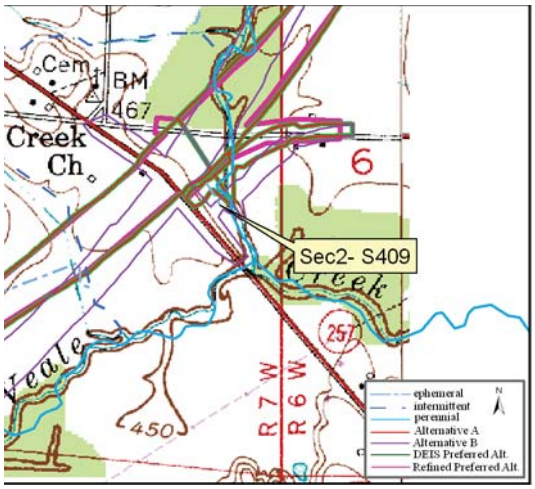
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

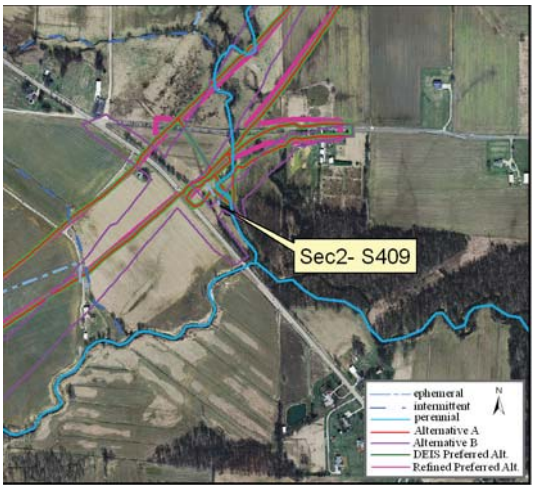
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 409



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 1 T2N R7W	**OHWM Width ft:**	1.0
UTME:	488192	**OHWM Depth ft:**	0.5
UTMN:	4275732	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S409

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	87 feet	0.01 acres	A	HHEI 34 / Modified Class II
Unnamed Tributary Hurricane Branch	82 feet	0.01 acres	B	HHEI 34 / Modified Class II
Unnamed Tributary Hurricane Branch	87 feet	0.01 acres	DEIS Preferred	HHEI 34 / Modified Class II
Unnamed Tributary Hurricane Branch	23 feet	0.01 acres	Refined Preferred	HHEI 34 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	34
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.25 ac, DP-0, RP-0

Stream Id-Section 2 S 409

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 409 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 54.501 LONG. 87 7 47.957 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.2

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 55-56

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

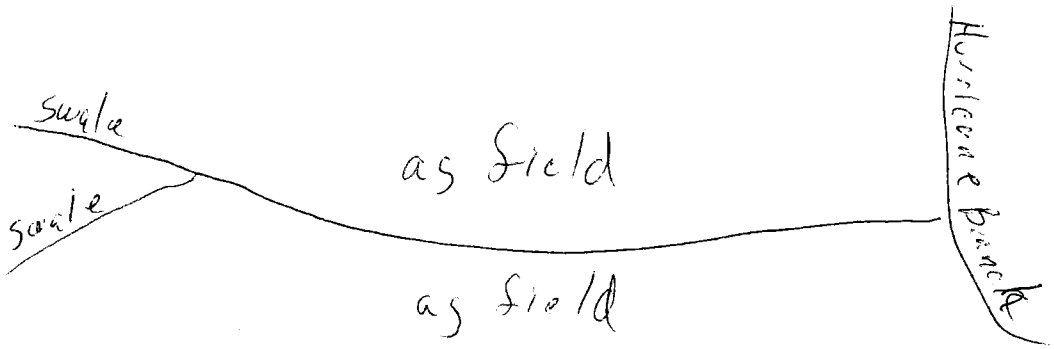
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

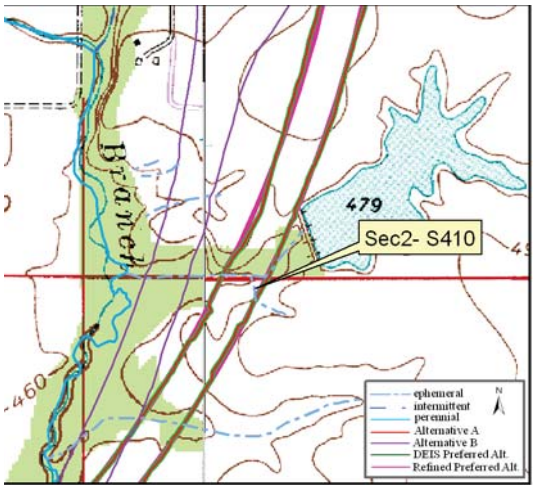
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

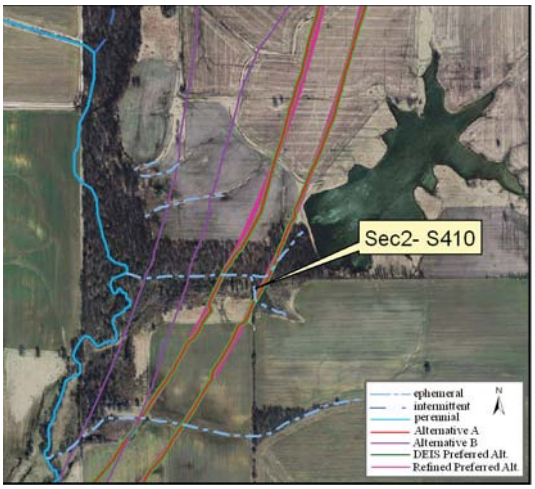
FLOW →



Stream Id-Section 2 S 410



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 6 T2N R6W	**OHWM Width ft:**	0.8
UTME:	489240	**OHWM Depth ft:**	0.3
UTMN:	4276862	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S410

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	200 feet	0.01 acres	A	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	200 feet	0.01 acres	DEIS Preferred	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	195 feet	0.01 acres	Refined Preferred	HHEI 15 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	15
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.31 ac, B-0, DP-0.31 ac, RP-0.30 ac

Stream Id-Section 2 S 410

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 15

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 410 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 24.860 LONG. 87 7 25.095 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.3m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 65-66

Elevated Turbidity? (Y/N): N Canopy (% open): 30%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

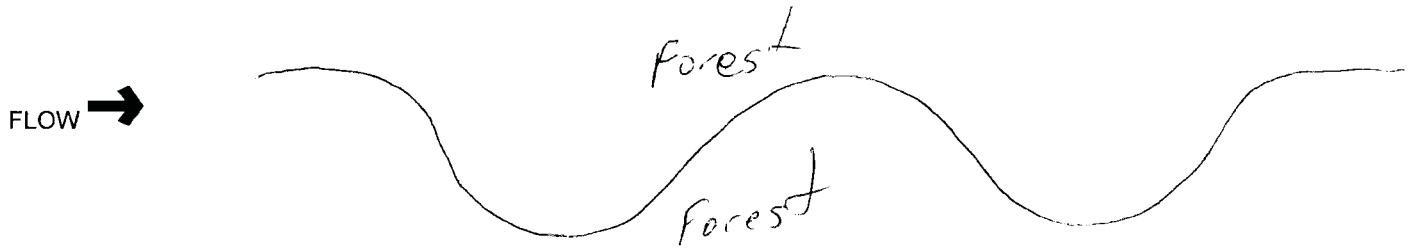
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

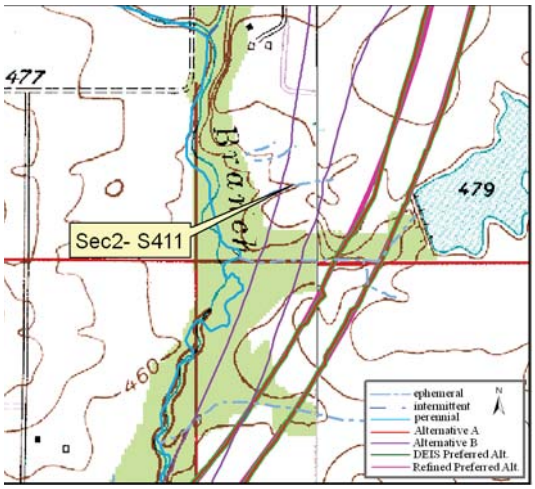
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

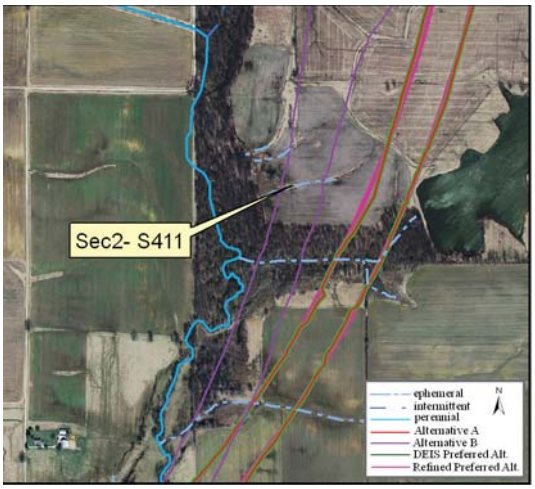
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 411



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 31 T3N R6W	**OHWM Width ft:**	0.8
UTME:	489066	**OHWM Depth ft:**	0.3
UTMN:	4277074	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S411

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	350 feet	0.01 acres	B	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 15 / Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 15 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	15
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 411

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 15

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 411 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 31.731 LONG. 87 7 32.305 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☒ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.3m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 63-64

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

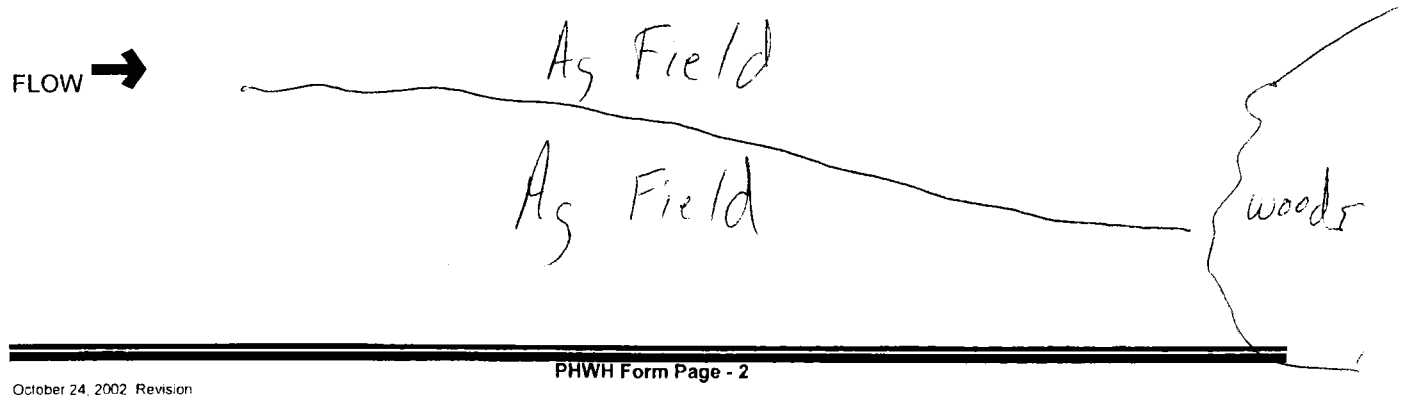
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

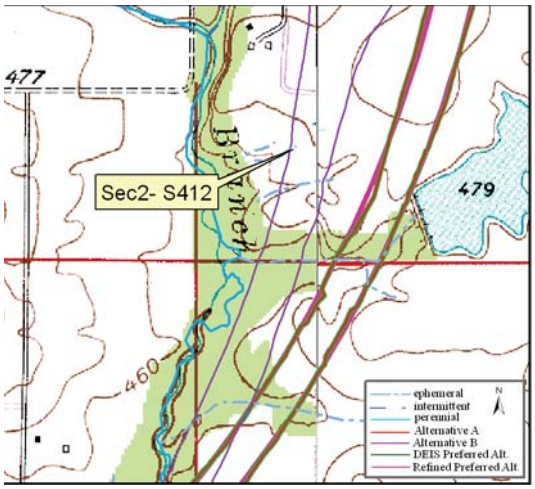
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

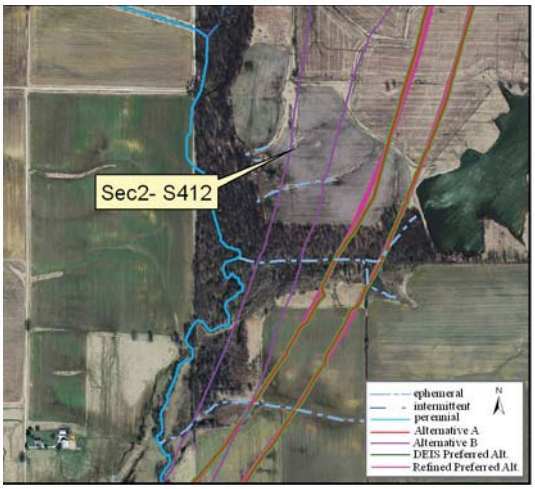
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 412



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 31 T3N R6W	**OHWM Width ft:**	1.0
UTME:	489064	**OHWM Depth ft:**	0.3
UTMN:	4277165	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S412

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	59 feet	0.01 acres	B	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 24 / Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 24 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	24
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 412

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 24

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 412 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 34.683 LONG. 87 7 32.393 RIVER CODE _____ RIVER MILE _____

DATE 3/11/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	100%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points

Substrate Max = 40: 4

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30: 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 61-62

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

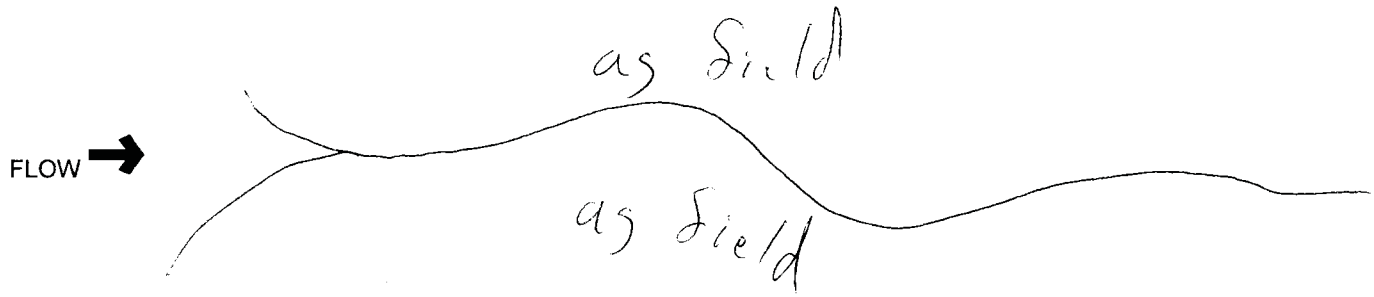
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

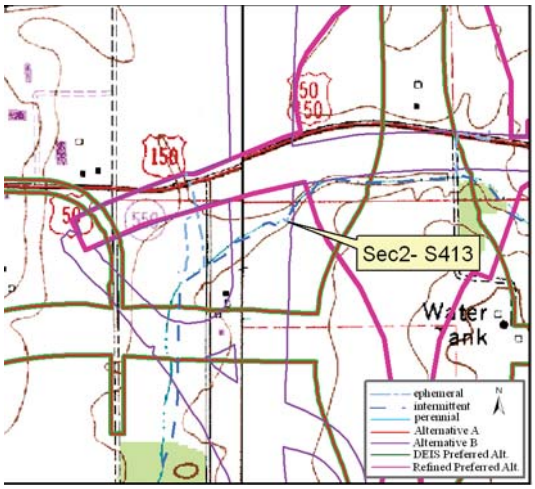
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

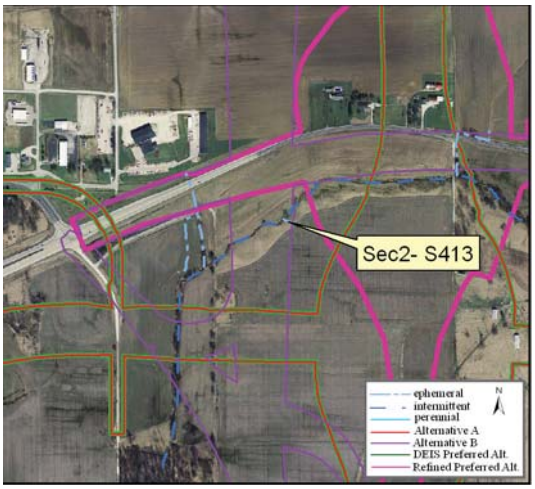
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 413



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 31 T3N R6W	**OHWM Width ft:**	1.7
UTME:	489232	**OHWM Depth ft:**	0.5
UTMN:	4278434	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S413

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 10 / Modified Class I
Unnamed Tributary Hurricane Branch	87 feet	0.01 acres	B	HHEI 10 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 10 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 10 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	10
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 413

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 10

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 413 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 15.860 LONG. 87 7 25.514 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	30%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☒ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 13-14

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

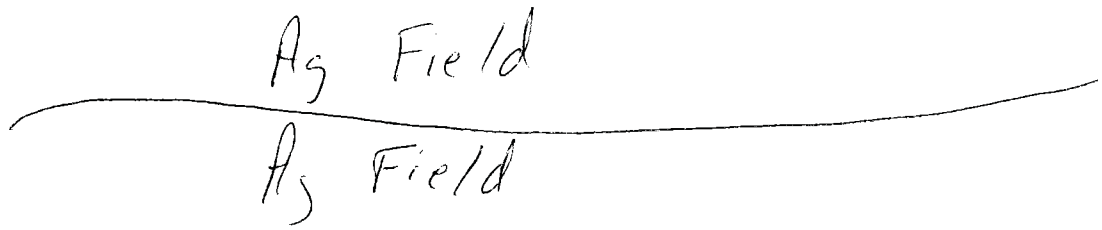
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

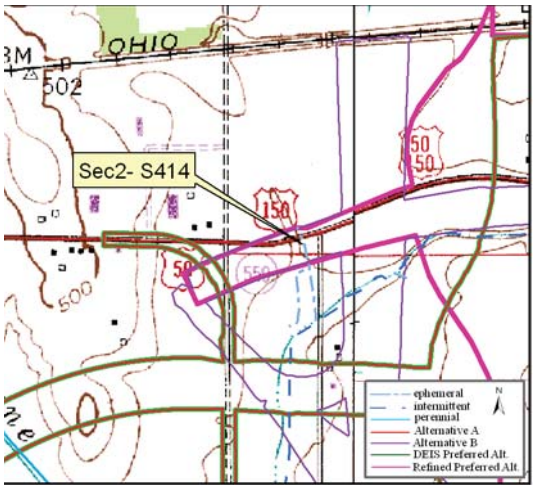
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

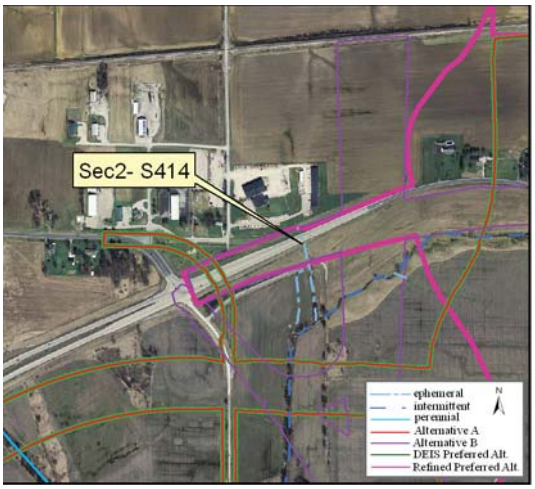
FLOW →



Stream Id-Section 2 S 414



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 30 T3N R6W	**OHWM Width ft:**	2.0
UTME:	489003	**OHWM Depth ft:**	0.8
UTMN:	4278510	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S414

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 25 / Class I
Unnamed Tributary Hurricane Branch	271 feet	0.01 acres	B	HHEI 25 / Class I
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 25 / Class I
Unnamed Tributary Hurricane Branch	288 feet	0.01 acres	Refined Preferred	HHEI 25 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 414

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 414 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 18.316 LONG. 87 7 34.993 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	30%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 11-12

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

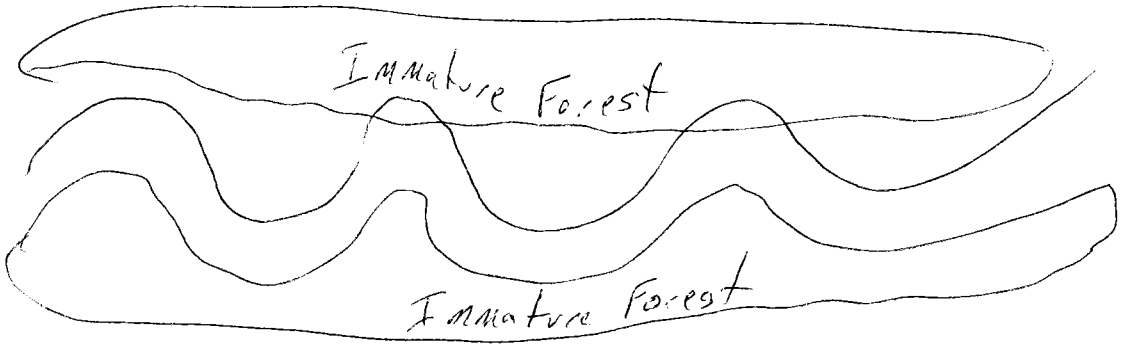
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

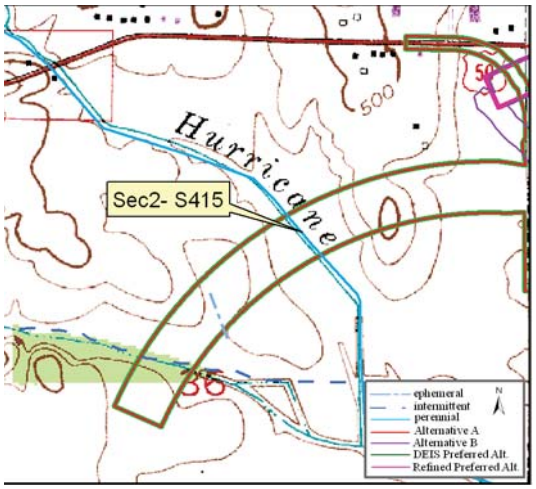
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

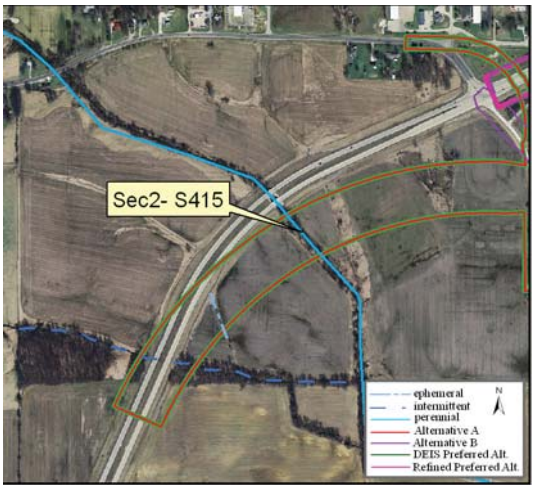
FLOW →



Stream Id-Section 2 S 415



Site Location on Washington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	Yes
PLSS:	NE ¼ Section 36 T3N R7W	**OHWM Width ft:**	10.0
UTME:	488284	**OHWM Depth ft:**	2.0
UTMN:	4278068	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S415

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Hurricane Branch	409 feet	0.09 acres	A	QHEI 46.5 / Modified Warmwater Habitat
Hurricane Branch	0	0	B	QHEI 46.5 / Modified Warmwater Habitat
Hurricane Branch	409 feet	0.09 acres	DEIS Preferred	QHEI 46.5 / Modified Warmwater Habitat
Hurricane Branch	0	0	Refined Preferred	QHEI 46.5 / Modified Warmwater Habitat

Stream Type:	Perennial
Evaluation Type:	QHEI
Evaluation Score:	46.5
Watershed Area (square miles):	1.27
Legal Drain:	No
Predominate Substrate:	Gravel
Estimated Riparian Area (acres):	A-1.02 ac, B-0, DP-1.02 ac, RP-0

Stream Id-Section 2 S 415

Photograph taken looking upstream

Photograph taken looking downstream

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 46.5

Stream & Location: Hurricane Branch (S 415) **RM:** _ _ _._ **Date:** 3 / 12 / 08

Scorers Full Name & Affiliation: Michael Elsner / Garre Conner

River Code: _ _ _- _ _ _- _ _ _ **STORET #:** _ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 38 . 39 3.943 /87 .8 4.714 **Office verified location** ☐

1] *SUBSTRATE*

Check ***ONLY* Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☒ ☐ GRAVEL [7]	x	x	☐ ☒ SILT [2]	x	x
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN	QUALITY
☐ LIMESTONE [1]	☐ HEAVY [-2]
☒ TILLS [1]	☒ MODERATE [-1]
☐ WETLANDS [0]	☐ NORMAL [0]
☐ HARDPAN [0]	☐ FREE [1]
☐ SANDSTONE [0]	SILT
☐ RIP/RAP [0]	☐ EXTENSIVE [-2]
☐ LACUSTURINE [0]	☐ MODERATE [-1]
☐ SHALE [-1]	☒ NORMAL [0]
☐ COAL FINES [-2]	☐ NONE [1]
	EMBEDDEDNESS

Comments

Substrate 9 *Maximum 20*

2] *INSTREAM COVER*

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1	UNDERCUT BANKS [1]	0	POOLS > 70cm [2]	0	OXBOWS, BACKWATERS [1]
1	OVERHANGING VEGETATION [1]	0	ROOTWADS [1]	0	AQUATIC MACROPHYTES [1]
0	SHALLOWS (IN SLOW WATER) [1]	0	BOULDERS [1]	0	LOGS OR WOODY DEBRIS [1]
0	ROOTMATS [1]				

AMOUNT

Check ONE (*Or 2 & average*)

☐ EXTENSIVE >75% [11]
☒ MODERATE 25-75% [7]
☐ SPARSE 5-<25% [3]
☐ NEARLY ABSENT <5% [1]

Comments

Cover 9 *Maximum 20*

3] *CHANNEL MORPHOLOGY*

Check ONE in each category (*Or 2 & average*)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☒ RECOVERED [4]	☒ MODERATE [2]
☒ LOW [2]	☒ FAIR [3]	☐ RECOVERING [3]	☐ LOW [1]
☐ NONE [1]	☐ POOR [1]	☐ RECENT OR NO RECOVERY [1]	

Comments

Channel 11 *Maximum 20*

4] *BANK EROSION AND RIPARIAN ZONE*

Check **ONE** in each category for ***EACH BANK*** (*Or 2 per bank & average*)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☒ ☐ NONE / LITTLE [3]	☐ ☐ WIDE > 50m [4]	☐ ☐ FOREST, SWAMP [3]	☐ ☐ CONSERVATION TILLAGE [1]
☐ ☒ MODERATE [2]	☐ ☐ MODERATE 10-50m [3]	☐ ☐ SHRUB OR OLD FIELD [2]	☐ ☐ URBAN OR INDUSTRIAL [0]
☐ ☐ HEAVY / SEVERE [1]	☐ ☐ NARROW 5-10m [2]	☐ ☐ RESIDENTIAL, PARK, NEW FIELD [1]	☐ ☐ MINING / CONSTRUCTION [0]
	☒ ☒ VERY NARROW < 5m [1]	☐ ☐ FENCED PASTURE [1]	
	☐ ☐ NONE [0]	☒ ☒ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian 3.5 *Maximum 10*

5] *POOL / GLIDE AND RIFFLE / RUN QUALITY*

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY
Check **ONE** (*ONLY!*)	Check ONE (*Or 2 & average*)	Check ALL that apply
☐ > 1m [6]	☒ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1] ☐ SLOW [1]
☐ 0.7-<1m [4]	☐ POOL WIDTH = RIFFLE WIDTH [1]	☐ VERY FAST [1] ☐ INTERSTITIAL [-1]
☐ 0.4-<0.7m [2]	☐ POOL WIDTH > RIFFLE WIDTH [0]	☐ FAST [1] ☐ INTERMITTENT [-2]
☒ 0.2-<0.4m [1]		☒ MODERATE [1] ☐ EDDIES [1]
☐ < 0.2m [0]		*Indicate for reach - pools and riffles.*

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 4 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ **NO RIFFLE [metric=0]**

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☒ NONE [2]
☒ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run 4 *Maximum 8*

6] *GRADIENT*

DRAINAGE AREA (1.27 mi²)

(10 ft/mi)
☐ VERY LOW - LOW [2-4]
☒ MODERATE [6-10]
☐ HIGH - VERY HIGH [10-6]

%POOL: 60 **%GLIDE:** **%RUN:** 20 **%RIFFLE:** 20

Gradient 6 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- [ ] BOAT
- [x] WADE
- [ ] L. LINE
- [ ] OTHER

STAGE

1st -sample pass-	2nd
[ ] HIGH	[ ]
[ ] UP	[ ]
[x] NORMAL	[x]
[ ] LOW	[ ]
[ ] DRY	[ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [x] OTHER

100 meters

CLARITY

1st --sample pass--	2nd
[ ] < 20 cm	[ ]
[x] 20-<40 cm	[x]
[ ] 40-70 cm	[ ]
[ ] > 70 cm/ CTB	[ ]
[ ] SECCHI DEPTH	[ ]

CANOPY

- [ ] > 85%- OPEN
- [ ] 55%-<85%
- [x] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass 20 cm

2nd 20 cm

B] AESTHETICS

- [ ] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	[ ] >100ft²	[ ] >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

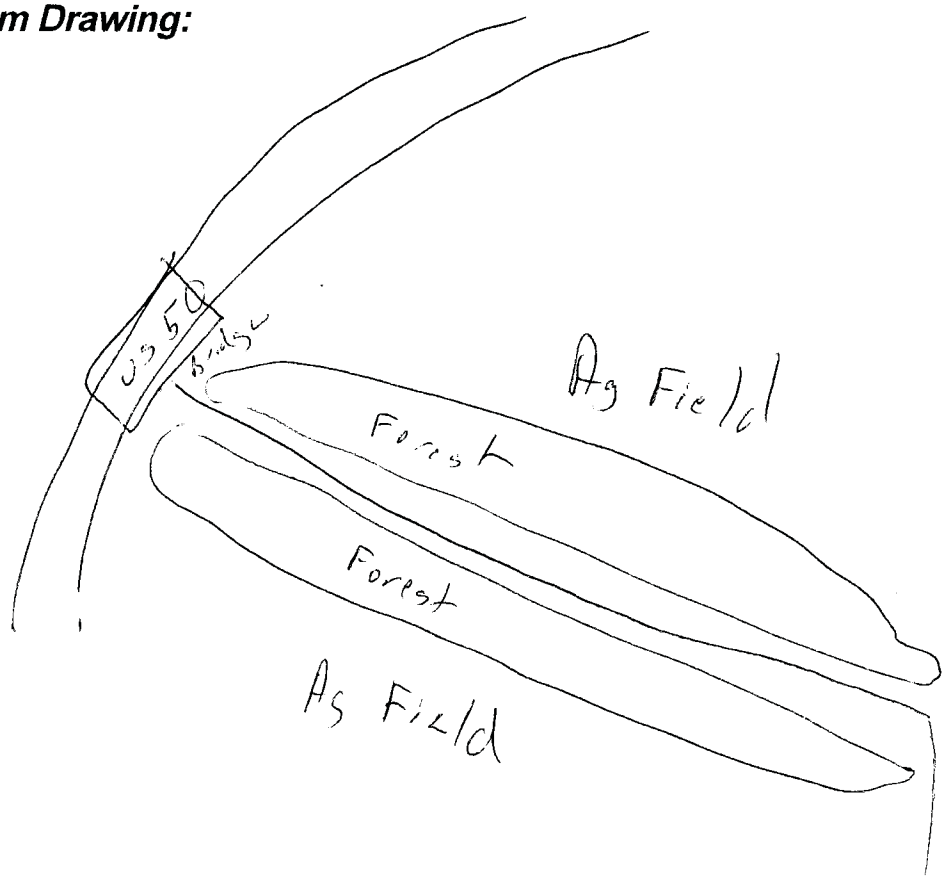
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

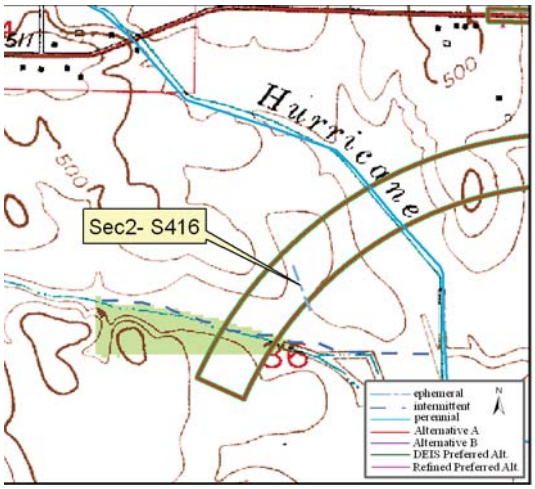
$\bar{x}$ width
$\bar{x}$ depth
max. depth
$\bar{x}$ bankfull width
bankfull $\bar{x}$ depth
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio

Legacy Tree:

Stream Drawing:



Stream Id-Section 2 S 416



Site Location on Washington USGS Quadrangle

Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 36 T3N R7W	**OHWM Width ft:**	2.0
UTME:	488080	**OHWM Depth ft:**	0.3
UTMN:	4277880	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S416

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	309 feet	0.01 acres	A	HHEI 28 / Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 28 / Class I
Unnamed Tributary Hurricane Branch	309 feet	0.01 acres	DEIS Preferred	HHEI 28 / Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 28 / Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	28
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 416

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 28

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 416 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 57.834 LONG. 87 8 13.142 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	50%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☒ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	50%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.9m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 3-4

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

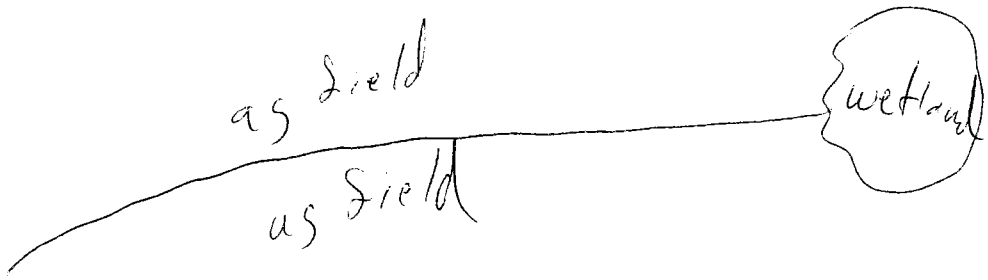
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

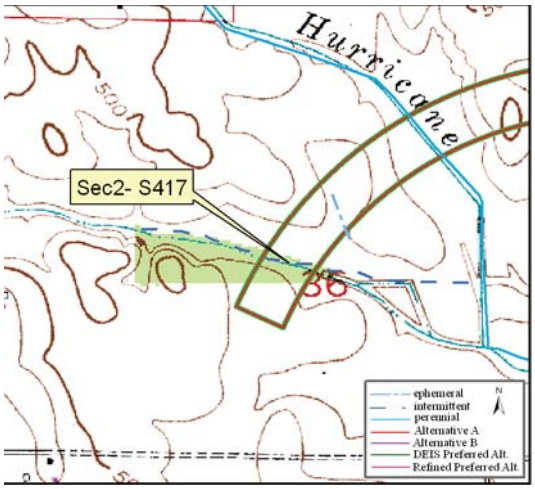
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

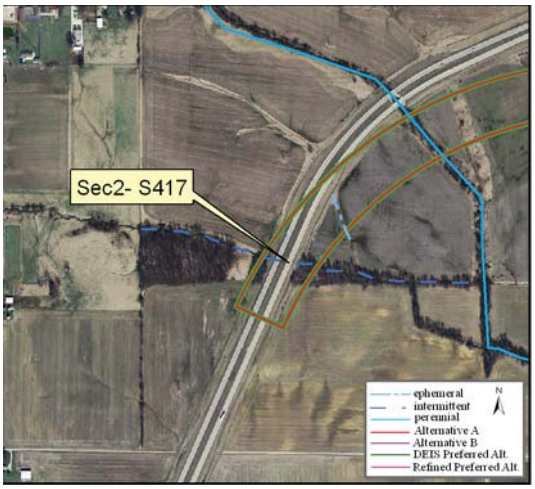
FLOW →



Stream Id-Section 2 S 417



Site Location on Wasgington USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 36 T3N R7W	**OHWM Width ft:**	8.0
UTME:	487961	**OHWM Depth ft:**	1.0
UTMN:	4277764	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Washington	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S417

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	444 feet	0.08 acres	A	HHEI 51 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 51 / Modified Class II
Unnamed Tributary Hurricane Branch	444 feet	0.08 acres	DEIS Preferred	HHEI 51 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 51 / Modified Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	51
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.99 ac, B-0, DP-0.99 ac, RP-0

Stream Id-Section 2 S 417

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 51

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 417 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 54.065 LONG. 87 8 18.058 RIVER CODE _____ RIVER MILE _____

DATE 3/17/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	40%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 11

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☒ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 30.5

Pool Depth Max = 30 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.7m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☒	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☒ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Washington NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 1-2

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

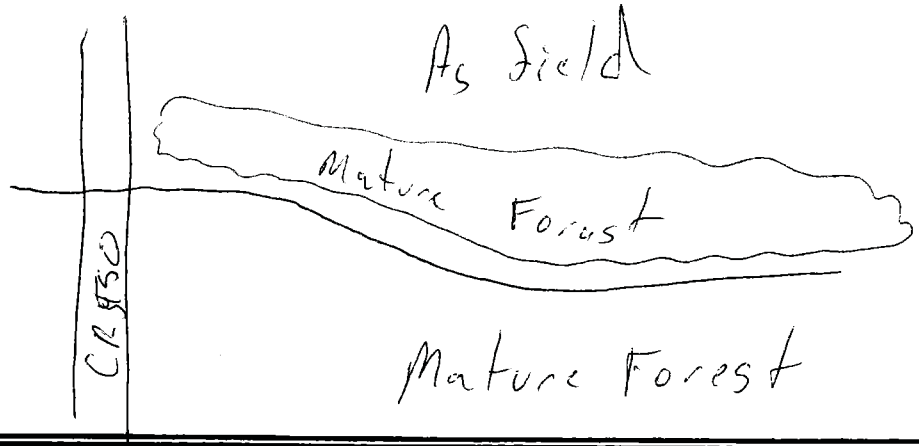
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

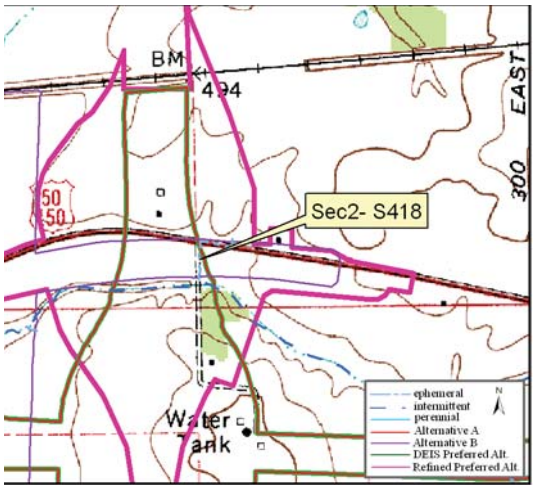
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

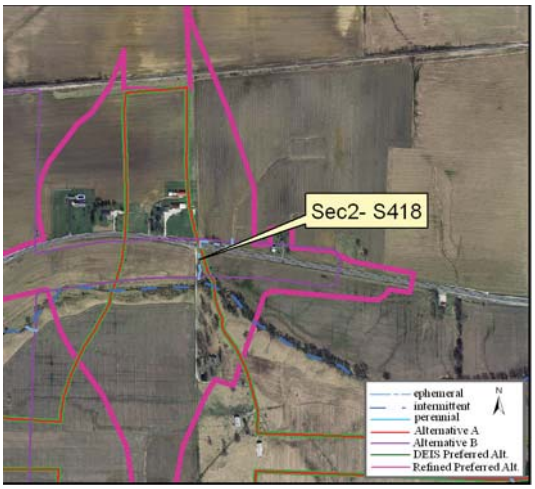
FLOW



Stream Id-Section 2 S 418



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 30 T3N R6W	**OHWM Width ft:**	5.0
UTME:	489630	**OHWM Depth ft:**	1.0
UTMN:	4278600	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S418

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	291 feet	0.03 acres	A	HHEI 48/ Modified Class II
Unnamed Tributary Hurricane Branch	281 feet	0.03 acres	B	HHEI 48 / Modified Class II
Unnamed Tributary Hurricane Branch	291 feet	0.03 acres	DEIS Preferred	HHEI 48 / Modified Class II
Unnamed Tributary Hurricane Branch	329 feet	0.04 acres	Refined Preferred	HHEI 48 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	48
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.05 ac, B-0.05 ac, DP-0.05 ac, RP-0.05 ac

Stream Id-Section 2 S 418

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 48

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 418 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 21.263 LONG. 87 7 9.056 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	70%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	10%
☐ ☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	10%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 13

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 44-45

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

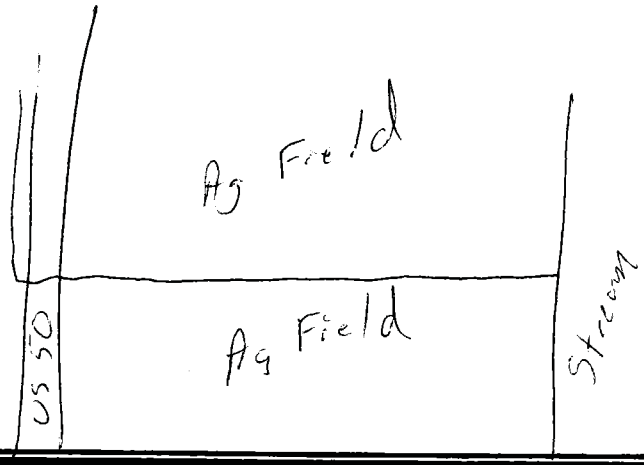
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

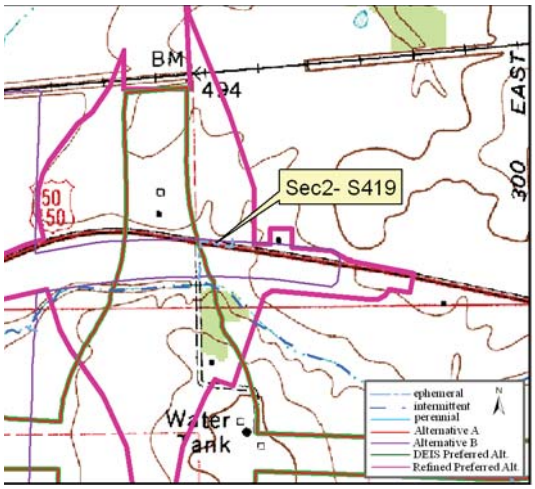
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

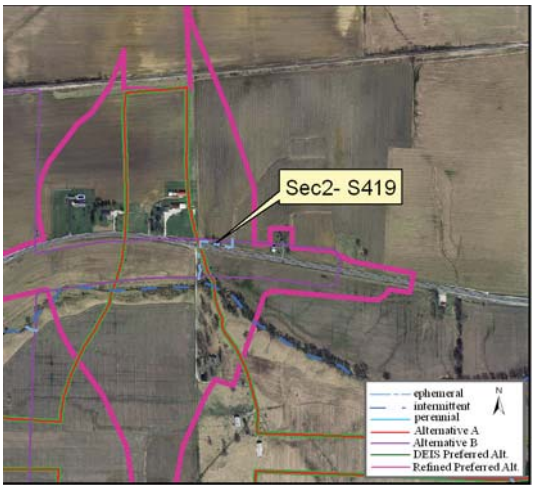
FLOW →



Stream Id-Section 2 S 419



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SE ¼ Section 30 T3N R6W	**OHWM Width ft:**	4.0
UTME:	489673	**OHWM Depth ft:**	1.5
UTMN:	4278636	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S419

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	0	0	A	HHEI 42 / Modified Class II
Unnamed Tributary Hurricane Branch	304 feet	0.03 acres	B	HHEI 42 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	DEIS Preferred	HHEI 42 / Modified Class II
Unnamed Tributary Hurricane Branch	336 feet	0.03 acres	Refined Preferred	HHEI 42 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	42
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 419

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 42

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 419 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 22.432 LONG. 87 7 7.279 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	60%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☒	CLAY or HARDPAN **[0 pt]**	15%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☒ ☐	SAND (<2 mm) **[6 pts]**	25%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 42-43

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

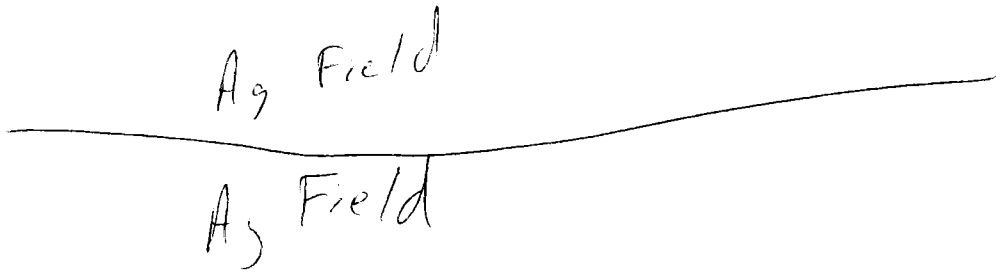
Frogs or Tadpoles Observed? (Y/N)_____ Voucher? (Y/N)_____ Aquatic Macroinvertebrates Observed? (Y/N)_____ Voucher? (Y/N)_____

Comments Regarding Biology: _____

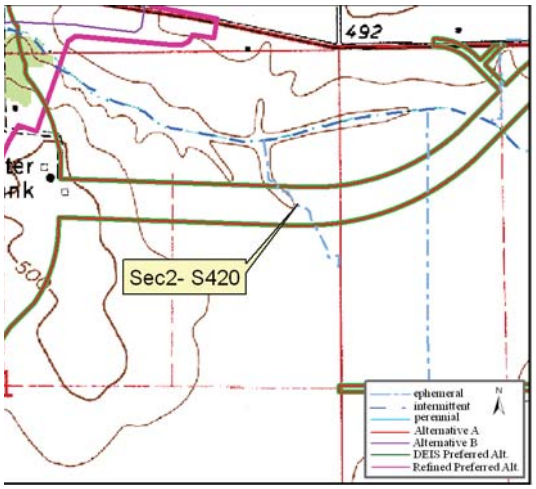
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

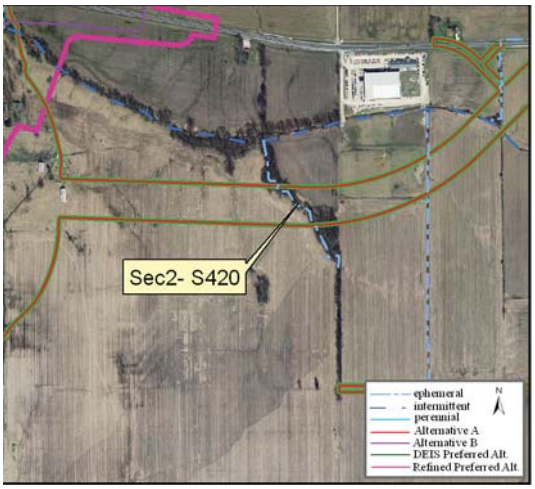
FLOW →



Stream Id-Section 2 S 420



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NE ¼ Section 31 T3N R6W	**OHWM Width ft:**	3.0
UTME:	490331	**OHWM Depth ft:**	0.8
UTMN:	4278128	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S420

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	479 feet	0.03 acres	A	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	479 feet	0.03 acres	DEIS Preferred	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 25 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.33
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-1.19 ac, B-0, DP-1.19 ac, RP-0

Stream Id-Section 2 S 420

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 420 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.33

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 5.978 LONG. 87 6 40.029 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None ☐ 1.0 ☐ 2.0 ☒ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 57-58

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

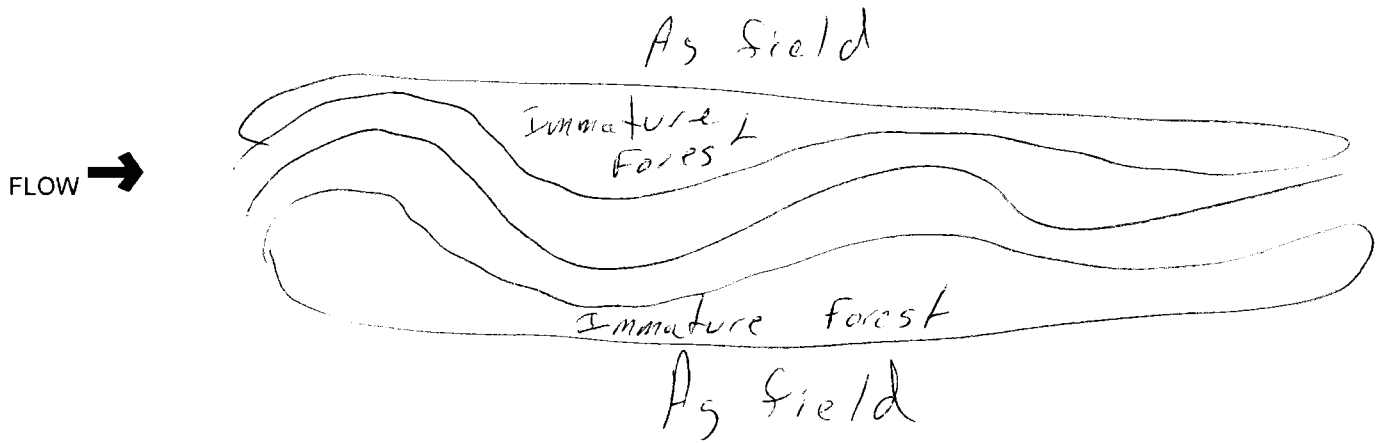
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

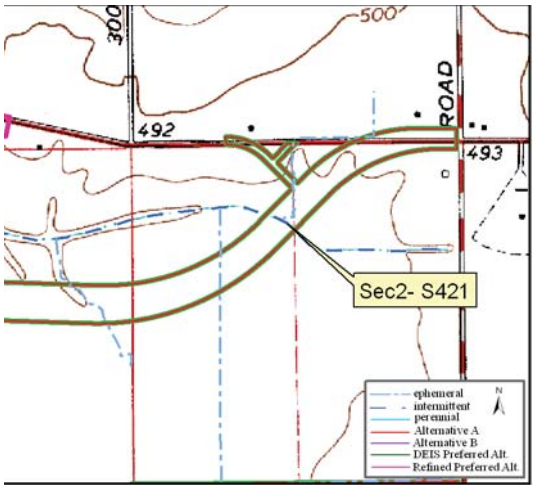
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

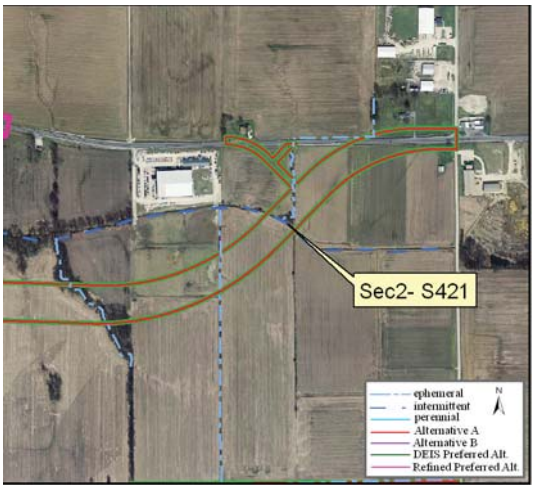
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 421



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 32 T3N R6W	**OHWM Width ft:**	9
UTME:	490801	**OHWM Depth ft:**	2.0
UTMN:	4278315	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S421

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	257 feet	0.05 acres	A	HHEI 46 / Class II
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 46 / Class II
Unnamed Tributary Hurricane Branch	257 feet	0.05 acres	DEIS Preferred	HHEI 46 / Class II
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 46 / Class II

Stream Type:	Intermittent
Evaluation Type:	HHEI
Evaluation Score:	46
Watershed Area (square miles):	0.30
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0.17 ac, B-0, DP-0.17 ac, RP-0

Stream Id-Section 2 S 421

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 46

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 421 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.30

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 12.063 LONG. 87 6 20.593 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	70%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☒	☐	CLAY or HARDPAN **[0 pt]**	20%
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40: 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☒ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 35.6

Pool Depth Max = 30: 20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.0m

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 53-54

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

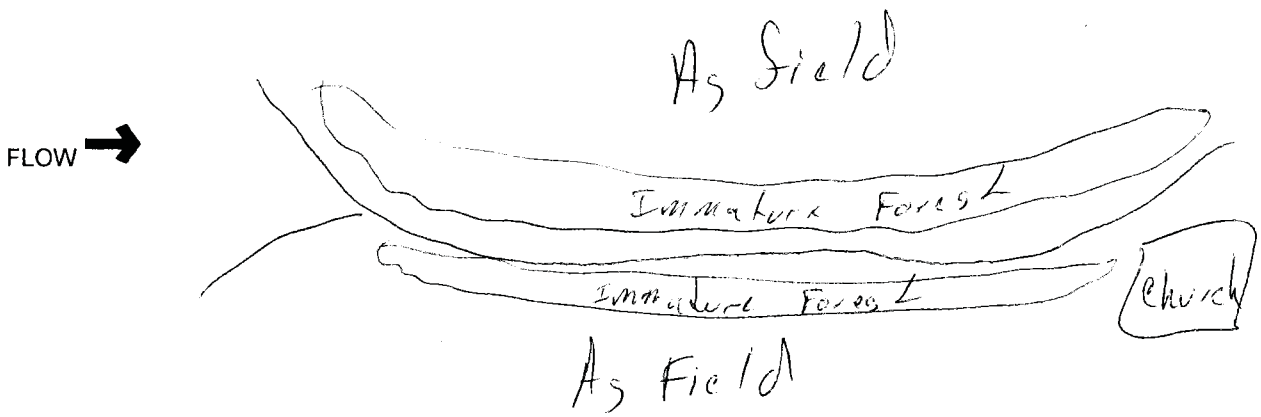
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

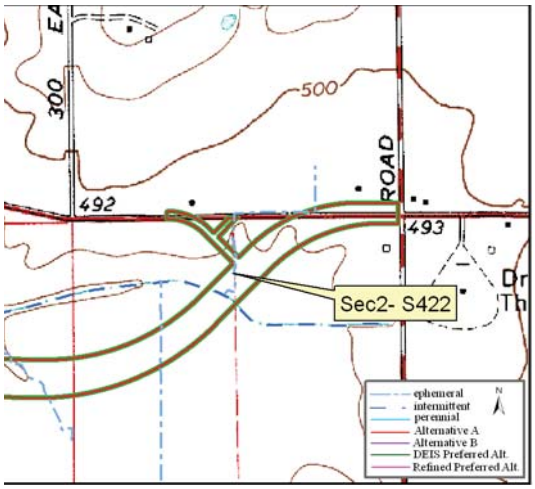
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 422



Site Location on Montgomery USGS Quadrangle

Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 32 T3N R6W	**OHWM Width ft:**	8
UTME:	490813	**OHWM Depth ft:**	2.0
UTMN:	4278371	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S422

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	469 feet	0.09 acres	A	HHEI 51 / Class II
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 51 / Class II
Unnamed Tributary Hurricane Branch	469 feet	0.09 acres	DEIS Preferred	HHEI 51 / Class II
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 51 / Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	51
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Clay
Estimated Riparian Area (acres):	A-0.18 ac, B-0, DP-0.18 ac, RP-0

Stream Id-Section 2 S 422

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 51

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 422 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 13.880 LONG. 87 6 20.099 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	30%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☒	☐	CLAY or HARDPAN **[0 pt]**	50%
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	20%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40: 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 15.2

Pool Depth Max = 30: 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 2.7m

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 50-52

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

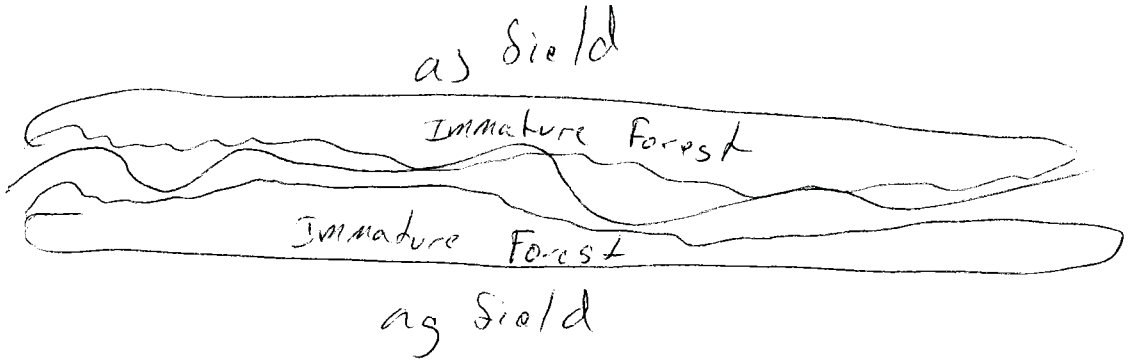
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

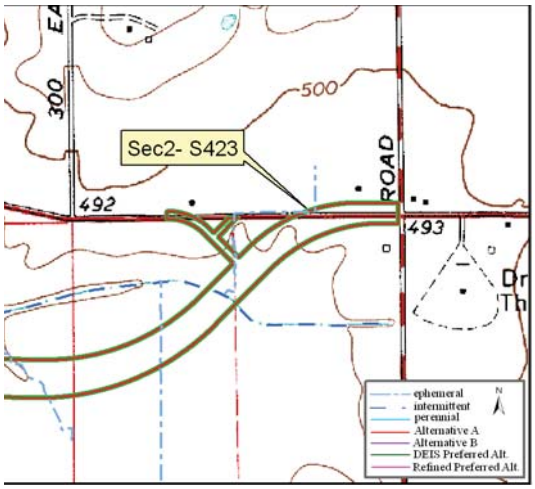
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

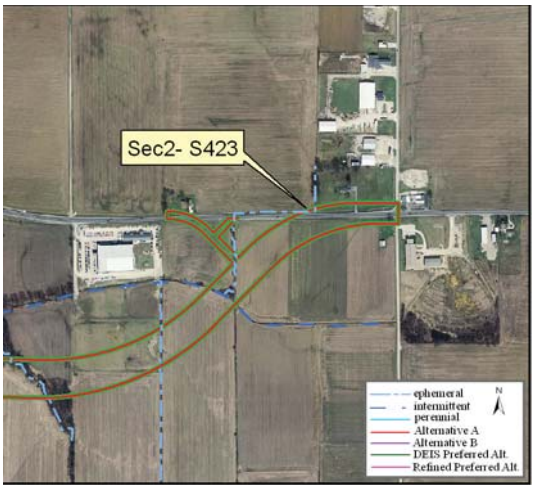
FLOW →



Stream Id-Section 2 S 423



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 29 T3N R6W	**OHWM Width ft:**	3.0
UTME:	490992	**OHWM Depth ft:**	1.0
UTMN:	4278524	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S423

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	91 feet	0.01 acres	A	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	91 feet	0.01 acres	DEIS Preferred	HHEI 25 / Modified Class I
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 25 / Modified Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	25
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 423

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 423 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 18.851 LONG. 87 6 12.700 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 2.5

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2m

Bankfull Width Max=30 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☒	Residential, Park, New Field	☒	☐	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 65-66

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

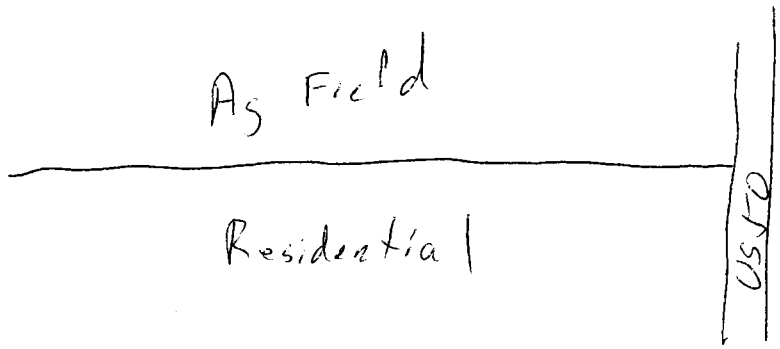
Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

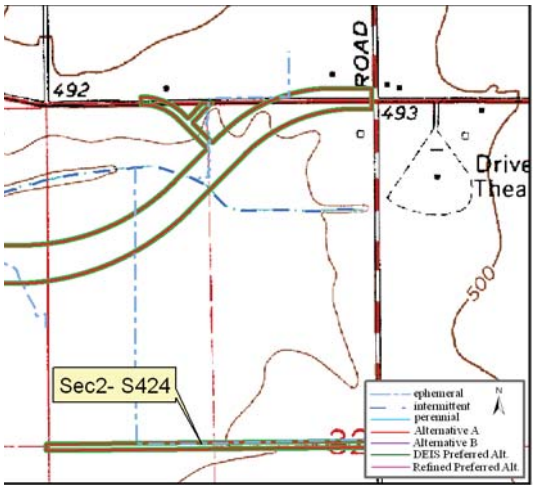
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

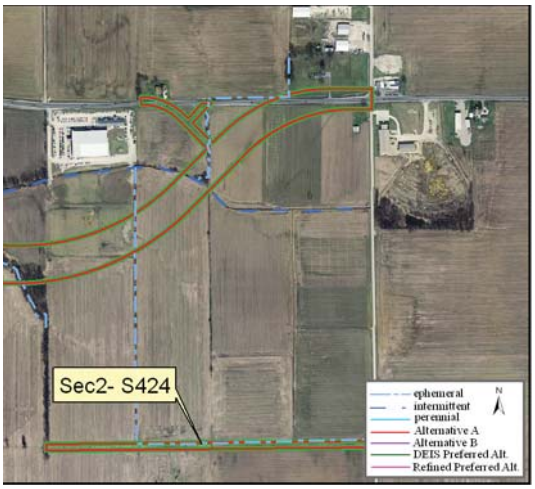
FLOW →



Stream Id-Section 2 S 424



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 32 T3N R6W	**OHWM Width ft:**	4.0
UTME:	490799	**OHWM Depth ft:**	1.0
UTMN:	4277699	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S424

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	1,003 feet	0.09 acres	A	HHEI 45 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 45 / Modified Class II
Unnamed Tributary Hurricane Branch	1,003 feet	0.09 acres	DEIS Preferred	HHEI 45 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 45 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	45
Watershed Area (square miles):	0.10
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 424

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 45

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 424 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.10

LENGTH OF STREAM REACH (ft) 200 LAT. 38 38 52.078 LONG. 87 6 20.646 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☒ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3.7m

Bankfull Width Max=30 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 63-64

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

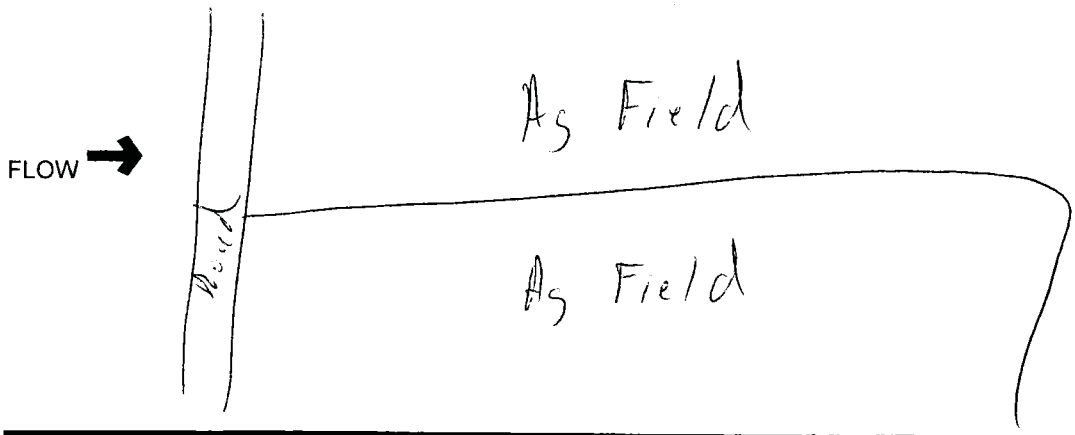
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

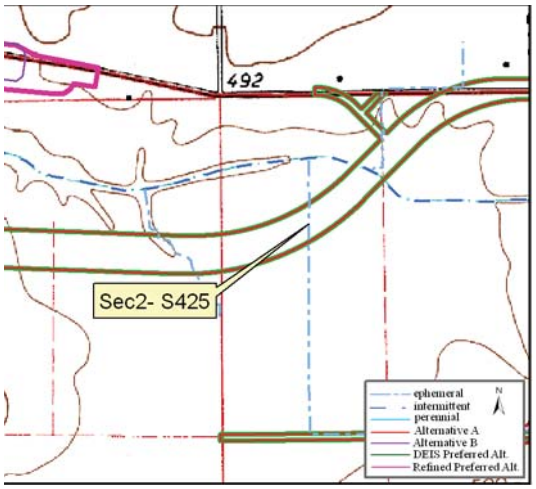
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

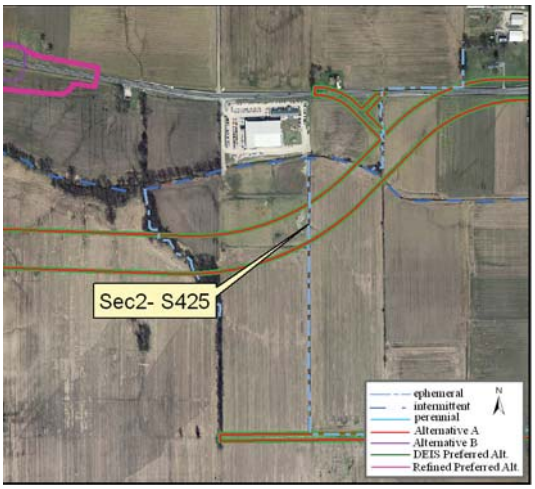
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 425



Site Location on Montgomery USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Un Trib Hurricane Branch	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 32 T3N R6W	**OHWM Width ft:**	2.0
UTME:	490640	**OHWM Depth ft:**	0.5
UTMN:	4278197	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Montgomery	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S425

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Hurricane Branch	314 feet	0.01 acres	A	HHEI 50 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	B	HHEI 50 / Modified Class II
Unnamed Tributary Hurricane Branch	314 feet	0.01 acres	DEIS Preferred	HHEI 50 / Modified Class II
Unnamed Tributary Hurricane Branch	0	0	Refined Preferred	HHEI 50 / Modified Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	50
Watershed Area (square miles):	0.30
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 425

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 50

SITE NAME/LOCATION Unnamed Trib Hurricane Branch

SITE NUMBER S 425 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.30

LENGTH OF STREAM REACH (ft) 200 LAT. 38 39 8.229 LONG. 87 6 27.248 RIVER CODE _____ RIVER MILE _____

DATE 3/12/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☒ ☐	CLAY or HARDPAN **[0 pt]**	20%
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**		☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 3 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☒ > 5 cm - 10 cm **[15 pts]**
☐ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☒ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 4.3m

Bankfull Width Max=30 30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L R	(Per Bank)	FLOODPLAIN QUALITY L R	(Most Predominant per Bank)	L R	
☐ ☐	Wide >10m	☐ ☐	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☒ ☐	Residential, Park, New Field	☐ ☒	Open Pasture, Row Crop
☒ ☒	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 1.0 ☐ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Montgomery NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 3/10/09 Quantity: <1 inch

Photograph Information: P 55-56

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

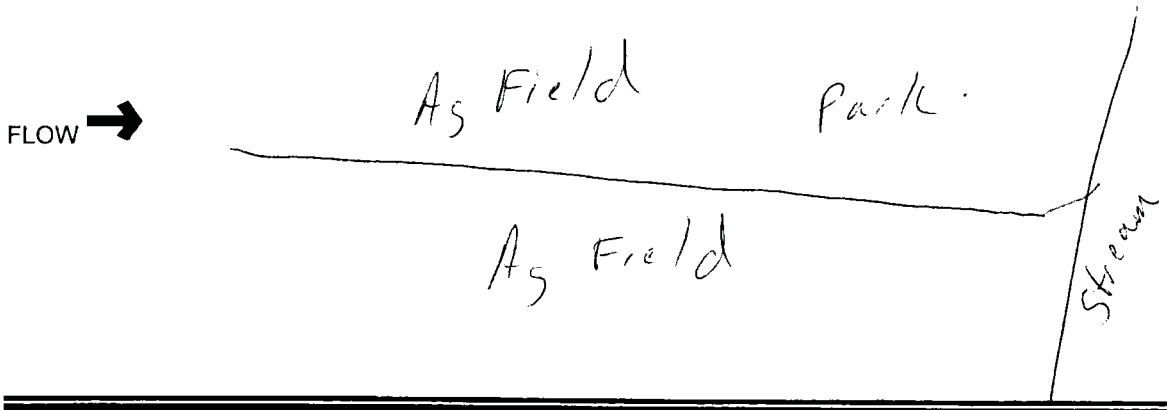
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

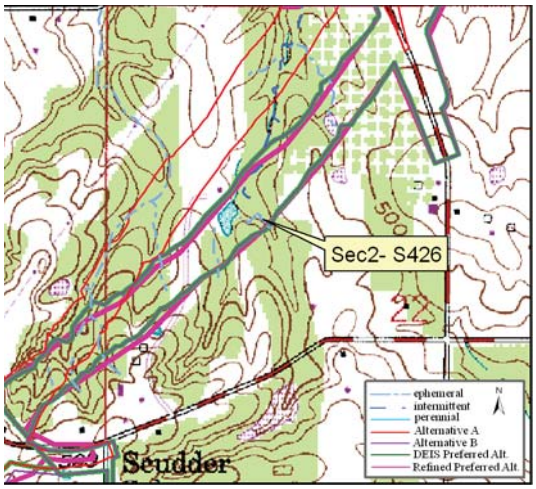
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

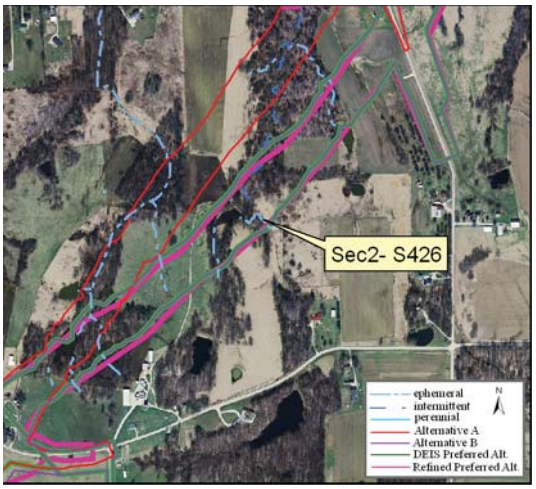
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 426



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 22 T2N R7W	**OHWM Width ft:**	3.5
UTME:	484249	**OHWM Depth ft:**	0.5
UTMN:	4271677	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S426

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 57 / Class II
Unnamed Tributary Veale Creek	178 feet	0.01 acres	B	HHEI 57/ Class II
Unnamed Tributary Veale Creek	178 feet	0.01 acres	DEIS Preferred	HHEI 57/ Class II
Unnamed Tributary Veale Creek	159 feet	0.01 acres	Refined Preferred	HHEI 57/ Class II

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	57
Watershed Area (square miles):	0.02
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0.05 ac, DP-0.05 ac, RP-0.04 ac

Stream Id-Section 2 S 426

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 57

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 426 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 38 35 36.861 LONG. 87 10 51.667 RIVER CODE _____ RIVER MILE _____

DATE 3/10/09 SCORER me/gc COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	80%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	10%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 20.3

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.8m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☒	☒	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: P 5-6

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

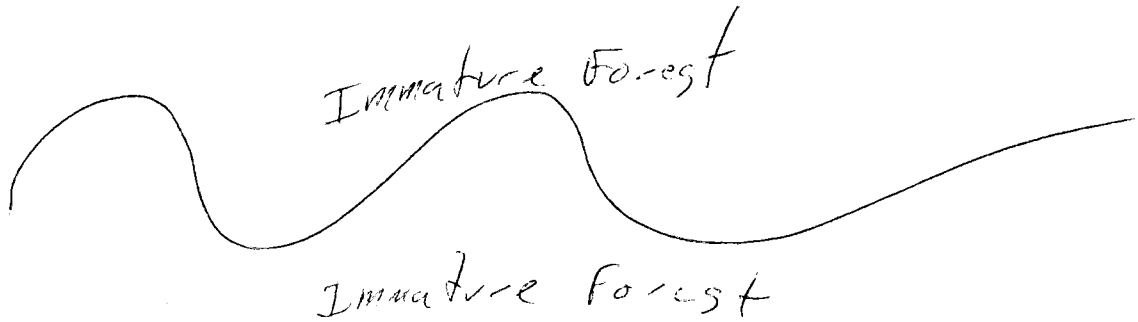
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

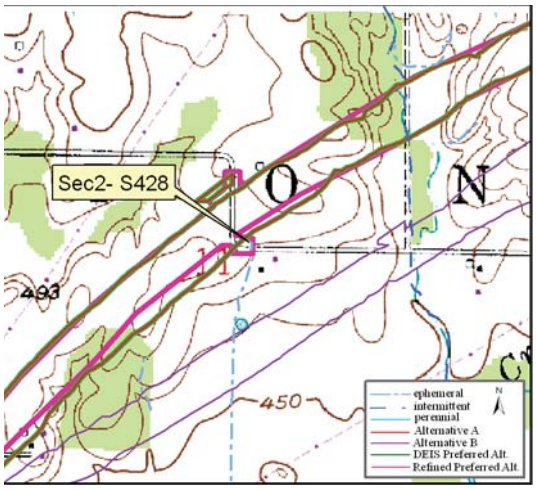
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

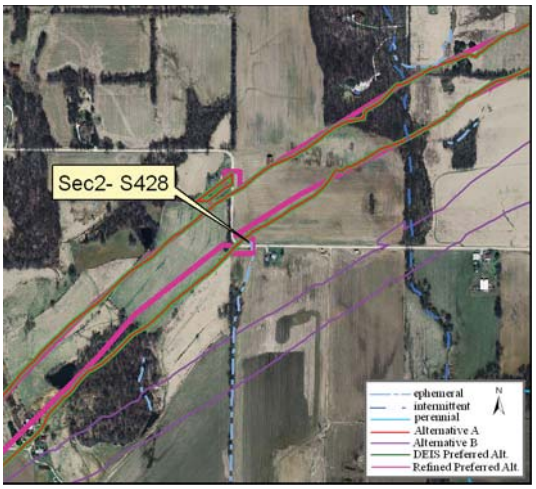
FLOW →



Stream Id-Section 2 S 428



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	Yes
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 11 T2N R7W	**OHWM Width ft:**	2.0
UTME:	486418	**OHWM Depth ft:**	0.3
UTMN:	4274630	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S428

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 32/ Class I
Unnamed Tributary Veale Creek	0	0	B	HHEI 32/ Class I
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 32/ Class I
Unnamed Tributary Veale Creek	91	0.01 acres	Refined Preferred	HHEI 32/ Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	32
Watershed Area (square miles):	0.09
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 428

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 32

SITE NAME/LOCATION Unnamed Trib Veale Creek

SITE NUMBER S 428 RIVER BASIN Lower White River DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 12.007 LONG. 87 9 21.726 RIVER CODE _____ RIVER MILE _____

DATE 6/04/09 SCORER me/bv COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	50%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☒	GRAVEL (2-64 mm) **[9 pts]**	10%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 9 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 12

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 8

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.8m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☒	☐	Residential, Park, New Field	☐	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Daviess Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 60

Were samples collected for water chemistry? (Y/N): Y (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

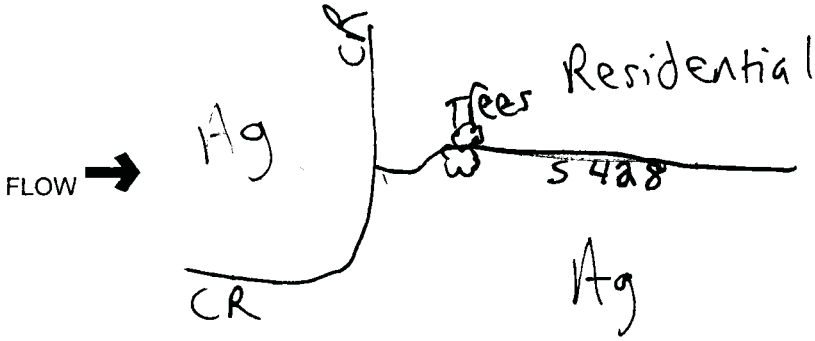
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

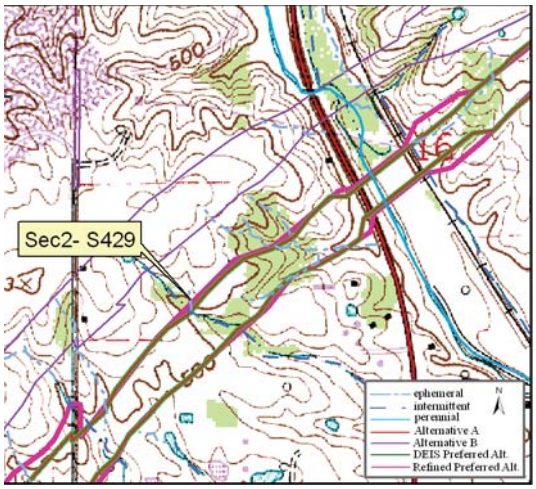
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

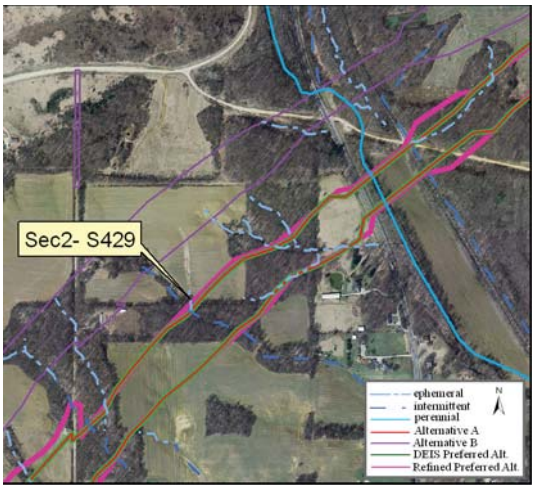
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 429



Site Location on Petersburg USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Patoka
Stream Name:	Unnamed Trib Flat Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 16 T1S R8W	**OHWM Width ft:**	3.0
UTME:	472770	**OHWM Depth ft:**	1.3
UTMN:	4253115	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Petersburg	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S429

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Flat Creek	0	0	A	HHEI 18/ Class I
Unnamed Tributary Flat Creek	0	0	B	HHEI 18/ Class I
Unnamed Tributary Flat Creek	0	0	DEIS Preferred	HHEI 18/ Class I
Unnamed Tributary Flat Creek	50	0.01 acres	Refined Preferred	HHEI 18/ Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	18
Watershed Area (square miles):	0.01
Legal Drain:	No
Predominate Substrate:	Muck
Estimated Riparian Area (acres):	A*-0.01 ac, B-0, DP*-0.01 ac, RP-0.01 ac

*This stream is not impacted within the right-of-way; however, the riparian is within the right-of-way.

Stream Id-Section 2 S 429

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION Unnamed Trib Flat Creek

SITE NUMBER S 429 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 38 25 33.198 LONG. 87 18 43.077 RIVER CODE _____ RIVER MILE _____

DATE 12/15/09 SCORER jsk / mtr COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☐ ☐	SILT **[3 pt]**	
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☐ ☐	GRAVEL (2-64 mm) **[9 pts]**		☒ ☐	MUCK **[0 pts]**	80%
☒ ☐	SAND (<2 mm) **[6 pts]**	20%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 6 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 2 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐ > 30 centimeters **[20 pts]**
☐ > 22.5 - 30 cm **[30 pts]**
☐ > 10 - 22.5 cm **[25 pts]**
☐ > 5 cm - 10 cm **[15 pts]**
☒ < 5 cm **[5 pts]**
☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 1"

Pool Depth Max = 30 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐ > 4.0 meters (> 13') **[30 pts]**
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3'

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R		FLOODPLAIN QUALITY (Most Predominant per Bank) L R		L R	
☒ ☒	Wide >10m	☒ ☒	Mature Forest, Wetland	☐ ☐	Conservation Tillage
☐ ☐	Moderate 5-10m	☐ ☐	Immature Forest, Shrub or Old Field	☐ ☐	Urban or Industrial
☐ ☐	Narrow <5m	☐ ☐	Residential, Park, New Field	☐ ☐	Open Pasture, Row Crop
☐ ☐	None	☐ ☐	Fenced Pasture	☐ ☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☒ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Petersburg NRCS Soil Map Page: 25 NRCS Soil Map Stream Order 1

County: Pike Township / City: Washington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 9-10

Elevated Turbidity? (Y/N): N Canopy (% open): 40%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

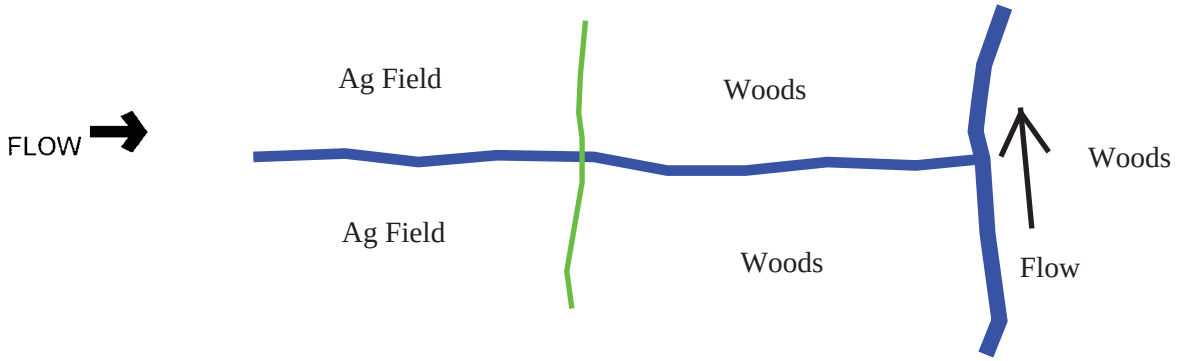
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

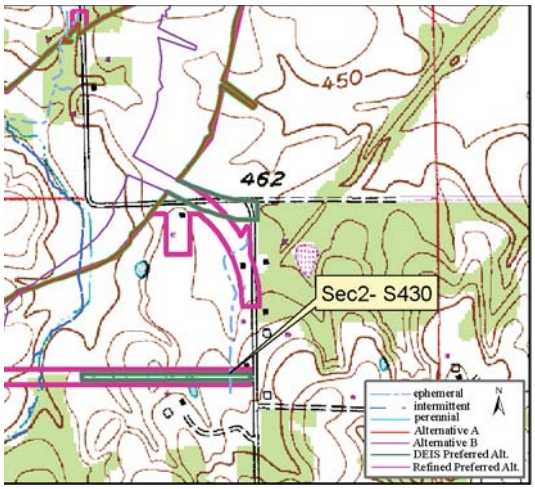
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

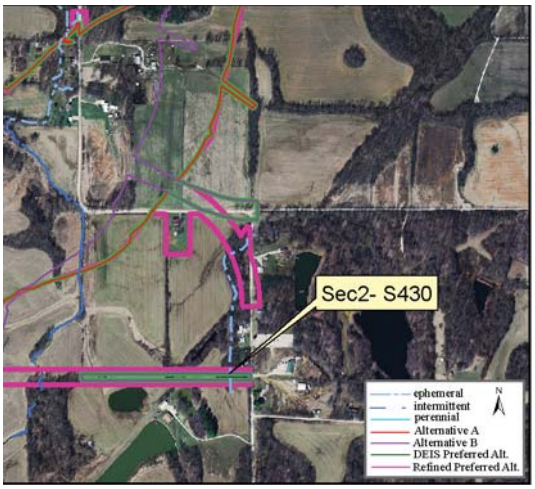
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 430



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 19 T1S R7W	**OHWM Width ft:**	2.0
UTME:	480205	**OHWM Depth ft:**	0.5
UTMN:	4262011	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S430

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	50	0.01 acres	A	HHEI 36/ Class I
Unnamed Tributary Lick Creek	50	0.01 acres	B	HHEI 36/ Class I
Unnamed Tributary Lick Creek	50	0.01 acres	DEIS Preferred	HHEI 36/ Class I
Unnamed Tributary Lick Creek	125	0.01 acres	Refined Preferred	HHEI 36/ Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	36
Watershed Area (square miles):	0.03
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 430

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 36

SITE NAME/LOCATION Unnamed Trib to Mud Creek

SITE NUMBER S 430 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.03

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 21.692 LONG. 87 13 37.198 RIVER CODE _____ RIVER MILE _____

DATE 12/15/09 SCORER jsk / mtr COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS **[16 pts]**		☒ ☐	SILT **[3 pt]**	80%
☐ ☐	BOULDER (>256 mm) **[16 pts]**		☐ ☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	5%
☐ ☐	BEDROCK **[16 pt]**		☐ ☐	FINE DETRITUS **[3 pts]**	
☐ ☐	COBBLE (65-256 mm) **[12 pts]**		☐ ☐	CLAY or HARDPAN **[0 pt]**	
☒ ☐	GRAVEL (2-64 mm) **[9 pts]**	10%	☐ ☐	MUCK **[0 pts]**	
☐ ☐	SAND (<2 mm) **[6 pts]**	5%	☐ ☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A) 12 **SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:**

(B) 4 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 16

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters **[20 pts]**	☒	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.1

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☒	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☒	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: 9 NRCS Soil Map Stream Order 1

County: Pike Township / City: Washington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 24, 25

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

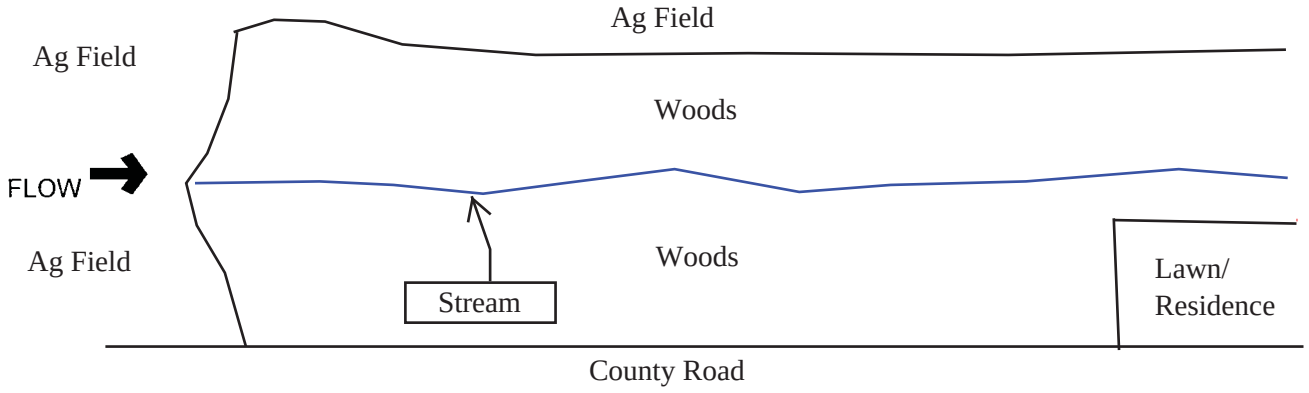
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

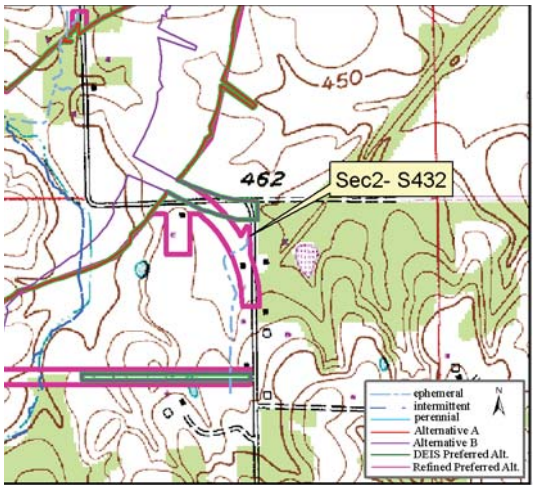
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

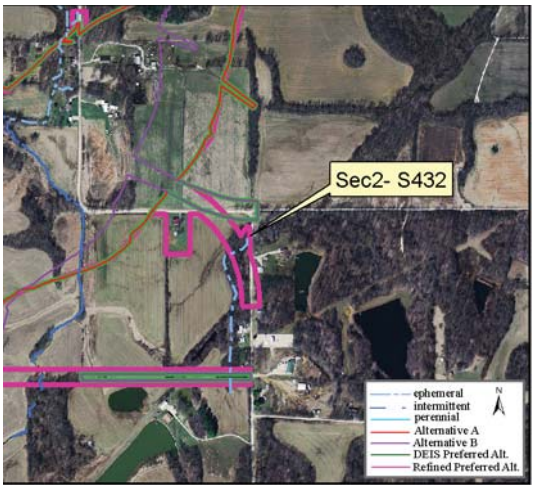
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 432



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Lick Creek	**Channelized:**	No
County:	Pike	**IDEM 303(d) List:**	No
PLSS:	NW ¼ Section 19 T1S R7W	**OHWM Width ft:**	2.0
UTME:	480254	**OHWM Depth ft:**	0.7
UTMN:	4262310	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S432

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Lick Creek	0	0	A	HHEI 29/ Class I
Unnamed Tributary Lick Creek	0	0	B	HHEI 29/ Class I
Unnamed Tributary Lick Creek	0	0	DEIS Preferred	HHEI 29/ Class I
Unnamed Tributary Lick Creek	209	0.01 acres	Refined Preferred	HHEI 29/ Class I

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	29
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	Silt
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 432

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 29

SITE NAME/LOCATION Unnamed Trib to Mud Creek

SITE NUMBER S 432 RIVER BASIN Lower White River DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 30 31.959 LONG. 87 13 35.628 RIVER CODE _____ RIVER MILE _____

DATE 12/15/09 SCORER jsk / mtr COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☒	☐	SILT **[3 pt]**	85%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☒	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	10%
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☐	☐	GRAVEL (2-64 mm) **[9 pts]**		☐	☐	MUCK **[0 pts]**	
☐	☒	SAND (<2 mm) **[6 pts]**	5%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points

Substrate Max = 40 9

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☐ > 10 - 22.5 cm **[25 pts]**
- ☒ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 7.6

Pool Depth Max = 30 15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☒ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 0.6m

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☒	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: 9 NRCS Soil Map Stream Order 1

County: Pike Township / City: Washington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 26, 27

Elevated Turbidity? (Y/N): N Canopy (% open): 30%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

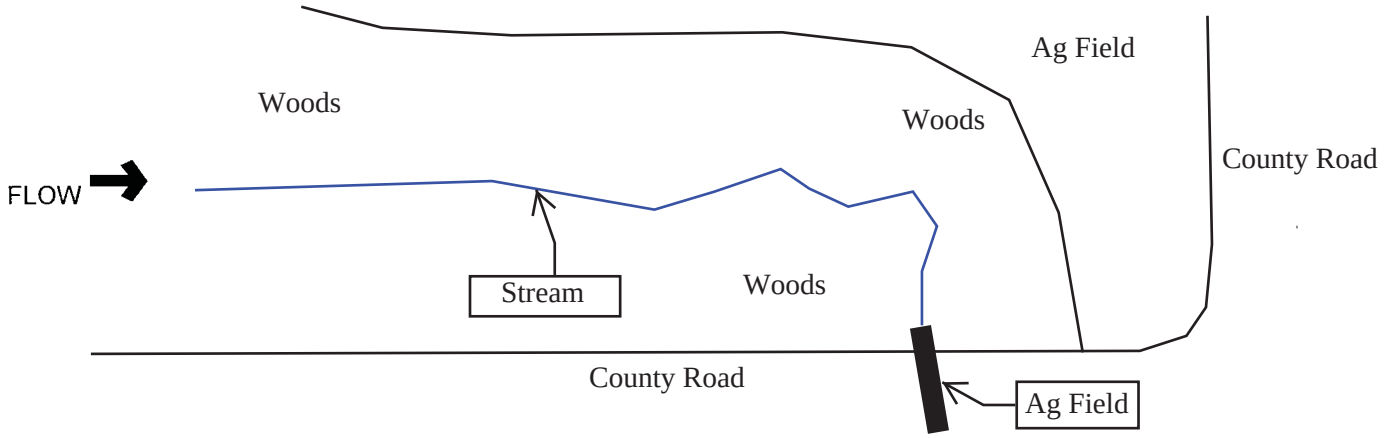
Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

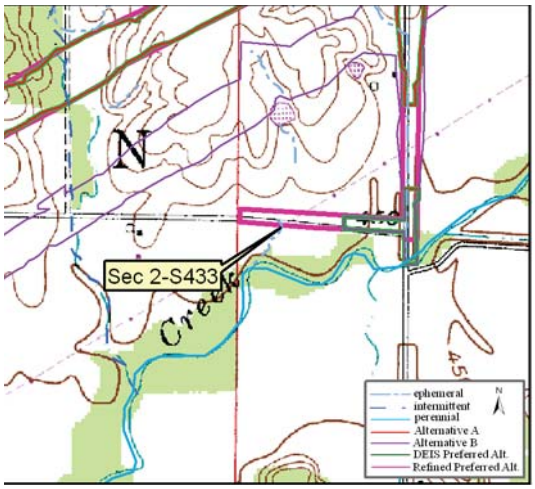
Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

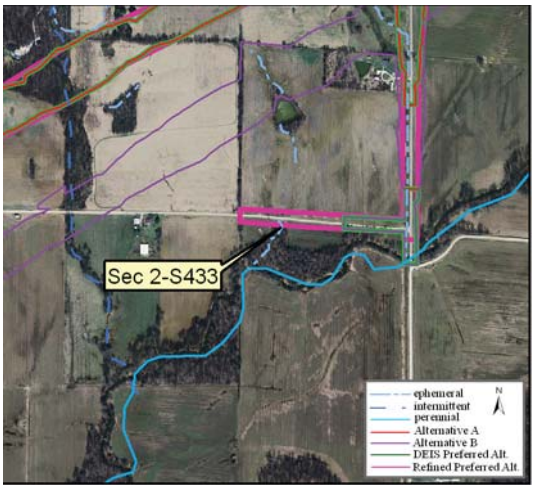
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



Stream Id-Section 2 S 433



Site Location on Sandy Hook USGS Quadrangle



Site Location on 2005 Aerial Photograph

Aquatic Resource:	Stream	**Watershed:**	Lower White
Stream Name:	Unnamed Trib Veale Creek	**Channelized:**	No
County:	Daviess	**IDEM 303(d) List:**	No
PLSS:	SW ¼ Section 12 T2N R7W	**OHWM Width ft:**	5.0
UTME:	487282	**OHWM Depth ft:**	1.5
UTMN:	4274566	**USACE Jurisdiction:**	Yes
USGS Quadrangle:	Sandy Hook	**IDEM Jurisdiction:**	Yes

Stream Sec 2 S433

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Tributary Veale Creek	0	0	A	HHEI 63/ Class III
Unnamed Tributary Veale Creek	0	0	B	HHEI 63/ Class III
Unnamed Tributary Veale Creek	0	0	DEIS Preferred	HHEI 63/ Class III
Unnamed Tributary Veale Creek	54	0.01 acres	Refined Preferred	HHEI 63/ Class III

Stream Type:	Ephemeral
Evaluation Type:	HHEI
Evaluation Score:	63
Watershed Area (square miles):	0.05
Legal Drain:	No
Predominate Substrate:	gravel
Estimated Riparian Area (acres):	A-0, B-0, DP-0, RP-0

Stream Id-Section 2 S 433

Photograph taken looking upstream

Photograph taken looking downstream

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 63

SITE NAME/LOCATION Unnamed Trib Veale

SITE NUMBER S 433 RIVER BASIN Lower White DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200 LAT. 38 37 10.984 LONG. 87 8 45.687 RIVER CODE _____ RIVER MILE _____

DATE 12/15/09 SCORER jsk / mtr COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE			PERCENT	TYPE			PERCENT
☐	☐	BLDR SLABS **[16 pts]**		☐	☒	SILT **[3 pt]**	15%
☐	☐	BOULDER (>256 mm) **[16 pts]**		☐	☐	LEAF PACK/WOODY DEBRIS **[3 pts]**	
☐	☐	BEDROCK **[16 pt]**		☐	☐	FINE DETRITUS **[3 pts]**	
☐	☐	COBBLE (65-256 mm) **[12 pts]**		☐	☐	CLAY or HARDPAN **[0 pt]**	
☒	☐	GRAVEL (2-64 mm) **[9 pts]**	45%	☐	☐	MUCK **[0 pts]**	
☒	☐	SAND (<2 mm) **[6 pts]**	40%	☐	☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 3 **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points

Substrate Max = 40 18

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters **[20 pts]**
- ☐ > 22.5 - 30 cm **[30 pts]**
- ☒ > 10 - 22.5 cm **[25 pts]**
- ☐ > 5 cm - 10 cm **[15 pts]**
- ☐ < 5 cm **[5 pts]**
- ☐ NO WATER OR MOIST CHANNEL **[0 pts]**

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 10.1

Pool Depth Max = 30 25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') **[30 pts]**
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") **[20 pts]**
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
- ☐ ≤ 1.0 m (≤ 3' 3") **[5 pts]**

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.5m

Bankfull Width Max=30 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☒	☒	Open Pasture, Row Crop
☒	☒	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Sandy Hook NRCS Soil Map Page: 26 NRCS Soil Map Stream Order 1

County: Daviess Township / City: Washington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: _____

Photograph Information: 29, 30

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C)_____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

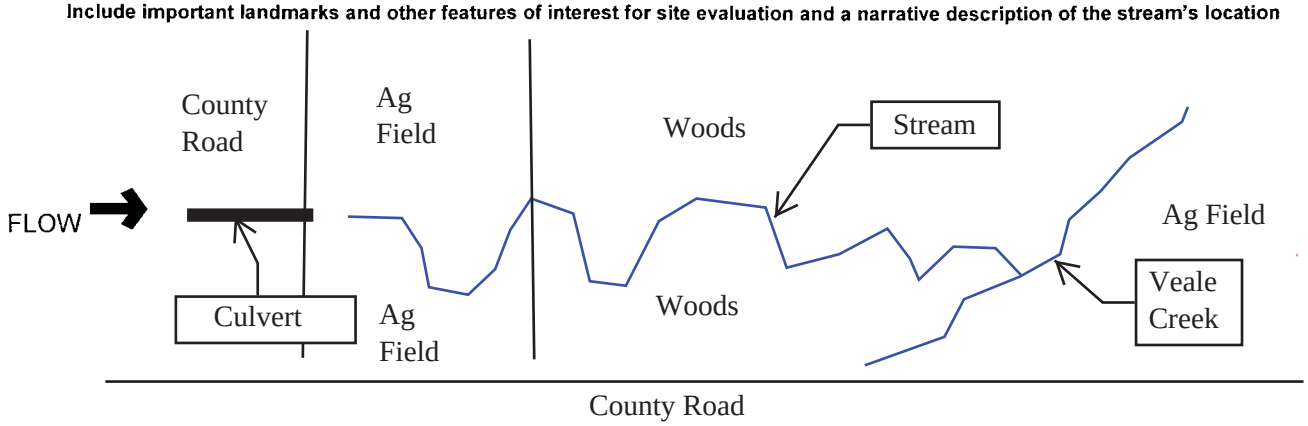
BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N)_____ Voucher? (Y/N)_____ Salamanders Observed? (Y/N)_____ Voucher? (Y/N)_____

Frogs or Tadpoles Observed? (Y/N)____ Voucher? (Y/N)____ Aquatic Macroinvertebrates Observed? (Y/N)____ Voucher? (Y/N)____

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location