



## **I-69 EVANSVILLE TO INDIANAPOLIS TIER 2 STUDIES**

### **Section 5—Final Environmental Impact Statement**

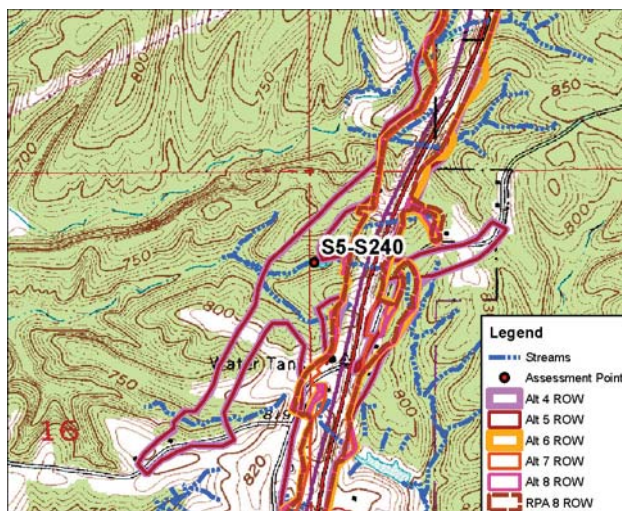
## **APPENDIX M DRAFT STREAM ASSESSMENT REPORT**

### **TECHNICAL REPORT APPENDICES**

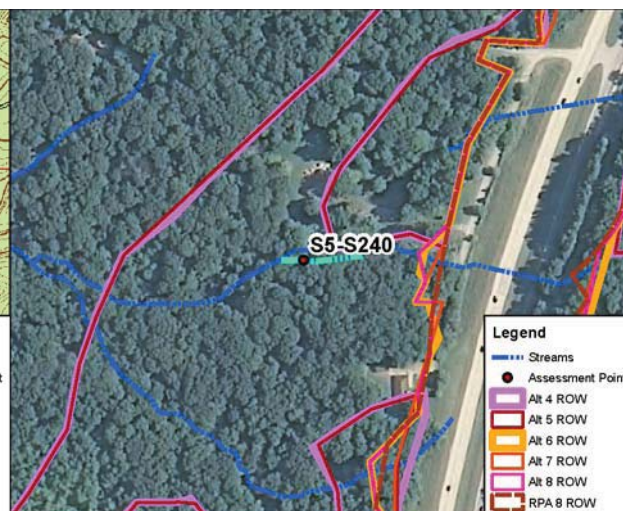
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<b>APPENDIX A</b>	<b>Stream Impacts and Stream Relocation Lengths by Alternative</b>
<b>APPENDIX B</b>	<b>Stream Site Reports and Data Sheets</b>

## Stream Impacts S5-S240



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 43  
**Legal Drain (Y/N):** N  
**UTME:** 1776752 ft

**USGS Quadrangle:** Modesto  
**Section:** 15  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.5 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/cand

Stream S5-S240 –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	211	0.01	1.12
5	211	0.01	1.12
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

### Description of Potential Impact:

Impacts to S5-S240 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and clay. There is a wide riparian corridor consisting of mature forest on both banks of this stream's floodplain. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S240 are on the second page of this form.



## Stream Impacts S5-S240

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

43

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S240

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.30695 LONG. RIVER CODE RIVER MILE

DATE 05/10/06 SCORER A Rogers COMMENTS (Long: -86.51801) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	30%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	40%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	20%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

9

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

14

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.5' / 0.4'

AVERAGE BANKFULL WIDTH (meters):

0.80

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **8** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information:

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) ☐

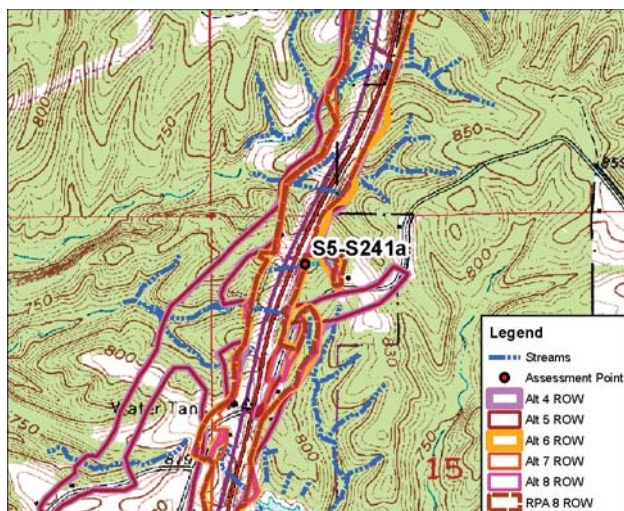
Comments Regarding Biology:

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

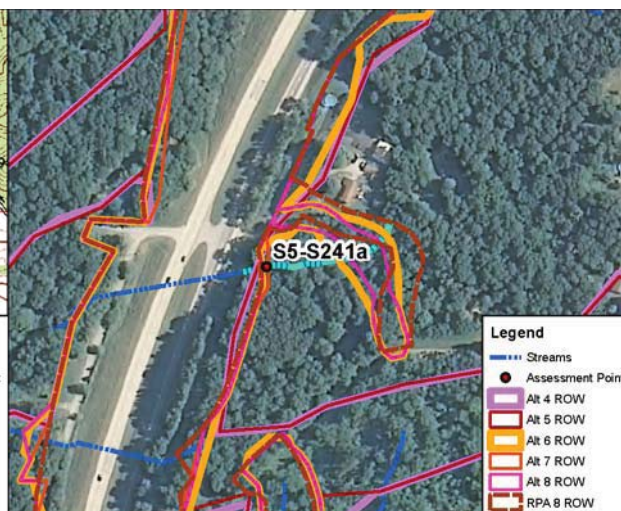
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S240 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S241a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 50  
**Legal Drain (Y/N):** N  
**UTME:** 1777684 ft

**USGS Quadrangle:** Modesto  
**Section:** 15  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.0 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S241a – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	40	0.01	0.09
5	41	0.01	0.10
6	197	0.01	0.78
7	71	0.01	0.20
8	146	0.01	0.49
RPA 8	117	0.01	0.52

### Description of Potential Impact:

Impacts to S5-S241a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and sand. There is a wide riparian corridor with the adjacent floodplain consisting of mature forests on both banks of this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S241a are on the second page of this form.



## Stream Impacts S5-S241a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

50

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S241a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.30817

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER A Rogers

COMMENTS (Long: -86.51471) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	50%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	35%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.0' / 0.2'

AVERAGE BANKFULL WIDTH (meters):

1.25

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **8** NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/10/06** Quantity: **0.89**  
Photograph Information:   
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:   

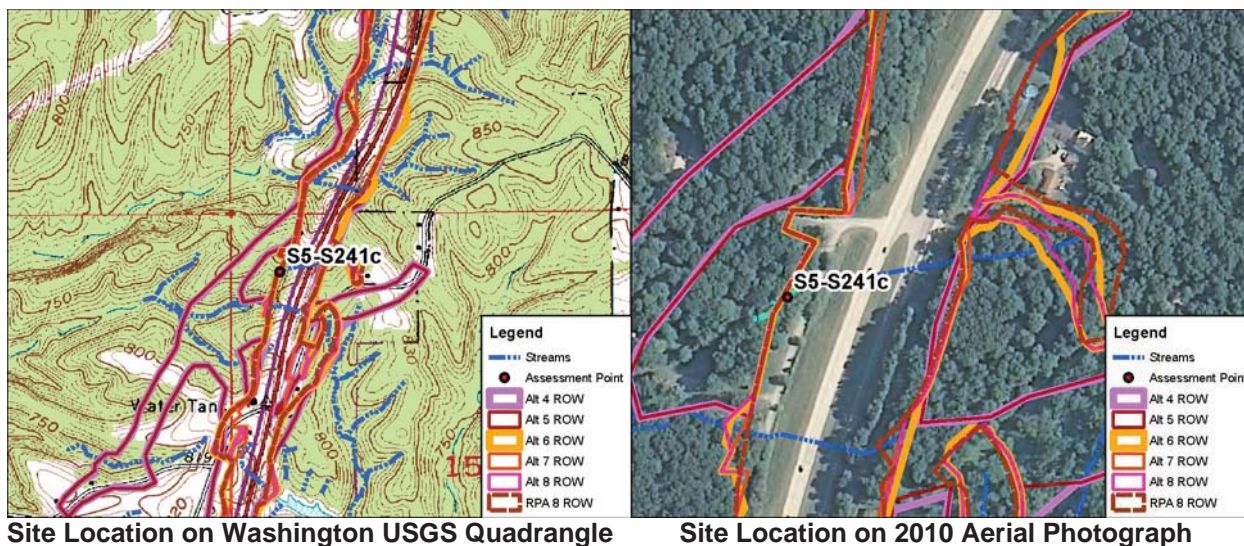
**BIOTIC EVALUATION**
Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☐ Voucher? (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** → See Stream Assessment Form  
 S5-S241a for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S241c



Site Location on Washington USGS Quadrangle

Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Creek  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 45  
**Legal Drain (Y/N):** N  
**UTME:** 1777215 ft

**USGS Quadrangle:** Washington  
**Section:** 15  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.5 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S241c – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	41	0.01	0.17
5	39	0.01	0.17
6	39	0.01	0.17
7	39	0.01	0.17
8	39	0.01	0.17
RPA 8	39	0.01	0.17

### Description of Potential Impact:

Impacts to S5-S241c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of sand and gravel. There is a wide riparian corridor consisting of mature forest on both banks of the adjacent floodplain area. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S241c are on the second page of this form.



## **Stream Impacts S5-S241c**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

45

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S241c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 145

LAT. 39.30789

LONG.

RIVER CODE

RIVER MILE

DATE 10/18/11

SCORER DEW/KSS

COMMENTS (Long: -86.51637) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	5%	<input type="checkbox"/> SILT [3 pt]	15%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	10%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	25%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	45%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 15.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth  
Max = 30

5

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 5.5'/0.5'

AVERAGE BANKFULL WIDTH (meters):

1.68

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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:

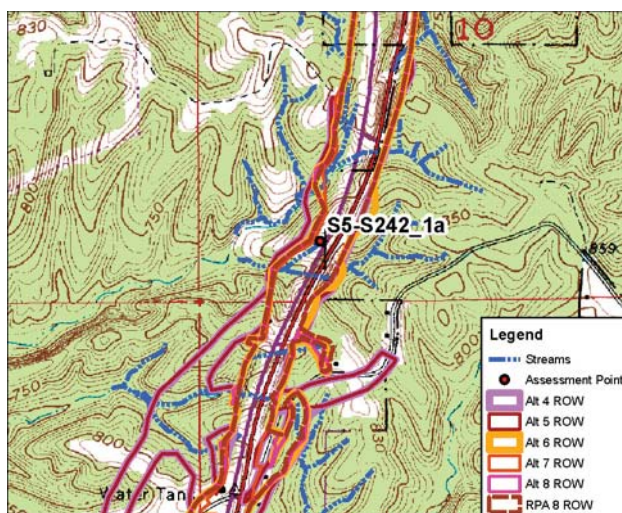
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

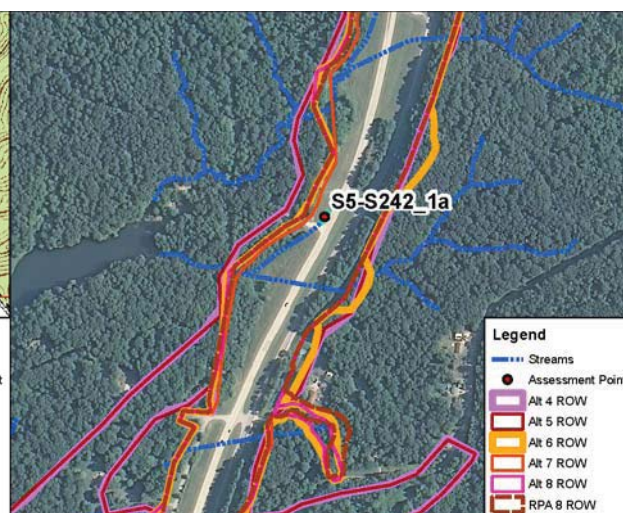
**FLOW** → See Stream Assessment Form  
S5-S241c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S242\_1a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1777692 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S242_1a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	76	0.01	0.00
5	76	0.01	0.00
6	76	0.01	0.00
7	76	0.01	0.00
8	76	0.01	0.00
RPA 8	76	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S242\_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located adjacent to SR 37. There is no riparian buffer associated with this artificial channel. The floodplain consists of entirely of existing maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S242\_1a are on the second page of this form.

## Stream Impacts S5-S242\_1a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S242\_1a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 75

LAT. 39.31127

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51371) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.2'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.36

## 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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

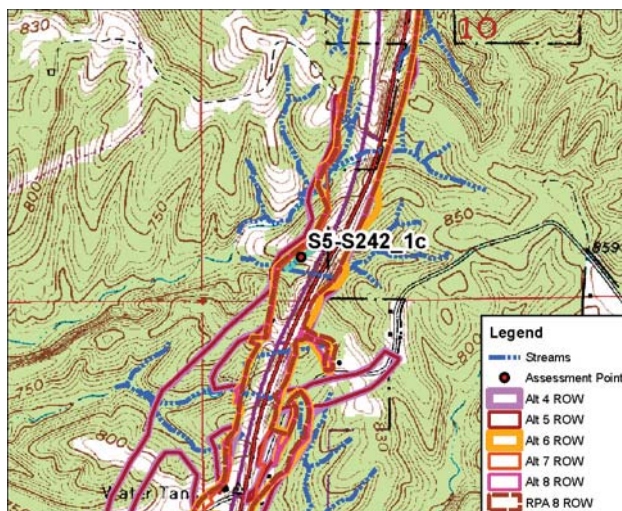
Comments Regarding Biology:

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

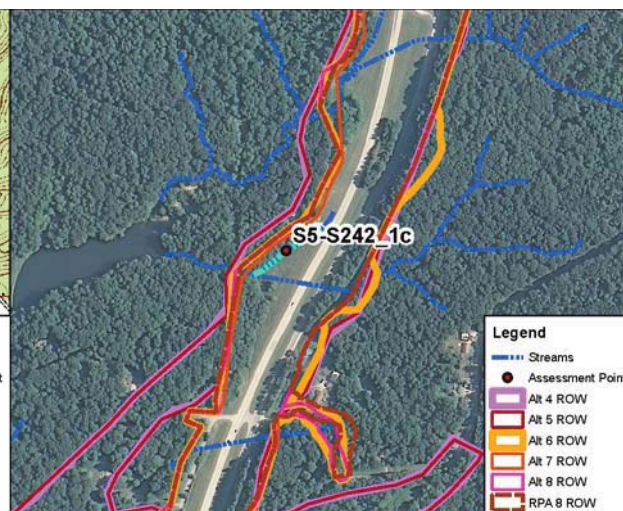
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S242\_1a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S242\_1c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1777730 ft    **UTMN:** 14276148 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S242_1c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	416	0.01	0.48
5	416	0.01	0.48
6	416	0.01	0.41
7	416	0.01	0.24
8	416	0.01	0.41
RPA 8	416	0.01	0.41

### Description of Potential Impact:

Impacts to S5-S242\_1c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located adjacent to SR 37. There is no riparian buffer associated with the left bank and a wide riparian buffer along the right bank of this artificial channel. The floodplain consists of new field along the left adjacent floodplain and immature forest along the right floodplain. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S242\_1c are on the second page of this form.



## **Stream Impacts S5-S242\_1c**

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S242\_1c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31079

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51453) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.2'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.36

## 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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

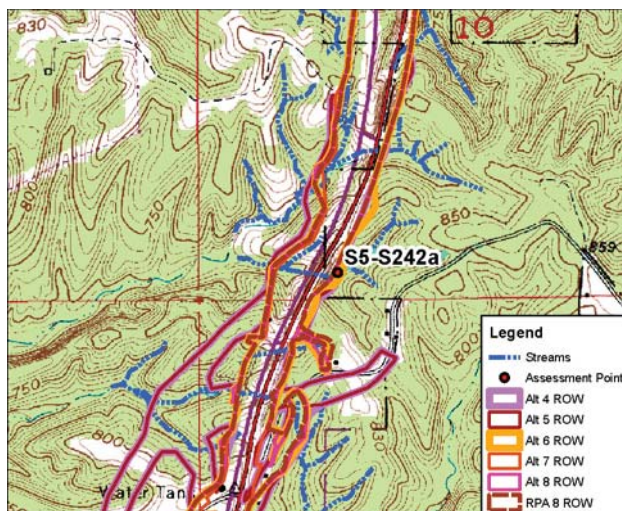
Comments Regarding Biology:

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

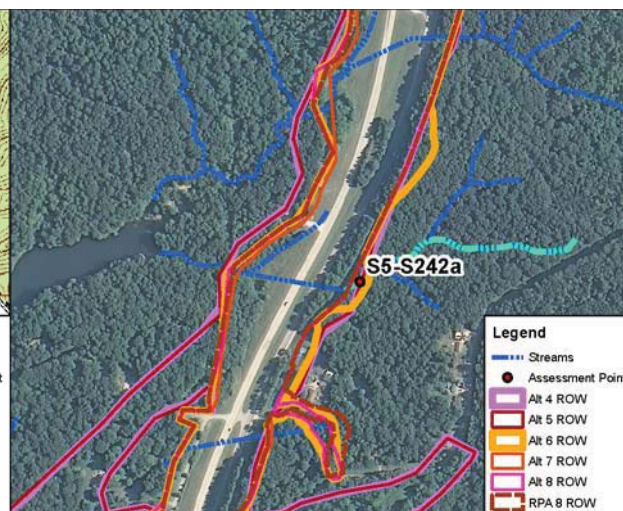
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S242\_1c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S242a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 39  
**Legal Drain (Y/N):** N  
**UTME:** 1778148ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.0 feet  
**OHWM Depth:** 0.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.08 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S242a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	118	0.01	0.31
5	115	0.01	0.29
6	174	0.02	0.39
7	36	0.01	0.03
8	36	0.01	0.03
RPA 8	36	0.01	0.03

### Description of Potential Impact:

Impacts to S5-S242a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and sand. There is a wide riparian corridor consisting of mature forest along both banks, as well as into the floodplain of this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S242a are on the second page of this form.



## Stream Impacts S5-S242a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

39

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S242a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.08**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.31033** LONG.  RIVER CODE  RIVER MILE

DATE **10/18/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.51306) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="35%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **4**HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

20

COMMENTS **OHW = 5'/0.3'** AVERAGE BANKFULL WIDTH (meters): **1.52**

This information must also be completed

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

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	
Moderate 5 10m		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	
Narrow <5m		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	
None		<input type="checkbox"/>	<input type="checkbox"/>
		Conservation Tillage	
		Urban or Industrial	
		Open Pasture, Row Crop	
		Mining or Construction	

COMMENTS 

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS 

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**  
Photograph Information:   
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) ☒ 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:   

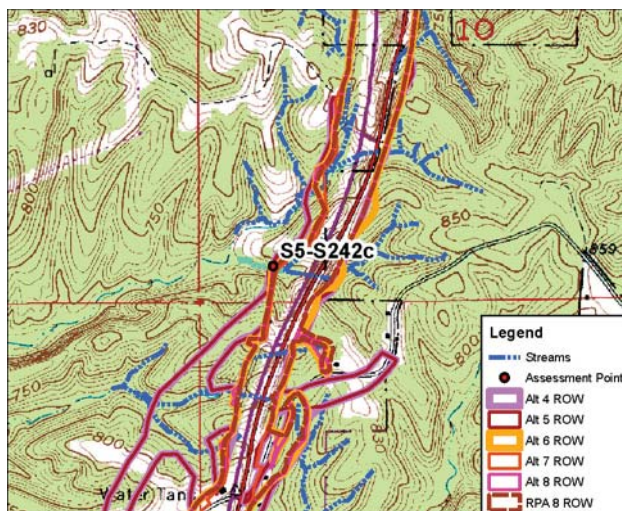
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

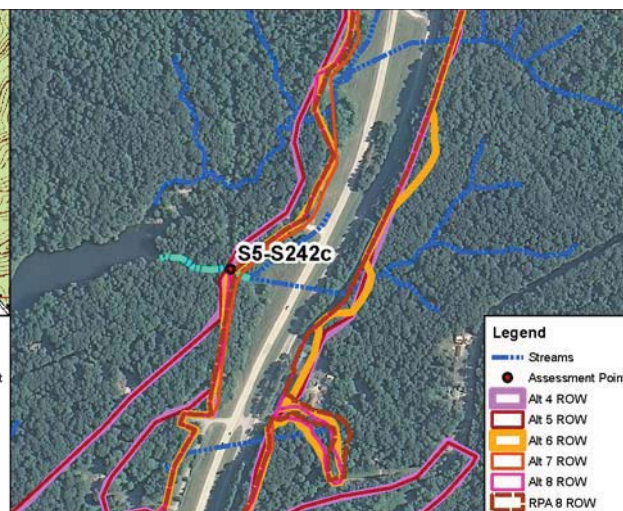
**FLOW** → See Stream Assessment Form  
 S5-S242a for site topographic map,  
 aerial photograph, and resource photographs



## Stream Impacts S5-S242c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 52  
**Legal Drain (Y/N):** N  
**UTME:** 1777470 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 6.9 feet  
**OHWM Depth:** 1.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.08 sq mi  
**Predominant Sub:** Gravel/cobble

Stream S5-S242c – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	116	0.02	0.51
5	136	0.02	0.59
6	92	0.01	0.36
7	49	0.01	0.17
8	94	0.01	0.35
RPA 8	82	0.01	0.30

### Description of Potential Impact:

Impacts to S5-S242c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and cobble. There is a wide riparian corridor consisting of mature forest along both banks, as well as into the floodplain of this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S242c are on the second page of this form.

## **Stream Impacts S5-S242c**

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

52

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S242c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.08

LENGTH OF STREAM REACH (ft) 200 LAT. 39.31058 LONG. RIVER CODE RIVER MILE

DATE 05/10/06 SCORER A Rogers COMMENTS (Long: -86.51545) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input checked="" type="checkbox"/> COBBLE (65 256 mm) [12 pts]	25%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	50%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 25.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21

TOTAL NUMBER OF SUBSTRATE TYPES: 6

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 3

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW - 6.9' / 1.1' AVERAGE BANKFULL WIDTH (meters): 2.50

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **8** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **190 Upstream / 191 Downstream / 192 Right bank / 193 Left bank**

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) ☐

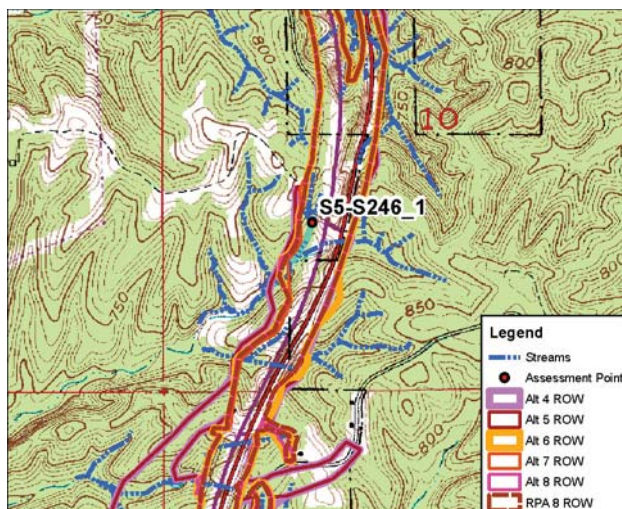
Comments Regarding Biology:

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

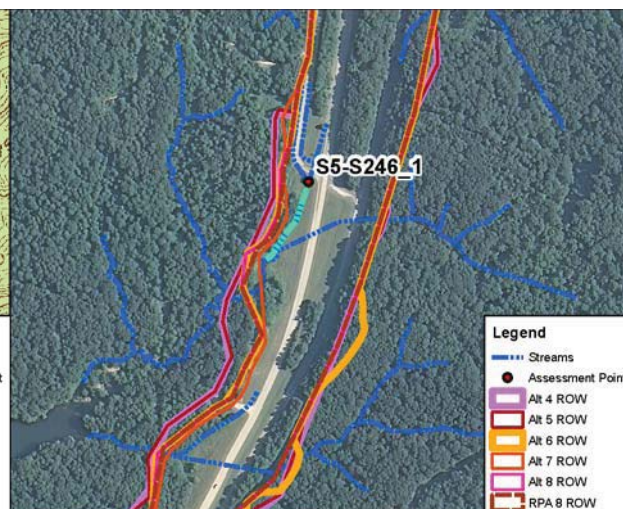
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S242c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S246\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778249 ft    **UTMN:** 14277449 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S246_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	428	0.02	0.26
5	428	0.02	0.26
6	428	0.02	0.25
7	428	0.02	0.22
8	428	0.02	0.25
RPA 8	428	0.02	0.25

### Description of Potential Impact:

Impacts to S5-S246\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter beginning along West Burma Road and following SR 37 to S5-S246c. There is no riparian buffer associated with this artificial channel on the left bank and a wide buffer on the right. The floodplain consists of transportation along the left floodplain and immature forest along the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246\_1 are on the second page of this form.



## **Stream Impacts S5-S246\_1**

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S246\_1

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31436

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51267) (Concrete Gutter-Modified Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.1'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.64

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

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) ☒ 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

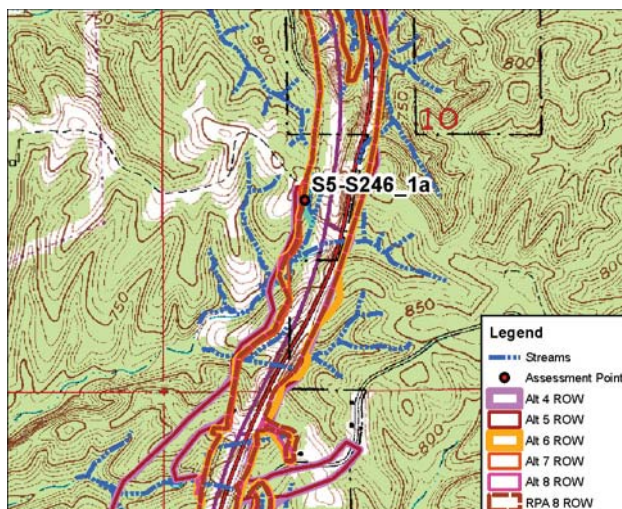
Comments Regarding Biology:

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

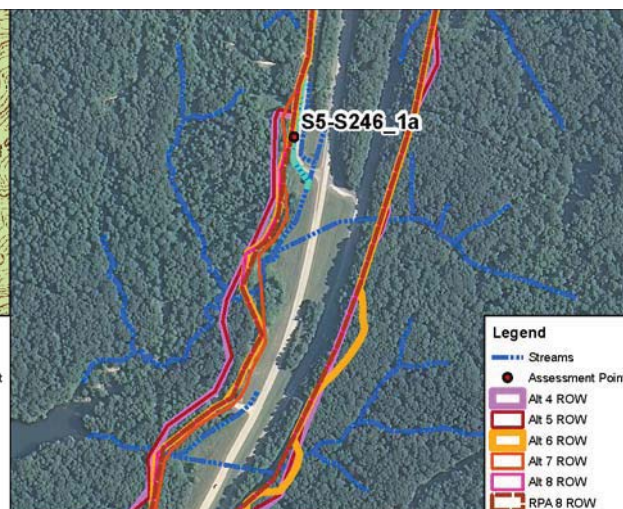
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S246\_1 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S246\_1a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778174 ft    **UTMN:** 14277682 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S246_1a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	592	0.03	0.65
5	592	0.03	0.67
6	592	0.03	0.18
7	592	0.03	0.44
8	592	0.03	0.17
RPA 8	592	0.03	0.12

### Description of Potential Impact:

Impacts to S5-S246\_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter beginning along West Burma Road and following SR 37 to S5-S246c. There is no riparian buffer associated with this artificial channel on the left bank and a wide buffer on the right. The floodplain consists of transportation along the left floodplain and immature forest along the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246\_1a are on the second page of this form.



## **Stream Impacts S5-S246\_1a**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S246\_1a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31500

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.51292) (Concrete Gutter-Modified Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.1'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.37

## 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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **02/18/13** Quantity: **0.02**

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) ☒ 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:

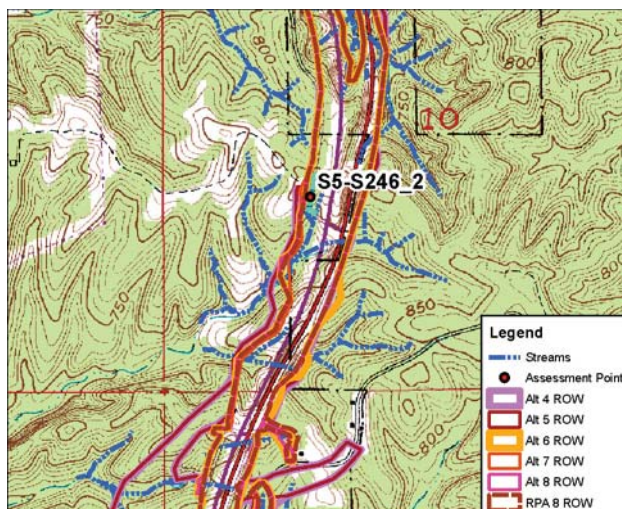
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

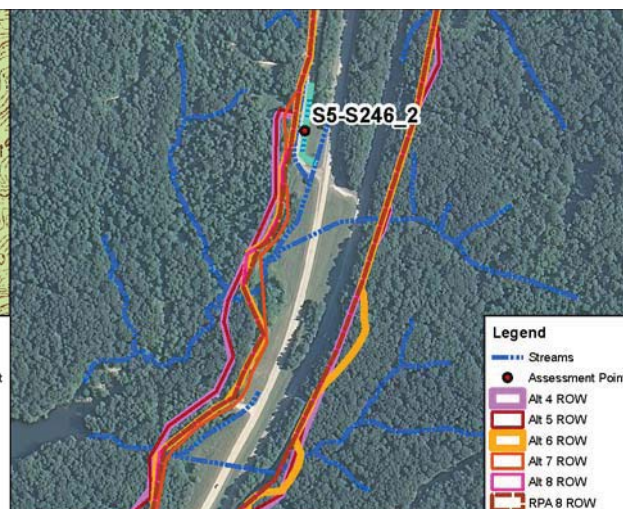
**FLOW** → See Stream Assessment Form  
S5-S246\_1a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S246\_2



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778222 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S246_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	462	0.01	0.30
5	462	0.01	0.30
6	462	0.01	0.30
7	462	0.01	0.30
8	462	0.01	0.30
RPA 8	462	0.01	0.30

### Description of Potential Impact:

Impacts to S5-S246\_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter adjacent to West Burma Road. There is no riparian buffer associated with this artificial channel. The floodplain consists of transportation use along the right bank and old field along the left. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246\_2 are on the second page of this form.

## Stream Impacts S5-S246\_2

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S246\_2

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31509

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51276) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.2'/0.2'

AVERAGE BANKFULL WIDTH (meters): 0.36

## 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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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:

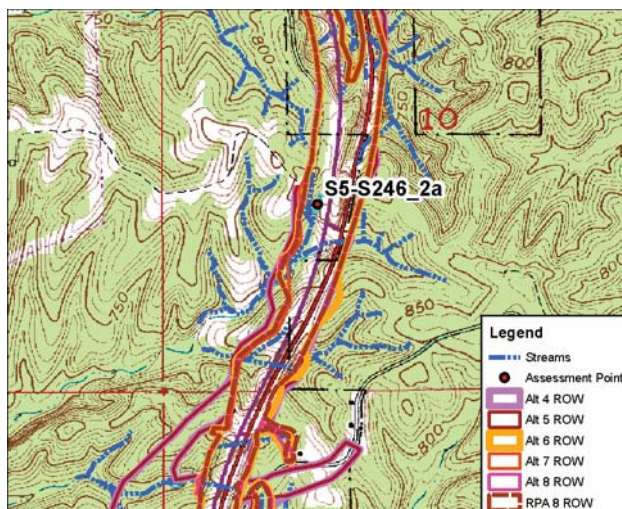
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

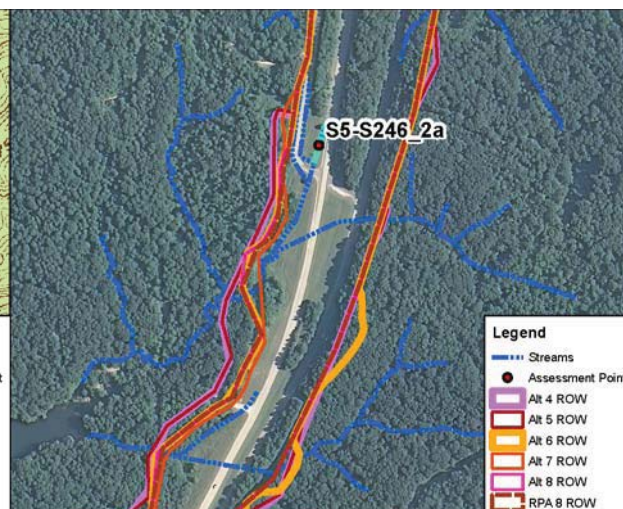
**FLOW** →

See Stream Assessment Form  
S5-S246\_2 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S246\_2a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778306 ft  
**UTMN:** 14277639 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S246_2a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	211	0.01	0.17
5	211	0.01	0.17
6	211	0.01	0.17
7	211	0.01	0.17
8	211	0.01	0.17
RPA 8	211	0.01	0.17

### Description of Potential Impact:

Impacts to S5-S246\_2a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter beginning along SR 37. There is no riparian buffer associated with this artificial channel. The floodplain consists entirely of transportation uses. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246\_2a are on the second page of this form.

## **Stream Impacts S5-S246\_2a**

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Photograph Taken Upstream



Photograph Taken Downstream





# Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S246\_2a**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.31488**

LONG.

RIVER CODE

RIVER MILE

DATE **04/26/12**

SCORER **KSS/DEW**

COMMENTS **(Long: -86.51247) (Concrete Gutter-Modified Class I)**

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
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

## HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 1.2'/0.2'**

AVERAGE BANKFULL WIDTH (meters): **0.37**

## 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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

#### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

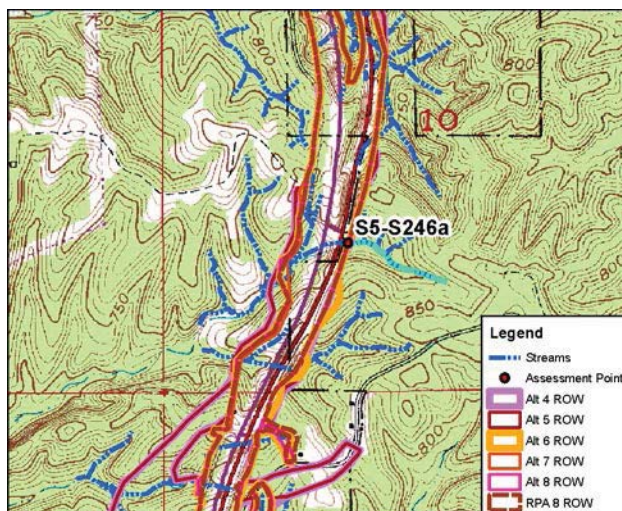
Comments Regarding Biology:

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

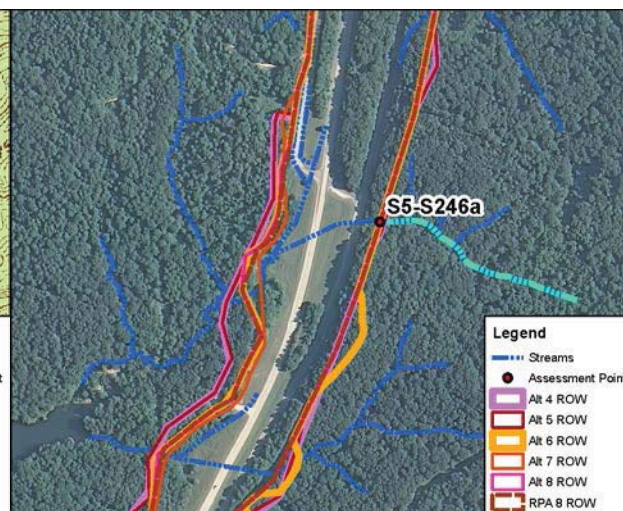
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S246\_2a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S246a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 40  
**Legal Drain (Y/N):** N  
**UTME:** 1778622 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 9.0 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.08 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S246a – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	39	0.01	0.14
5	41	0.01	0.15
6	21	0.01	0.08
7	21	0.01	0.08
8	21	0.01	0.08
RPA 8	21	0.01	0.08

### Description of Potential Impact:

Impacts to S5-S246a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of sand and gravel. There is a wide riparian corridor where these Alternatives cross this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246a are on the second page of this form.



## Stream Impacts S5-S246a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

40

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S246a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.08

LENGTH OF STREAM REACH (ft) 200 LAT. 39.31381 LONG. RIVER CODE RIVER MILE

DATE 10/18/11 SCORER DEW/KSS COMMENTS (Long: -86.51135) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	20%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	60%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 9'/0.9' AVERAGE BANKFULL WIDTH (meters): 2.75

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**  
Photograph Information:   
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) ☒ 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:   

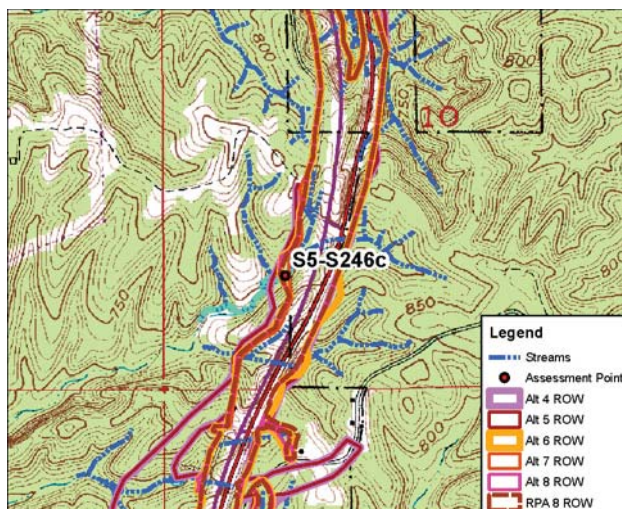
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

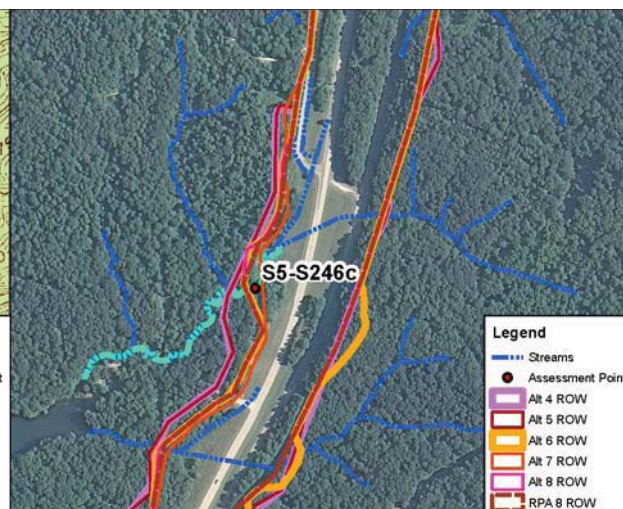
**FLOW** → See Stream Assessment Form  
S5-S246a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S246c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Indian Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120202010  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 38  
**Legal Drain (Y/N):** N  
**UTME:** 1777965 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.2 feet  
**OHWM Depth:** 0.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.08 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S246c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	456	0.04	1.13
5	455	0.04	1.11
6	340	0.03	0.54
7	235	0.02	0.25
8	345	0.03	0.58
RPA 8	342	0.03	0.45

### Description of Potential Impact:

Impacts to S5-S246c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of sand and gravel. There is a wide riparian corridor on the right bank and a moderately-wide buffer on the left bank where these Alternatives cross this stream. The adjacent floodplain consists of immature forest on the adjacent right floodplain area while the left floodplain consists of an old field through a utility line ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S246c are on the second page of this form.



## Stream Impacts S5-S246c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

38

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S246c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.08

LENGTH OF STREAM REACH (ft) 121

LAT. 39.31278

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51368) (Natural -Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	15%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	30%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	55%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

5

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 4.2'/0.7'

AVERAGE BANKFULL WIDTH (meters):

1.28

## 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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input checked="" type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Indian Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/04/12** Quantity: **0.15**

Photograph Information:

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) ☒ 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

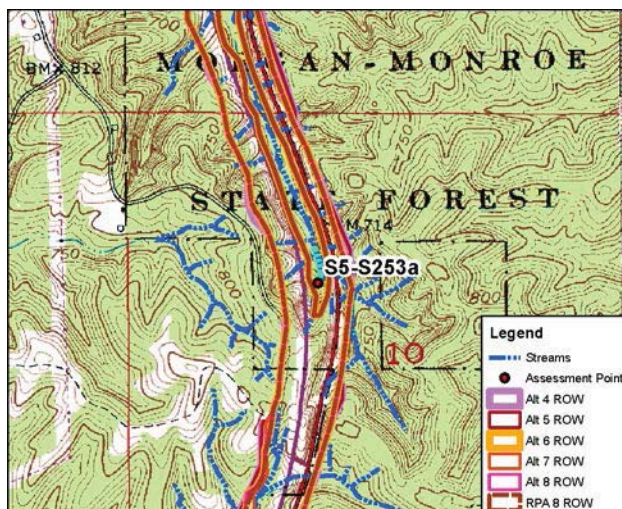
Comments Regarding Biology:

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

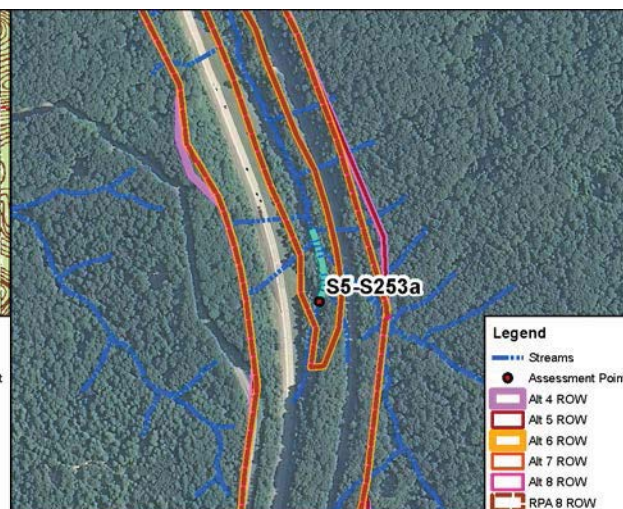
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S246c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S253a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778660 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Silt/Clay

Stream S5-S253a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	416	0.02	0.63
5	416	0.02	0.63
6	416	0.02	0.63
7	416	0.02	0.63
8	416	0.02	0.63
RPA 8	416	0.02	0.63

### Description of Potential Impact:

Impacts to S5-S253a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of silt and clay. There is wide riparian corridor on both the right and left banks of this stream consisting of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S253a are on the second page of this form.



## **Stream Impacts S5-S253a**

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Photograph Taken Downstream



Photograph Taken Upstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S253a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31933

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.51118) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="20%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 

(A)

Substrate Percentage  
Check 

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

3

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

5

COMMENTS OHW 2.1'/0.2'

AVERAGE BANKFULL WIDTH (meters):

0.64

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **02/18/13** Quantity: **0.10**  
Photograph Information:   
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:   

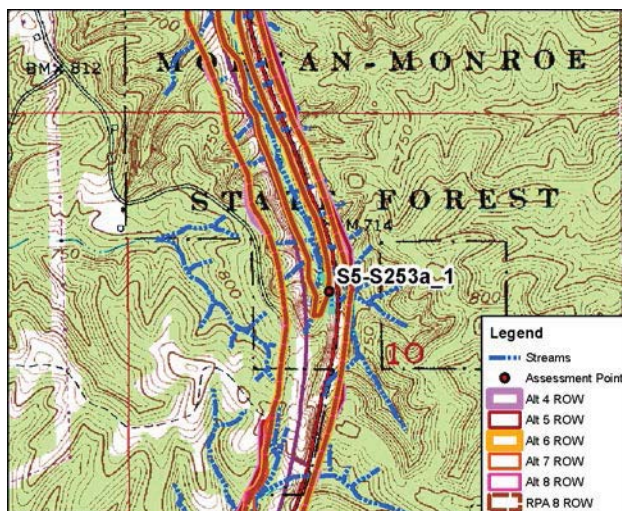
**BIOTIC EVALUATION**
Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) **N** Voucher?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

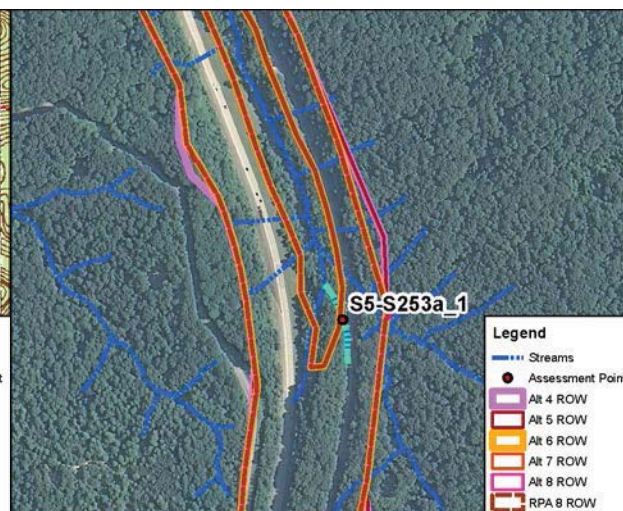
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S253a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S253a\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778783 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S253a_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	437	0.02	0.71
5	437	0.02	0.71
6	437	0.02	0.71
7	437	0.02	0.71
8	437	0.02	0.71
RPA 8	437	0.02	0.71

### Description of Potential Impact:

Impacts to S5-S253a\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The concrete gutter is located inside the bifurcated median of SR 37. There is a narrow riparian buffer associated with this artificial channel along its right bank and a wide buffer along the left. The right floodplain consists of INDOT ROW while the left floodplain area consists of mature forest where these Alternatives cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S253a\_1 are on the second page of this form.



## **Stream Impacts S5-S253a\_1**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S253a\_1

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31908

LONG.

RIVER CODE

RIVER MILE

DATE 05/22/12

SCORER JDP

COMMENTS (Long: -86.51075) (Concrete Gutter-Modified Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.1'/0.2'

AVERAGE BANKFULL WIDTH (meters): 0.64

## 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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/21/12** Quantity: **0.10**

Photograph Information:

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) ☒ 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:

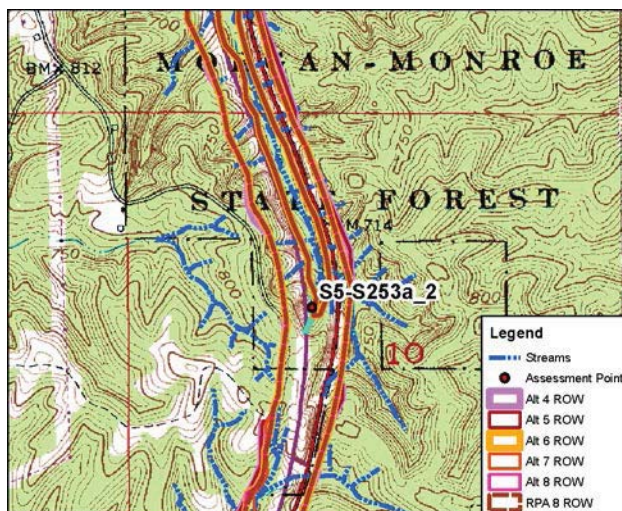
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

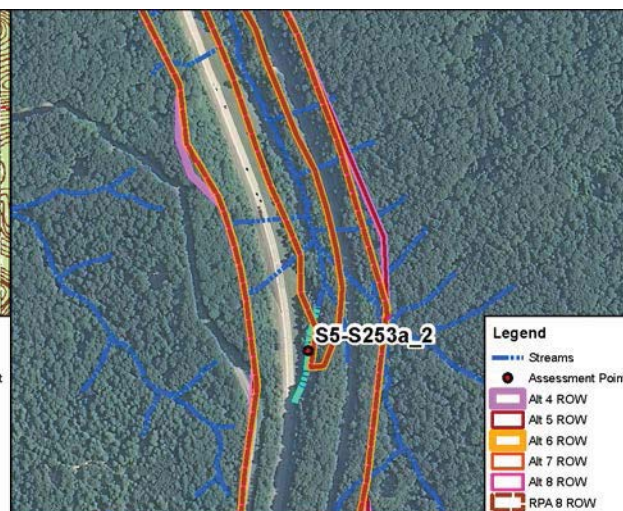
**FLOW** → See Stream Assessment Form  
S5-S253a\_1 for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S253a\_2



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778603 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S253a_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	516	0.02	1.58
5	516	0.02	1.58
6	516	0.02	1.58
7	516	0.02	1.58
8	516	0.02	1.58
RPA 8	516	0.02	1.58

### Description of Potential Impact:

Impacts to S5-S253a\_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The concrete gutter is located inside the bifurcated median of SR 37. There is a narrow riparian buffer associated with this artificial channel along its right bank and a wide buffer along the left. The right floodplain consists of INDOT ROW while the left floodplain area consists of mature forest where these Alternatives cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S253a\_2 are on the second page of this form.



## Stream Impacts S5-S253a\_2

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Photograph Taken Upstream



Photograph Taken Downstream



# Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S253a\_2**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.31908**

LONG.

RIVER CODE

RIVER MILE

DATE **05/22/12**

SCORER **JDP**

COMMENTS **(Long: -86.51075) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

## HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 2.1'/0.2'**

AVERAGE BANKFULL WIDTH (meters): **0.64**

## 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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

#### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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: **Bryant Creek** 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: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/21/12** Quantity: **0.10**

Photograph Information:

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) ☒ 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

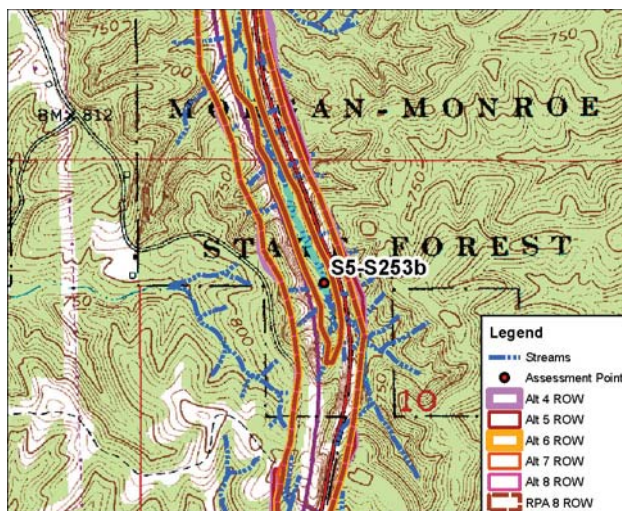
Comments Regarding Biology:

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

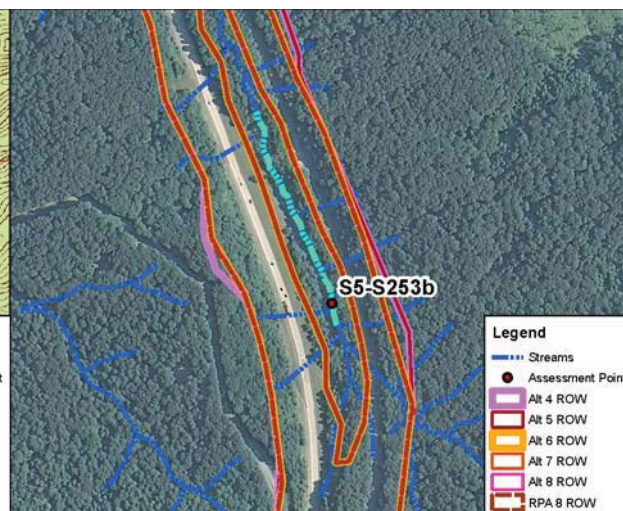
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S253a\_2 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S253b



Site Location on Washington USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Creek  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 63.5  
**Legal Drain (Y/N):** N  
**UTME:** 1778597 ft

**USGS Quadrangle:** Washington  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 13.0 feet  
**OHWM Depth:** 2.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.14 sq mi  
**Predominant Sub:** Bedrock/boulder slabs

Stream S5-S253b – Class III PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	1223	0.36	4.70
5	1223	0.36	4.70
6	1223	0.36	4.70
7	1223	0.36	4.70
8	1223	0.36	4.70
RPA 8	1223	0.36	4.70

### Description of Potential Impact:

Impacts to S5-S253b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel is located inside the bifurcated median of SR 37 and its substrate consists predominantly of bedrock and boulder slabs. There is a wide riparian buffer associated with this stream. The adjacent floodplain consist of mature forest. Photographs taken upstream and downstream are on the second page of this form.



## Stream Impacts S5-S253b

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

80

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S253b

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.14

LENGTH OF STREAM REACH (ft) 200 LAT. 39.32092 LONG. RIVER CODE RIVER MILE

DATE 05/08/06 SCORER A Rogers COMMENTS (Long: -86.51146) (Natural-Class III)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input checked="" type="checkbox"/> BLDR SLABS [16 pts]	35%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	50%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 85.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 32

TOTAL NUMBER OF SUBSTRATE TYPES: 3

## HHEI Metric Points

Substrate Max = 40

35

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):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

20

COMMENTS MAXIMUM POOL DEPTH (centimeters): 39

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

<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

25

COMMENTS OHW 13'/2.5' AVERAGE BANKFULL WIDTH (meters): 3.99

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/04/06** Quantity: **0.01**  
Photograph Information:   
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:   

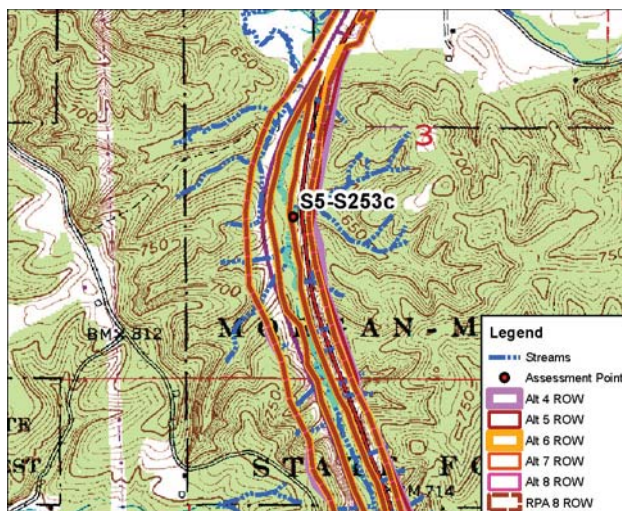
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

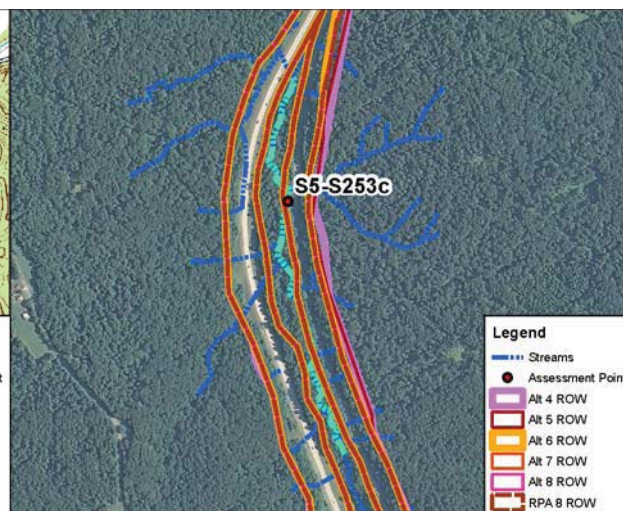
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
 S5-S253b for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S253c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 80  
**Legal Drain (Y/N):** N  
**UTME:** 1777766 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 13.0 feet  
**OHWM Depth:** 2.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.48 sq mi  
**Predominant Sub:** Bedrock

**UTMN:** 14282715 ft

Stream S5-S253c – Class III PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	3432	1.02	12.59
5	3432	1.02	12.59
6	3432	1.02	12.59
7	3432	1.02	12.59
8	3432	1.02	12.59
RPA 8	3432	1.02	12.59

### Description of Potential Impact:

Impacts to S5-S253c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel is located inside the bifurcated median of SR 37 and its substrate consists predominantly of bedrock, boulder slabs, and gravel. There is a wide riparian buffer associated with this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S253c are on the second page of this form.



## Stream Impacts S5-S253c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

80

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S253c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.48

LENGTH OF STREAM REACH (ft) 200 LAT. 39.32883 LONG. RIVER CODE RIVER MILE

DATE 05/08/06 SCORER A Rogers COMMENTS (Long: -86.51428) (Natural-Class III)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input checked="" type="checkbox"/> BLDR SLABS [16 pts]	35%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	50%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 85.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 32

TOTAL NUMBER OF SUBSTRATE TYPES: 3

## HHEI Metric Points

Substrate Max = 40

35

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):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

20

COMMENTS MAXIMUM POOL DEPTH (centimeters): 39

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

<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

25

COMMENTS OHW 13'/2.5' AVERAGE BANKFULL WIDTH (meters): 3.99

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/04/06** Quantity: **0.01**Photograph Information: 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) <input checked="" type="checkbox"/> N	Voucher? (Y/N) <input checked="" type="checkbox"/> N	Salamanders Observed? (Y/N) <input checked="" type="checkbox"/> N	Voucher? (Y/N) <input checked="" type="checkbox"/> N
Frogs or Tadpoles Observed? (Y/N) <input checked="" type="checkbox"/> N	Voucher? (Y/N) <input checked="" type="checkbox"/> N	Aquatic Macroinvertebrates Observed? (Y/N) <input checked="" type="checkbox"/> N	Voucher? (Y/N) <input checked="" type="checkbox"/> N

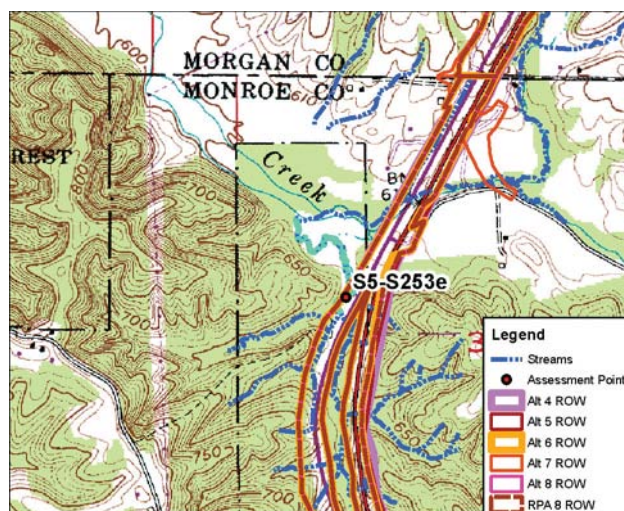
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

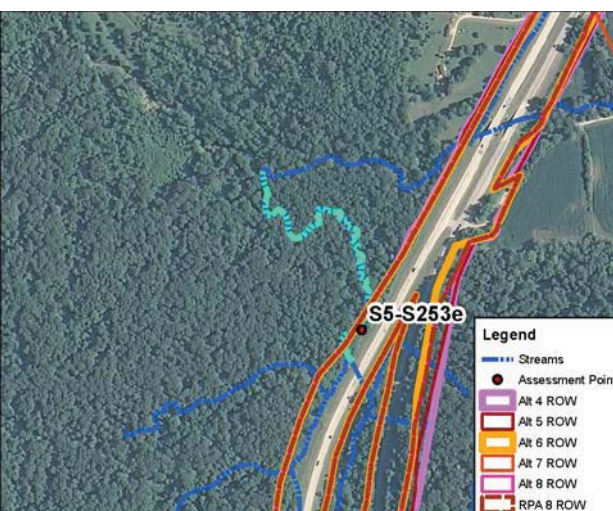
**FLOW** → See Stream Assessment Form  
S5-S253c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S253e



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized:** No  
**Stream Type:** Intermittent  
**Evaluation Type:** QHEI  
**Evaluation Score:** 55.5  
**Legal Drain (Y/N):** N  
**UTME:** 1777761 ft  
**UTMN:** 14284030 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 15.0 feet  
**OHWM Depth:** 1.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.71 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S253e – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	368	0.13	0.67
5	363	0.13	0.65
6	363	0.13	0.65
7	363	0.13	0.65
8	363	0.13	0.65
RPA 8	363	0.13	0.65

### Description of Potential Impact:

Impacts to S5-S253e at for Alternatives 4, 5, 6, 7, 8, and RPA 8 are listed in the table above. At the time of the evaluation, this stream is an intermittent stream with fair to good habitat development and high sinuosity where these Alternatives cross this stream. The predominant substrate consists of gravel and sand. The stream has a wide riparian corridor associated with its left bank and a narrow riparian buffer along its right bank. The adjacent floodplain is dominated by forest land on the left and transportation (SR 37) on the right. Photographs taken upstream and downstream at the S5-S253e are on the second page of this form. All of the Alternatives possess the same length and area of impacts to the unnamed tributary to Bryant Creek at this location.



## Stream Impacts S5-S253e

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Photograph Taken Upstream



Photograph Taken Downstream



# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
5253e		OT Right Creek	West SR 37
Surveyor	Sample Date	County	Macro Sample Type
Kyle Dew	4/26/12	Minnesota	
<input checked="" type="checkbox"/> Habitat Complete			<b>QHEI Score:</b> 55.9

1) **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P R	PRESENT	TOTAL %	P R	PRESENT	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	65	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Score natural substrates; ignore sludge from point-sources)						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

2) **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 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 root wad in deep/fast water, or deep, well-defined, functional pools.)

Amount		Amount		Amount	
<input type="checkbox"/>	UNDERCUT BANKS [1]	<input type="checkbox"/>	POOLS > 70cm [2]	<input type="checkbox"/>	OXBOWS, BACKWATERS [1]
<input type="checkbox"/>	OVERHANGING VEGETATION [1]	<input type="checkbox"/>	ROOTWADS [1]	<input type="checkbox"/>	AQUATIC MACROPHYTES [1]
<input type="checkbox"/>	SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/>	BOULDERS [1]	<input type="checkbox"/>	LOGS OR WOODY DEBRIS [1]
<input type="checkbox"/>	ROOTMATS [1]				

Comments

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY		DEVELOPMENT		CHANNELIZATION		STABILITY	
<input checked="" type="checkbox"/>	HIGH [4]	<input type="checkbox"/>	EXCELLENT [7]	<input type="checkbox"/>	NONE [6]	<input type="checkbox"/>	HIGH [3]
<input type="checkbox"/>	MODERATE [3]	<input checked="" type="checkbox"/>	GOOD [5]	<input checked="" type="checkbox"/>	RECOVERED [4]	<input type="checkbox"/>	MODERATE [2]
<input type="checkbox"/>	LOW [2]	<input checked="" type="checkbox"/>	FAIR [3]	<input type="checkbox"/>	RECOVERING [3]	<input checked="" type="checkbox"/>	LOW [1]
<input type="checkbox"/>	NONE [1]	<input type="checkbox"/>	POOR [1]	<input type="checkbox"/>	RECENT OR NO RECOVERY [1]		

Comments

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		Land Use	
<input type="checkbox"/>	EROSION	<input checked="" type="checkbox"/>	WIDE > 50m [4]	<input checked="" type="checkbox"/>	FOREST, SWAMP [3]	<input type="checkbox"/>	CONSERVATION TILLAGE [1]
<input type="checkbox"/>	NONE/LITTLE [3]	<input type="checkbox"/>	MODERATE 10-50m [3]	<input type="checkbox"/>	SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/>	URBAN OR INDUSTRIAL [0]
<input type="checkbox"/>	MODERATE [2]	<input checked="" type="checkbox"/>	NARROW 5-10m [2]	<input type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
<input checked="" type="checkbox"/>	HEAVY/SEVERE [1]	<input type="checkbox"/>	VERY NARROW [1]	<input type="checkbox"/>	FENCED PASTURE [1]		
		<input type="checkbox"/>	NONE [0]	<input type="checkbox"/>	OPEN PASTURE, ROWCROP [0]		

Comments

5) **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH		CHANNEL WIDTH		CURRENT VELOCITY		Recreation Potential	
<input type="checkbox"/>	> 1m [6]	<input type="checkbox"/>	POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/>	TORRENTIAL [-1]	<input checked="" type="checkbox"/>	SLOW [1]
<input type="checkbox"/>	0.7 - < 1m [4]	<input checked="" type="checkbox"/>	POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/>	VERY FAST [1]	<input type="checkbox"/>	INTERSTITIAL [-1]
<input checked="" type="checkbox"/>	0.4 - < 0.7m [2]	<input type="checkbox"/>	POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/>	FAST [1]	<input type="checkbox"/>	INTERMITTENT [-2]
<input type="checkbox"/>	0.2 - < 0.4m [1]			<input checked="" type="checkbox"/>	MODERATE [1]	<input type="checkbox"/>	EDDIES [1]
<input type="checkbox"/>	< 0.2m [0]						

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH		RUN DEPTH		RIFFLE/RUN SUBSTRATE		RIFFLE/RUN EMBEDDEDNESS	
<input type="checkbox"/>	BEST AREAS > 10cm [2]	<input type="checkbox"/>	MAXIMUM > 50cm [2]	<input type="checkbox"/>	STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/>	NONE [2]
<input checked="" type="checkbox"/>	BEST AREAS 5 - 10cm [1]	<input checked="" type="checkbox"/>	MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/>	MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/>	LOW [1]
<input type="checkbox"/>	BEST AREAS < 5cm [metric = 0]			<input type="checkbox"/>	UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/>	MODERATE [0]
						<input type="checkbox"/>	EXTENSIVE [-1]

Comments

6) <b>GRADIENT</b>		DRAINAGE AREA		% POOL		% GLIDE		% RUN		% RIFFLE	
8.4 ft/mi		0.70 mi <sup>2</sup>		<input type="checkbox"/>	VERY LOW - LOW [2-4]	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
				<input checked="" type="checkbox"/>	MODERATE [6-10]	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
				<input type="checkbox"/>	HIGH - VERY HIGH [10-6]	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	

DHW = 15' x 1.7'



5253e



# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

COMMENT

<b>A-CANOPY</b>		<b>B-AESTHETICS</b>		<b>C-RECREATION</b>		<b>D-MAINTENANCE</b>		<b>E-ISSUES</b>	
<input type="checkbox"/> > 85% - Open	<input type="checkbox"/> Muckiness: algae	<input type="checkbox"/> Oil/slime	<input type="checkbox"/> Public <input type="checkbox"/> Private	<input type="checkbox"/> Area	<input type="checkbox"/> Depth	<input type="checkbox"/> Industry <input type="checkbox"/> Urban	<input type="checkbox"/> WHWP <input type="checkbox"/> CSO <input type="checkbox"/> NPDES		
<input checked="" type="checkbox"/> 55% - < 85%	<input type="checkbox"/> Invasive macrophytes	<input type="checkbox"/> Trash/Litter	<input type="checkbox"/> Active <input type="checkbox"/> Historic	<input type="checkbox"/> > 100 ft <sup>2</sup>	<input type="checkbox"/> > 3 ft	<input type="checkbox"/> Hardened <input type="checkbox"/> Dirt & Grime	<input type="checkbox"/> Logging <input type="checkbox"/> Irrigation <input type="checkbox"/> Corraling		
<input type="checkbox"/> 30% - < 55%	<input type="checkbox"/> Excess turbidity	<input type="checkbox"/> Muckiness odor	Succession: <input type="checkbox"/> Young <input type="checkbox"/> Old	<input type="checkbox"/> Rock		<input type="checkbox"/> Contaminated <input type="checkbox"/> Landfill	<input type="checkbox"/> Erosion <input type="checkbox"/> Bank <input type="checkbox"/> Surface		
<input type="checkbox"/> 10% - < 30%	<input type="checkbox"/> Discoloration	<input type="checkbox"/> Sludge deposits	Spray <input type="checkbox"/> Islands <input type="checkbox"/> Scoured			<input type="checkbox"/> Baffles <input type="checkbox"/> Construction <input type="checkbox"/> Sediment	<input type="checkbox"/> False bank <input type="checkbox"/> Manure <input type="checkbox"/> Lagoon		
<input type="checkbox"/> < 10% - Closed	<input type="checkbox"/> Foamy/Scum	<input type="checkbox"/> CSOs/SSOs/Outfalls	Snag: <input type="checkbox"/> Removed <input type="checkbox"/> Modified			<input type="checkbox"/> Logging <input type="checkbox"/> Irrigation <input type="checkbox"/> Corraling	<input type="checkbox"/> Wash H <sub>2</sub> O <input type="checkbox"/> Tile <input type="checkbox"/> H <sub>2</sub> O Table		
			Lowest <input type="checkbox"/> One sided <input type="checkbox"/> Both banks			<input type="checkbox"/> Erosion <input type="checkbox"/> Bank <input type="checkbox"/> Surface	<input type="checkbox"/> Mines <input type="checkbox"/> Acid <input type="checkbox"/> Quarry		
			<input type="checkbox"/> Relocated <input type="checkbox"/> Culverts			<input type="checkbox"/> False bank <input type="checkbox"/> Manure <input type="checkbox"/> Lagoon	<input type="checkbox"/> Flow: <input type="checkbox"/> Natural <input type="checkbox"/> Stagnant		
			Bedrock <input type="checkbox"/> Moving <input type="checkbox"/> Stable			<input type="checkbox"/> Wash H <sub>2</sub> O <input type="checkbox"/> Tile <input type="checkbox"/> H <sub>2</sub> O Table	<input type="checkbox"/> Wetland <input type="checkbox"/> Park <input type="checkbox"/> Golf		
			<input type="checkbox"/> Armoured <input type="checkbox"/> Slumps			<input type="checkbox"/> Mines <input type="checkbox"/> Acid <input type="checkbox"/> Quarry	<input type="checkbox"/> Lawn <input type="checkbox"/> Home		
			<input type="checkbox"/> Impounded <input type="checkbox"/> Destabilized			<input type="checkbox"/> Flow: <input type="checkbox"/> Natural <input type="checkbox"/> Stagnant	<input type="checkbox"/> Atmospheric deposition		
			<input type="checkbox"/> Flood control <input type="checkbox"/> Drainage						

Looking upstream (> 10m, 3 readings < 10m, 1 reading in middle); Round to the nearest whole percent

	Left	Middle	Right	Total Average
% open	40 %	60 %	80 %	60 %

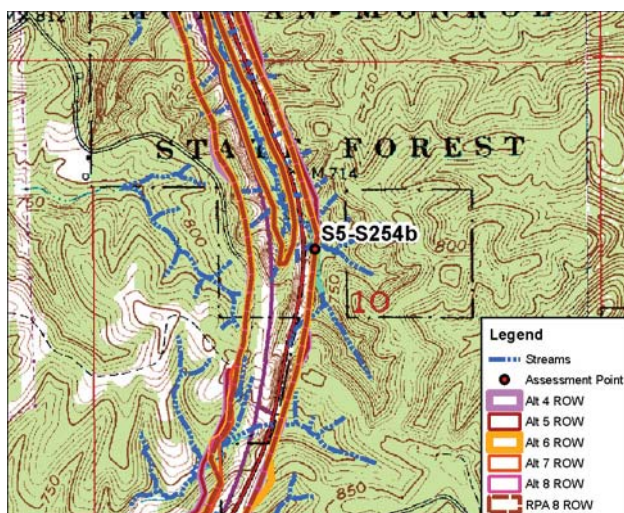
X

X

X

Stream Drawing:

## Stream Impacts S5-S254b



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 41  
**Legal Drain (Y/N):** N  
**UTME:** 1778989 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.5 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.09 sq mi  
**Predominant Sub:** Cobble/gravel

**UTMN:** 14279076 ft

Stream S5-S254b – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	155	0.02	1.06
5	165	0.02	1.09
6	165	0.02	1.08
7	165	0.02	1.09
8	165	0.02	1.09
RPA 8	165	0.02	1.09

### Description of Potential Impact:

Impacts to S5-S254b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of coble, gravel, and boulder slabs. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S254b are on the second page of this form.



## Stream Impacts S5-S254b

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

41

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S254b

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.09

LENGTH OF STREAM REACH (ft) 200

LAT. 39.31882

LONG.

RIVER CODE

RIVER MILE

DATE 10/18/11

SCORER DEW/KSS

COMMENTS (Long: -86.51002) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	20%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65 256 mm) [12 pts]	40%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	25%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 60.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

5

HHEI  
Metric  
PointsSubstrate  
Max = 40

26

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

15

COMMENTS OHW = 4.5'/0.8'

AVERAGE BANKFULL WIDTH (meters):

1.40

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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

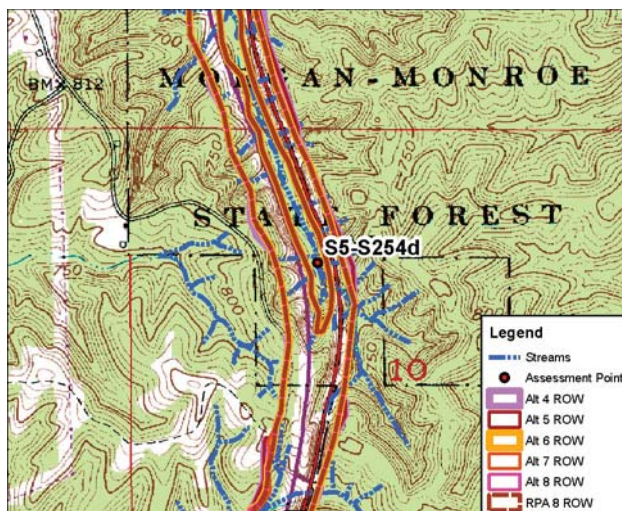
Comments Regarding Biology:

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

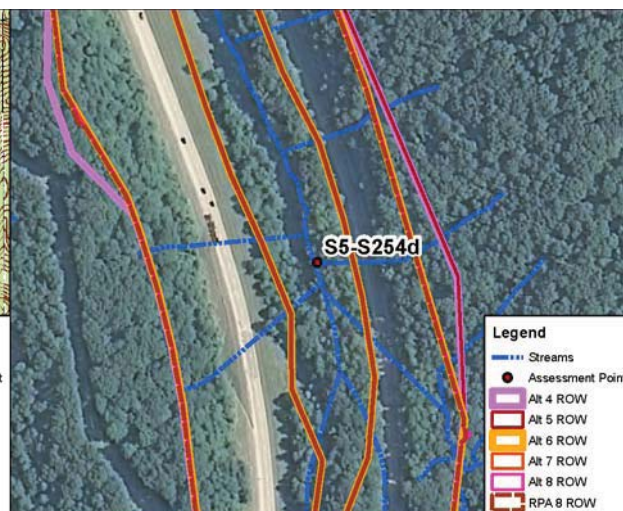
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S254b for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S254d



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 20  
**Legal Drain (Y/N):** N  
**UTME:** 1778632 ft    **UTMN:** 14279638 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.3 feet  
**OHWM Depth:** 0.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Silt/gravel

Stream S5-S254d – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	22	0.01	0.01
5	22	0.01	0.01
6	22	0.01	0.01
7	22	0.01	0.01
8	22	0.01	0.01
RPA 8	22	0.01	0.01

### Description of Potential Impact:

Impacts to S5-S254d for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of silt and gravel. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S254d are on the second page of this form.



## **Stream Impacts S5-S254d**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

20

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S254d

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 22 LAT. 39.32036 LONG. RIVER CODE RIVER MILE

DATE 07/10/12 SCORER BLA Inc. COMMENTS (Long: -86.51127) (Natural-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	70%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	20%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 3

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.3'/0.3' AVERAGE BANKFULL WIDTH (meters): 0.61

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N):  **N** Date of last precipitation: **06/30/12** Quantity: **0.01**

Photograph Information: **60 - Up, 61 - 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:

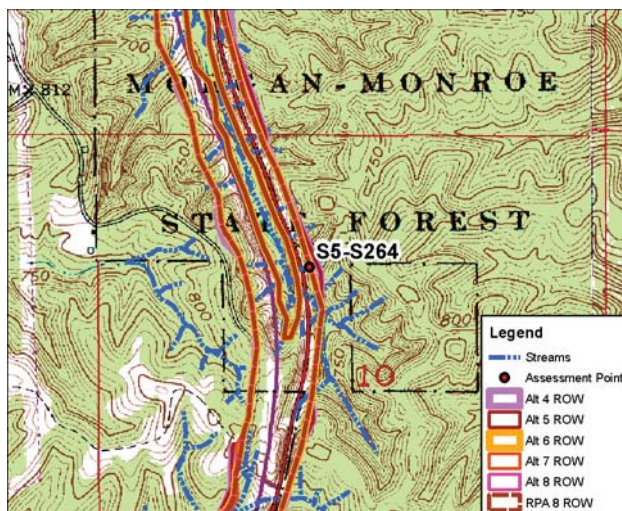
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

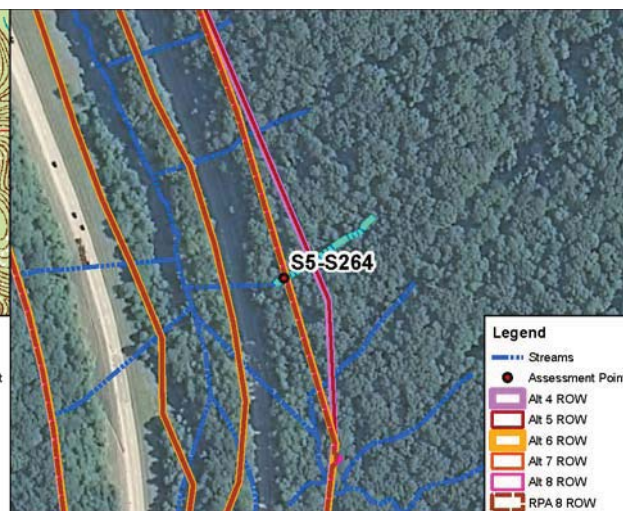
**FLOW**  See Stream Assessment Form  
S5-S254d for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S264



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 21  
**Legal Drain (Y/N):** N  
**UTME:** 1778879 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.2 feet  
**OHWM Depth:** 1.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/leaf pack

**UTMN:** 14279660 ft

Stream S5-S264 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	113	0.01	0.16
5	115	0.01	0.17
6	36	0.01	0.01
7	36	0.01	0.01
8	36	0.01	0.01
RPA 8	36	0.01	0.01

### Description of Potential Impact:

Impacts to S5-S264 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and leaf pack. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S264 are on the second page of this form.

## Stream Impacts S5-S264

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

21

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S264** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.32042** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **A Rogers** COMMENTS **(Long: -86.51040) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="30%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="60%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **4**HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

5

COMMENTS **OHW - 2.2' / 1.1'** AVERAGE BANKFULL WIDTH (meters): **0.80**

This information must also be completed

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

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

COMMENTS 

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **Leaves indicated surface conveyance only**

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **95 Upstream / 96 Downstream / 97 Right Bank / 98 Left Bank**

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) ☐

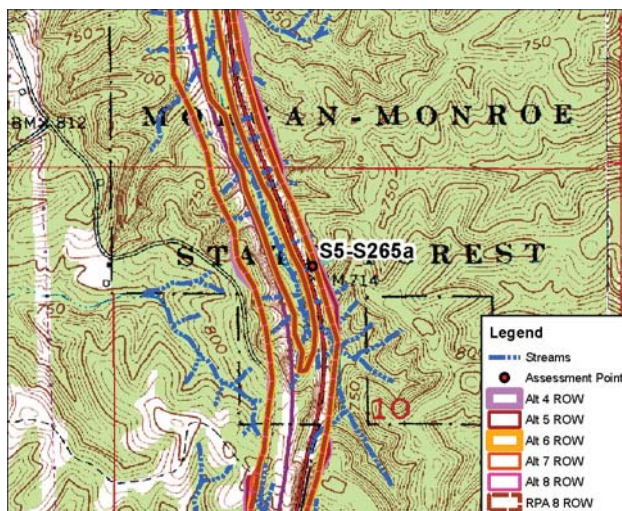
Comments Regarding Biology:

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

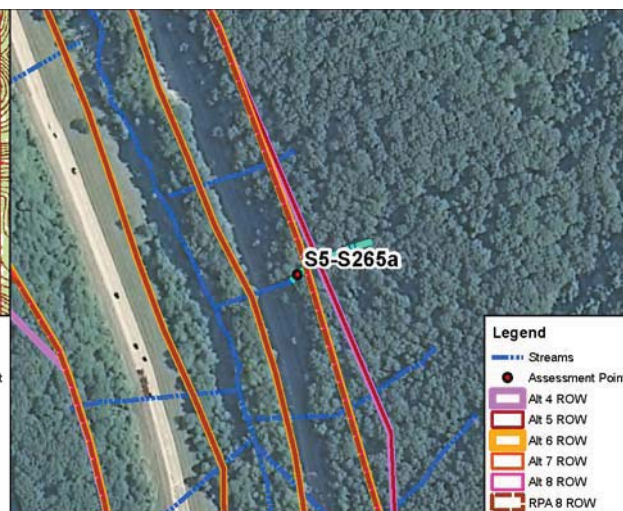
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S264 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S265a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 22  
**Legal Drain (Y/N):** N  
**UTME:** 1778754 ft  
**UTMN:** 14280009 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.9 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/leaf pack

Stream S5-S265a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	91	0.01	0.42
5	93	0.01	0.43
6	57	0.01	0.26
7	57	0.01	0.26
8	57	0.01	0.26
RPA 8	57	0.01	0.26

### Description of Potential Impact:

Impacts to S5-S265a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and leaf pack. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S265a are on the second page of this form.

## Stream Impacts S5-S265a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

22

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S265a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.32138

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER J Meeker

COMMENTS (Long. -86.51084) (Natural-Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	25%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	60%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 5

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS ephemeral reach

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.9' / 0.9'

AVERAGE BANKFULL WIDTH (meters): 0.70

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **99 Upstream / 100 Downstream / 101 Right Bank / 102 Left Bank**

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) ☐

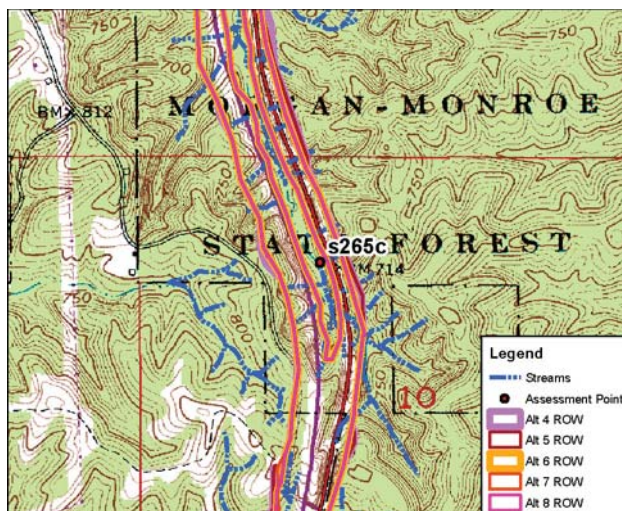
Comments Regarding Biology:

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

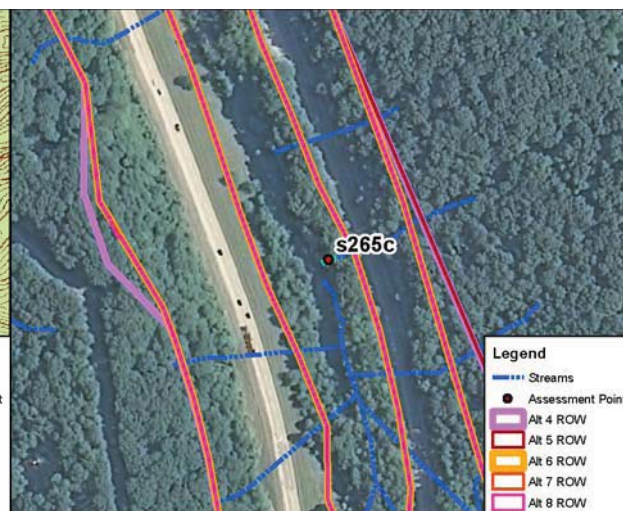
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S265a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S265c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 30  
**Legal Drain (Y/N):** N  
**UTME:** 1778566 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.5 feet  
**OHWM Depth:** 0.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Silt/gravel

Stream S5-S265c – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	36	0.01	0.00
5	36	0.01	0.00
6	36	0.01	0.00
7	36	0.01	0.00
8	36	0.01	0.00
RPA 8	36	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S265c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of silt and gravel. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of immature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S265c are on the second page of this form.



## **Stream Impacts S5-S265c**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

30

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S265c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **36** LAT. **39.32118** LONG.  RIVER CODE  RIVER MILE

DATE **07/10/12** SCORER **BLA Inc.** COMMENTS **(Long: -86.51150) (Modified Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="60%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 2.5'/0.7'** AVERAGE BANKFULL WIDTH (meters): **1.10**

HHEI Metric Points

Substrate Max = 40

15

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		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Moderate 5 10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	

COMMENTS 

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS 

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☐ N Date of last precipitation: **06/30/12** Quantity: **0.01**

Photograph Information: **58 - Up, 59 - 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) ☒ 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:

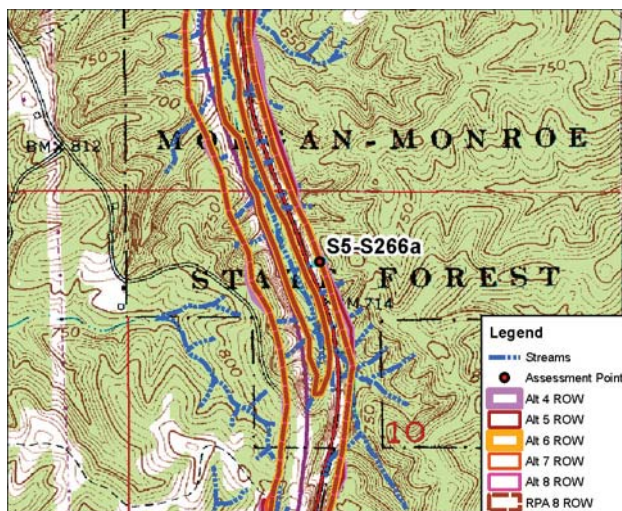
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

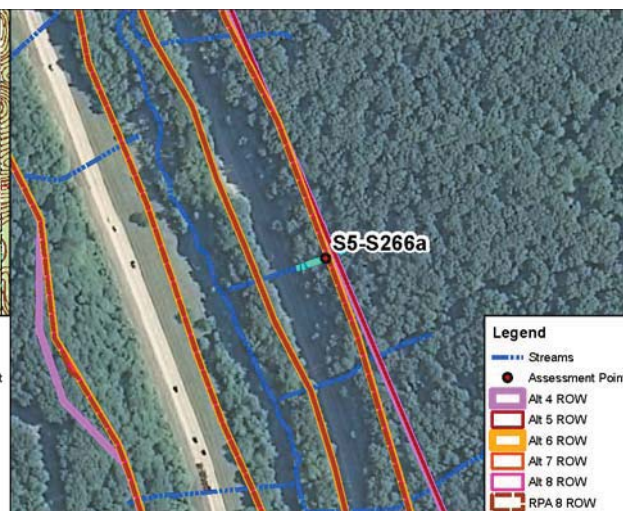
**FLOW** → See Stream Assessment Form  
S5-S265c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S266a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 21  
**Legal Drain (Y/N):** N  
**UTME:** 1778673 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.7 feet  
**OHWM Depth:** 1.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/leaf pack

**UTMN:** 14280295 ft

Stream S5-S266a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	108	0.01	0.49
5	110	0.01	0.50
6	92	0.01	0.42
7	92	0.01	0.42
8	92	0.01	0.42
RPA 8	92	0.01	0.42

### Description of Potential Impact:

Impacts to S5-S266a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and leaf pack. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S266a are on the second page of this form.

## Stream Impacts S5-S266a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

21

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S266a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 164

LAT. 39.32217

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER J Meeker

COMMENTS (Long: -86.51112) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	35%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	55%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

12

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ephemeral reach

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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.7' / 1.3'

AVERAGE BANKFULL WIDTH (meters):

0.82

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name:	<b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **103 Upstream / 104 Downstream / 105 Right Bank / 106 Left Bank**

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) ☐

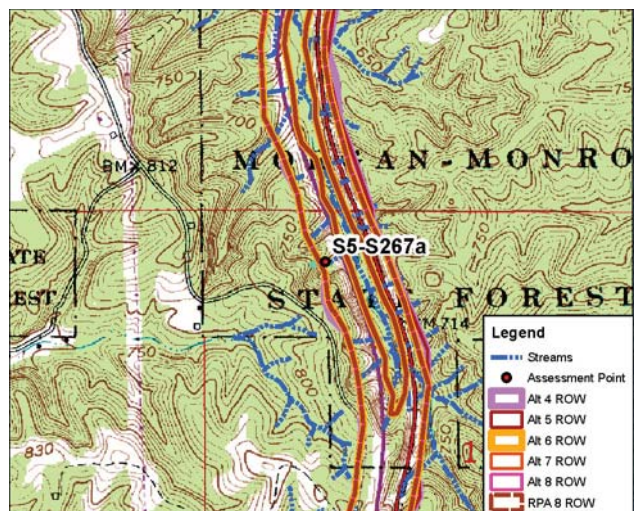
Comments Regarding Biology:

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

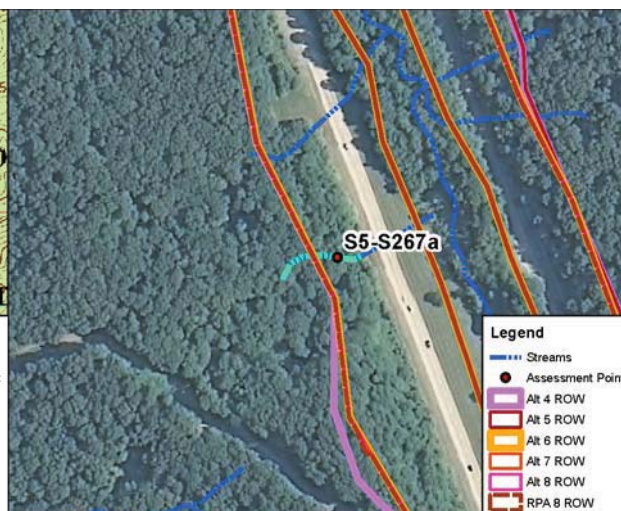
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S266a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S267a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 35  
**Legal Drain (Y/N):** N  
**UTME:** 1777939 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 1.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S267a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	127	0.01	0.58
5	125	0.01	0.57
6	125	0.01	0.57
7	125	0.01	0.57
8	125	0.01	0.57
RPA 8	125	0.01	0.57

### Description of Potential Impact:

Impacts to S5-S267a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S267a are on the second page of this form.



## Stream Impacts S5-S267a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

35

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S267a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.32275

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER A Rogers

COMMENTS (Long: -86.51371) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	5%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	60%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	20%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS ephemeral reach

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW - 2.1' / 1.2'

AVERAGE BANKFULL WIDTH (meters): 1.20

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **185 Upstream / 186 Downstream / 187 Right Bank / 188 Left Bank**

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) ☐

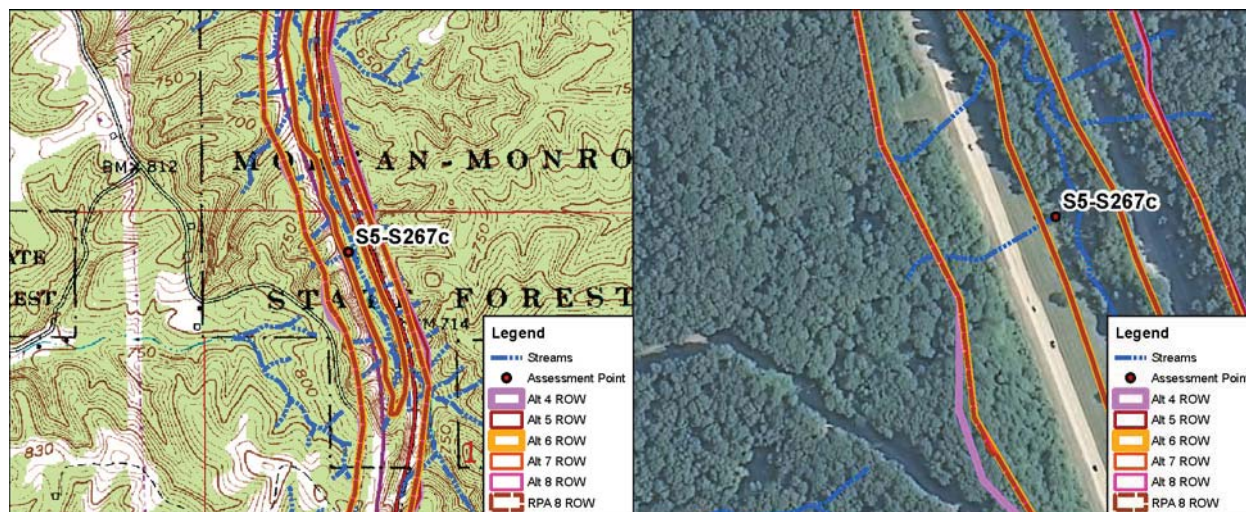
Comments Regarding Biology:

**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** → See Stream Assessment Form  
S5-S267a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S267c



Site Location on Modesto USGS Quadrangle

Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 20  
**Legal Drain (Y/N):** N  
**UTME:** 1778181 ft

**UTMN:** 14280610 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.1 feet  
**OHWM Depth:** 0.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/silt

Stream S5-S267c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	13	0.01	0.01
5	13	0.01	0.01
6	13	0.01	0.01
7	13	0.01	0.01
8	13	0.01	0.01
RPA	13	0.01	0.01

### Description of Potential Impact:

Impacts to S5-S267c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and silt. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S267c are on the second page of this form.



## Stream Impacts S5-S267c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

20

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S267c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **13** LAT. **39.32321** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **A Rogers** COMMENTS **(Long: -86.51284) (Natural-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="25%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="70%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 1.1' / 0.3'** AVERAGE BANKFULL WIDTH (meters): **0.34**

HHEI Metric Points

Substrate Max = 40

15

A + B

Pool Depth Max = 30

0

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		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5 10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **185 Upstream / 186 Downstream / 187 Right Bank / 188 Left Bank**

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):**

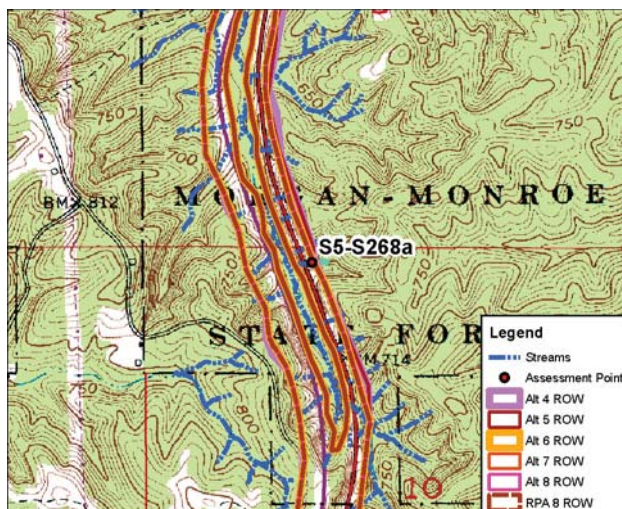
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** →

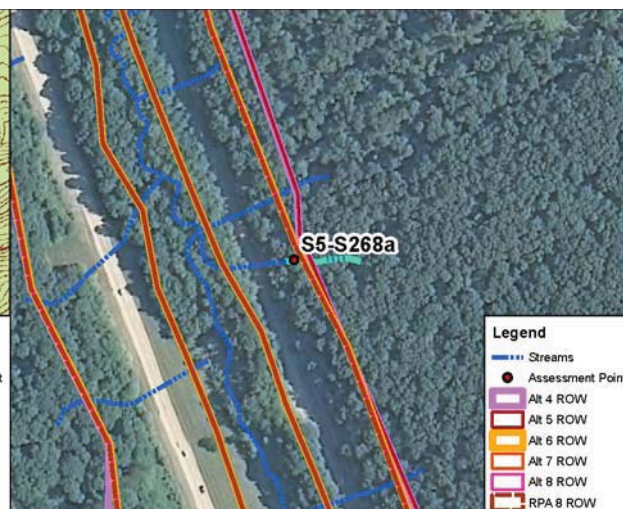
See Stream Assessment Form  
S5-S267c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S268a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 28  
**Legal Drain (Y/N):** N  
**UTME:** 1778412 ft  
**UTMN:** 14280875 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.0 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.02 sq mi  
**Predominant Sub:** Gravel/clay

Stream S5-S268a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	62	0.01	0.29
5	65	0.01	0.30
6	45	0.01	0.21
7	45	0.01	0.21
8	45	0.01	0.21
RPA 8	45	0.01	0.21

### Description of Potential Impact:

Impacts to S5-S268a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and clay. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S268a are on the second page of this form.

## Stream Impacts S5-S268a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S268a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.02**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.32376** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **J Meeker** COMMENTS **(Long: -86.51203) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="60%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **ephemeral reach**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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 3.0' / 0.9'**AVERAGE BANKFULL WIDTH (meters): **1.20**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **107 Upstream / 108 Downstream / 109 Right Bank / 110 Left Bank**

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) ☐

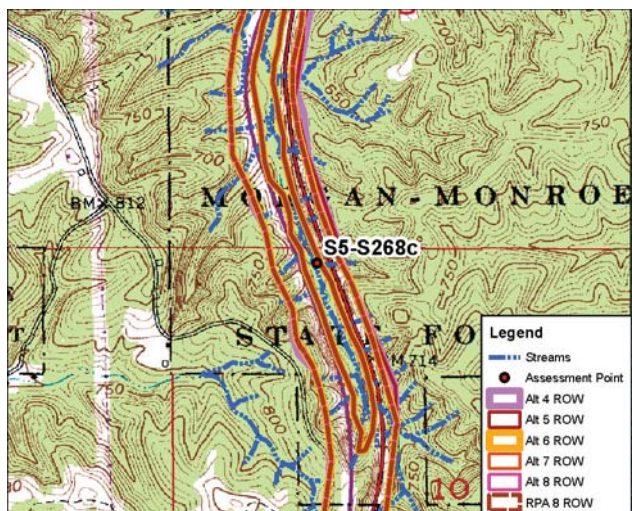
Comments Regarding Biology:

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

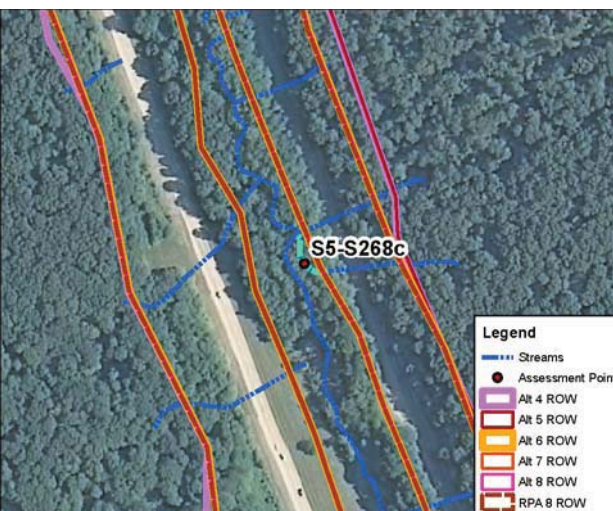
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S268a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S268c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 38  
**Legal Drain (Y/N):** N  
**UTME:** 1778184 ft  
**UTMN:** 14280873 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 6.0 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.02 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S268c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	154	0.02	0.09
5	154	0.02	0.09
6	154	0.02	0.09
7	154	0.02	0.09
8	154	0.02	0.09
RPA 8	154	0.02	0.09

### Description of Potential Impact:

Impacts to S5-S268c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest within the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S268c are on the second page of this form.



## Stream Impacts S5-S268c

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

38

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S268c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.02

LENGTH OF STREAM REACH (ft) 150

LAT. 39.32376

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.51284) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	75%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	15%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 6'/0.4'

AVERAGE BANKFULL WIDTH (meters):

1.83

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>1.04</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
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:   

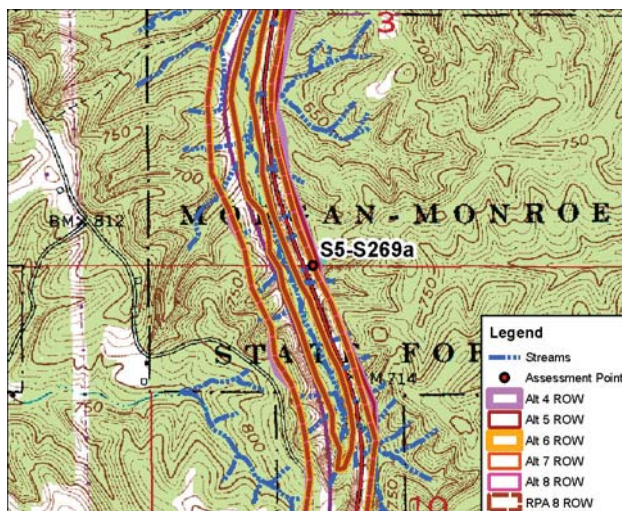
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

**FLOW** → See Stream Assessment Form  
 S5-S268c for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S269a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 28  
**Legal Drain (Y/N):** N  
**UTME:** 1778364 ft  
**UTMN:** 14281039 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.0 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/clay

Stream S5-S269a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	92	0.01	0.35
5	94	0.01	0.36
6	39	0.01	0.15
7	39	0.01	0.15
8	39	0.01	0.15
RPA 8	39	0.01	0.15

### Description of Potential Impact:

Impacts to S5-S269a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and clay. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S269a are on the second page of this form.



## **Stream Impacts S5-S269a**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S269a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **181** LAT. **39.32421** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **A Rogers** COMMENTS **(Long: -86.51219) (Natural-Class I)**

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="35%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="55%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **ephemeral reach**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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 3.0' / 0.9'**AVERAGE BANKFULL WIDTH (meters): **1.40**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **111 Upstream / 112 Downstream / 113 Right Bank / 114 Left Bank**

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:

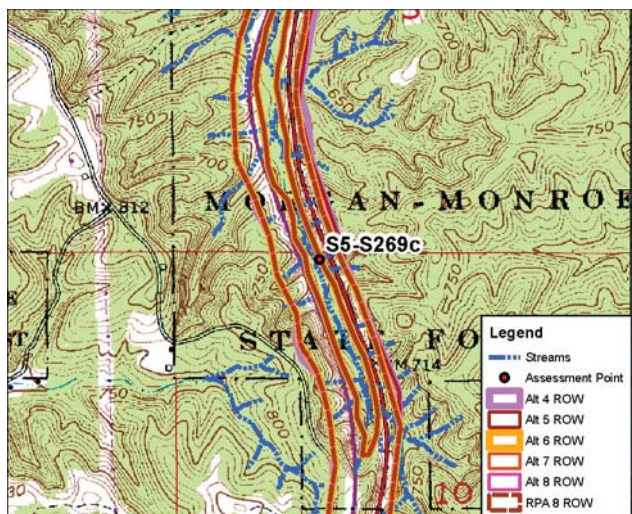
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

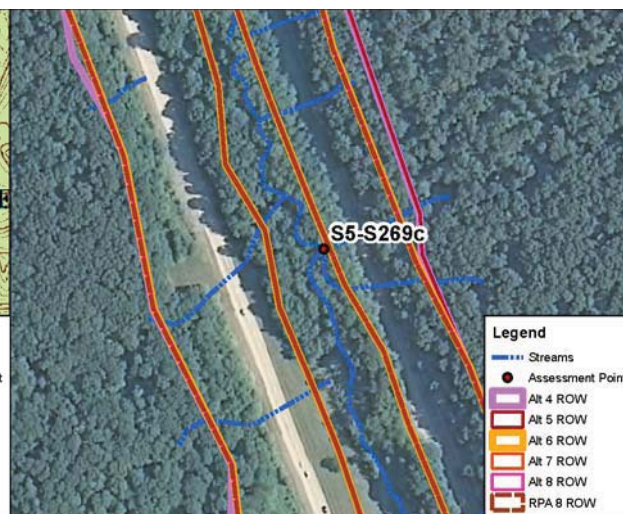
**FLOW** → See Stream Assessment Form  
S5-S269a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S269c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 38  
**Legal Drain (Y/N):** N  
**UTME:** 1778171 ft    **UTMN:** 14280956 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.5 feet  
**OHWM Depth:** 0.35 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S269c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	12	0.01	0.01
5	12	0.01	0.01
6	12	0.01	0.01
7	12	0.01	0.01
8	12	0.01	0.01
RPA 8	12	0.01	0.01

### Description of Potential Impact:

Impacts to S5-S269c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S269c are on the second page of this form.

## Stream Impacts S5-S269c

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

38

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S269c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 12

LAT. 39.32399

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.51288) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	75%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	15%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 5.5'/0.4'

AVERAGE BANKFULL WIDTH (meters): 1.70

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>1.03</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
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:   

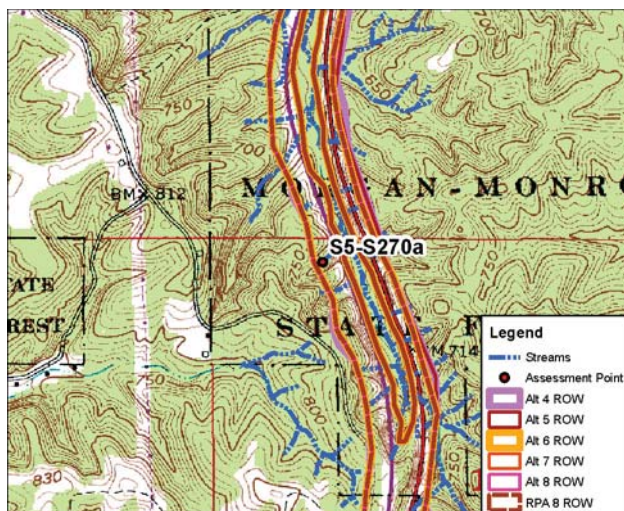
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

**FLOW** → See Stream Assessment Form  
S5-S269c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S270a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 19  
**Legal Drain (Y/N):** N  
**UTME:** 1777824 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.1 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/gravel

Stream S5-S270a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	153	0.01	0.66
5	150	0.01	0.65
6	150	0.01	0.65
7	150	0.01	0.65
8	150	0.01	0.65
RPA 8	150	0.01	0.65

### Description of Potential Impact:

Impacts to S5-S270a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and gravel. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S270a are on the second page of this form.



## Stream Impacts S5-S270a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

19

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S270a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **175** LAT. **39.32353** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **J Meeker** COMMENTS **(Long: -86.51411) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="55%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS **ephemeral reach**MAXIMUM POOL DEPTH (centimeters): **0**

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 1.1' / 0.9'**AVERAGE BANKFULL WIDTH (meters): **0.34**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **181 Upstream / 182 Downstream / 183 Right Bank / 184 Left Bank**

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) ☐

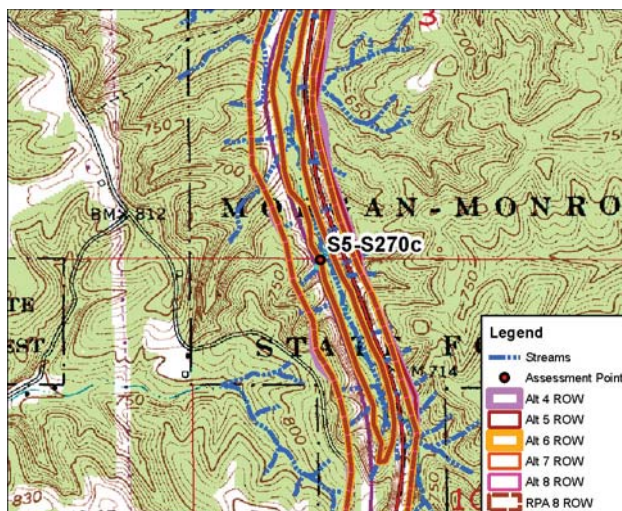
Comments Regarding Biology:

**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** → See Stream Assessment Form  
S5-S270a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S270c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 33  
**Legal Drain (Y/N):** N  
**UTME:** 1778010 ft    **UTMN:** 14281020 ft

**USGS Quadrangle:** Modesto  
**Section:** 10  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.8 feet  
**OHWM Depth:** 0.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/gravel

Stream S5-S270c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	202	0.02	0.10
5	202	0.02	0.10
6	202	0.02	0.10
7	202	0.02	0.10
8	202	0.02	0.10
RPA 8	202	0.02	0.10

### Description of Potential Impact:

Impacts to S5-S270c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and gravel. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest within the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S270c are on the second page of this form.



## Stream Impacts S5-S270c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

33

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S270c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.32417 LONG. RIVER CODE RIVER MILE

DATE 04/25/12 SCORER KSS/DEW COMMENTS (Long: -86.51345) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	60%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	20%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	15%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

9

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 3.8'/0.7'

AVERAGE BANKFULL WIDTH (meters):

1.16

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.98</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
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) ☒ 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:   

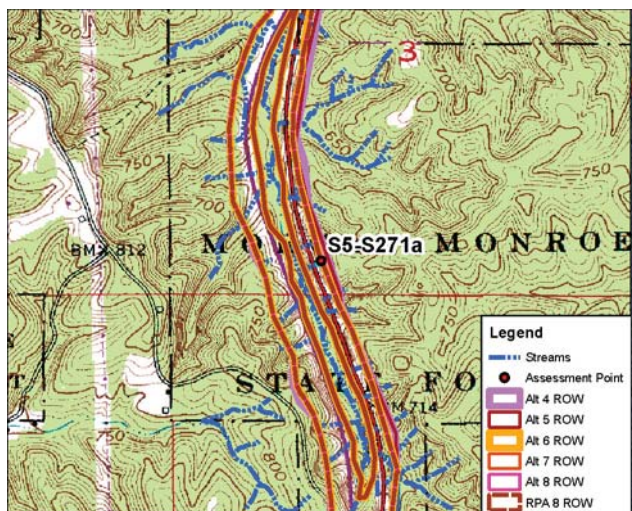
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW** → See Stream Assessment Form  
 S5-S270c for site topographic map,  
 aerial photograph, and resource photographs



## Stream Impacts S5-S271a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778224 ft  
**UTMN:** 14281384 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.5 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Leaf pack/clay

Stream S5-S271a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	92	0.01	0.55
5	92	0.01	0.56
6	73	0.01	0.26
7	73	0.01	0.26
8	73	0.01	0.26
RPA 8	73	0.01	0.26

### Description of Potential Impact:

Impacts to S5-S271a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and leaf pack. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S271a are on the second page of this form.

## Stream Impacts S5-S271a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S271a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **92** LAT. **39.32517** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **J Meeker** COMMENTS **(Long: -86.51268) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="40%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

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

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS **ephemeral reach**MAXIMUM POOL DEPTH (centimeters): **0**

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 1.5' / 0.8'**AVERAGE BANKFULL WIDTH (meters): **0.46**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **115 Upstream / 116 Downstream / 117 Right Bank / 118 Left Bank**

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) ☐

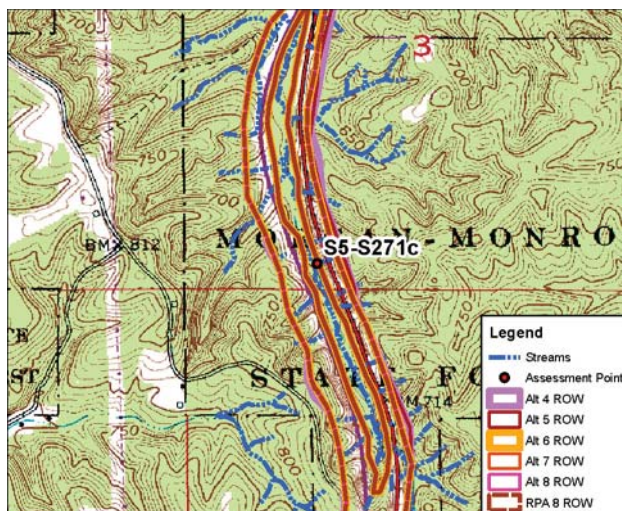
Comments Regarding Biology:

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

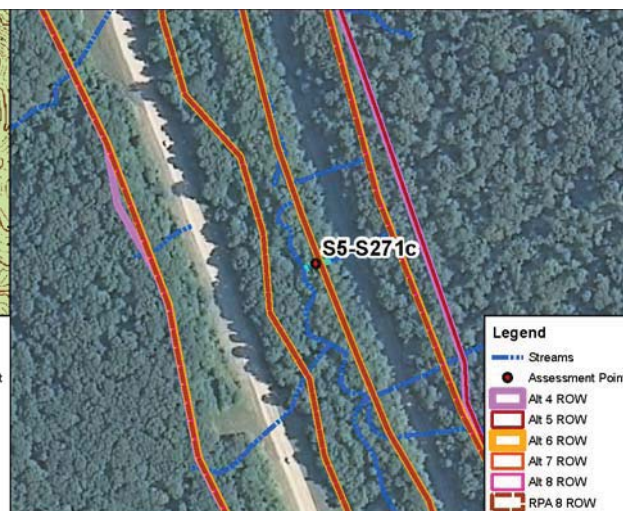
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S271a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S271c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 14  
**Legal Drain (Y/N):** N  
**UTME:** 1778033 ft  
**UTMN:** 14281303 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.9 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Leaf Pack/silt

Stream S5-S271c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	75	0.01	0.05
5	75	0.01	0.05
6	75	0.01	0.05
7	75	0.01	0.05
8	75	0.01	0.05
RPA 8	75	0.01	0.05

### Description of Potential Impact:

Impacts to S5-S271c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of leaf pack and silt. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest in the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S271c are on the second page of this form.



## Stream Impacts S5-S271c

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

14

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S271c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **100** LAT. **39.32495** LONG.  RIVER CODE  RIVER MILE

DATE **04/25/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.51336) (Natural-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="50%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 2.9'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.88**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.92</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
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:   

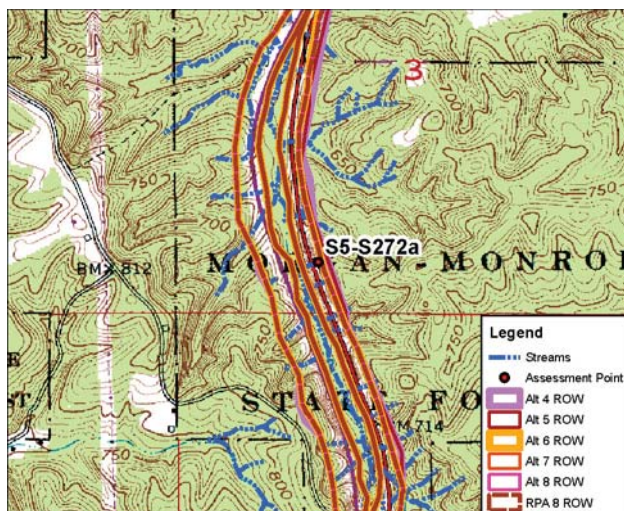
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

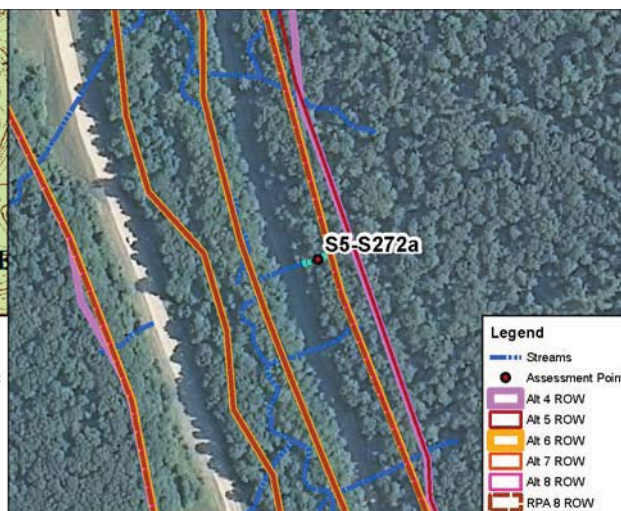
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S271c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S272a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778134 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.3 feet  
**OHWM Depth:** 0.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Leaf Pack, Clay

Stream S5-S272a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	88	0.01	0.60
5	88	0.01	0.61
6	82	0.01	0.34
7	82	0.01	0.34
8	82	0.01	0.34
RPA 8	82	0.01	0.34

### Description of Potential Impact:

Impacts to S5-S272a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and leaf pack. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S272a are on the second page of this form.



## Stream Impacts S5-S272a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S272a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 80

LAT. 39.32566

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER J Meeker

COMMENTS (Long: -86.51300) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="35%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.3' / 0.7'

AVERAGE BANKFULL WIDTH (meters): 0.40

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **119 Upstream / 120 Downstream / 121 Right Bank / 122 Left Bank**

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:

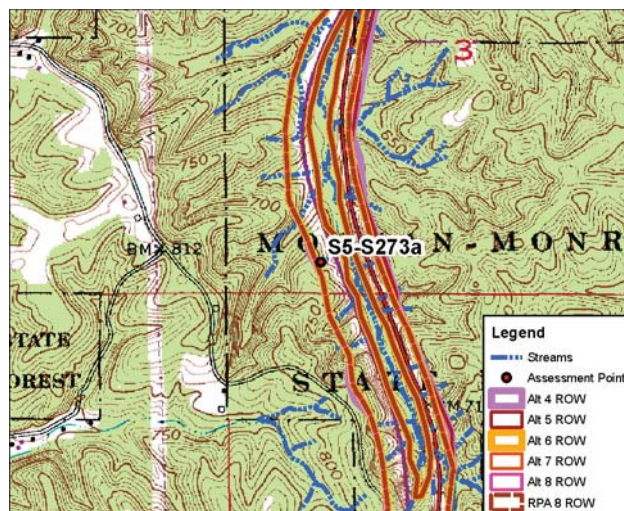
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

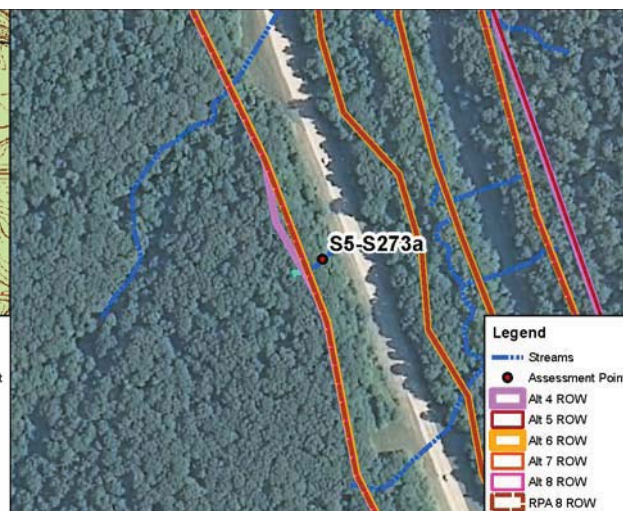
**FLOW** → See Stream Assessment Form  
S5-S272a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S273a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 50  
**Legal Drain (Y/N):** N  
**UTME:** 1777639 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.8 feet  
**OHWM Depth:** 0.9 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S273a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	11	0.01	0.05
5	0	0.00	0.01
6	0	0.00	0.01
7	0	0.00	0.01
8	0	0.00	0.01
RPA 8	0	0.00	0.01

### Description of Potential Impact:

Impacts to S5-S273a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S273a are on the second page of this form.

## Stream Impacts S5-S273a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

50

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S273a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 120

LAT. 39.32511

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER A Rogers

COMMENTS (Long: -86.51475) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	3%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	15%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	2%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	45%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	35%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

7

Pool Depth Max = 30

15

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.8' / 0.9'

AVERAGE BANKFULL WIDTH (meters):

1.20

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **177 Upstream / 178 Downstream / 179 Right Bank / 180 Left Bank**

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) ☐

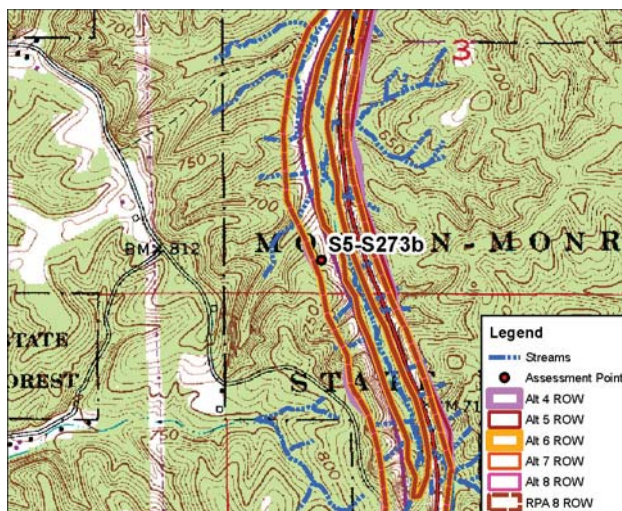
Comments Regarding Biology:

**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** → See Stream Assessment Form  
S5-S273a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S273b



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1777770 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.0 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S273b – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	130	0.01	0.60
5	130	0.01	0.58
6	130	0.01	0.58
7	130	0.01	0.58
8	130	0.01	0.58
RPA 8	130	0.01	0.58

### Description of Potential Impact:

Impacts to S5-S273b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The artificial substrate consists of a concrete gutter. There is a wide riparian corridor on both banks of the stream. The floodplain consists primarily of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S273b are on the second page of this form.

## **Stream Impacts S5-S273b**

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S273b

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 130

LAT. 39.32529

LONG.

RIVER CODE

RIVER MILE

DATE 07/10/12

SCORER BLA Inc.

COMMENTS (Long: -86.51428) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

6

TOTAL NUMBER OF SUBSTRATE TYPES:

1

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

5

COMMENTS OHW 2'/0.2'

AVERAGE BANKFULL WIDTH (meters):

0.61

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N):  **N** Date of last precipitation: **06/30/12** Quantity: **0.01**

Photograph Information: **39 - Up, 40 - DS**

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)  **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:

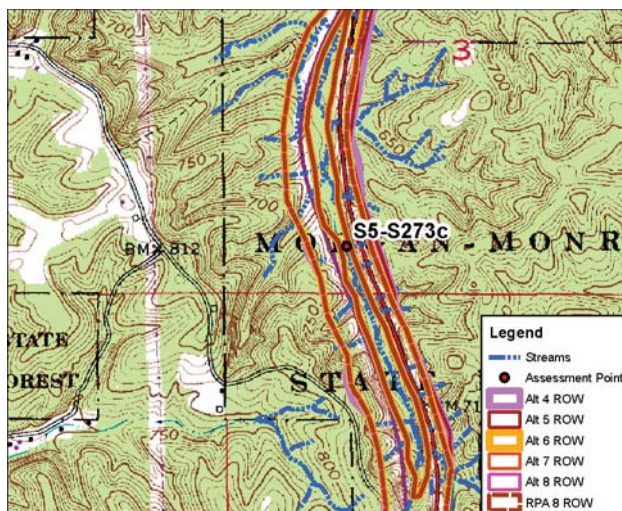
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW** →

See Stream Assessment Form  
S5-S273b for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S273c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 19  
**Legal Drain (Y/N):** N  
**UTME:** 1777917 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Silt/gravel

Stream S5-S273c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	52	0.01	0.05
5	52	0.01	0.05
6	52	0.01	0.05
7	52	0.01	0.05
8	52	0.01	0.05
RPA 8	52	0.01	0.05

### Description of Potential Impact:

Impacts to S5-S273c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate primarily consists of a silt and gravel. There is a wide riparian corridor on both banks of the stream. The floodplain consists primarily of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S273c are on the second page of this form.





Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

19

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S273c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 111

LAT. 39.32548

LONG.

RIVER CODE

RIVER MILE

DATE 07/10/12

SCORER BLA Inc.

COMMENTS (Long: -86.51376) (Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	70%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	30%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 2

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.1/0.2'

AVERAGE BANKFULL WIDTH (meters): 0.84

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N):  **N** Date of last precipitation: **06/30/12** Quantity: **0.01**

Photograph Information: **P37 - Down, P38 - Up**

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)  **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:

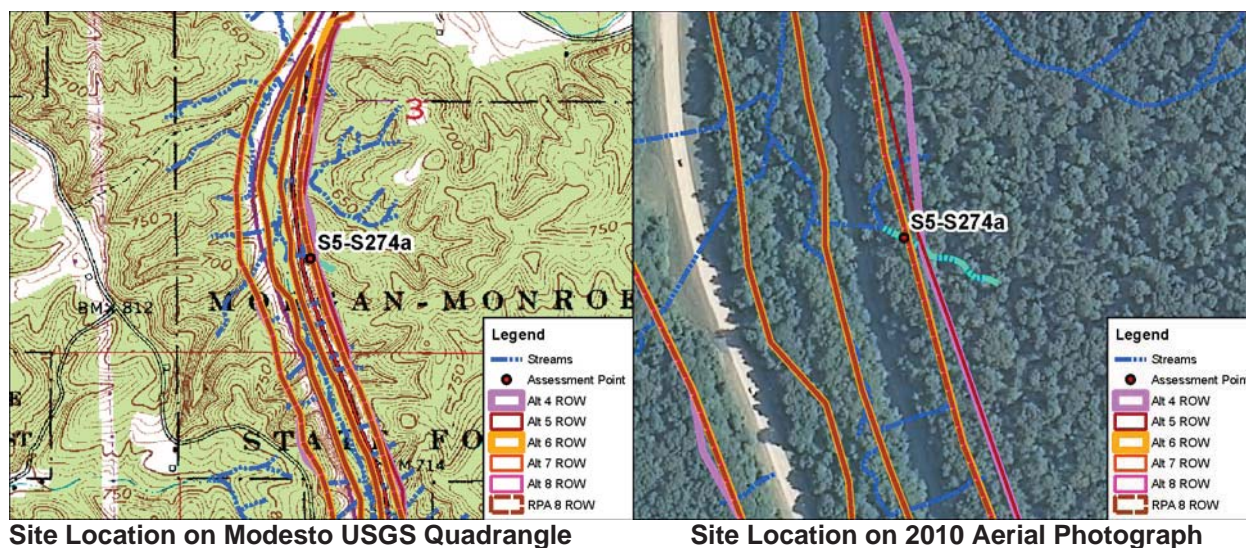
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW** → See Stream Assessment Form  
S5-S273c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S274a



**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 28  
**Legal Drain (Y/N):** N  
**UTME:** 1778041 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.1 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.02 sq mi  
**Predominant Sub:** Gravel/clay

Stream S5-S274a –Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	114	0.01	0.57
5	116	0.01	0.55
6	74	0.01	0.34
7	74	0.01	0.34
8	74	0.01	0.34
RPA 8	74	0.01	0.34

### Description of Potential Impact:

Impacts to S5-S274a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and clay. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S274a are on the second page of this form.

## Stream Impacts S5-S274a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S274a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.02**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.32689** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **J Meeker** COMMENTS **(Long: -86.51332) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="10%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="35%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="50%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **4**HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

15

COMMENTS **OHW - 3.1' / 0.8'** AVERAGE BANKFULL WIDTH (meters): **1.25**

This information must also be completed

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

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

COMMENTS 

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS 

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **123 Upstream / 124 Downstream / 130 Right Bank / 129 Left Bank**

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) ☐

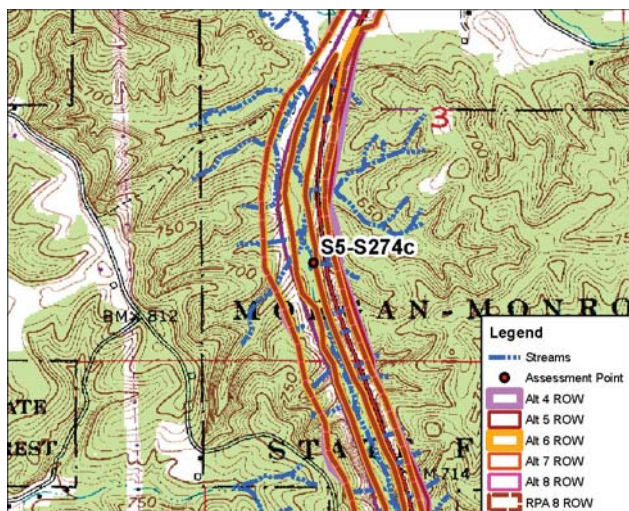
Comments Regarding Biology:

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

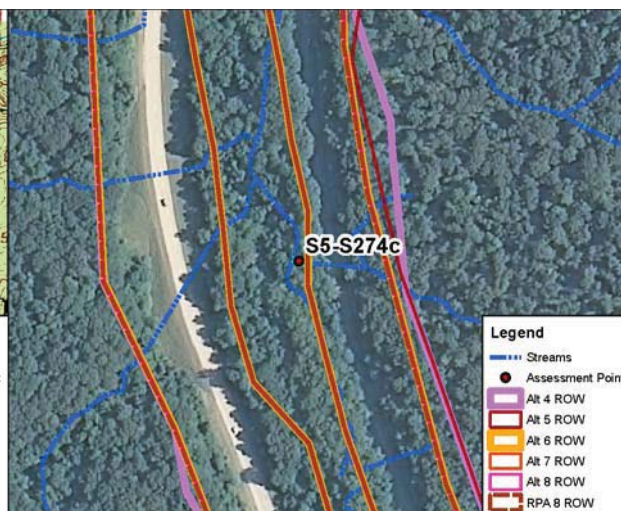
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S274a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S274c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 23  
**Legal Drain (Y/N):** N  
**UTME:** 1777812 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.6 feet  
**OHWM Depth:** 0.6 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.02 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S274c –Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	52	0.01	0.00
5	52	0.01	0.00
6	52	0.01	0.00
7	52	0.01	0.00
8	52	0.01	0.00
RPA 8	52	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S274c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest in the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S274c are on the second page of this form.



## Stream Impacts S5-S274c

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

23

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S274c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.02**

LENGTH OF STREAM REACH (ft) **80** LAT. **39.32701** LONG.  RIVER CODE  RIVER MILE

DATE **04/25/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.51413) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="80%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 3.2'/0.6'** AVERAGE BANKFULL WIDTH (meters): **0.98**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.78</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

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) ☒ 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

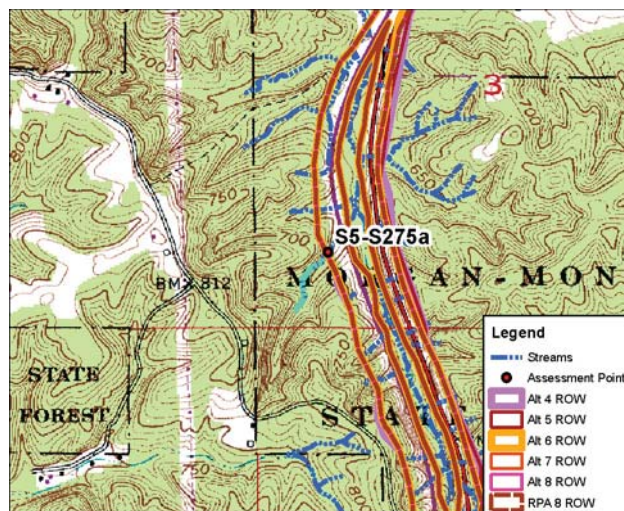
Comments Regarding Biology:

**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

**FLOW**  See Stream Assessment Form  
S5-S274c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S275a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 40  
**Legal Drain (Y/N):** N  
**UTME:** 1777414 ft  
**UTMN:** 14281820 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.4 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.07 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S275a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	52	0.01	0.23
5	50	0.01	0.22
6	50	0.01	0.22
7	50	0.01	0.22
8	50	0.01	0.22
RPA 8	50	0.01	0.22

### Description of Potential Impact:

Impacts to S5-S275a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S275a are on the second page of this form.



## **Stream Impacts S5-S275a**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

40

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S275a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.07

LENGTH OF STREAM REACH (ft) 200

LAT. 39.32637

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER J Meeker

COMMENTS (Long: -86.51554) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	3%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	20%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	2%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	45%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	30%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage  
Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

15

COMMENTS MAXIMUM POOL DEPTH (centimeters): 7

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull  
Width  
Max=30

5

COMMENTS OHW = 2.4'/0.8' AVERAGE BANKFULL WIDTH (meters): 0.73

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information:

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) ☒ 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:

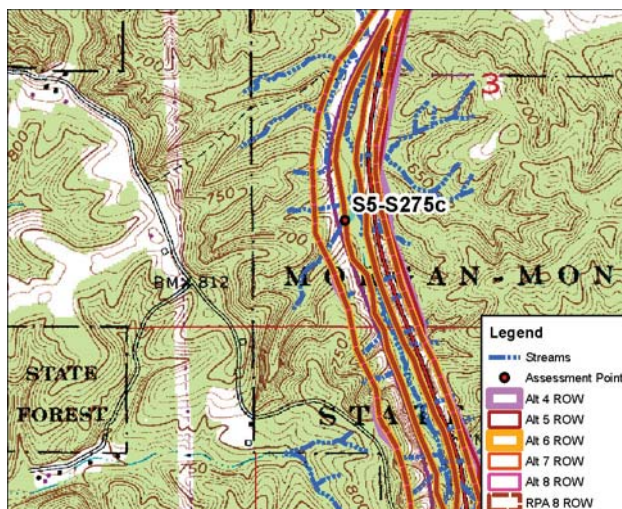
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

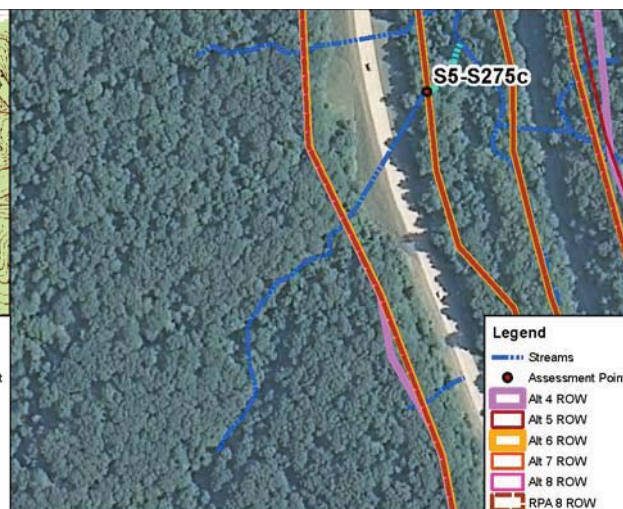
**FLOW** → See Stream Assessment Form  
S5-S275a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S275c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 43  
**Legal Drain (Y/N):** N  
**UTME:** 1777612 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.0 feet  
**OHWM Depth:** 0.7 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.07 sq mi  
**Predominant Sub:** Gravel

**UTMN:** 14282142 ft

Stream S5-S275c –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	179	0.02	0.24
5	179	0.02	0.24
6	179	0.02	0.24
7	179	0.02	0.24
8	179	0.02	0.24
RPA 8	179	0.02	0.24

### Description of Potential Impact:

Impacts to S5-S275c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate of S5-S275c is gravel. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest in the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S275c are on the second page of this form.



## Stream Impacts S5-S275c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

43

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S275c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.07

LENGTH OF STREAM REACH (ft) 195

LAT. 39.32726

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.51483) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	85%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 4

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 5'/0.7' AVERAGE BANKFULL WIDTH (meters): 1.52

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.72</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

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) ☒ 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

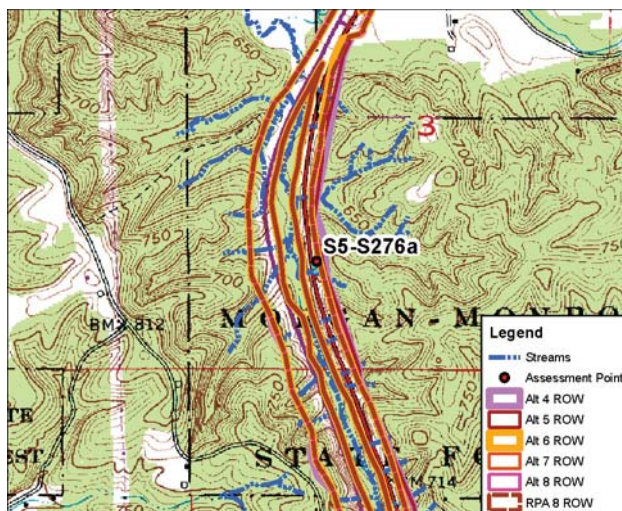
Comments Regarding Biology:

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

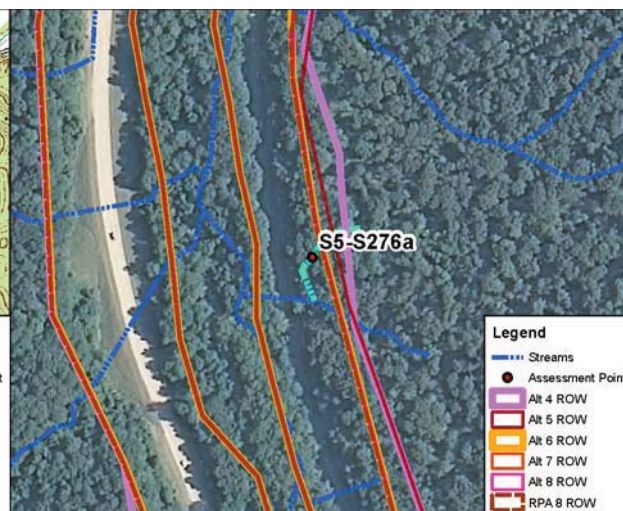
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S275c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S276a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 21  
**Legal Drain (Y/N):** N  
**UTME:** 1777980 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.0 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/leaf pack

**UTMN:** 14282151 ft

Stream S5-S276a –Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	247	0.01	0.52
5	212	0.01	0.35
6	172	0.01	0.21
7	172	0.01	0.21
8	172	0.01	0.21
RPA 8	172	0.01	0.21

### Description of Potential Impact:

Impacts to S5-S276a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and leaf pack. There is a wide riparian corridor associated with this stream along both banks until the channel turns to the south and runs parallel to SR 37, where the riparian buffer is narrow. The adjacent floodplain consists of mature forest and transportation. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S276a are on the second page of this form.



## Stream Impacts S5-S276a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

21

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S276a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 180

LAT. 39.32727

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER J Meeker

COMMENTS (Long: -86.51353) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	25%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	55%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 4

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.0' / 0.5' AVERAGE BANKFULL WIDTH (meters): 0.30

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> 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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **125 Upstream / 126 Downstream / 127 Right Bank / 128 Left Bank**

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) ☐

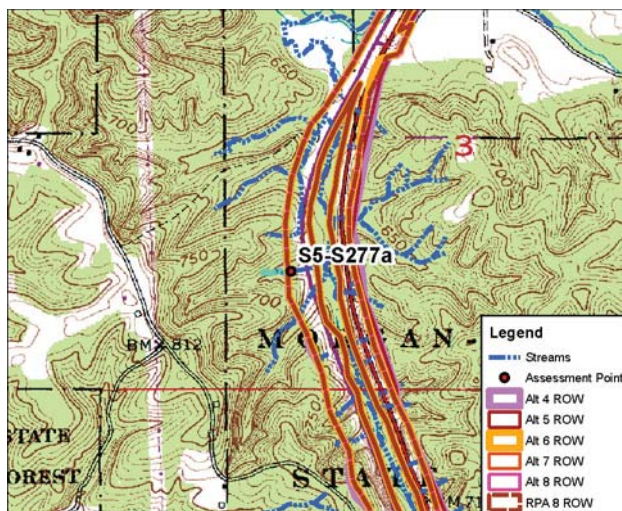
Comments Regarding Biology:

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

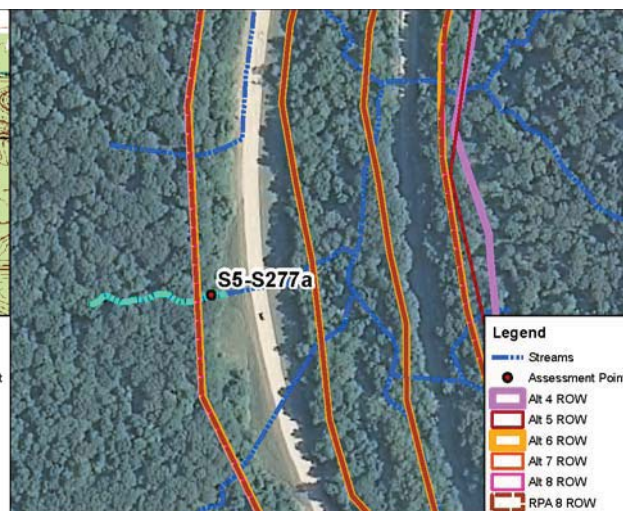
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW**  See Stream Assessment Form  
S5-S276a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S277a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 51  
**Legal Drain (Y/N):** N  
**UTME:** 1777328 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.5 feet  
**OHWM Depth:** 1.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.04 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S277a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	75	0.01	0.28
5	73	0.01	0.27
6	73	0.01	0.27
7	73	0.01	0.27
8	73	0.01	0.27
RPA 8	73	0.01	0.27

### Description of Potential Impact:

Impacts to S5-S277a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S277a are on the second page of this form.



## Stream Impacts S5-S277a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

51

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S277a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 39.32759 LONG. RIVER CODE RIVER MILE

DATE 05/10/06 SCORER A Rogers COMMENTS (Long: -86.51583) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	3%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	2%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	55%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	30%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 2.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): 10

Pool Depth Max = 30

15

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 4.5'/1.1' AVERAGE BANKFULL WIDTH (meters): 1.37

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information:

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) ☒ 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:

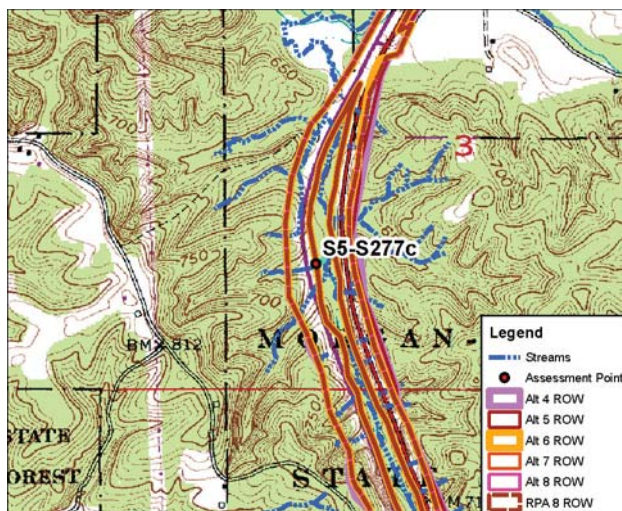
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

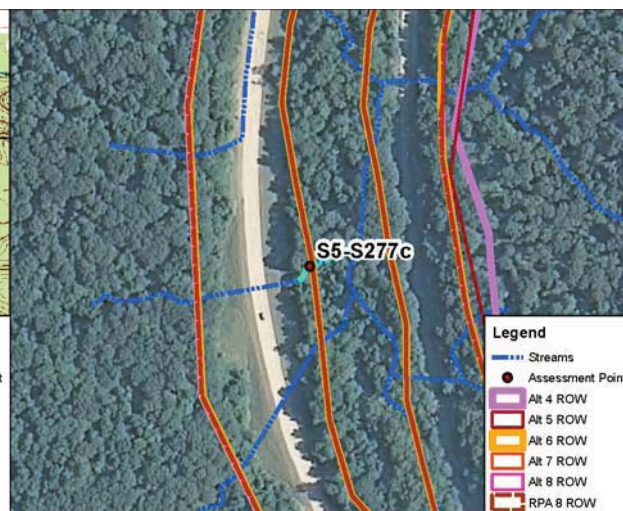
**FLOW** → See Stream Assessment Form  
S5-S277a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S277c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 33  
**Legal Drain (Y/N):** N  
**UTME:** 1777584 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.8 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.04 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S277c –Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	188	0.02	0.24
5	188	0.02	0.24
6	188	0.02	0.24
7	188	0.02	0.24
8	188	0.02	0.24
RPA 8	188	0.02	0.24

### Description of Potential Impact:

Impacts to S5-S277c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest in the bifurcated area of existing SR 37. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S277c are on the second page of this form.



## Stream Impacts S5-S277c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

33

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S277c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.04

LENGTH OF STREAM REACH (ft) 175

LAT. 39.32779

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.51493) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	20%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	45%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	35%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 4.8'/0.4' AVERAGE BANKFULL WIDTH (meters): 1.50

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.72</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
 County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
 Photograph Information:   
 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**

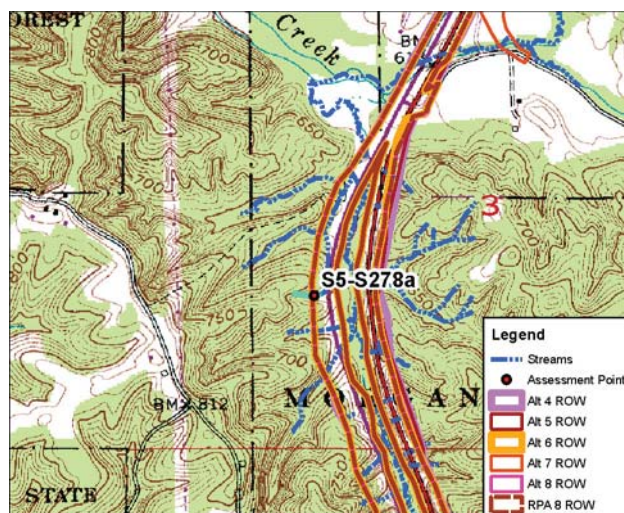
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
 Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders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

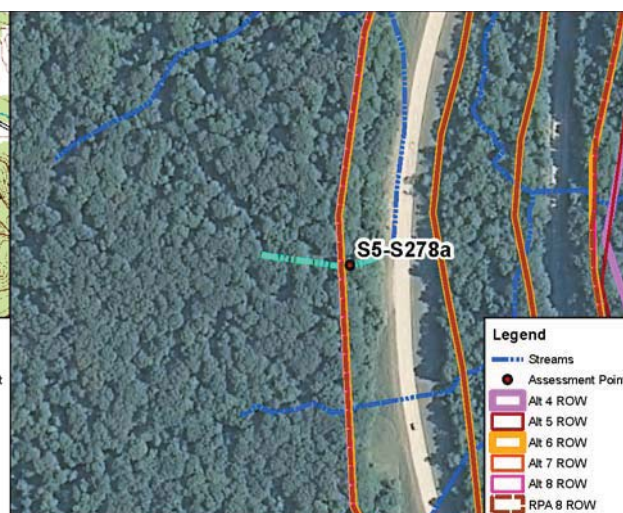
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
 S5-S277c for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S278a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 40  
**Legal Drain (Y/N):** N  
**UTME:** 1777269 ft  
**UTMN:** 14282626 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.5 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S278a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	103	0.01	0.41
5	101	0.01	0.40
6	101	0.01	0.40
7	101	0.01	0.40
8	101	0.01	0.40
RPA 8	101	0.01	0.40

### Description of Potential Impact:

Impacts to S5-S278a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of sand and gravel. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S278a are on the second page of this form.



## Stream Impacts S5-S278a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

40

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

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S278a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.32859

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER A Rogers

COMMENTS (Long: -86.51594) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	15%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	20%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	50%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth  
Max = 30

5

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 4.5' / 0.5'

AVERAGE BANKFULL WIDTH (meters):

1.37

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **165 Upstream / 166 Downstream / 167 Right Bank / 168 Left Bank**

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) ☐

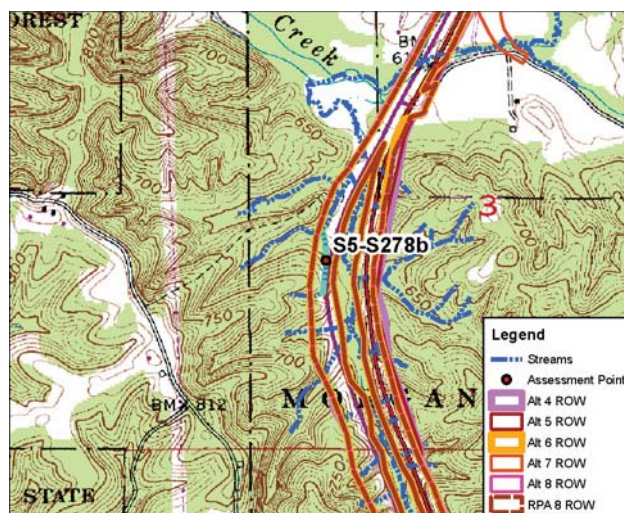
Comments Regarding Biology:

**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** → See Stream Assessment Form  
S5-S278a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S278b



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1777439 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.7 feet  
**OHWM Depth:** 0.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S278b – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	706	0.03	0.96
5	706	0.03	0.96
6	706	0.03	0.96
7	706	0.03	0.96
8	706	0.03	0.96

### Description of Potential Impact:

Impacts to S5-S278b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located adjacent to existing SR 37. There is no riparian buffer associated with this artificial channel. The floodplain consists of INDOT ROW on the right bank and an old field on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S278b are on the second page of this form.



## Stream Impacts S5-S278b

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S278b

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.32961 LONG. RIVER CODE RIVER MILE

DATE 04/26/12 SCORER KSS/DEW COMMENTS (Long: -86.51543) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.7'/0.1' AVERAGE BANKFULL WIDTH (meters): 0.52

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name:	<b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
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) ☒ 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:   

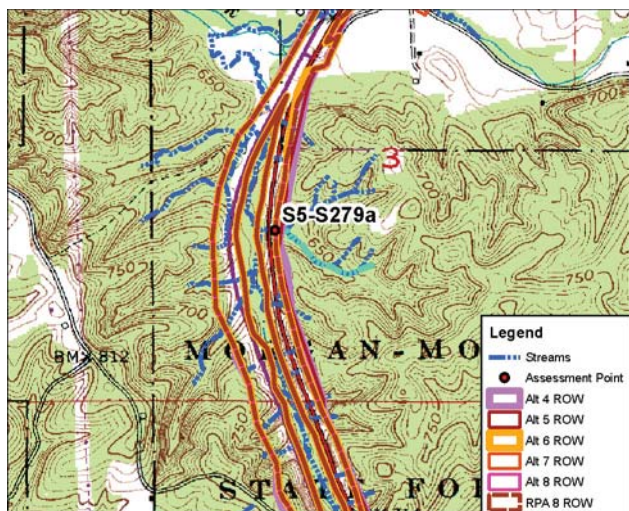
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

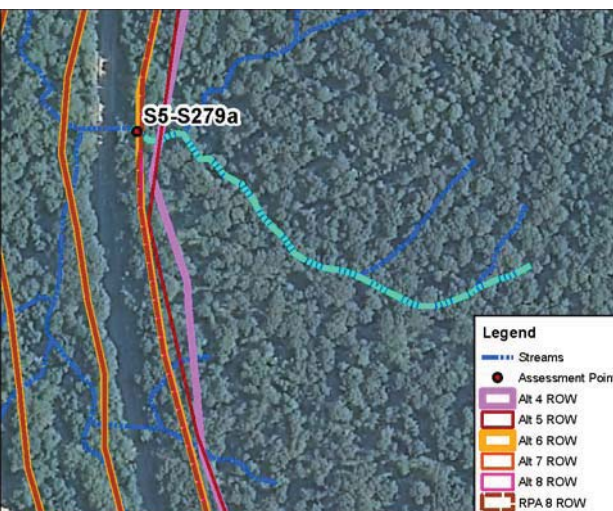
**FLOW** → See Stream Assessment Form  
 S5-S278b for site topographic map,  
 aerial photograph, and resource photographs



## Stream Impacts S5-S279a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 72  
**Legal Drain (Y/N):** N  
**UTME:** 1777920 ft  
**UTMN:** 14282810 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.2 feet  
**OHWM Depth:** 1.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.10 sq mi  
**Predominant Sub:** Gravel/cobble

Stream S5-S279a – Class III PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	81	0.01	0.36
5	83	0.01	0.37
6	23	0.01	0.09
7	28	0.01	0.12
8	30	0.01	0.12
RPA 8	33	0.01	0.13

### Description of Potential Impact:

Impacts to S5-S279a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel, cobble, and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S279a are on the second page of this form.

## Stream Impacts S5-S279a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

72

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S279a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.10**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.32909** LONG.  RIVER CODE  RIVER MILE

DATE **05/10/06** SCORER **J Meeker** COMMENTS **(Long: -86.51373) (Natural-Class III)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="10%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="5%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **30.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **21**TOTAL NUMBER OF SUBSTRATE TYPES: **6**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS  MAXIMUM POOL DEPTH (centimeters): **12**

Pool Depth Max = 30

25

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 4.2' / 1.2'** AVERAGE BANKFULL WIDTH (meters): **1.80**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS 

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name:	<b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order **2**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **131 Upstream / 132 Downstream / 133 Right Bank / 134 Left Bank**

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:

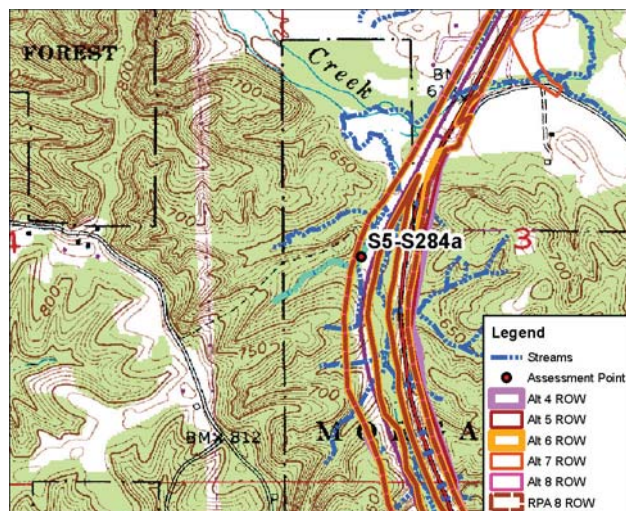
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

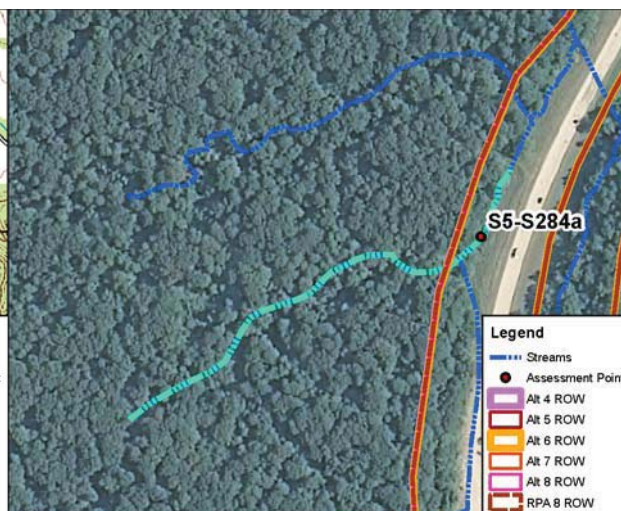
**FLOW** →

See Stream Assessment Form  
S5-S279a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S284a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 21  
**Legal Drain (Y/N):** N  
**UTME:** 1777445 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.5 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.04 sq mi  
**Predominant Sub:** Silt

Stream S5-S284a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	321	0.01	0.58
5	319	0.01	0.56
6	319	0.01	0.56
7	319	0.01	0.56
8	319	0.01	0.56
RPA 8	319	0.01	0.56

### Description of Potential Impact:

Impacts to S5-S284a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of silt. There is a wide riparian corridor along the left bank and no riparian buffer along the right bank where these Alternatives cross this stream. The adjacent left bank floodplain consists of mature forest while the right floodplain is transportation. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S284a are on the second page of this form.



## Stream Impacts S5-S284a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

21

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S284a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.04

LENGTH OF STREAM REACH (ft) 200

LAT. 39.33065

LONG.

RIVER CODE

RIVER MILE

DATE 10/18/11

SCORER DEW/KSS

COMMENTS (Long: -86.51540) (Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	90%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

9

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

1

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW = 1.5'/0.8'

AVERAGE BANKFULL WIDTH (meters):

0.50

## 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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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

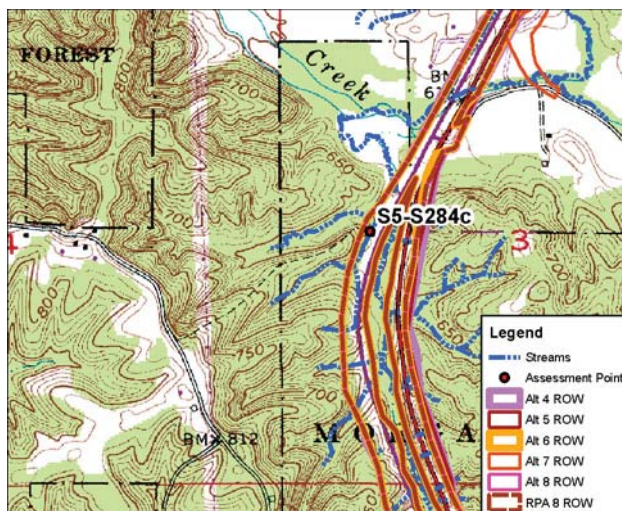
Comments Regarding Biology:

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

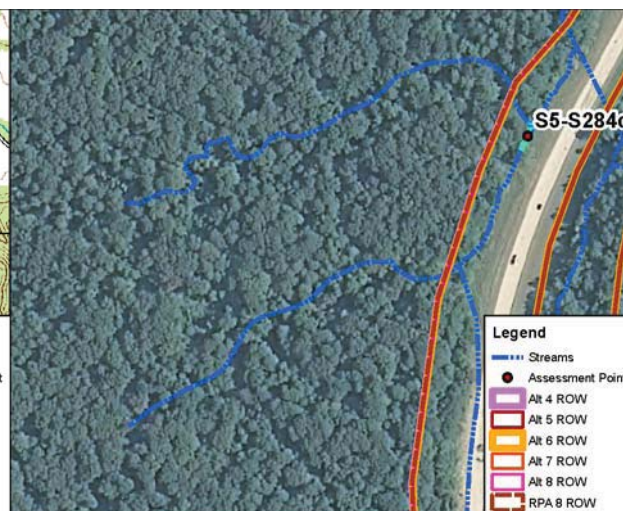
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S284a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S284c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 30  
**Legal Drain (Y/N):** N  
**UTME:** 1777568 ft  
**UTMN:** 14283657 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.8 feet  
**OHWM Depth:** 0.6 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.04 sq mi  
**Predominant Sub:** Silt/fine detritus

Stream S5-S284c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	80	0.01	0.11
5	80	0.01	0.10
6	80	0.01	0.10
7	80	0.01	0.10
8	80	0.01	0.10
RPA 8	80	0.01	0.10

### Description of Potential Impact:

Impacts to S5-S284c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of silt and fine detritus. There is a wide riparian corridor along the left bank and no riparian buffer along the right bank where these Alternatives cross this stream. The adjacent left bank floodplain consists of mature forest while the right floodplain is transportation. Photographs taken upstream and downstream in the area where the Alternatives cross S5-S284c are on the second page of this form.



## Stream Impacts S5-S284c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

30

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S284c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.04**

LENGTH OF STREAM REACH (ft) **80** LAT. **39.33142** LONG.  RIVER CODE  RIVER MILE

DATE **05/09/06** SCORER **A Rogers** COMMENTS **(Long: -86.51496) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="70%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="20%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

6

TOTAL NUMBER OF SUBSTRATE TYPES:

4

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 3.8' / 0.6'**

AVERAGE BANKFULL WIDTH (meters):

1.20

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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order: **2**

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/09/06** Quantity: **0.01**

Photograph Information: **82 Upstream / 83 Downstream / 84 Right bank / 85 Left bank**

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:

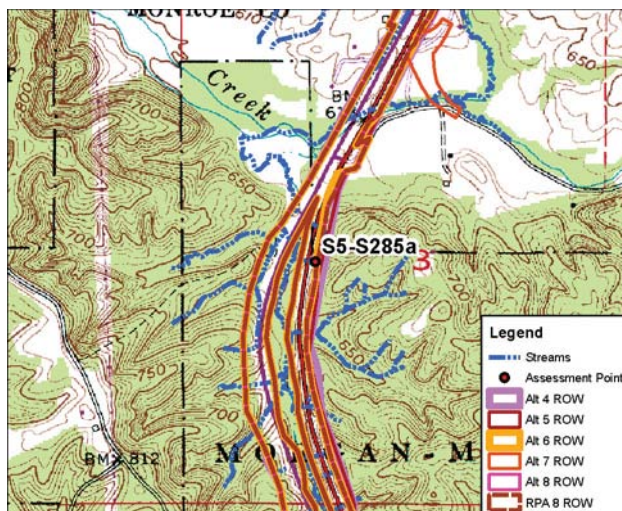
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

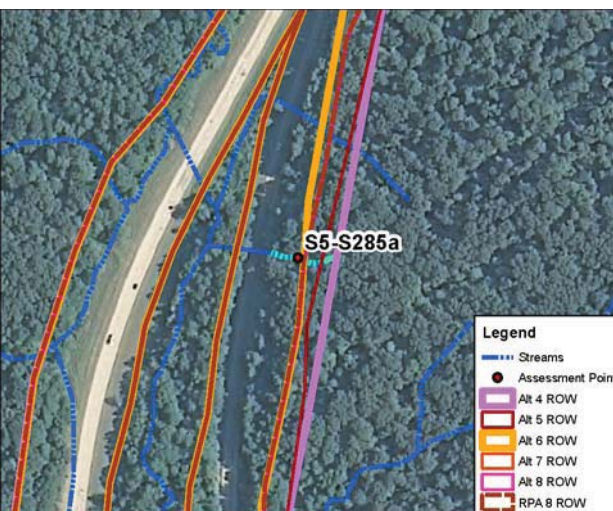
**FLOW** → See Stream Assessment Form  
S5-S284c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S285a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778021 ft  
**UTMN:** 14283547 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.5 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Leaf pack/clay

Stream S5-S285a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	178	0.01	0.79
5	135	0.01	0.61
6	88	0.01	0.38
7	90	0.01	0.41
8	90	0.01	0.41
RPA 8	90	0.01	0.41

### Description of Potential Impact:

Impacts to S5-S285a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of leaf pack, clay, and gravel. There is a wide riparian corridor along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S285a are on the second page of this form.

## Stream Impacts S5-S285a

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Photograph Taken Upstream



Photograph Taken Downstream





# Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S285a**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **160**

LAT. **39.33111**

LONG.

RIVER CODE

RIVER MILE

DATE **05/10/06**

SCORER **J Meeker**

COMMENTS **(Long: -86.51336) (Natural-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="35%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**

TOTAL NUMBER OF SUBSTRATE TYPES: **4**

## HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 1.5' /0.8'**

AVERAGE BANKFULL WIDTH (meters): **0.46**

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

#### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information: **135 Upstream / 136 Downstream / 137 Right Bank / 138 Left Bank**

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) ☐

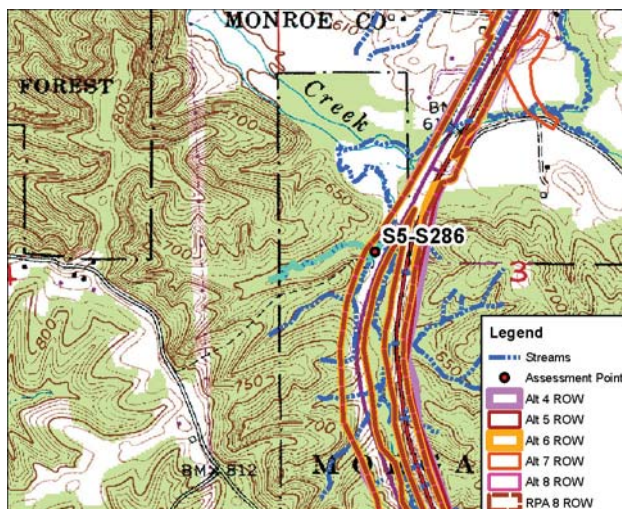
Comments Regarding Biology:

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

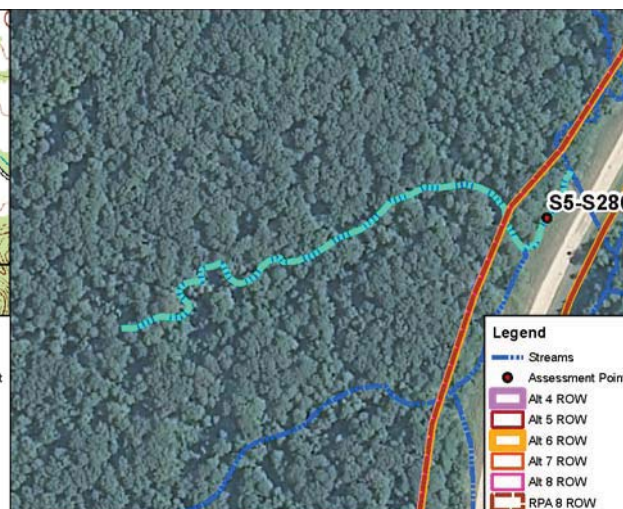
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S285a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S286



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 58  
**Legal Drain (Y/N):** N  
**UTME:** 1777632 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.2 feet  
**OHWM Depth:** 0.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.12 sq mi  
**Predominant Sub:** Gravel/silt

Stream S5-S286 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	347	0.02	0.39
5	344	0.02	0.38
6	344	0.02	0.38
7	344	0.02	0.38
8	344	0.02	0.38
RPA 8	344	0.02	0.38

### Description of Potential Impact:

Impacts to S5-S286 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel, silt and leaf pack. There is a wide riparian corridor along the left bank and a narrow riparian buffer along the right bank where these Alternatives cross this stream. The adjacent left bank floodplain consists of mature forest while the right floodplain is transportation. This stream feeds S5-S253e which was scored using QHEI. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S286 are on the second page of this form.



## Stream Impacts S5-S286

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

58

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S286

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.12

LENGTH OF STREAM REACH (ft) 200 LAT. 39.33172 LONG. RIVER CODE RIVER MILE

DATE 05/09/06 SCORER A Rogers COMMENTS (Long: -86.51473) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input type="checkbox"/> 20%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/> 18%
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/> 10%	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="checkbox"/> 15%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="checkbox"/> 22%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="checkbox"/> 15%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 25.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 6

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25

COMMENTS MAXIMUM POOL DEPTH (centimeters): 12

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW - 2.2' / 0.3' AVERAGE BANKFULL WIDTH (meters): 1.50

## 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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **3** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/09/06** Quantity: **0.01**

Photograph Information:

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) ☐

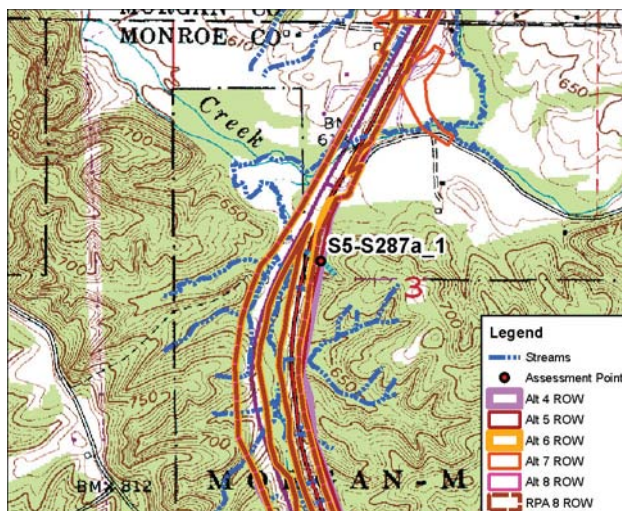
Comments Regarding Biology:

**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** → See Stream Assessment Form  
S5-S286 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S287a\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 37  
**Legal Drain (Y/N):** N  
**UTME:** 1778160 ft  
**UTMN:** 14283837 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.5 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S287a_1 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	164	0.01	0.72
5	141	0.01	0.61
6	57	0.01	0.23
7	88	0.01	0.36
8	88	0.01	0.36
RPA 8	88	0.01	0.37

### Description of Potential Impact:

Impacts to S5-S287a\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of sand and gravel. There is a wide riparian corridor along both banks of this stream. The adjacent floodplain consists of mature forest. This channel flows through a culvert under SR 37 and feeds S5-S287d. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S287a\_1 are on the second page of this form.



## Stream Impacts S5-S287a\_1

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

37

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S287a\_1

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 200

LAT. 39.33190

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.51286) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	25%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	75%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 2

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 4

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 3.5'/0.5' AVERAGE BANKFULL WIDTH (meters): 1.07

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.50</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **04/24/12** Quantity: **0.15**  
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:   

**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:   

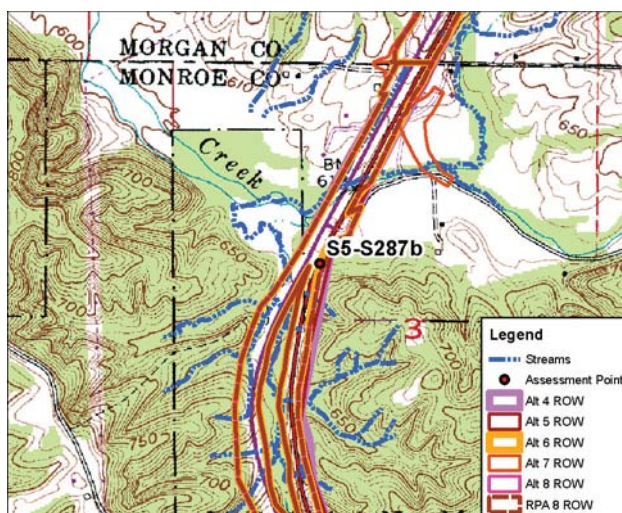
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

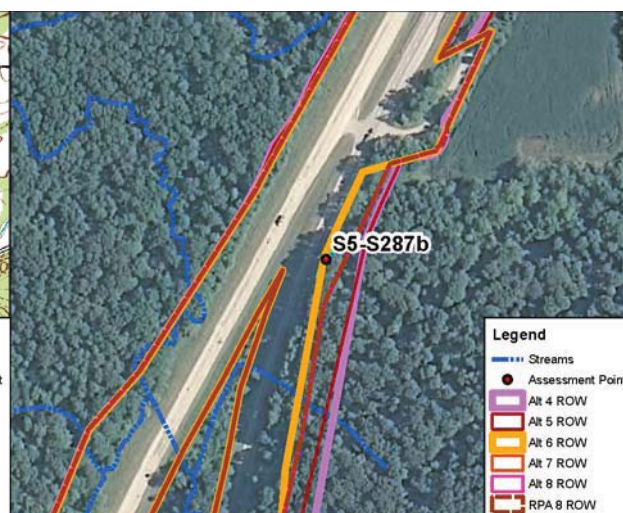
**FLOW** → See Stream Assessment Form  
 S5-S287a\_1 for site topographic map,  
 aerial photograph, and resource photographs



## Stream Impacts S5-S287b



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778154 ft  
**UTMN:** 14284239 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S287b – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	101	0.01	0.57
5	101	0.01	0.56
6	35	0.01	0.03
7	101	0.01	0.33
8	101	0.01	0.33
RPA 8	101	0.01	0.33

### Description of Potential Impact:

Impacts to S5-S287b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located adjacent to existing SR 37. There is a wide riparian buffer associated with the right bank and no riparian zone along the left bank. The floodplain consists of transportation on the left bank and mature forest on the right. A photograph taken downstream in the area where these Alternatives cross S5-S287b is on the second page of this form.

## **Stream Impacts S5-S287b**

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Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S287b

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 100

LAT. 39.33301

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51287) (Concrete Gutter-Modified Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.2'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.36

## 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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
 County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
 Photograph Information:   
 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**

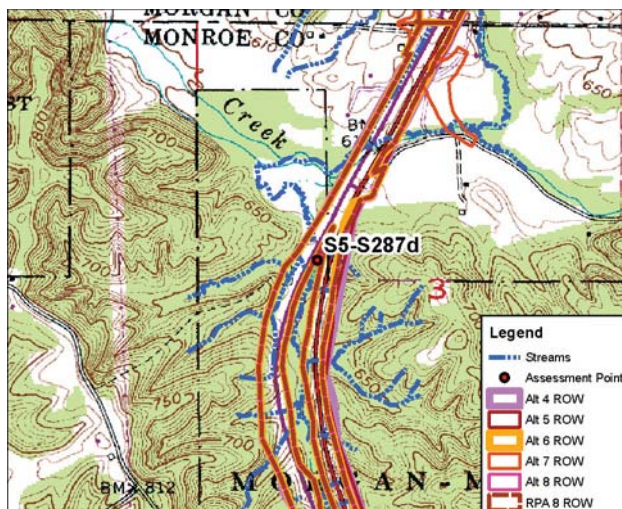
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
 Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders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

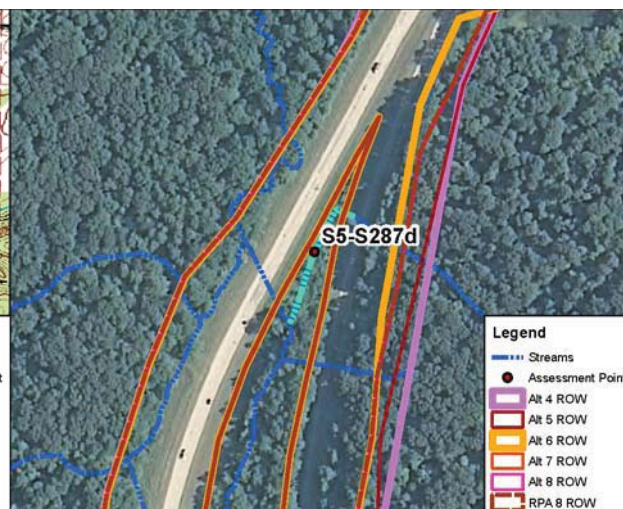
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
 S5-S287b for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S287d



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 25  
**Legal Drain (Y/N):** N  
**UTME:** 1777875 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S287d – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	371	0.01	0.00
5	371	0.01	0.00
6	371	0.01	0.00
7	371	0.01	0.00
8	371	0.01	0.00
RPA 8	371	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S287d for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel is located inside the bifurcated median of SR 37 and its substrate consists predominantly of gravel, sand, and leaf pack. There is a narrow riparian buffer associated with this stream. The adjacent floodplain consists of INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S287d are on the second page of this form.



## Stream Impacts S5-S287d

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Photograph Taken Upstream



Photograph Taken Downstream





# Primary Headwater Habitat Evaluation Form

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

25

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S287d** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.33197** LONG.  RIVER CODE  RIVER MILE

DATE **04/25/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.51387) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="14%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="55%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="16%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**

TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 1.2'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.40**

This information must also be completed

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

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	(Most Predominant per Bank)		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture		<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.50</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **04/24/12** Quantity: **0.15**  
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:   

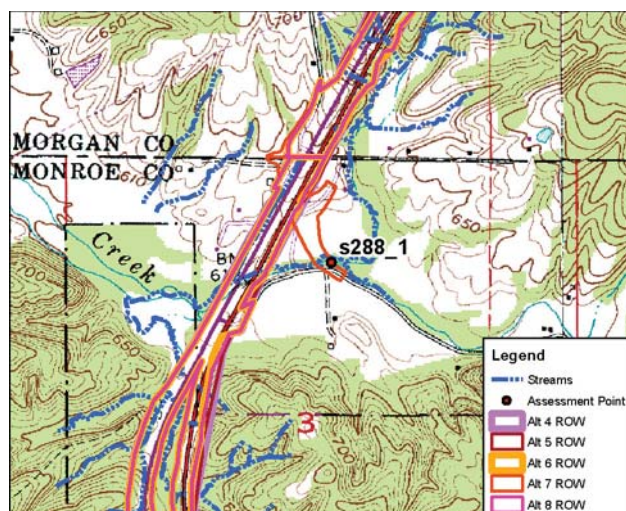
**BIOTIC EVALUATION**
Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) **N** Voucher?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

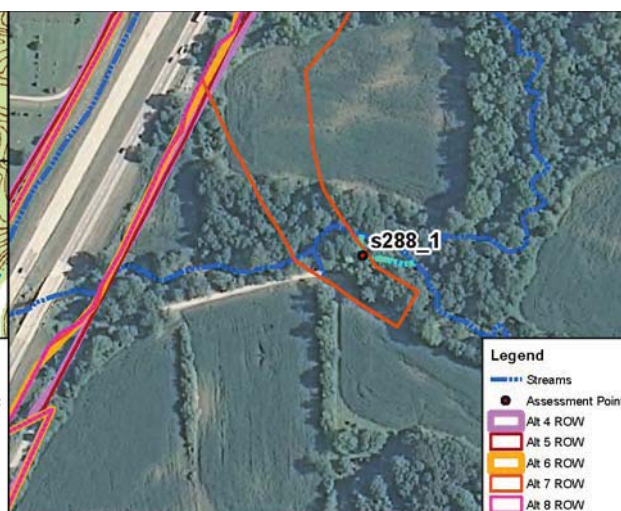
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
 S5-S287d for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S288\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 37  
**Legal Drain (Y/N):** N  
**UTME:** 1779392 ft  
**UTMN:** 14285229 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 8.4 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S288_1 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	0	0.00	0.00
6	0	0.00	0.00
7	50	0.01	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

### Description of Potential Impact:

Impacts to S5-S288\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel and sand. There is a wide riparian corridor consisting of immature forest on the right bank and a moderately wide riparian corridor on the left bank consisting mostly of transportation use. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S288\_1 are on the second page of this form.





Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

37

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S288\_1

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 5.72

LENGTH OF STREAM REACH (ft) 191

LAT. 39.33570

LONG.

RIVER CODE

RIVER MILE

DATE 07/10/12

SCORER BLA Inc.

COMMENTS (Long: -86.50847) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	40%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	60%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

15

TOTAL NUMBER OF SUBSTRATE TYPES:

2

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS Old Meadow

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW 8.4'/0.8'

AVERAGE BANKFULL WIDTH (meters):

2.80

## 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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N):  **N** Date of last precipitation: **06/30/12** Quantity: **0.00**

Photograph Information: **P35 - Down, P36 - Up**

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)  **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:

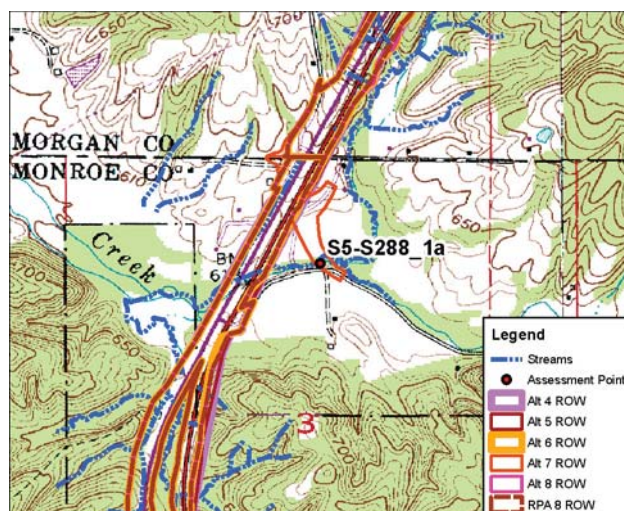
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

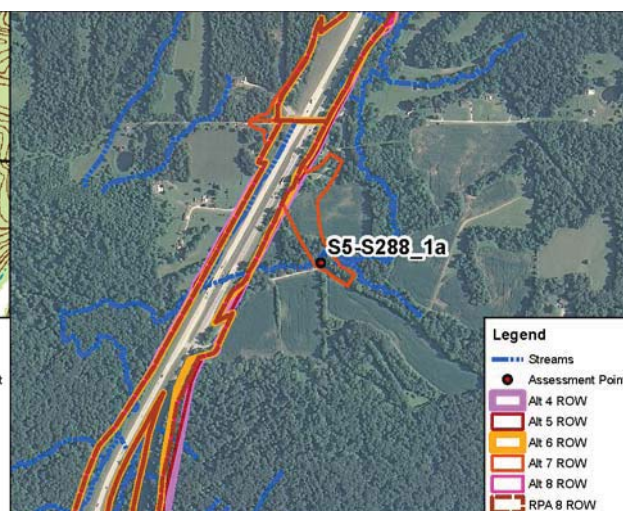
**FLOW** → See Stream Assessment Form  
S5-S288\_1 for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S288\_1a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 26  
**Legal Drain (Y/N):** N  
**UTME:** 1779272 ft  
**UTMN:** 14285223 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.9 feet  
**OHWM Depth:** 1.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.09 sq mi  
**Predominant Sub:** Artificial/clay

Stream S5-S288_1a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	0	0.00	0.00
6	0	0.00	0.00
7	52	0.01	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

### Description of Potential Impact:

Impacts to S5-S288\_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. This recovered channel consists of artificial river rock over clay. There is a wide riparian buffer along both banks of the channel, which is situated in between East Bryant Creek Road and Bryant Creek. The adjacent floodplain consists of mature forest along both banks of this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S288\_1a are on the second page of this form.



## Stream Impacts S5-S288\_1a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

26

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S288\_1a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.09

LENGTH OF STREAM REACH (ft) 52

LAT. 39.33569

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.50890) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="10%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="60%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

3

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

2

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 3.9'/1.1'

AVERAGE BANKFULL WIDTH (meters):

1.20

## 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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.50</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **85%**  
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:   

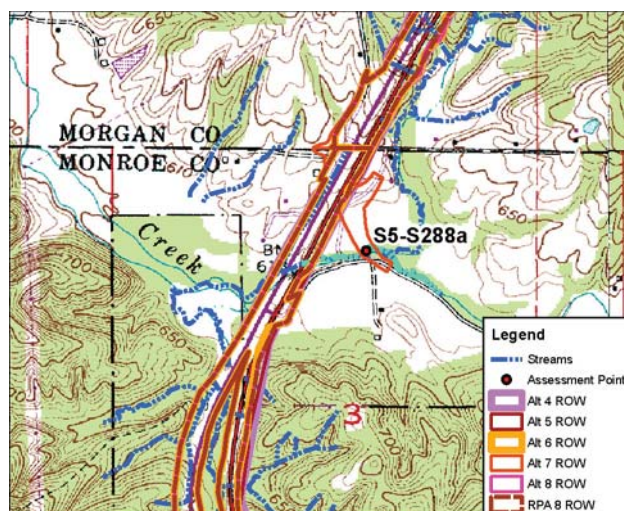
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

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

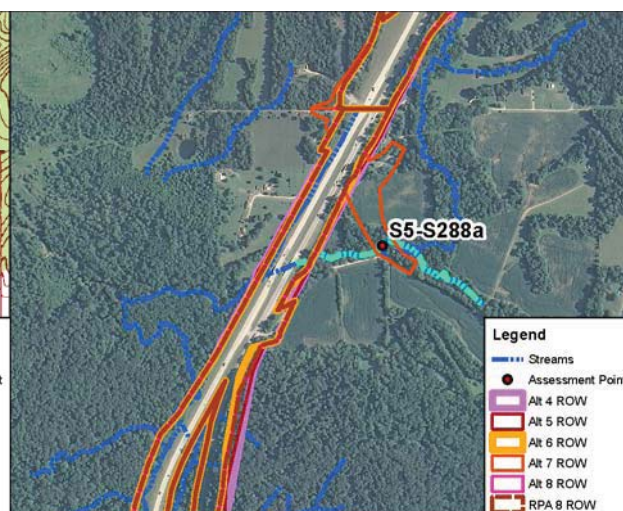
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S288\_1a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S288a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Bryant Creek  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized:** No  
**Stream Type:** Perennial  
**Evaluation Type:** QHEI  
**Evaluation Score:** 66.5  
**Legal Drain (Y/N):** N  
**UTME:** 1779269 ft **UTMN:** 14285262 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 35.0 feet  
**OHWM Depth:** 4.0 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 5.72 sq mi  
**Predominant Sub:** Gravel

Stream S5-S288a – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	120	0.10	0.06
5	176	0.14	0.07
6	116	0.09	0.06
7	300	0.24	0.77
8	108	0.09	0.06
RPA 8	108	0.09	0.06

### Description of Potential Impact:

Impacts to S5-S288a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. At the time of evaluation, this stream is a perennial stream with excellent habitat development and high sinuosity where the Alternatives cross this stream. The predominant substrate is gravel. The stream has a wide riparian corridor associated with its right bank and a narrow riparian buffer along its left bank. The adjacent floodplain is dominated by forest land on the right and transportation (East Bryant Creek Road) on the left. Photographs taken upstream and downstream in the area where the proposed alternatives cross S5-S288a are on the second page of this form. Implementation of RPA 8 will decrease the amount of impacts at this location.



## Stream Impacts S5-S288a

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Photograph Taken Upstream



Photograph Taken Downstream



# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
4288a		Bryant Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS/OW	4/25/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			<b>QHEI Score:</b> 66.5

1) **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Score natural substrates; ignore sludge from point-sources)						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>NUMBER OF BEST TYPES:</b> <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

2) **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 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 root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	Amount	% Amount	% Amount	Amount	% Amount	Amount	
40	3	10	1	20	2	20	
40	3	10	1	20	2	20	
UNDERCUT BANKS [1]		POOLS > 70cm [2]		OXBOWS, BACKWATERS [1]		AMOUNT	
OVERHANGING VEGETATION [1]		ROOTWADS [1]		AQUATIC MACROPHYTES [1]		Check ONE (Or 2 & average)	
SHALLOWS (IN SLOW WATER) [1]		BOULDERS [1]		LOGS OR WOODY DEBRIS [1]		<input type="checkbox"/> EXTENSIVE > 75% [11] <input checked="" type="checkbox"/> MODERATE 25 - 75% [7] <input type="checkbox"/> SPARSE 5 - < 25% [3] <input type="checkbox"/> NEARLY ABSENT < 5% [1]	
ROOTMATS [1]						<b>Cover</b> Maximum 20	

Comments

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input checked="" type="checkbox"/> HIGH [4]	<input checked="" type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 + 3 + 1.5						Indicate predominant land use(s) past 100m riparian.	

Comments

5) **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Circle one and comment on back
<input checked="" type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> SLOW [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.2 - < 0.4m [1]		<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> < 0.2m [0]		<input checked="" type="checkbox"/> MODERATE [1]	
		<input type="checkbox"/> INTERSTITIAL [-1]	
		<input type="checkbox"/> INTERMITTENT [-2]	
		<input type="checkbox"/> EDDIES [1]	
		Indicate for reach - pools and riffles.	

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species.

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input checked="" type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input checked="" type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

6) GRADIENT	DRAINAGE AREA	% POOL	% GLIDE	% RUN	% RIFFLE	Gradient Maximum
2.4 ft/mi	5.72 mi <sup>2</sup>	30		30	40	10

OHW = 35' x 4' (10.7m)

52889

IDEM		OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)	
Sample #	bioSample #	Stream Name	Location
		Bryant Creek	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score <b>66.5</b>

**Impacts/Miscellaneous**

Major Suspected Impacts (Check all that apply)

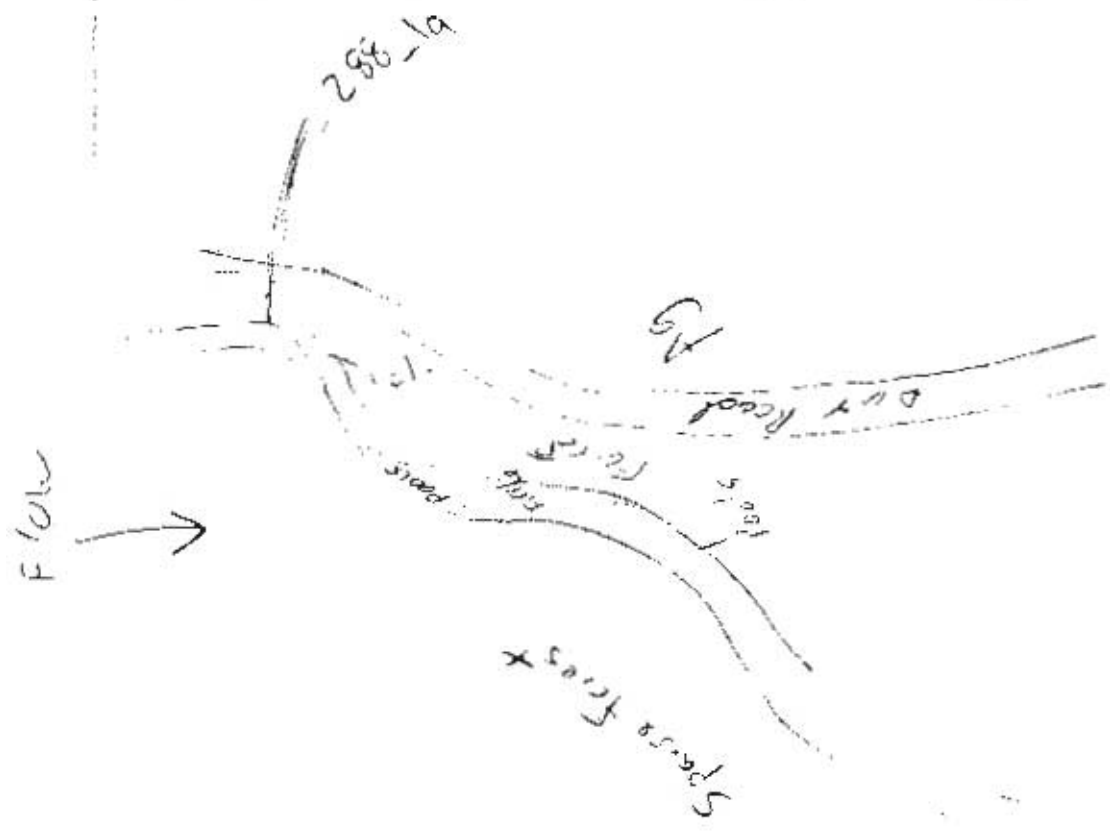
- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> None         | <input type="checkbox"/> Suburban         |
| <input type="checkbox"/> Industrial   | <input type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP         | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration  |
| <input type="checkbox"/> Livestock    | <input type="checkbox"/> CSOs             |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining           |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills        |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural          |

Pollution Impact Comments:

Miscellaneous QHEI Information

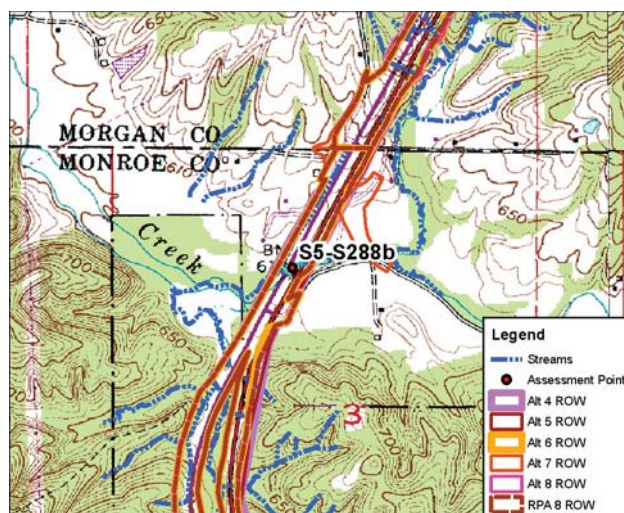
Subjective rating (1-10):	<input type="text" value="9"/>	% Riffle:	<input type="text" value="40"/>	Is reach representative of stream? <input type="text"/>
Aesthetic rating (1-10):	<input type="text" value="9"/>	% Run:	<input type="text" value="30"/>	
Canopy Cover (% Open):	<input type="text" value="75"/>	% Pool:	<input type="text" value="30"/>	
General QHEI Notes				

General QHEI Notes

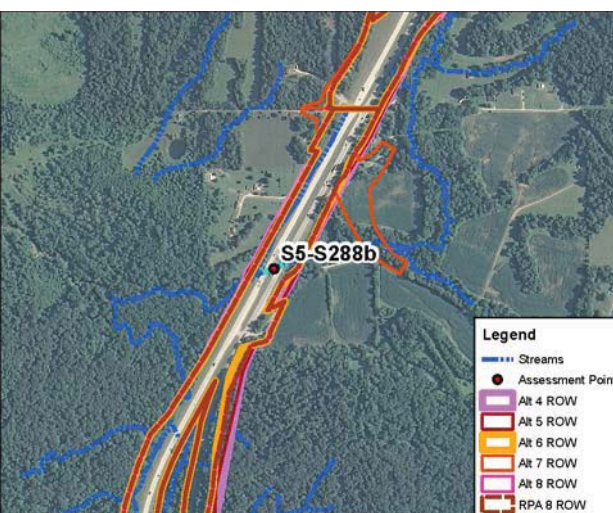




## Stream Impacts S5\_S288b



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Bryant Creek  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized:** No  
**Stream Type:** Perennial  
**Evaluation Type:** QHEI  
**Evaluation Score:** 64  
**Legal Drain (Y/N):** N  
**UTME:** 1778499 ft **UTMN:** 14285084 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 35.0 feet  
**OHWM Depth:** 4.0 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 5.72 sq mi  
**Predominant Sub:** Gravel

Stream S5_S288b– Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	199	0.09	0.00
5	199	0.09	0.00
6	199	0.09	0.00
7	199	0.09	0.00
8	199	0.09	0.00
RPA 8	199	0.09	0.00

### Description of Potential Impact:

Impacts to S5\_S288b at this location for the Alternatives are listed in the table above. Segments S5\_S288b and S5\_S288c were evaluated together. At the time of evaluation, this stream is a perennial stream with fair habitat development and moderate sinuosity where these Alternatives cross this stream. The predominant substrate is gravel. The stream has a narrow riparian corridor associated with both its banks. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream in the area where the proposed alternatives cross S5\_S288c are on the second page of this form. All of the Alternatives possess similar impacts at this location.



## **Stream Impacts S5\_S288b**

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Photograph Taken Upstream



Photograph Taken Downstream

Sec 5-3286, c

# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	BioSample #	Stream Name	Location
		Bryant Creek	@ SR-37 bridge
Surveyor	Sample Date	County	Macro Sample Type
	6/29/95	Monroe	
Habitat Complete			QHEI Score: 64

## 1-Substrate (20 points maximum)

Substrate Score: 17

Check 1 Predominant Pool &amp; 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> R/drs/Slabs(10)	<input type="checkbox"/>	<input type="checkbox"/> Hardpan(4)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Boulders(9)	<input type="checkbox"/>	<input type="checkbox"/> Detritus(3)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Cobble(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Muck(2)	<input type="checkbox"/>
<input checked="" type="checkbox"/> Gravel(7)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Silt(2)	<input type="checkbox"/>
<input type="checkbox"/> Sand(6)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Sludge(1)	<input type="checkbox"/>
<input type="checkbox"/> Bedrock(5)	<input type="checkbox"/>	<input type="checkbox"/> Artificial(0)	<input checked="" type="checkbox"/>

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

Substrate Origin	
<input type="checkbox"/> Limestone(1)	<input type="checkbox"/> Lacustrine(0)
<input checked="" type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)
<input type="checkbox"/> Wetlands(0)	<input type="checkbox"/> Rip/Rap(0)
<input type="checkbox"/> Coal fines(-2)	
Silt Cover	
<input type="checkbox"/> Silt heavy(-2)	<input type="checkbox"/> Extensive(-2)
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)
<input checked="" type="checkbox"/> Silt normal(0)	<input checked="" type="checkbox"/> Low/Normal(0)
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)

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

&gt;4 substrates present(2)

Comments:

## 2-Instream Cover (20 points maximum)

Instream Cover Score: 12

Type (check ALL that apply)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)
<input checked="" type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)
<input checked="" type="checkbox"/> Shallows(In slow water)(1)	<input type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)
<input type="checkbox"/> Rootmats(1)		

Comments: 12

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input checked="" type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

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

Channel Score: 13.5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input checked="" type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input checked="" type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input checked="" type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input checked="" type="checkbox"/> Low (1) 1.5	<input type="checkbox"/> Canopy Removal
<input type="checkbox"/> None (1)	<input type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
				<input type="checkbox"/> One side channel modifications

Comments: dam top end / upstream end of site

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

Comments:

## 5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 9

Max pool depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle current velocity (check all that apply)
<input checked="" type="checkbox"/> >1m (6)	<input checked="" type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input checked="" type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> Slow (1)
<input type="checkbox"/> <0.2m (pool=0)		<input type="checkbox"/> Torrential (-1)
		<input checked="" type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> 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)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable e.g. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input checked="" type="checkbox"/> Mod. stable e.g. pea gravel (1) 1.5	<input checked="" type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable e.g. sand, gravel (0)	<input type="checkbox"/> Moderate (0)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)		<input type="checkbox"/> None (2)
		<input type="checkbox"/> No riffle (0)

Comments:

## 6-Gradient (10 points maximum)

Gradient Score: 10

Average width: 5.8m	Gradient: 6 (ft/mile)	Drainage Area: 5.7 (square miles)
Comments:		

OHNM 19' x 25'



**IDEM**

Sample #	bioSample #	Stream Name	Location
		BRYANT CREEK	@ SR37
Surveyor	Sample Date	County	Macro Sample Type
	10/29/2005	MORGAN	
			Habitat Complete
			QHEI Score: 64

**Impacts/Miscellaneous****Major Suspected Impacts (Check all that apply)**

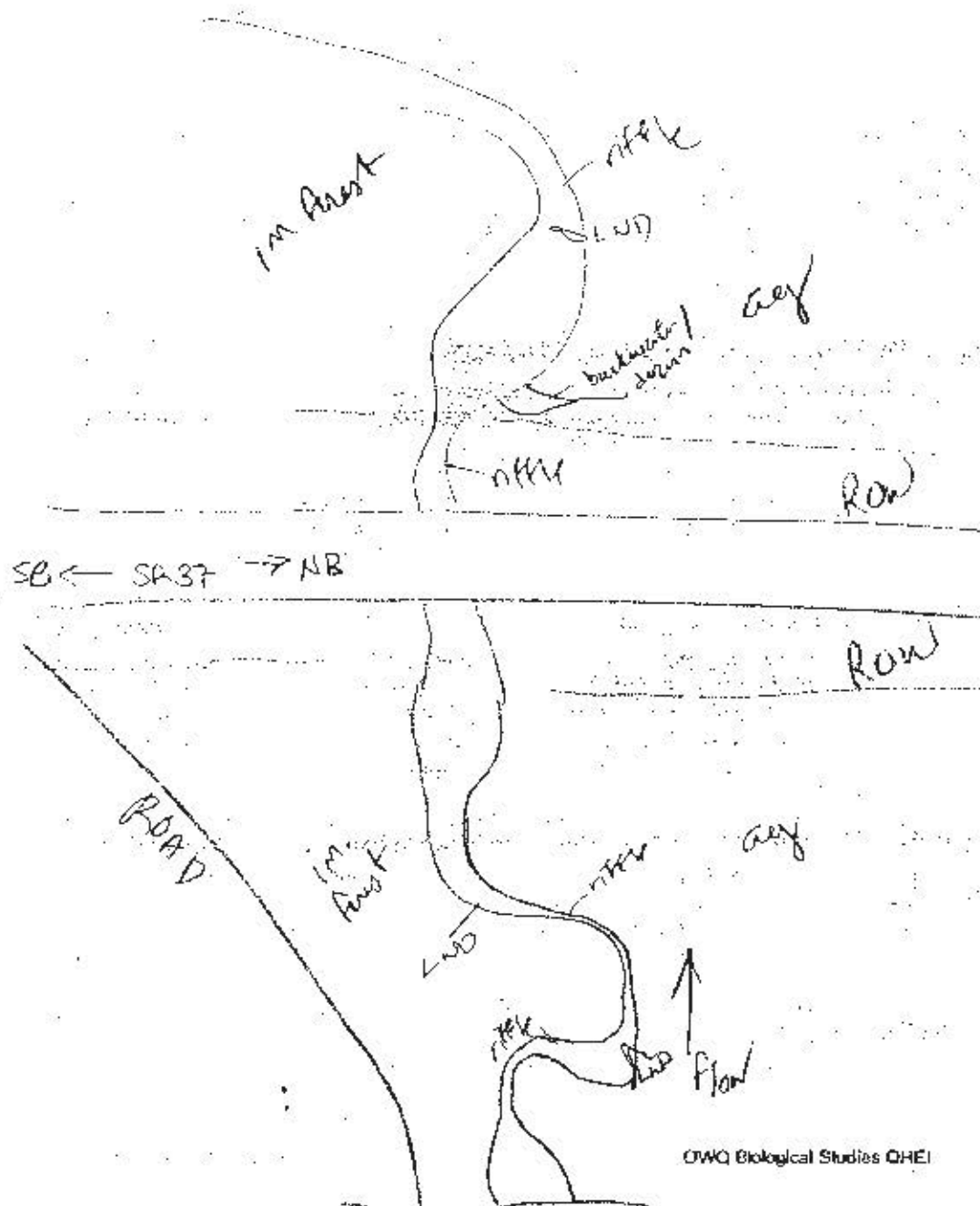
- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> None         | <input type="checkbox"/> Suburban         |
| <input type="checkbox"/> Industrial   | <input type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP         | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration  |
| <input type="checkbox"/> Livestock    | <input type="checkbox"/> CSOs             |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining           |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills        |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural          |

**Miscellaneous QHEI Information**

Subjective rating (1-10): 8    % Riffle: 30    Is reach representative of stream? ☒ yes

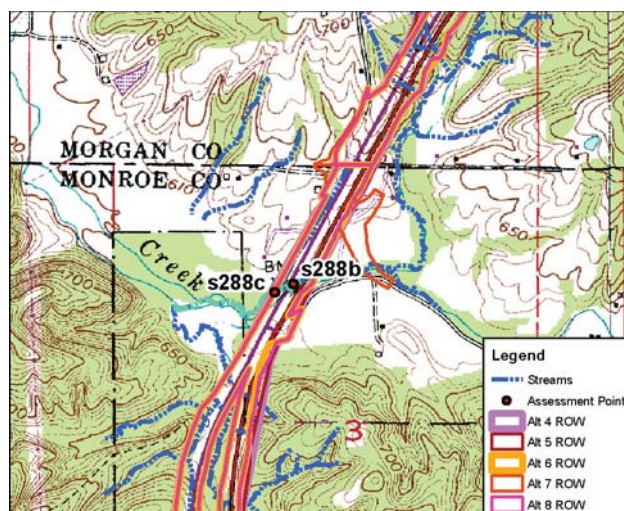
Aesthetic rating (1-10): 8    % Run: 30

Canopy Cover (% Open): 70    % Glide: 10    % Pool: 20

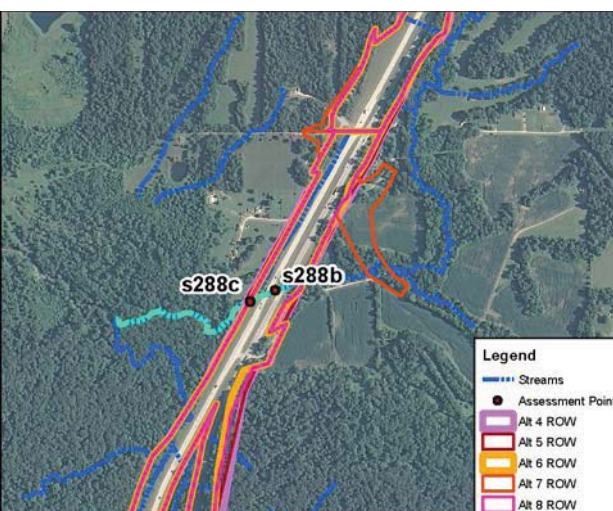
**General QHEI Notes:****Pollution Impact Comments:**



## Stream Impacts S5\_S288c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Bryant Creek  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized:** No  
**Stream Type:** Perennial  
**Evaluation Type:** QHEI  
**Evaluation Score:** 64  
**Legal Drain (Y/N):** N  
**UTME:** 1778499 ft    **UTMN:** 14285084 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 35.0 feet  
**OHWM Depth:** 4.0 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 5.72 sq mi  
**Predominant Sub:** Gravel

Stream S5_S288c – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	161	0.07	0.01
5	159	0.07	0.01
6	140	0.06	0.00
7	140	0.06	0.00
8	140	0.06	0.00
RPA 8	140	0.06	0.00

### Description of Potential Impact:

Impacts to S5\_S288c at this location for the Alternatives are listed in the table above. Segments S5\_S288b and S5\_S288c were evaluated together. At the time of evaluation, this stream is a perennial stream with fair habitat development and moderate sinuosity where these Alternatives cross this stream. The predominant substrate is gravel. The stream has a narrow riparian corridor associated with both its banks. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream in the area where the proposed alternatives cross S5\_S288c are on the second page of this form. Implementation of RPA 8 will decrease the amount of impacts at this location.

## **Stream Impacts S5\_S288c**

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Photograph Taken Upstream



Photograph Taken Downstream



Sec 5-3286, c

# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	BioSample #	Stream Name	Location
		Bryant Creek	@ SR-37 bridge
Surveyor	Sample Date	County	Macro Sample Type
	6/29/95	Monroe	
Habitat Complete			QHEI Score: 64

## 1-Substrate (20 points maximum)

Substrate Score: 17

Check 1 Predominant Pool &amp; 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> R/drs/Slabs(10)	<input type="checkbox"/>	<input type="checkbox"/> Hardpan(4)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Boulders(9)	<input type="checkbox"/>	<input type="checkbox"/> Detritus(3)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Cobble(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Muck(2)	<input type="checkbox"/>
<input checked="" type="checkbox"/> Gravel(7)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Silt(2)	<input type="checkbox"/>
<input type="checkbox"/> Sand(6)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Sludge(1)	<input type="checkbox"/>
<input type="checkbox"/> Bedrock(5)	<input type="checkbox"/>	<input type="checkbox"/> Artificial(0)	<input checked="" type="checkbox"/>

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

Substrate Origin	
<input type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)
<input type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)
<input type="checkbox"/> Wetlands(0)	<input type="checkbox"/> Rip/Rap(0)
<input type="checkbox"/> Lacustrine(0)	<input type="checkbox"/> Shale(-1)
<input type="checkbox"/> Coal fines(-2)	
Silt Cover	
<input type="checkbox"/> Silt heavy(-2)	<input type="checkbox"/> Extensive(-2)
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)
<input checked="" type="checkbox"/> Silt normal(0)	<input checked="" type="checkbox"/> Low/Norm(0)
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)

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

&gt;4 substrates present(2)

Comments:

## 2-Instream Cover (20 points maximum)

Instream Cover Score: 12

Type (check ALL that apply)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)
<input checked="" type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)
<input checked="" type="checkbox"/> Shallows(In slow water)(1)	<input type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)
<input type="checkbox"/> Rootmats(1)		

Comments: 12

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input checked="" type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

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

Channel Score: 13.5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input checked="" type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input checked="" type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input checked="" type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input checked="" type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal
<input type="checkbox"/> None (1)	<input type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
				<input type="checkbox"/> One side channel modifications

Comments: dam top end / upstream end of site

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

Comments:

## 5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 9

Max pool depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle current velocity (check all that apply)
<input checked="" type="checkbox"/> >1m (6)	<input checked="" type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input checked="" type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> Slow (1)
<input type="checkbox"/> <0.2m (pool=0)		<input type="checkbox"/> Torrential (-1)
		<input checked="" type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> 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)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable e.g. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input checked="" type="checkbox"/> Mod. stable e.g. pea gravel (1)	<input checked="" type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable e.g. sand, gravel (0)	<input type="checkbox"/> Moderate (0)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)		<input type="checkbox"/> None (2)
		<input type="checkbox"/> No riffle (0)

Comments:

## 6-Gradient (10 points maximum)

Gradient Score: 6

Average width: 5.8m	Gradient: 6 (ft/mile)	Drainage Area: 5.7 (square miles)
Comments:		

OHNM 19' x 25'



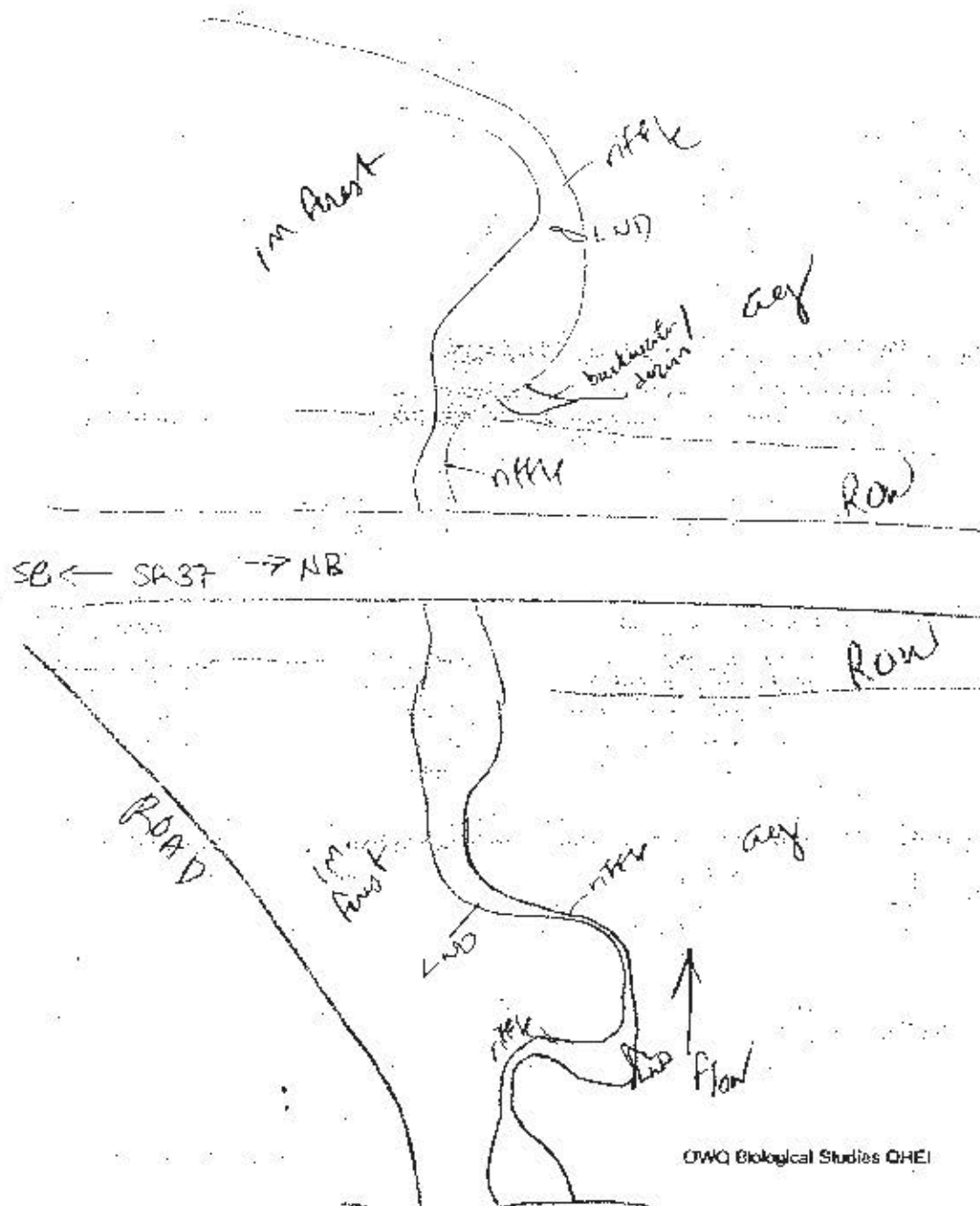
**IDEM**

### Impacts/Miscellaneous

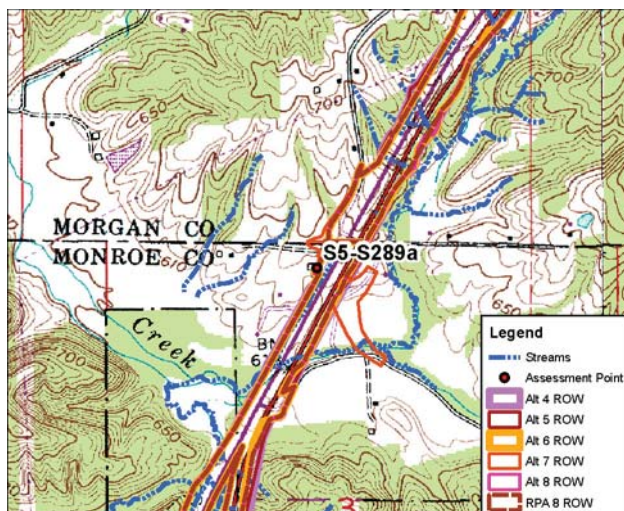
### Miscellaneous CHE Information

- Subjective rating (1-10): 8 % Riffles: 30 Is reach representative of stream? yes  
Aesthetic rating (1-10): 8 % Run: 30 =  
% Glide: 10  
Canopy Cover (% Open): 30 % Pool: 30

**Pollution Impact Comments:**



## Stream Impacts S5-S289a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 25  
**Legal Drain (Y/N):** N  
**UTME:** 1778813 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.7 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.05 sq mi  
**Predominant Sub:** Gravel/silt

**UTMN:** 14286060 ft

Stream S5-S289a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	17	0.01	0.00
5	8	0.01	0.00
6	8	0.01	0.00
7	107	0.01	0.14
8	8	0.01	0.00
RPA 8	8	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S289a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of gravel, silt, and muck. There is no riparian buffer associated with this channel. The floodplain consists of residential land along the right floodplain area and transportation (North Turkey Track Road) along the left bank. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289a are on the second page of this form.



## Stream Impacts S5-S289a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

25

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S289a

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.05

LENGTH OF STREAM REACH (ft) 180

LAT. 39.33800

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51051) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	39%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	41%	<input type="checkbox"/> MUCK [0 pts]	20%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 3

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth Max = 30

5

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 1.7'/0.4'

AVERAGE BANKFULL WIDTH (meters):

0.52

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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.22</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

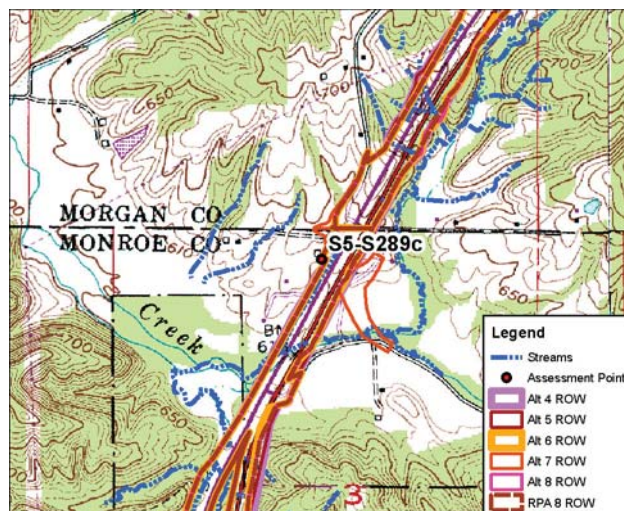
Comments Regarding Biology:

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

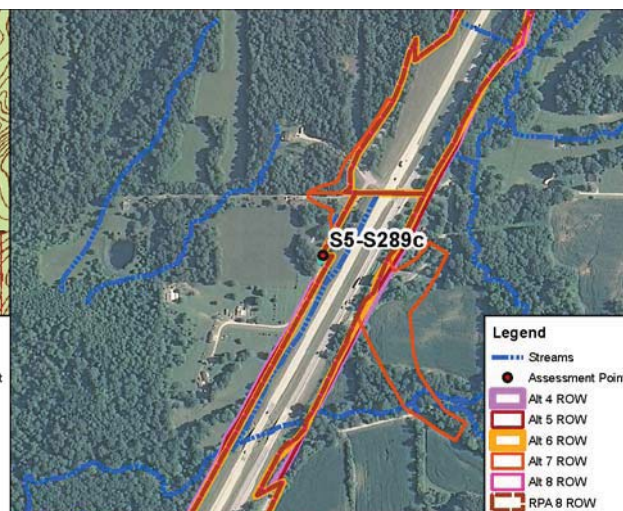
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S289a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S289c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 35  
**Legal Drain (Y/N):** N  
**UTME:** 1778792 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.7 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.05 sq mi  
**Predominant Sub:** Gravel/silt

Stream S5-S289c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	20	0.01	0.00
5	19	0.01	0.00
6	19	0.01	0.00
7	19	0.01	0.00
8	19	0.01	0.00
RPA 8	19	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S289c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and silt. There is no riparian buffer associated with this channel's left bank and a wide riparian buffer along its right bank. The floodplain consists of a tract immature forest land along the right floodplain area and transportation (North Turkey Track Road) along the left bank. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289c are on the second page of this form.



## Stream Impacts S5-S289c

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

35

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S289c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.05

LENGTH OF STREAM REACH (ft) 60

LAT. 39.33786

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51059) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	25%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	15%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	60%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 3

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth Max = 30

5

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 4.5'/0.4'

AVERAGE BANKFULL WIDTH (meters):

1.37

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)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.21</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **65%**  
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:   

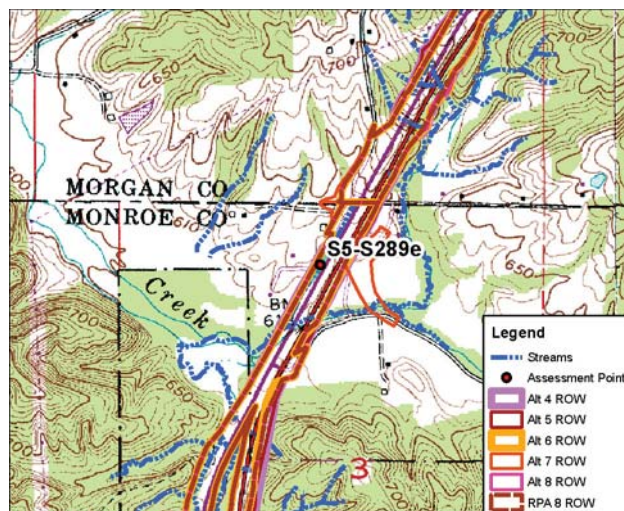
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

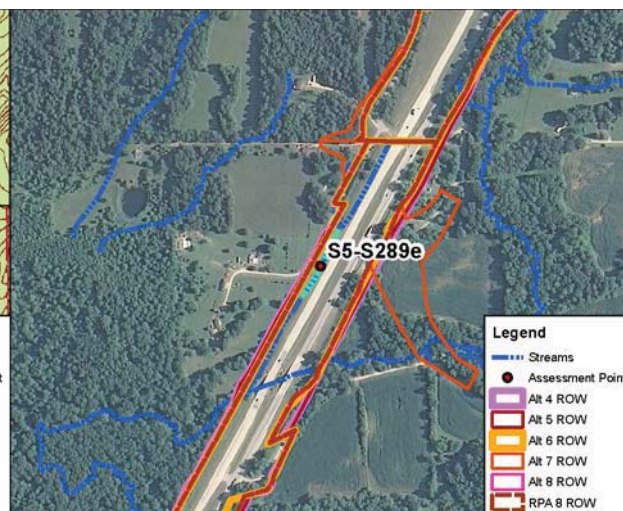
**FLOW** → See Stream Assessment Form  
S5-S289c for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S289e



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Dump Rock Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 27  
**Legal Drain (Y/N):** N  
**UTME:** 1778715 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.6 feet  
**OHWM Depth:** 0.3 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.05 sq mi  
**Predominant Sub:** Artificial

Stream S5-S289e – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	400	0.02	0.00
5	400	0.02	0.00
6	400	0.02	0.00
7	400	0.02	0.00
8	400	0.02	0.00
RPA 8	400	0.02	0.00

### Description of Potential Impact:

Impacts to S5-S289e for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a dump rock gutter. There is no riparian buffer associated with this disturbed channel. The adjacent floodplain consists of transportation along both banks of this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289e are on the second page of this form.

## Stream Impacts S5-S289e

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Photograph Taken Upstream



Photograph Taken Downstream





# Primary Headwater Habitat Evaluation Form

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

27

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S289e**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.05**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.33696**

LONG.

RIVER CODE

RIVER MILE

DATE **04/26/12**

SCORER **KSS/DEW**

COMMENTS **(Long: -86.51086) (Dump Rock Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

## HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

15

Bankfull Width Max=30

5

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **9**

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 2.6'/0.3'**

AVERAGE BANKFULL WIDTH (meters): **0.80**

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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

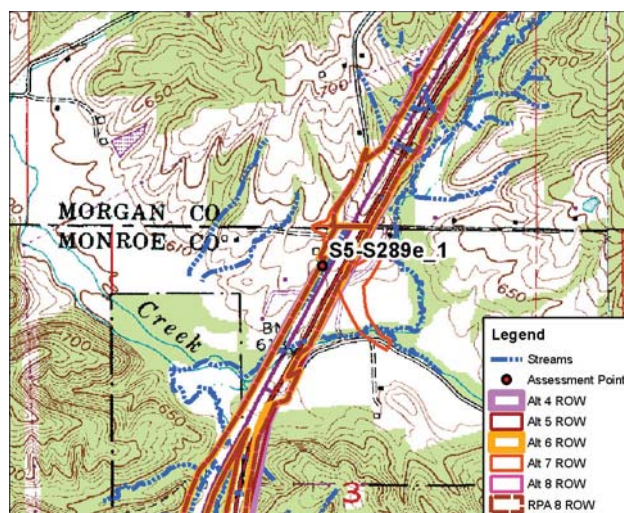
Comments Regarding Biology:

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

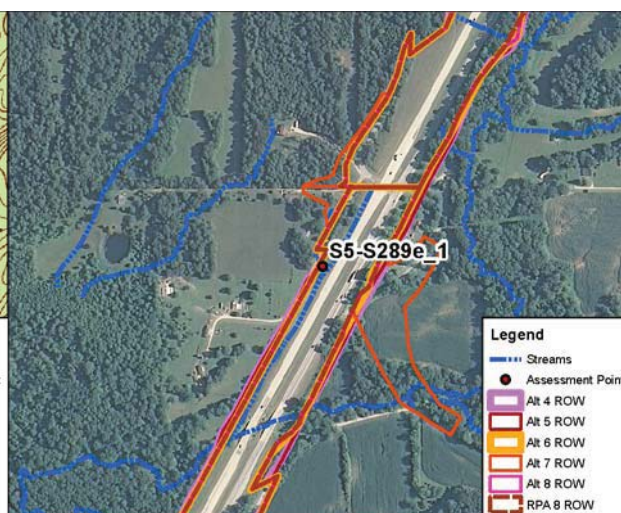
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S289e for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S289e\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 27  
**Legal Drain (Y/N):** N  
**UTME:** 1778817 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.0 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.05 sq mi  
**Predominant Sub:** Artificial

Stream S5-S289e_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	86	0.01	0.01
5	85	0.01	0.01
6	85	0.01	0.01
7	85	0.01	0.01
8	85	0.01	0.01
RPA 8	85	0.01	0.01

### Description of Potential Impact:

Impacts to S5-S289e\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located in between North Turkey Track Road and SR 37. There is no riparian buffer associated with this artificial channel. The floodplain consists of INDOT ROW on the left bank and North Turkey Track Road on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289e\_1 are on the second page of this form.



## Stream Impacts S5-S289e\_1

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

27

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S289e\_1

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.05

LENGTH OF STREAM REACH (ft) 98

LAT. 39.33761

LONG.

RIVER CODE

RIVER MILE

DATE 04/26/12

SCORER KSS/DEW

COMMENTS (Long: -86.51050) (Concrete Gutter-Modified Class I)

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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

## 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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 10

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.0'/0.4'

AVERAGE BANKFULL WIDTH (meters): 0.60

## This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

## RIPARIAN WIDTH

## FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

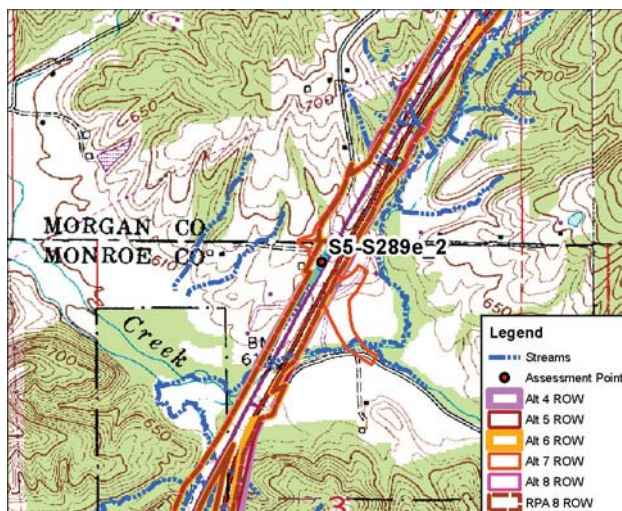
Comments Regarding Biology:

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

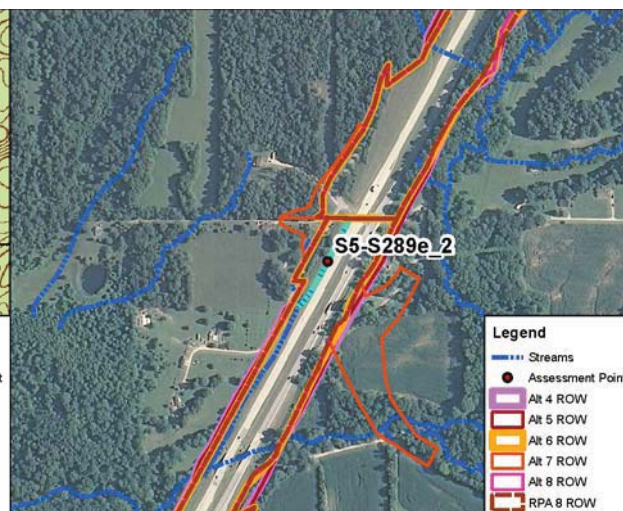
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S289e\_1 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S289e\_2



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1778963 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S289e_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	554	0.02	0.00
5	554	0.02	0.00
6	554	0.02	0.00
7	554	0.02	0.00
8	554	0.02	0.00
RPA 8	554	0.02	0.00

### Description of Potential Impact:

Impacts to S5-S289e\_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located within existing INDOT ROW. There is no riparian buffer associated with either bank of this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289e\_2 are on the second page of this form.



## Stream Impacts S5-S289e\_2

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Photograph Taken Upstream



Photograph Taken Downstream



# Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S289e\_2**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.33813**

LONG.

RIVER CODE

RIVER MILE

DATE **04/26/12**

SCORER **KSS/DEW**

COMMENTS **(Long: -86.50998) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

## HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 1.2'/0.2'**

AVERAGE BANKFULL WIDTH (meters): **0.37**

## 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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

#### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name:	<b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan/Monroe** Township / City: **Washington**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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:

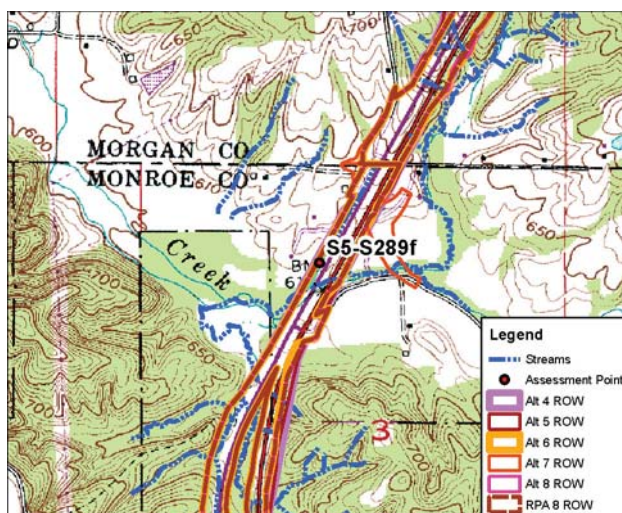
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

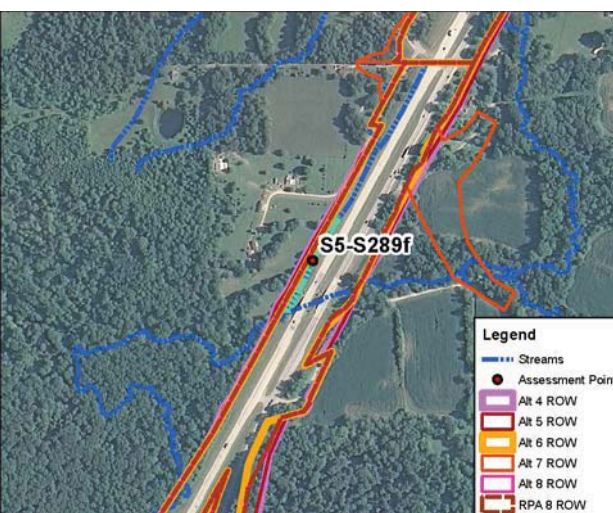
**FLOW** → See Stream Assessment Form  
S5-S289e\_2 for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S289f



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Roadside Ditch  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 48  
**Legal Drain (Y/N):** N  
**UTME:** 1778484 ft

**USGS Quadrangle:** Modesto  
**Section:** 3  
**Township:** T10N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.2 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.05 sq mi  
**Predominant Sub:** Sand/gravel

Stream S5-S289f – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	565	0.06	0.07
5	565	0.06	0.07
6	565	0.06	0.01
7	565	0.06	0.01
8	565	0.06	0.01
RPA 8	565	0.06	0.01

### Description of Potential Impact:

Impacts to S5-S289f for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of sand, gravel, and silt. There is no riparian buffer associated with this roadside ditch. The adjacent floodplain consists of transportation along the left bank and new field along the right. This ditch flows directly into Bryant Creek. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S289f are on the second page of this form.

## Stream Impacts S5-S289f

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Photograph Taken Upstream



Photograph Taken Downstream





# Primary Headwater Habitat Evaluation Form

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

48

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S289f**

RIVER BASIN **White River**

DRAINAGE AREA (mi<sup>2</sup>) **0.05**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.33592**

LONG.

RIVER CODE

RIVER MILE

DATE **04/26/12**

SCORER **KSS/DEW**

COMMENTS **(Long: -86.51169) (Roadside Ditch-Modified Class II)**

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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="50%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**

TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15

COMMENTS  MAXIMUM POOL DEPTH (centimeters): **10**

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS **OHW = 4.9'/0.5'** AVERAGE BANKFULL WIDTH (meters): **1.49**

## 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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

#### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.21</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Monroe** Township / City: **Washington**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **04/24/12** Quantity: **0.15**  
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:   

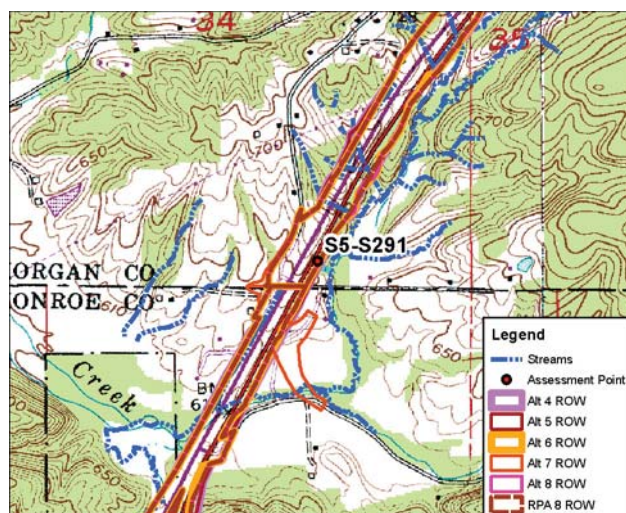
**BIOTIC EVALUATION**
Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) **N** Voucher?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

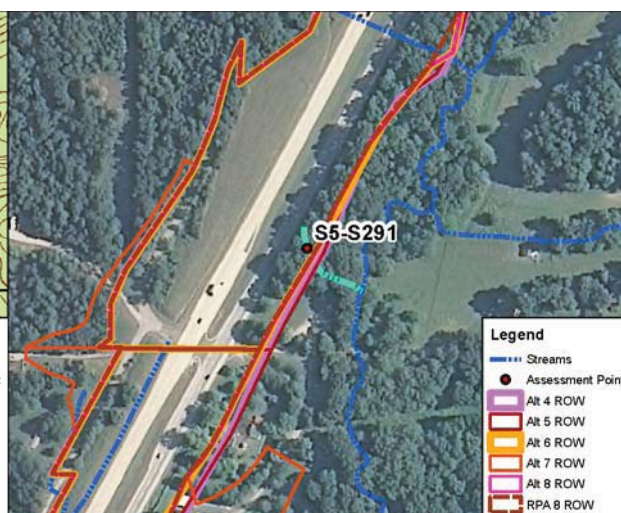
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** → See Stream Assessment Form  
S5-S289f for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S291



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 18  
**Legal Drain (Y/N):** N  
**UTME:** 1779447 ft  
**UTMN:** 14286593 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.5 feet  
**OHWM Depth:** 0.1 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/gravel

Stream S5-S291 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	103	0.01	0.39
5	106	0.01	0.39
6	81	0.01	0.32
7	83	0.01	0.31
8	82	0.01	0.31
RPA 8	82	0.01	0.31

### Description of Potential Impact:

Impacts to S5-S291 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of clay, gravel, and sand. There is a wide riparian corridor on the left bank and a moderately-wide riparian zone on the left bank where these Alternatives cross this stream. The floodplain consists primarily of immature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S291 are on the second page of this form.



## Stream Impacts S5-S291

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

18

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S291** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.33945** LONG.  RIVER CODE  RIVER MILE

DATE **10/18/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.50826) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="60%"/>
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="16%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="14%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 2.5/1'** AVERAGE BANKFULL WIDTH (meters): **0.76**

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)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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

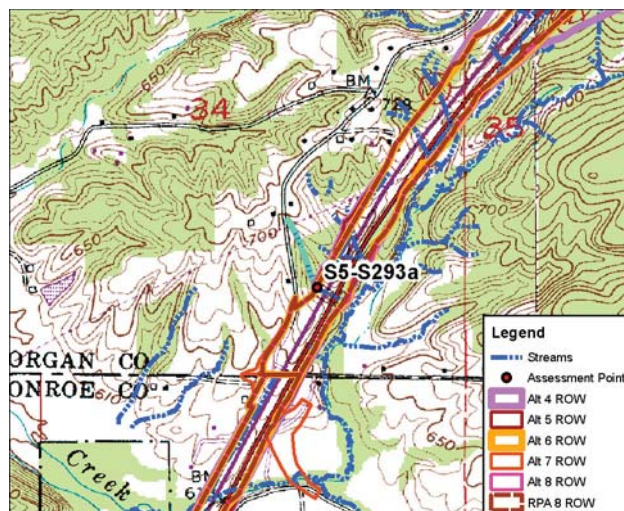
Comments Regarding Biology:

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

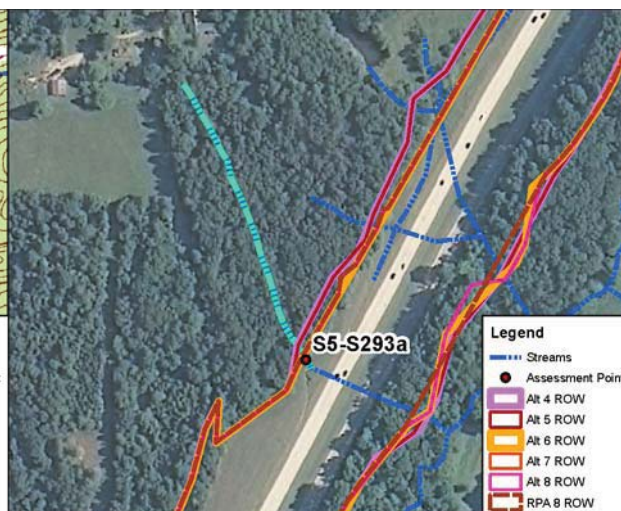
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW**  See Stream Assessment Form  
S5-S291 for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S293a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 31  
**Legal Drain (Y/N):** N  
**UTME:** 1779504 ft  
**UTMN:** 14287237 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 4.5 feet  
**OHWM Depth:** 0.8 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/sand

Stream S5-S293a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	70	0.01	0.15
5	65	0.01	0.13
6	38	0.01	0.05
7	38	0.01	0.05
8	38	0.01	0.05
RPA 8	38	0.01	0.05

### Description of Potential Impact:

Impacts to S5-S293a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and sand. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S293a are on the second page of this form.



## Stream Impacts S5-S293a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

31

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S293a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.34122** LONG.  RIVER CODE  RIVER MILE

DATE **10/18/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.50805) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="5%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="60%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **5**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> 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):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW = 4.5'/0.8'** AVERAGE BANKFULL WIDTH (meters): **1.37**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS 

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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:

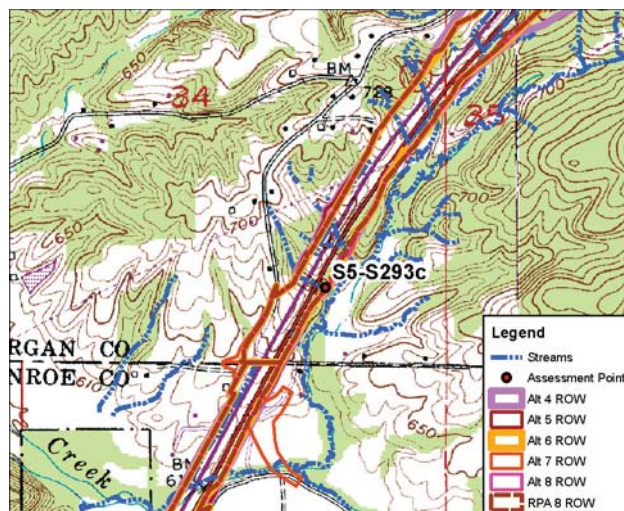
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW**  See Stream Assessment Form  
S5-S293a for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S293c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 60  
**Legal Drain (Y/N):** N  
**UTME:** 1779783 ft    **UTMN:** 14287107 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.2 feet  
**OHWM Depth:** 1.2 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Gravel/sand

Stream S5-S293c – Class III PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	89	0.01	0.29
5	81	0.01	0.29
6	80	0.01	0.28
7	82	0.01	0.28
8	82	0.01	0.28
RPA 8	55	0.01	0.25

### Description of Potential Impact:

Impacts to S5-S293c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S293c are on the second page of this form.

## **Stream Impacts S5-S293c**

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

60

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S293c

RIVER BASIN White River

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF STREAM REACH (ft) 150

LAT. 39.34086

LONG.

RIVER CODE

RIVER MILE

DATE 05/10/06

SCORER DEW/KSS

COMMENTS (Long: -86.50706) (Natural-Class III)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	41%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	39%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage  
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI  
Metric  
PointsSubstrate  
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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 11

Pool Depth  
Max = 30

25

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 3.2'/1.2'

AVERAGE BANKFULL WIDTH (meters): 1.40

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page: **59** NRCS Soil Map Stream Order **1**

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **05/10/06** Quantity: **0.89**

Photograph Information:

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) **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:

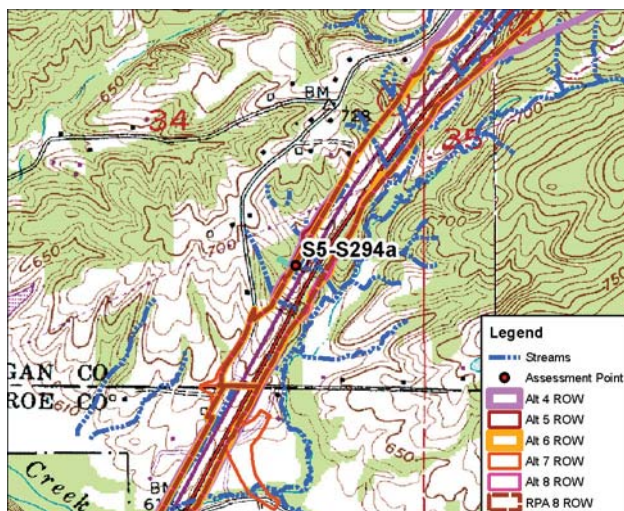
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW** →

See Stream Assessment Form  
S5-S293c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S294a



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 14  
**Legal Drain (Y/N):** N  
**UTME:** 1779704 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 2.1 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/sand

Stream S5-S294a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	66	0.01	0.17
5	63	0.01	0.17
6	41	0.01	0.07
7	42	0.01	0.07
8	43	0.01	0.07
RPA 8	43	0.01	0.07

### Description of Potential Impact:

Impacts to S5-S294a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and sand. There is a wide riparian corridor associated with this stream along both banks of this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream where these Alternatives cross S5-S294a are on the second page of this form.

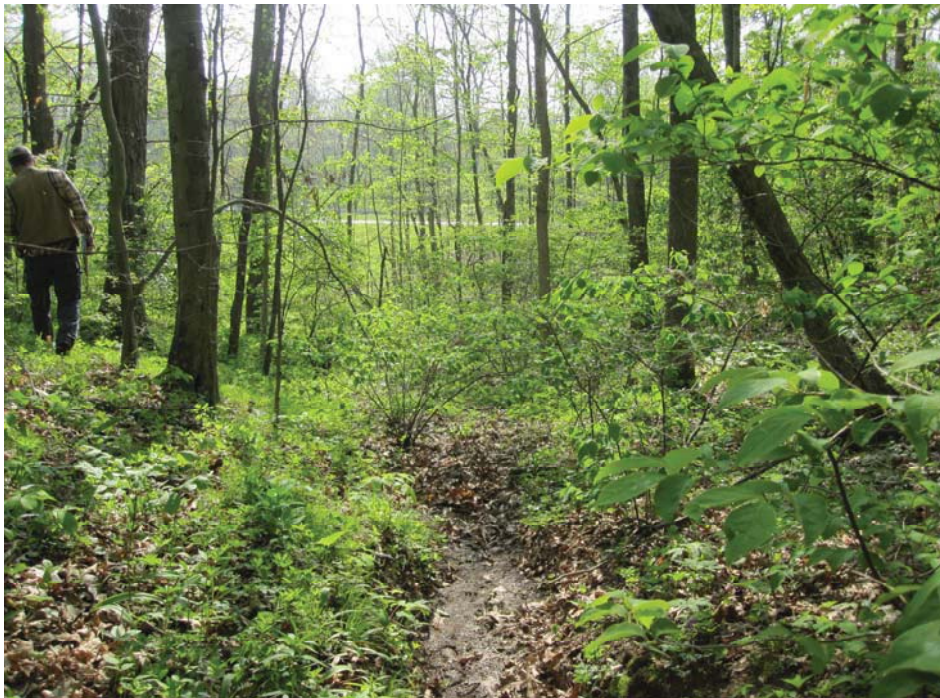


## Stream Impacts S5-S294a

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

14

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S294a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.34217** LONG.  RIVER CODE  RIVER MILE

DATE **04/26/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.50733) (Natural-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="75%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

6

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 2.1' / 0.4'**

AVERAGE BANKFULL WIDTH (meters):

0.64

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.21</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>


**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**
USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order   
County: **Morgan** Township / City: **Baker**
**MISCELLANEOUS**
Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**  
Photograph Information:   
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:   

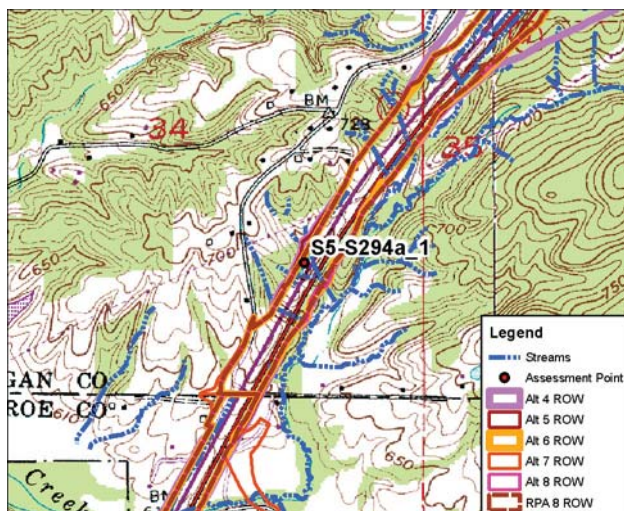
**BIOTIC EVALUATION**
Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)  
Fish Observed? (Y/N) ☒ N Voucher?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

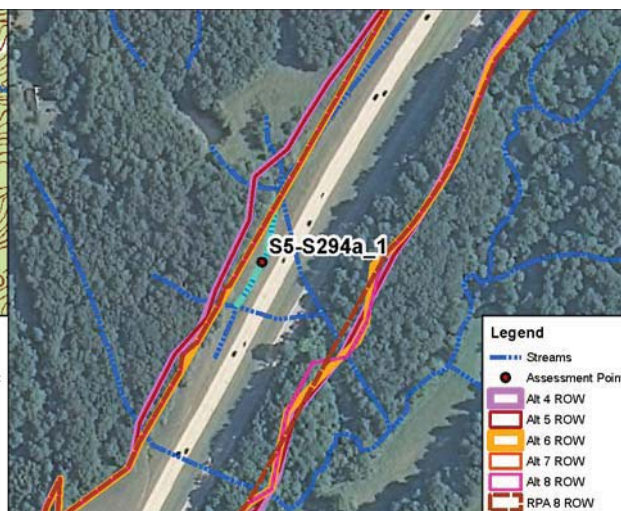
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW**  See Stream Assessment Form  
S5-S294a for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S294a\_1



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1779801 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S294a_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	304	0.01	0.05
5	304	0.01	0.05
6	282	0.01	0.00
7	282	0.01	0.00
8	282	0.01	0.00
RPA 8	282	0.01	0.00

### Description of Potential Impact:

Impacts to S5-S294a\_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S294a\_1 are on the second page of this form.



## **Stream Impacts S5-S294a\_1**

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S294a\_1** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.34247** LONG.  RIVER CODE  RIVER MILE

DATE **04/26/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.50699) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **1**

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 1.2'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.36**

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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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):**

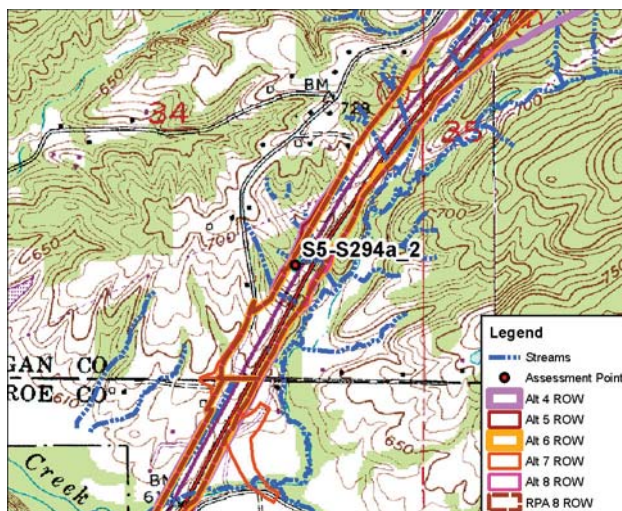
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

**FLOW** →

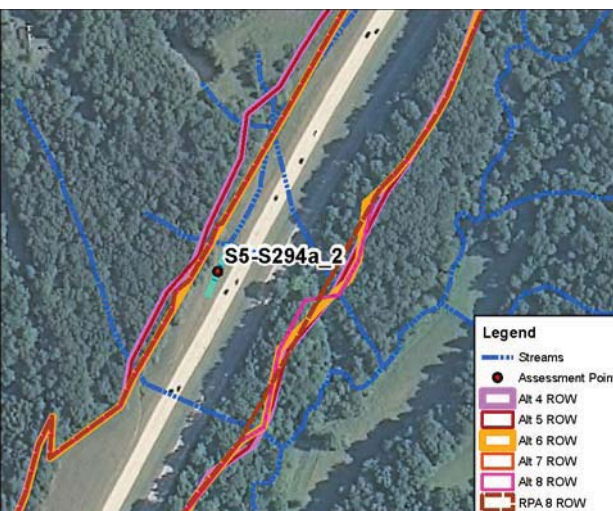
See Stream Assessment Form  
S5-S294a\_1 for site topographic map,  
aerial photograph, and resource photographs



## Stream Impacts S5-S294a\_2



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** Yes/Concrete Gutter  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 12  
**Legal Drain (Y/N):** N  
**UTME:** 1779706 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 1.2 feet  
**OHWM Depth:** 0.2 feet  
**USCOE Jurisdiction:** No  
**IDEM Jurisdiction:** No  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Artificial

Stream S5-S294a_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	146	0.01	0.12
5	146	0.01	0.12
6	146	0.01	0.06
7	146	0.01	0.08
8	146	0.01	0.08
RPA	146	0.01	0.08

### Description of Potential Impact:

Impacts to S5-S294a\_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S294a\_2 are on the second page of this form.

## Stream Impacts S5-S294a\_2

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S294a\_2** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **146** LAT. **39.34196** LONG.  RIVER CODE  RIVER MILE

DATE **04/26/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.50732) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

6

TOTAL NUMBER OF SUBSTRATE TYPES:

1

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 1.2'/0.2'**

AVERAGE BANKFULL WIDTH (meters):

0.36

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)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

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) ☒ 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

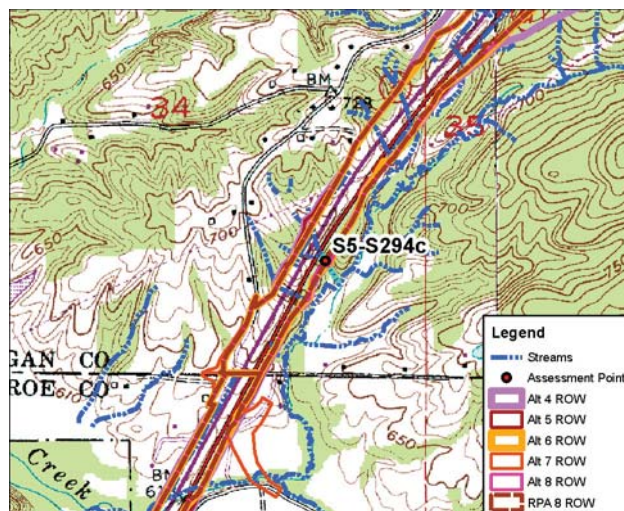
Comments Regarding Biology:

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

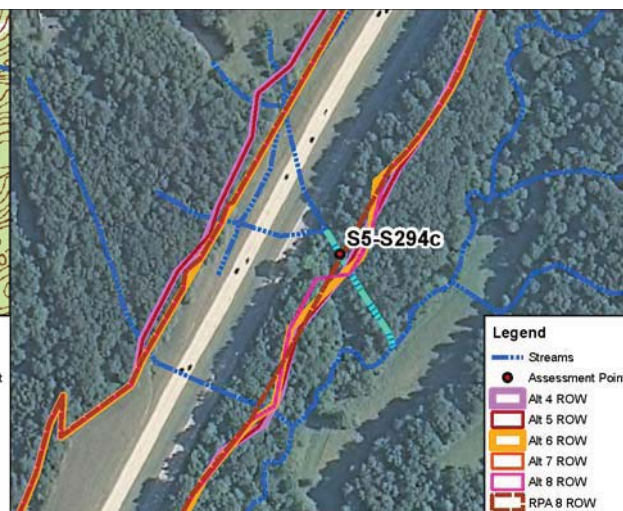
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

See Stream Assessment Form  
**FLOW** → S5-S294a\_2 for site topographic map,  
 aerial photograph, and resource photographs

## Stream Impacts S5-S294c



Site Location on Modesto USGS Quadrangle



Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** SE  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 29  
**Legal Drain (Y/N):** N  
**UTME:** 1779995 ft    **UTMN:** 14287497 ft

**USGS Quadrangle:** Modesto  
**Section:** 34  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 5.0 feet  
**OHWM Depth:** 0.5 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.01 sq mi  
**Predominant Sub:** Clay/sand

Stream S5-S294c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	109	0.01	0.47
5	111	0.01	0.48
6	116	0.01	0.51
7	126	0.01	0.47
8	126	0.01	0.47
RPA 8	80	0.01	0.36

### Description of Potential Impact:

Impacts of S5-S294c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of clay and sand. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S294c are on the second page of this form.



## Stream Impacts S5-S294c

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Photograph Taken Upstream



Photograph Taken Downstream





## Primary Headwater Habitat Evaluation Form

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

29

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S294c** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.34193** LONG.  RIVER CODE  RIVER MILE

DATE **10/18/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.50630) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="75%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

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

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS **OHW = 5'/0.5'** AVERAGE BANKFULL WIDTH (meters): **1.52**

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

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

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

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

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name:	<b>Bryant Creek</b>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

USGS Quadrangle Name: **Modesto** NRCS Soil Map Page:  NRCS Soil Map Stream Order

County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

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) ☒ 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:

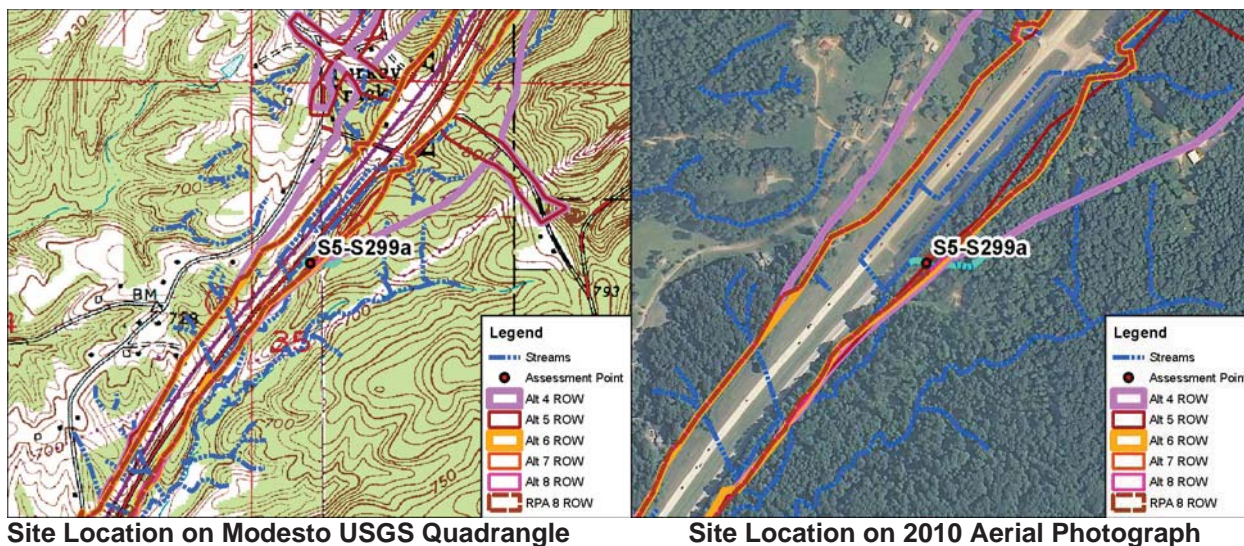
**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

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

**FLOW** →

See Stream Assessment Form  
S5-S294c for site topographic map,  
aerial photograph, and resource photographs

## Stream Impacts S5-S299a



Site Location on Modesto USGS Quadrangle

Site Location on 2010 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Unnamed Trib. Bryant Ck  
**Quarter:** NW  
**Range:** R1W  
**Watershed:** 05120201180  
**Channelized/Type:** No/Natural  
**Stream Type:** Ephemeral  
**Evaluation Type:** HHEI  
**Evaluation Score:** 30  
**Legal Drain (Y/N):** N  
**UTME:** 1781650 ft

**UTMN:** 14289711 ft

**USGS Quadrangle:** Modesto, Hindustan  
**Section:** 35  
**Township:** T11N  
**IDEM 303(d) List:** N/A  
**OHWM Width:** 3.4 feet  
**OHWM Depth:** 0.4 feet  
**USCOE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes  
**Watershed Area:** 0.11 sq mi  
**Predominant Sub:** Sand/clay

Stream S5-S299a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	177	0.01	0.88
5	94	0.01	0.31
6	150	0.01	0.57
7	136	0.01	0.51
8	136	0.01	0.51
RPA 8	85	0.01	0.36

### Description of Potential Impact:

Impacts to S5-S299a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of sand and clay. There is a wide riparian corridor associated with this stream along both banks. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S299a are on the second page of this form.



## Stream Impacts S5-S299a

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Photograph Taken Upstream



Photograph Taken Downstream



## Primary Headwater Habitat Evaluation Form

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

30

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S299a** RIVER BASIN **White River** DRAINAGE AREA (mi<sup>2</sup>) **0.11**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.34798** LONG.  RIVER CODE  RIVER MILE

DATE **04/25/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.50041) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> COBBLE (65 256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="20%"/>
<input type="checkbox"/> GRAVEL (2 64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="5%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="70%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

6

TOTAL NUMBER OF SUBSTRATE TYPES:

4

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

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

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS **OHW = 3.4'/0.4'**

AVERAGE BANKFULL WIDTH (meters):

1.10

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)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

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

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >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)**

<input checked="" type="checkbox"/> WWH Name: <b>Bryant Creek</b>	Distance from Evaluated Stream	<b>0.21</b>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

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

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County: **Morgan** Township / City: **Baker**

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

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:

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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)

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Comments Regarding Biology:

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