INDIANA DEPARTMENT OF TRANSPORTATION

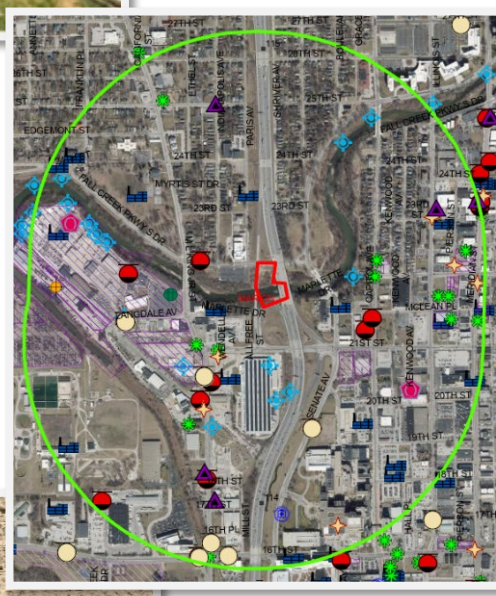
SITE ASSESSMENT & MANAGEMENT MANUAL

2024

ENVIRONMENTAL POLICY OFFICE

ENVIRONMENTAL SERVICES DIVISION

WELCOME!



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MISSION

The mission of Site Assessment & Management (SAM) is to provide support and guidance to INDOT employees, consultants, and contractors in the areas of:

- Processing, developing, reviewing, and approving Red Flag Investigations (RFIs), Phase I Environmental Site Assessments (ESAs) and Phase II ESAs for INDOT transportation project development and implementation.
- Management of the investigation and remediation of INDOT-owned contaminated properties.
- Solid and Hazardous waste management.
- Day-to-day guidance as needed.
- Facilitate GIS templates used for Red Flag Investigations and assist with troubleshooting.
- Maintenance of the internal Geographic Information Systems (GIS) layer associated with Notice of Contamination sites.

CHAPTER 1 – ORGANIZATION AND ADMINISTRATIVE ITEMS

1.1 MANUAL ORGANIZATION

The INDOT Site Assessment & Management (SAM) Manual has seven chapters. **Chapter 1** provides general information on INDOT's organization as well as helpful administrative items that will assist with the generation of reports, the submittal of documents for review, and will also describe how to obtain access to various INDOT databases. **Chapter 2** includes a brief introduction to hazardous material concerns. **Chapter 3** provides guidance on processing, preparation, and review of Red Flag Investigation (RFI) reports. A step-by-step explanation is provided on how the written report is prepared based on ArcGIS Pro maps and various databases. **Chapter 4** describes the integration of the RFI into the National Environmental Policy Act (NEPA) process, with a special emphasis on Environmental Commitments. The unique provisions for the Local Public Agency (LPA) process are also discussed here. **Chapter 5** discusses information required by INDOT for Phase I and Phase II Environmental Site Assessments (ESAs). These documents are prepared in general accordance with American Society for Testing and Materials (ASTM) Standards; however, the emphasis is placed on worker safety and handling and disposal of contaminated media. **Chapter 6** provides guidance on management of INDOT- -owned contaminated properties, as well as the process for handling discoveries of contamination and/or unanticipated concerns (i.e. orphan USTs, unlabeled 55-gallon drums, etc.) encountered by field personnel during construction projects and maintenance activities, including lead-based paint. Finally, **Chapter 7** discusses miscellaneous items, such as what SAM does and does not do, Professional Services Contracting System (PSCS) evaluations, antique landfills, and obtaining an Environmental Protection Agency (EPA) ID Number.

1.2 INDOT ENVIRONMENTAL SERVICES DIVISION ORGANIZATION

The Environmental Services Division (ESD) is a part of INDOT Central Office. The ESD is responsible for ensuring that INDOT projects comply with all local, state, and federal environmental laws and regulations during the project development process. ESD also provides technical support for projects under construction. There are three offices within ESD: Cultural Resources, Environmental Policy, and Ecology, Waterway Permitting, and Stormwater Office. SAM is part of the Environmental Policy Office. Each office provides technical assistance and training to INDOT personnel, consultants, and the public on the environmental requirements that pertain to transportation projects.

1.3 ADMINISTRATIVE ITEMS

To effectively do business with INDOT SAM, access to and general knowledge of the following resources is highly recommended:

1.3.1 Access to ProjectWise

ProjectWise is a suite of software provided by Bentley Systems which is used to transfer, share, and store files associated with various INDOT projects. ProjectWise is being used by INDOT as a project lifecycle tool and is the location of all active project data, including email communications, project-specific files, Geographic Information Systems (GIS) layers, maps, permits, and approved reports.

Obtaining access and using ProjectWise will:

- Provide access to shared files

- Standardize the method of document submittals
- Reduce the number of emails containing large files
- Remove the need for file share websites
- Reduce the potential for document loss or misplacement
- Assist with document review (i.e., access to multiple document versions)

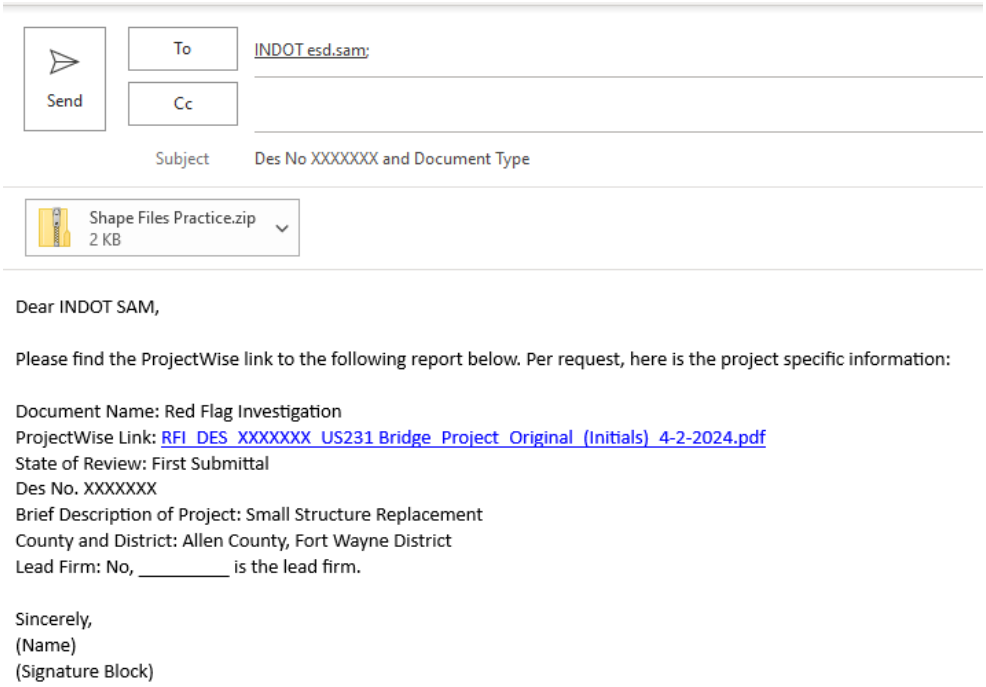
It is highly recommended that document submitters obtain access to ProjectWise. This can be completed by following the instructions provided at: INDOT: Doing Business with INDOT: ProjectWise. A copy of the INDOT Consultant Quick Start User Guide can be accessed using this link as well.

1.3.1.1 Submitting Documents

When documents, such as RFIs, Limited RFIs, RFI Addendums, Phase I ESAs, Scopes of Work (SOW) or Phase II ESAs, are ready to be submitted to SAM for review, please send an email to the general SAM email address esd.sam@indot.in.gov with the ProjectWise link and, at a minimum, the Designation Number (DES No.) and work product information within the subject line of the email. The body of the email should include the following information:

Document Name
ProjectWise link to the document (address provided from ProjectWise)
Stage of Review (i.e., Initial, Second, Final)
DES No.
Brief Description of Project
County and District Information
Lead Firm (Yes or No)

For example,



Once a document has been reviewed, direct email communication with the reviewer of the document should occur. The general email address (esd.sam@indot.in.gov) does not need to be copied on second submittals.

1.3.1.2 Naming Documents

In order to provide consistency among reports submitted from various authors and companies, the following naming system for reports is preferred:

RFI_DES No_ Road Name_Type of Project_Status_Initials and Date

Examples: RFI_DES XXXXXXX_SR 45_Bridge Project_Original_INITIALS MM.DD.YY

RFI_DES XXXXXXX_Small Structure_First Review_INITIALS MM.DD.YY

RFI_DES XXXXXXX _HMA Overlay_Revised1_INITIALS MM.DD.YY

RFI_DES XXXXXXX_Trail Project_Signed_INITIALS MM.DD.YY

Below is an example of a typical progression of document naming: Preparer = John Smith (JS), Reviewer = Jane Doe (JD).

Initial Submission:

RFI_DES XXXXXXX_SR 45_Bridge_Original_JS_04.07.24

After INDOT SAM Review:

RFI_DES XXXXXXX_SR 45_Bridge_First Review_JD_04.10.24

Second Submittal:

RFI_DES XXXXXXX_SR 45_Bridge_Revised 1_JS_04.11.24

INDOT Approval:

RFI_DES XXXXXXX_SR 45_Bridge_Signed_JD_04.12.24

1.3.1.3 Naming Shapefiles

INDOT SAM requires GIS polygon shapefiles for all RFI submissions. See **Appendix E** for instructions on how to create and send shapefiles.

- All shapefiles should contain the following text attribute field: “DES_NO”. The project Des. No. should be entered into this field.
- Shapefiles should be named:
    - RFI_DESXXXXXXX_Road Name_Type of Project_ProjectArea
        - Example: RFI_DES1234567_SR1_HMAOverlay_ProjectArea
    - RFI_DESXXXXXXX_Road Name_Type of Project_HalfMileRadius

        - Example: RFI_DES1234567_SR1_HMAOverlay_HalfMileRadius
    - Please do not use spaces or other special characters, except underscores, in the shapefile names.
- Shapefiles should be in a single zipped folder that attached to the RFI submission email and named:
    - RFI_DESXXXXXXX_Road Name_Type of Project_Shapefiles
        - Example: RFI_DES1234567_SR1_HMAOverlay_Shapefiles

1.3.1.4 Normal Review Timeframes and Submissions

INDOT SAM strives to review documents in a timely manner to support the NEPA process and construction projects. To assist with reviews, INDOT SAM requests that documents be submitted a minimum of four weeks prior to the next step in the process, if not earlier. While most documents should be submitted within this requested timeframe, INDOT SAM recognizes that an expedited review may be needed from time to time. If an expedited review is necessary to meet a project deadline, then the document preparer must reach out to the INDOT PM to request an expedited review on their behalf. The INDOT PM should send the expedited review request, including a reasonable and specific due date, to esd.sam@indot.in.gov. After the first review is complete, document preparers are expected to return the revised document back to INDOT SAM within three working days.

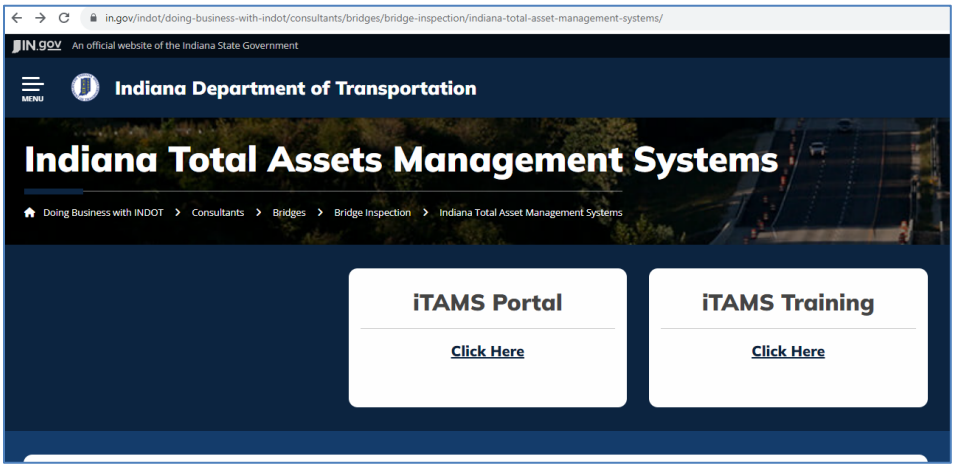
1.3.2 Access to Total Assets Management System (iTAMS)

The INDOT Total Assets Management System (iTAMS) is an online database containing bridge inventory and inspection data for both state-owned and locally owned bridges, culverts, and small structures in Indiana. Consultants and individuals completing RFI reports for INDOT should obtain access to iTAMS to:

- Verify the location of proposed projects involving bridges, small structures, and culverts.
- Obtain the most recent bridge, small structure, and/or culvert inspection report to summarize information for the Ecological Section.

Obtaining an iTAMS account is free and easily accessible. To obtain an account, please email iTAMSHelp@indot.in.gov.

A link to the database can be found at: https://itams.sixense.co/login.



1.3.3 Access to ArcGIS Pro

According to the IN.gov website, GIS is a collection of tools to build, maintain, and use electronic maps and associated databases. There are different formats for obtaining GIS information; however, to access data and generate figures specifically for RFI reports, access and use of ArcGIS Pro is imperative. An updated consultant version of the RFI Template (zip file) is available on the INDOT SAM website (INDOT: Engineering: Site Assessment & Management). This file can be opened with ArcGIS using a Basic Viewer license and will provide information that is required when generating an RFI. See **Appendix E** for ArcGIS Guidance.

CHAPTER 2 - INTRODUCTION TO HAZARDOUS MATERIAL CONCERNS

2.1 WHAT ARE HAZARDOUS MATERIAL CONCERNS?

According to the Institute of Hazardous Materials Management website (IHMM – Institute of Hazardous Materials Management), a "hazardous material is any item or agent (biological, chemical, radiological, and/or physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors."

As environmental professionals, we often encounter the terms "hazardous waste," "hazardous materials," and "hazardous substances." It's helpful to know exactly what is meant by these terms.

Hazardous waste is regulated by the Resource Conservation and Recovery Act (RCRA). As the name implies, this term applies to waste and not products or raw materials.

Hazardous substances are regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The list of hazardous substances includes constituents identified by federal Air, Water, and Hazardous Waste Regulations.

Hazardous materials are identified and regulated by federal transportation regulations. (Note: In Indiana, this is under the Indiana State Police, Motor Carrier Division.)

As the diagram illustrates, there is overlap with all three terms. As stated above, federal laws and regulations apply as well as state laws and regulations. These laws and regulations apply to wastes (such as contaminated soil and groundwater) generated by construction and maintenance activities and must be considered when developing transportation projects.

Even if no waste is expected to be generated on a project, workers must be protected from health risks presented by hazardous materials or substances (solvents, gases for welding, metals, or similar) that they encounter as part of their work.

2.2 HOW ARE HAZARDOUS MATERIAL CONCERNS IDENTIFIED?

The following process has been developed to assist in determining the potential presence of hazardous materials associated with a project and, if warranted, determining the nature and extent of the material:

1) A Red Flag Investigation (RFI) is performed for most INDOT-sponsored projects and must be reviewed by INDOT ESD SAM. It is recommended that the Local Project Agency (LPA) and other state projects be reviewed by INDOT ESD SAM to avoid procedural delays in the NEPA process, which could result in possible loss of funding. The purpose of this investigation is to highlight areas of concern to prevent or minimize potential human exposure risks, impacts to environmentally sensitive resources, and to analyze potential risk to infrastructure components. This information appears on publicly available standard sources and the ArcGIS Pro RFI template. If no areas of concern are found in the RFI, the finding “no impact is expected” is applicable. However, if unknown or potential environmental risks are identified, further assessment may need to be conducted, generally in the form of a Phase I or Phase II Environmental Site Assessment (ESA).

2) A Phase I ESA is a review of state and federal databases and other historical sources to determine whether environmental concerns are already known by resource agencies to be present on or in the vicinity of the property in question. The ESA is conducted in general accordance with the standard established by the American Society for Testing Materials (ASTM E1527-21). If the Phase I ESA identifies properties or areas of concern that warrant additional investigation, then a Phase II ESA may be recommended.

3) A Phase II ESA is conducted in general accordance with ASTM E1903-19 and typically includes the collection of subsurface soil and/or water samples for laboratory analysis. This investigation is used to determine the presence or absence of hazardous materials by obtaining analytical data that is project specific and is needed to determine project specific worker safety, waste handling, and disposal recommendations.

Additional information and guidance for each of the three documents is provided in the following chapters.

2.3 ITEMS AND ROLES NOT ADDRESSED BY SITE ASSESSMENT & MANAGEMENT

INDOT SAM provides guidance and can serve as a liaison between contractors and agencies when working through environmental issues; however, there are items SAM is typically not directly involved in, such as:

- Emergency response including accidental spills.
- Asbestos surveys
- Health and Safety
- Indiana Occupational Safety and Health Administration (IOSHA)-related items
- Regulatory authority for enforcing laws and regulations.

CHAPTER 3 – RED FLAG INVESTIGATION REPORT

3.1 INTRODUCTION TO RED FLAG INVESTIGATION REPORTS

3.1.1 What is the Purpose of a Red Flag Investigation Report?

In general, the purpose of a Red Flag Investigation (RFI) is to:

- Provide a general overview of the environmental condition of a project area,
- Highlight areas that may need additional environmental work or coordination,
- Highlight areas that you might want to avoid or minimize impacts (i.e., Superfund site, wetland mitigation site, or similar); and
- Assist in prioritizing projects.

3.1.2 What Information is Included in a Red Flag Investigation?

There are five (5) sections that are evaluated in an RFI for each project. The sections are:

- Infrastructure
- Water Resources
- Mining and Mineral Exploration
- Hazardous Material Concerns
- Ecological Information

An RFI report template, which includes specific section tables (where applicable) and the report layout, is provided in **Appendix B**. An RFI report template in word document format for both State and Local Public Agency (LPA)-sponsored projects is available on the INDOT Environmental Policy webpage (INDOT: Engineering: Site Assessment & Management).

While the template provides an outline for the RFI report, the *Red Flag Investigation Guidance Documents* provide instructions on how to present the data for each section, provide standard language for recommendations, and include additional guidance for specific resources in each section for both State and LPA-sponsored projects. The guidance documents for both project-types are provided in **Appendix A** and are available online on the INDOT Environmental Policy webpage (see above link for reference). These documents are used by Site Assessment & Management (SAM) to prepare and review RFI reports and should be referenced frequently. It is also strongly recommended that the provided recommendations are used verbatim from the guidance document where appropriate. This increases the speed of review for the reviewers, standardizes reports coming from a wide range of document preparers (i.e., consultants, INDOT, or other agencies), and typically reduces confusion between the document preparer and the reviewer.

3.1.3 When Should a Red Flag Investigation be Prepared?

An RFI should be one of, if not the first, documents prepared during the development of a project. Once a project has been programmed and assigned a Designation Number (DES No.), the RFI should be submitted to SAM for review and approval. Refer to the INDOT Project Development Process Manual for more details about how an RFI fits into the overall project development timeline. For LPA projects, submittal of the RFI in advance of the environmental document is highly recommended. If the LPA or its representative elects not to submit the RFI for review early, it should be included as an attachment to the environmental document.

Because an RFI should be one of the first documents generated, do not attach coordination letters, emails, reference to permits that have been obtained, and/or details of field visits (including photo logs) to the document.

In general, a project above the level of a Programmatic Categorical Exclusion (PCE) should have a full RFI. An RFI is not necessary when the following criteria are met for a PCE:

- No new temporary or permanent right-of-way
- No resource agency permits are required
- Project fits under the Minor Projects Programmatic Agreement
- No significant excavation

****Follow the RFI Determination Flow Chart in Appendix A to determine the level of the RFI needed****

3.1.4 When Should a Limited Red Flag Investigation be Prepared?

As stated above (*Section 3.1.3*), projects that fall under the PCE typically do not require an RFI; however, there are instances where a PCE project can involve limited or focused excavation activities which would warrant, at a minimum, a hazmat review of the project area. These projects typically include Americans with Disabilities Act (ADA) curb ramp installation, signal and/or light pole replacement / installation, railroad signal replacement, school flashing signal installation, or similar. In these instances, a Limited RFI focusing on the area(s) of excavation and including the Hazardous Material Concerns and Ecological Information Summary sections, at a minimum, is recommended. A *Limited Red Flag Investigation* template can be made from the RFI template in **Appendix B**, as well as a flow chart summarizing the Limited RFI process and typical projects that fall under this category.

The document preparer must receive approval from the applicable district (i.e. LaPorte, Fort Wayne, Crawfordsville, Greenfield, Vincennes, or Seymour) confirming that a Limited RFI is appropriate for the project. In addition, it is at the discretion of the district to decide if additional sections, beyond Hazardous Material Concerns and Ecological Information Summary, should be included (i.e., Infrastructure Resources, Water Resources, or Mining / Mineral Exploration). Although the Limited RFI is an abbreviated report, the instructions and recommendations outlined in the *Red Flag Investigation Guidance Document*, provided in **Appendix A**, should still be applied.

The second scenario involves projects that are PCE in nature but are elevated to a higher level of NEPA document due to either cultural resources, ecology, and/or right-of-way acquisition. An example is an HMA overlay with ADA curb ramps project that has reported bat captures within the 0.5 mile search radius. While the NEPA document will be elevated above a PCE level due to ecology, the level of effort required at the RFI stage is still in-line with a Limited RFI. Document preparers should reach out to either the district or INDOT SAM to determine the level of documentation needed.

Lastly, if a state sponsored PCE project involves the replacement or repair of underdrains or maintenance pipes (structures not in iTAMS), then direct coordination with INDOT ESD Ecology, Permitting, and Stormwater Office should occur to determine if further actions are needed. Replacement or repair of maintenance pipes should be included in the project description of the Limited RFI; however, neither communications with INDOT ESD Ecology, Permitting, and Stormwater Office, nor a recommendation to complete a Waters of the US report, should be included in the Limited RFI. If the project is upgraded to a higher-level

document due to the need for waterway permitting, then re-coordination with the district or INDOT SAM will be needed.

3.1.5 When Should a Hybrid Red Flag Investigation be Prepared?

The Hybrid RFI should include all resources sections, as applicable, shown in the template in **Appendix C**. The attribute tables should be ran as normal via ArcGIS Pro and the number of all resources identified within the 0.5 mile buffer should be included in the resource tables. If a resource identified will impact the project area, an explanation should be included. If no resource attributes within a section are going to impact the project area, then a write up stating no impact to the project area should be included.

3.1.6 What is the Shelf Life of a Red Flag Investigation?

Once an RFI has been reviewed and approved, the following timeline before environmental document approval is recommended:

- Less than 1 year old (from generation or approval) - proceed with using the approved RFI.
- Between 1 and 3 years old – the RFI report should be re-examined to determine if any new information is now available (i.e., ArcGIS Pro layers, Google Maps, programmatic or policy updates, or similar). If there are significant updates (significant change in scope, scale, and extents of the project that were not included in the initial RFI report or newly identified resources that will be impacted by the project area), an RFI Addendum can be completed and added to the front of the previously approved document. An example of the *Red Flag Investigation Addendum* can be found in **Appendix D**.
    - Please contact either SAM (at esd.sam@indot.in.gov) or the appropriate district to determine if an RFI Addendum should be generated. In general, an addendum is warranted if a change in scope or impacts to resources is substantive and will alter recommendations. For example, a change in excavation depth, an additional scope not discussed in the original document, or a change in the original project area, to name a few.
    - In some cases, a minor update or resource adjustment can be detailed in the environmental document and does not warrant an RFI Addendum. For example, adding 100 feet of linear project area in a rural setting with no additional impacts.
- More than 3 years old – a new RFI report may be necessary. Contact SAM to determine the best path forward.

CHAPTER 4 - RED FLAG INVESTIGATION REPORTS AND THE NEPA PROCESS

4.1 RED FLAG INVESTIGATION RECOMMENDATIONS – GENERAL

As indicated in the above sections, Red Flag Investigation (RFI) reports are an early screening tool that should be used to determine if additional coordination or investigation associated with the proposed project is warranted. Recommendations made within the approved RFI should be discussed in the environmental document. If recommendations made within the RFI report are no longer valid or appropriate, based on a change in the project scope or based on guidance received from other programs, then it is the document preparer's responsibility to explain and provide reasoning for why a recommendation is no longer applicable.

If there are recommendations within the RFI that request coordination with other agencies, the coordination, either phone call logs, email communications, or letters, should be included in the environmental document and should include responses, if received.

If there is a recommendation within the RFI for a Phase I or Phase II Environmental Site Assessment (ESA) to be completed, a Scope of Work (SOW) plan should be submitted to Site Assessment & Management (SAM) for review. After SOW approval, the Phase I/II ESA should be prepared, and subsequently submitted for SAM review and concurrence. Finally, the Phase I/II ESA should be performed prior to the Ready for Contracts (RFC) and included in the environmental document for review by INDOT.

It is recommended that LPA-sponsored projects follow the above process for Phase I ESAs and Phase II ESAs as well.

4.2 RED FLAG INVESTIGATION RECOMMENDATIONS – HAZARDOUS MATERIAL CONCERNS

There are a few common recommendations that can be made in the Hazardous Material Concerns section of the Red Flag Investigation. Specific guidance language for these recommendations can be found in the Red Flag Investigation Guidance (**Appendix A**). Common recommendations may include:

- If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater will be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.
- Before proper handling, removal, and disposal of soil and/or groundwater, analysis for lead will be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.
- Coordination will be conducted with the IDEM Institutional Controls section (institutionalcontrols@idem.IN.gov) before RFC. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.
- Coordination will be conducted with the IDEM project manager identified in the VFC before RFC.
- No investigation has been conducted on this property. A Phase II Environmental Site Assessment is recommended to occur before RFC. Prior to any investigation activities, a SOW plan will be prepared and submitted to INDOT SAM for review and approval.

These recommendations are made following the review of the various sites on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC) or through identifying sites that may be a concern within or adjacent to the project area. If the scope of work changes, then the recommendations associated with a particular site may no longer apply. It is the responsibility of the document preparer to explain and provide evidence indicating that further coordination, investigation, or other associated activities are not warranted.

If a recommendation for additional coordination (i.e., IDEM project manager) is necessary, the coordination should occur prior to or during the generation of the environmental document. A phone log summary, email communication, or letter should be included in the environmental document.

If a recommendation to perform a Phase I ESA is made, coordination with INDOT SAM should occur to determine if the Phase I ESA is still warranted and to review the recommendations provided in the Phase I ESA prior to submittal of the environmental document. Recommendations will be made as to whether additional investigation (a Phase II ESA) is necessary.

If a recommendation for sampling is made (i.e., lead sampling or a Phase II ESA), coordination with INDOT SAM should occur to assist with developing the SOW for the Phase II ESA. If the Phase II ESA is completed prior to the environmental document being generated, then details of the Phase II ESA, along with any recommendations specific to the sampling (i.e., personal protective equipment and/or waste handling and disposal protocol), should be included in the environmental document. If the Phase II ESA is not completed prior to developing the environmental document, then a commitment to complete the Phase II ESA work should be included and the investigation should be completed prior to project RFC.

4.3 LOCAL PUBLIC AGENCY PROJECTS

For Local Public Agency (LPA) sponsored projects, submittal of the RFI in advance of the environmental document is highly recommended. If recommendations are made within an RFI that has not been reviewed by SAM do not appear to adequately address potential hazardous material concerns associated with the project area, then additional investigation may be warranted and may be made during the review of the environmental document. Failure to identify and/or investigate potential hazardous material concerns can jeopardize federal funding for the project. Recommendations and procedures detailed in **Sections 4.1** and **4.2** above can be applied to LPA projects as well.

CHAPTER 5 – PHASE I AND PHASE II ENVIRONMENTAL SITE ASSESSMENTS

A Phase I Environmental Site Assessment (ESA) is a review of state and federal databases and other historical sources to determine whether environmental concerns are already known by resource agencies to be present on the property in question. The Phase I ESA is conducted in accordance with the standard established by the American Society for Testing Materials (ASTM E1527-21). If the Phase I ESA identifies properties or areas of concern that warrant additional investigation, then a Phase II ESA may be recommended.

A Phase II ESA is conducted in accordance with ASTM E1903-19 and typically includes the collection of subsurface soil and water samples for laboratory analysis to determine the nature and extent of potential contaminants typically within the extents of the project area.

5.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT

As indicated above, a Phase I ESA is a review of information about past property use to determine whether environmental contamination may be present and is usually prepared as due diligence for property transactions. Due to the high volume of sites and documents available on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC), the recommendation to complete a Phase I ESA for a project area can usually be bypassed depending on the scope and nature of the project and the project location. If the project area is extensive and traverses through a city center with properties that appear to be historical fueling and/or service stations or manufacturing facilities and information regarding the potential property cannot be identified on the IDEM VFC, then a Phase I ESA may be warranted. A Phase I ESA recommendation can be added to the Red Flag Investigation (RFI) report. In order to save time and money, INDOT recommends Phase I ESA requests be submitted and approved in advance. In addition, INDOT recommends that a maximum of two historical databases are checked (i.e., historical aerial imagery and Sanborn maps) during preparation of a Phase I ESA.

If a project or project area appears to necessitate a Phase I ESA, the document preparer should keep in mind that INDOT's two main objectives for the review are:

1) Worker safety on the job site, including determining required PPE
2) Proper handling and disposal of waste (i.e., soil and/or water) generated from construction activities

With those objectives in mind, a Phase I ESA can be focused toward identifying sites that may have releases within or adjacent to the project area and identifying sites that may need additional sampling in order to ensure workers are aware of the conditions during construction. Typical Phase I ESAs that identify dozens of Recognized Environmental Conditions (RECs), but then do not provide an evaluation of the potential impact of the REC to the specific project area, are less effective at assisting with developing a potential sampling plan for a Phase II ESA. INDOT recommends identifying potential RECs within the vicinity of the project and project area, but then also requests the document preparer provide a rational determination of whether the REC needs additional investigation within the extents of the project area or if the risk is considered low. Therefore, a modified Phase I ESA report can be prepared, as most of the Phase I ESAs generated for INDOT have less to do with property transfers and acquisition and more to do with the two main objectives identified above. Sections of the Phase I pertaining to property transactions and liability can be omitted from the report.

For example, a trail project is occurring through an old city center in central Indiana. A Phase I ESA was generated to identify historical concerns along the project area. The Phase I ESA identified a historical gasoline station approximately 0.15 mile north of the project area and tagged the site as a REC and recommended a Phase II ESA be completed. Additional review of the site on the IDEM VFC indicated the extents of a historical release had been defined and the residual chemicals of concern (CoCs), including lead, were found to remain on the off-site property and do not extend toward the proposed project area. Therefore, in the development of the subsequent Phase II ESA scope of work plan, the site was identified as an REC, but, upon further evaluation, was not recommended for further sampling based on the low risk of impacting the project area.

5.2 PHASE II ENVIRONMENTAL SITE ASSESSMENT

In general, a Phase II ESA is a subsurface investigation that typically includes the collection of subsurface soil and/or water samples for laboratory analysis. As indicated above, INDOT is interested in addressing two fundamental needs when performing a Phase II ESA:

1) Worker safety on the job site, including determining required PPE
2) Proper handling and disposal of waste (i.e., soil and/or water) generated from construction activities

With those objectives in mind, it should be noted that the goal of a Phase II ESA is not to delineate or “chase” the extents of potential contamination within or surrounding the project area, but to determine the presence or absence and concentration of potential contamination impacting the proposed project as defined by the proposed project scope.

For example, a project involving excavation to a depth of approximately five feet below the ground surface (5 ft-bgs) is found to be in proximity of a shallow chlorinated solvent plume originating from an off-site dry cleaning facility. In order to determine if the soil and/or groundwater generated during the project would need to be handled as hazardous waste, a Phase II ESA is recommended in the RFI report. The proposed boring locations are set within the extents of the proposed project area (not off-site) and should extend to the anticipated depth of the project (i.e., in this example 5 ft-bgs). A soil sample is collected at depth and, in this case, groundwater is not encountered so a water sample is not collected. Analytical results obtained from the sampling indicate that chlorinated solvents were not identified above the laboratory detection limits; therefore, the soil generated during the project would not need to be disposed as hazardous waste.

5.2.1 Phase II Environmental Site Assessment Development

The Scope of Work (SOW) should be developed prior to completing a Phase II ESA and submitted to INDOT Site Assessment & Management (SAM) for review and approval. The SOW should include:

- The approximate depth and general description of construction activities proposed to occur in the vicinity of the REC,
- Utility location/coordination prior to drilling activities,
- The number of boring(s)/temporary monitoring well(s) proposed for the investigation,
- Proposed depth of the sampling locations and the anticipated number of samples to be collected per boring,
- Proposed analysis to be performed on the samples and reasoning for selecting the analytical methods,
  **Please note that all RCRA 8 Metals do not need to be analyzed for most sites.
- Brief description of sampling methods and protocols to be used

    - Hand augering to clear unmarked utilities
    - Equipment anticipated to be used during the investigation (i.e., GeoProbe, hand auger, or others).
    - Sampling procedures
        - This includes the recommendation to collect both unfiltered and filtered groundwater samples (if applicable). Remember, when construction activities are occurring, the typical conditions generated are turbid. Solely collecting a filtered water sample is not necessarily reflective of the conditions that will be present during construction.
    - Decontamination procedure
    - Abandonment of soil boring(s) and/or temporary well(s) procedure
    - Details concerning drumming or containerizing waste generated during the investigation and disposal information. An environmental investigation is being recommended due to the potential for chemicals of concern (CoCs) within the project area and should therefore be considered impacted media until laboratory analytical results are obtained.
- General health and safety measures (this is not referencing a complete Health and Safety Plan (HASP)),
- A figure depicting the project area, the surrounding REC(s), and the proposed boring locations. If there is a large variation of depth to excavation throughout the project area, color coding can be beneficial to depict the variation in depth, and
- Itemized cost estimate, which includes time and materials and indicates associated mark-ups.

The SOW plans should be submitted to INDOT SAM via email (esd.sam@indot.in.gov). After the SOW is submitted, reviewed, and approved by INDOT SAM, the approved Phase II ESA can be performed.

5.2.2 Phase II Environmental Site Assessment Reporting and Guidelines

After the Phase II ESA investigation is performed, the sampling activities and analytical results obtained from the Phase II ESA should be summarized in a report and submitted to INDOT SAM for review and approval.

Details that should be included in the Phase II ESA report are:

- A brief description detailing the rationale behind the sampling and a summary of the proposed project.
- A summary of the investigation completed.
    - Location and number of borings and/or temporary monitoring wells completed.
- A summary of the analytical results within the text.
- Tables summarizing the analytical results.
- Figure(s) depicting the sample locations and analytical results.
- Boring logs (if applicable)
- Well construction logs (if applicable)
- Recommendations and conclusions that are meaningful for the project and to INDOT.

5.2.3 Phase II Environmental Site Assessment Conclusions and Recommendations

The conclusions and recommendations should be focused on providing worker safety recommendations and proper waste handling and disposal based on the analytical data received.

- If chemicals of concern (CoCs) are not reported above the laboratory detection limits, then standard personal protective equipment (PPE) and use of the Uncontaminated Soil Policy (Waste-0064-NPD-R1) (**Appendix H**) can be applied.

Regarding adsorbed CoCs in soil:

If adsorbed CoCs in soil are identified at a concentration at or above the levels referenced in the IDEM Uncontaminated Soil Policy (Waste-0064-NPD-R1), the soil is a regulated waste. There are two residential screening levels; "Migration to Groundwater" (MTG) or "Direct Contact" The lower of the two screening levels must be used as the residential level for comparison purposes. The final report should include a recommendation for proper handling, removal, and disposal at an approved landfill and, if applicable, the recommendation for additional PPE above and beyond standard safety requirements as determined by the contractor.

Regarding dissolved CoCs in water:

- If the analytical results obtained from an unfiltered water sample are below the applicable IDEM Risk-based Closure Guide (R2) Table 1 Groundwater Published level, then standard handling is appropriate.

$$CoCs \ < \ IDEM\ R2\ Groundwater\ Published\ \ levels \ \Rightarrow \ Standard\ Handling$$

- If the analytical results obtained from an unfiltered groundwater sample contain CoC concentrations at or above the applicable IDEM RCG R2 Tap Groundwater Published level, but the analytical results obtained from the filtered groundwater sample are below the applicable IDEM RCG R2 Groundwater Published level, then a recommendation to include engineering methods for sediment control during construction is required.

  Please note that the contractor is responsible for worker safety requirements based on the analytical data collected during the Phase II ESA.

$$Unfiltered\ Sample\ CoCs \ \geq \ IDEM\ \ R2\ Groundwater\ Published\ Level$$
$$Filtered\ Sample\ CoCs \ \leq \ IDEM\ R2\ Groundwater\ Published\ Level$$

Proper handling, removal, and disposal needed

- If the analytical results obtained from a filtered groundwater sample contain CoC concentrations above the applicable IDEM RCG R2 Groundwater Published levels, then proceed to the RCRA Guidance below.

$$Filtered\ Sample\ CoCs \ \geq \ IDEM\ R2\ Groundwater\ Published\ levels$$
$$= \ See\ RCRA\ Guidance$$

In addition to applying the IDEM RCG R2 Guidance document as a basis for recommendations, the below guidelines should be followed as well:

5.2.3.1 Use of RCRA Guidance

Remember that, for construction purposes, when a waste is generated (i.e., shovel to soil), Resource Conservation and Recovery Act (RCRA) guidelines are to be followed. As such, if analyte concentrations are detected above the RCRA 20x rule, then the material is considered

hazardous waste and may require additional analysis. This is typically encountered with metals, more specifically lead, in soil samples.

- For example, if adsorbed total lead is detected at a concentration greater than 100 milligrams per kilogram (mg/Kg) (which is 20x the RCRA Toxicity Characteristic Leaching Procedure (TCLP) concentration of 5 mg/Kg), then the media would be classified as hazardous waste. The laboratory should be contacted and the sample should be analyzed for TCLP lead. In general, the TCLP analysis mimics landfill conditions and can be used to assist with waste disposal. An initial total lead concentration greater than 100 mg/Kg may have a <5 mg/Kg result following the TCLP analysis, allowing the material to be disposed as non-hazardous waste instead of hazardous.

A table summarizing the RCRA 8 Metals and the TCLP Limit and 20x TCLP limit is provided below (https://www.epa.gov/sites/default/files/2016-01/documents/hw-char.pdf):

RCRA Metals (6010)	TCLP Limit (ppm)	20 x TCLP Limit (ppm)
Arsenic	5	100
Barium	100	2000
Cadmium	1	20
Chromium	5	100
Lead	5	100
Mercury	0.2	4
Selenium	1	20
Silver	5	100

ppm = parts per million

Additional analytes and their TCLP threshold are provided on the U.S. Environmental Protection Agency (EPA) website. If a water sample exceeds the TCLP limit, then it is hazardous and needs no additional analysis.

5.2.3.2 Chromium and Hexavalent Chromium

According to the *Agency for Toxic Substances and Disease Registry* (February 2001) fact sheet, chromium is a naturally occurring element that is present in several different forms including chromium (0), chromium (III), and chromium (VI). A copy of the fact sheet is provided in **Appendix H** for reference.

Chromium (VI) is also referred to as hexavalent chromium and has been found to be a known carcinogen and is significantly more toxic than other forms of chromium. Hexavalent chromium is generally produced by industrial processes and is used for chrome plating, dyes and pigments, leather tanning, and wood preserving. Common pathways to exposure include ingestion, dermal, and respiratory.

Typically, a request to include the analysis of total chromium during a Phase II ESA is associated with sites that are identified as a potential concern, such as manufacturing facilities, automotive repair and salvage yards, and metal finishing industries. If total chromium is analyzed, and the analytical results provide a concentration above the IDEM RCG MTG screening level for hexavalent chromium (mg/Kg), then the sample should also be analyzed for hexavalent chromium. Verify that the selected laboratory can achieve the required screening level.

5.3 DOCUMENT SUBMITTAL PROCESS AND TIMELINE

The following guidance applies to Phase I ESAs, SOWs, and Phase II ESAs that are submitted to SAM for review and approval. Document preparers should plan accordingly and submit documentation a minimum of four weeks prior to a deadline or needing approval. INDOT SAM personnel will try to accommodate requests for expedited reviews; however, if the document is not received within the four-week time period, it may be reflected in the PSCS review (see **Section 7.1**).

Refer to **Section 1.3.1.1** for guidance on how to submit documents for SAM review and approval. In general, once a report has been reviewed and approved, a concurrence email will be sent to the document preparer.

CHAPTER 6 – MANAGING INDOT-OWNED PROPERTIES AND RIGHT-OF-WAY

6.1 INDOT-OWNED PROPERTIES

On occasion, INDOT will acquire properties with potential or known contamination. These sites may require investigation, routine sampling, or remediation.

INDOT will utilize an on-call consultant that has met qualifications for investigating and remediating sites. The selected consultant should work in tandem with INDOT Site Assessment & Management (SAM) to determine the most effective path forward for the site and discuss the options available for pursuing closure. INDOT SAM will review documents, reports, Scope of Work (SOW) plans, cost estimates, and invoices associated with the activities.

6.2 DISCOVERY OF CONTAMINATED MATERIALS OR ORPHAN UNDERGROUND STORAGE TANKS IN INDOT-OWNED RIGHT-OF-WAY

Developing a Red Flag Investigation (RFI) is the first platform in identifying areas with potential or known contamination that may be encountered during project construction. While the goal is to identify as many, if not all, of the contaminated sites, unidentified contamination or an orphan underground storage tank can still be encountered. In the event that contaminated media (i.e. soil and/or water) is encountered, remember that personal safety is always a first priority. Do not endanger yourself by entering hazardous environments. Stay upwind of spills and never taste or touch spilled material or inhale odors to identify a spill.

Reference the process flow diagram in **Appendix G** for guidance on who to contact and what to do in the event that unplanned contaminated media is discovered within INDOT-owned right -of -way. Note that contamination within the INDOT right-of-way does not need to be "chased" or delineated, nor does the right-of-way need remediated. The main focus is to identify the contamination and determine the appropriate methods for handling and disposal (if warranted). In addition, historical petroleum releases can often smell and look (i.e., gasoline odor and staining) as though they are fresh. Often a hydrocarbon odor may exist, but the associated contaminant concentrations have degraded to below applicable screening levels. Therefore, contacting an environmental consultant to obtain and analyze samples is essential and may reduce the overall cost that could be incurred through handling and disposal.

6.2.1 Orphan Underground Storage Tank Management Protocol

According to the Indiana Department of Environmental Management (IDEM) website, storage tanks can store liquids or gases, such as flammable and combustible petroleum products and hazardous substances. In order to minimize the possibility of releases from tanks, both underground storage tanks (USTs) and aboveground storage tanks (ASTs) are regulated by federal and state agencies. For Indiana, the IDEM Office of Land Quality (OLQ) enforces UST regulations which includes inspection and testing of UST systems and ensures the correct upgrade or closure of UST systems. Any spill or release from a tank (new or historic) must be reported to IDEM, Emergency Response Spill Line.

While IDEM OLQ oversees regulated USTs and UST systems, it is not uncommon for abandoned or orphan USTs to be encountered during construction activities, typically occurring, but not limited to, within the right -of -way. These orphan USTs represent a unique problem as they have rarely been properly cleaned or closed. Orphan USTs can often contain old product, sludge, water, or a combination of all. While most orphan USTs are not regulated by IDEM OLQ Tanks Program, their location, removal details, and remaining environmental condition around the tank, are important to the project and for INDOT records and knowledge. Please see the

Orphan UST flow chart in **Appendix F**. As such, INDOT SAM recommends that orphan USTs follow similar protocols for sampling, removal and disposal, and reporting as regulated USTs.

When determining the contents of the orphan UST, please note if the tank is empty, filled with sand/aggregate, water, product, sludge, or any combination of the above listed items. Analytical data must be obtained as it is needed for waste characterization. The next step is to develop a sampling plan, which should include:

- Approximate location of the tank (include photos if able),
- Estimated size and material (i.e. steel, fiberglass, etc.),
- Brief description of the tank contents and how contents were determined,
- Sampling strategy, to include sampling equipment, sample containers, and constituent list.

Please note that each different material (waste) must be sampled separately (i.e. sludge and/or water). Provide the sampling plan in writing to the SAM Team email (esd.sam@indot.in.gov) for review and concurrence. After receiving concurrence, complete the sampling and laboratory analysis of the contents within the tank. Once the laboratory results are received, they should be sent via email to the SAM Team Inbox with the proposed next steps for content removal and disposal, tank removal (if appropriate), and closure sampling plan.

Following review and approval from SAM, the tank will be properly closed, which may include removal or in-place closure, and closure sampling completed. Preference is given for removal of the tank. However, in some situations, the tank can be closed in -place due to potential structural issues (i.e. orphan UST is adjacent to a building footprint). In either case, any contents must be identified, followed by an assessment of the surrounding soil and possibly groundwater. Removal of contents depends on the type of material. Note: inert material does not need to be removed. Reference the Orphan UST Management guidance and flowchart **Appendix F**.

After the closure activities are completed, a final report documenting the sampling, closure, disposal (including impacted media), and remaining environmental condition around the tank should be generated and submitted to the SAM Team Inbox for review and, ultimately, INDOT records. This process is also reflected in the Orphan UST Management flow chart provided in **Appendix F**.

6.3 NOTIFICATION OF CONTAMINATED SITES WITHIN INDOT-OWNED PROPERTY AND RIGHT-OF-WAY

The IDEM Office of Land Quality (OLQ) manages contaminated sites throughout Indiana. Typically, the type of site determines which program the facility will be evaluated under. For example, a fueling station that has a release from the underground storage tank (UST) system will be evaluated in the Leaking Underground Storage Tank (LUST) program. A listing of the investigation and cleanup programs is provided at IDEM: Environmental Cleanups: Investigation and Cleanup Programs for reference.

Each program has guidance on how to evaluate and remediate sites based on the type of contamination and the contaminated media present at the site. One of the main objectives of each program is to oversee the clean-up of contaminated sites to a level that will achieve closure or No Further Action (NFA) status. In some instances, a contaminated site may have impacted media that extends off-site into an INDOT-owned right-of-way or roadway and the contamination may not be able to be addressed during remediation activities. If the risk associated with the site is low, IDEM may approve the application of an institutional control on the deed of the property which places restrictions on the use of the property. If a site is being

closed using the application of an institutional control and there is contamination remaining within INDOT-owned property, IDEM will request that a notification letter be sent to INDOT as part of closure activities. These notification letters typically include a brief summary of the site, remediation activities completed, the location, depth, and concentration of contamination that remains on the site, and recommendations on proper management. These notices should be emailed to:

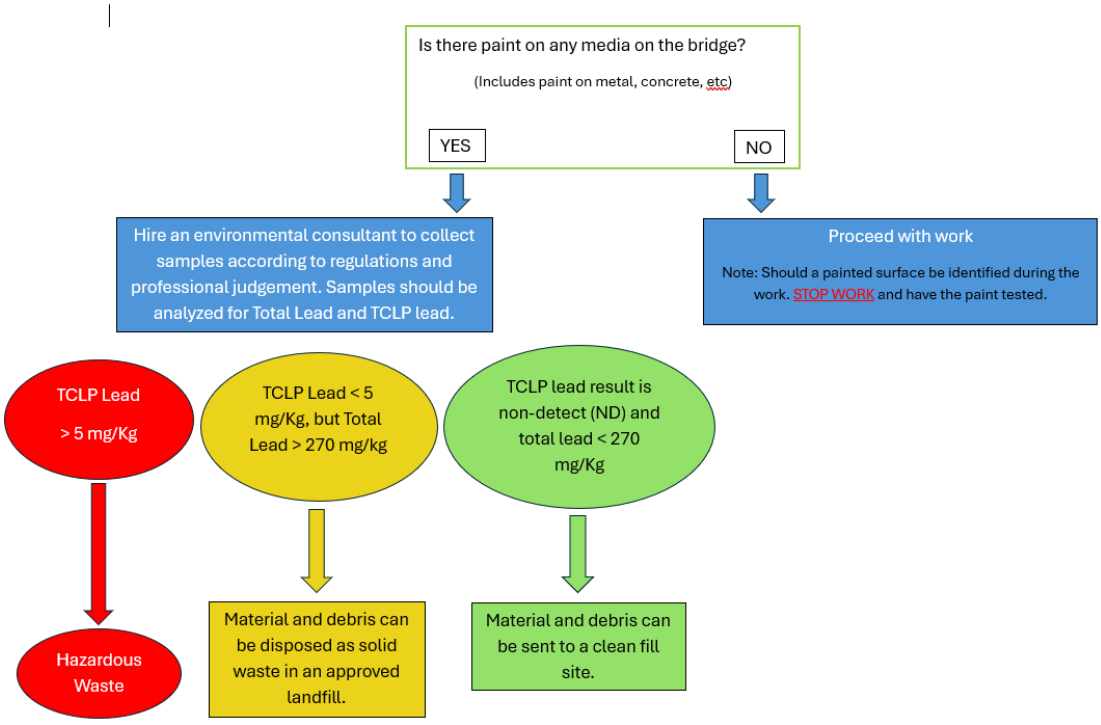
SAM Email Address: esd.sam@indot.in.gov
Subject Line: Attn: INDOT SAM – Notice of Contamination Notification

INDOT SAM has an internal ArcPro layer called Notice of Contamination sites, which is updated as these letters are received. These notification letters are greatly appreciated as they reduce the amount of time spent on the IDEM Virtual File Cabinet (VFC) and quickly identify sites that may impact a proposed project area.

6.4 LEAD-BASED AND LEAD-CONTAINING PAINT

Lead can be found in all parts of our environment and is one component of concern when reviewing historical (pre-1970) fueling stations during the generation of the RFI. In addition to looking for lead in the soil or groundwater within a project area involving excavation, there is also concern regarding the presence of lead-based paint (LBP) that may have been used historically on structures, including bridges. Demolition and maintenance activities that may result in lead dust generation can harm workers, stakeholders, and the surrounding environment. In circumstances where LBP is being removed, contractors play a critical role in helping to prevent lead exposure.

Contractors removing paint from structures should first and foremost refer to the most recent INDOT Standard Specifications (https://www.in.gov/dot/div/contracts/standards/book/) for guidance on sampling frequency and analysis. If analytical results indicate that a generated waste stream is hazardous, then coordination with INDOT SAM should occur and appropriate waste handling, transport, and disposal should occur (i.e. do not comingle waste, transport requires specific licenses, etc.). Refer to **Section 7.3** for guidance on obtaining an Environmental Protection Agency (EPA) ID number.



CHAPTER 7 – MISCELLANEOUS ITEMS

7.1 PROFESSIONAL SERVICES CONTRACTING SYSTEM

Following both the initial review and the approval of a document, Site Assessment & Management (SAM) personnel evaluate the document and the responsiveness of the consultant by completing a performance evaluation within the Professional Services Contracting System (PSCS). Be aware that the preparer of the report is the individual that will be evaluated in PSCS. Consultants have access to the PSCS website to review the associated scoring rubric by obtaining access and logging in to the INDOT Technical Application Pathway (ITAP) https://itap.indot.in.gov/login.aspx.

7.2 LANDFILLS – INCLUDING ANTIQUE LANDFILLS AND OPEN DUMPS

Waste management in Indiana and around the US has evolved over time. Some of the oldest landfills pre-date environmental regulations and others received an approval or permit, depending on the regulations or the practice at the time. Waste that is disposed outside of a permitted or approved landfill is called an “open dump.”

IDEM has been reviewing and compiling files of historical landfills and open dumps. Additionally, IDEM has been mapping them.

You may encounter disposal facilities, historic and current, in the following categories:

- Solid Waste Landfills
- Open Dumps
- Landfill Boundaries

As information on these sites becomes available and updated, the potential impacts from them are still being determined; however, if an antique landfill is mapped within the 0.5-mile search of a project area, SAM recommends coordination with IDEM Office of Land Quality occur. If the project is located within or adjacent to a mapped antique landfill, then the following actions have been recommended by IDEM and should be submitted in a Scope of Work (SOW) plan to SAM for review and approval before work occurs:

- Perform initial exploratory test pits to confirm the presence of waste and its extent.
- If waste is excavated, it needs to be properly disposed of in a landfill permitted to accept the waste such as a municipal solid waste landfill or hazardous waste disposal facility. IDEM can provide guidance and approval for remediation and/or excavation or post-closure use of the dumps.
- Special attention should be given to leachate control during the excavation activities, including run-on and run-off controls for excavated areas.
- Special attention should be given to the potential for explosive gas to be present.
- For antique landfills, determine if a closure plan is available that needs to be followed. If there is no identifiable closure plan, all exposed waste not removed from its original location will need to be re-covered with an appropriate soil cap two (2) feet in depth, graded, and vegetated.

Additional information can be found on IDEM’s Antique Landfill webpage. IDEM has technical guidance, Remediation Program Landfills and Open Dumps that can be referenced for additional information.

7.3 OBTAINING AN EPA ID NUMBER

Similar to the private sector, INDOT is a part of the regulated community and must comply with all state and federal guidelines and regulations. According to the Environmental Protection Agency (EPA) website, Section 3010 of Subtitle C of the Resource Conservation and Recovery Act (RCRA) requires reporting and tracking of regulated materials, including the location and general description of activities. Regulated wastes are hazardous wastes as defined by 40 CFR Part 261 and in order to track and ensure regulated waste is managed in a way that protects human health and the environment, EPA Identification Numbers (ID No.) are issued and annual reporting is required.

Due to the wide breadth and nature of construction projects, there is potential for INDOT projects to generate or encounter regulated (i.e. hazardous) wastes. Please note that paint on bridges should be characterized and EPA ID Nos. should not be acquired for waste that is non-hazardous. In addition, after testing, non-hazardous waste (i.e. sandblast) should not be sent as hazardous waste as this results in additional fees and time for reporting and much higher disposal costs. When these hazardous wastes are identified, proper handling, transport, and disposal is required by law, and this begins with obtaining an EPA ID No. For Indiana, this means notifying the Indiana Department of Environmental Management (IDEM) by requesting an EPA ID No. using MyRCRAid which is an electronic filing system. Instructions and registration information can be found at IDEM: Managing Waste: How to Obtain a New RCRA ID Number.

Instructions on how to obtain an EPA ID No. and complete annual reporting to IDEM is provided on the website; however, there are a few items that should be noted:

1) Waste generated as part of an INDOT project (i.e. soil, water, sandblast material, concrete, etc.) makes INDOT the generator and; therefore, an INDOT employee should obtain the EPA ID No. and sign subsequent waste manifests for hazardous waste generated during a project. It is recommended that either the INDOT PM or PEMS take on this role.

2) Documentation and updates for the EPA ID No. will be sent to individuals listed on the request form. It is recommended that two INDOT employees (the INDOT PM and PEMS are preferred) are listed as contacts should personnel change during the course of the project.

3) INDOT will be responsible for paying the annual hazardous waste generator fees if the threshold for being a large quantity generator (1,000 kilograms or 2,200 pounds) is met.
    - INDOT is responsible for paying the fees associated with the hazardous waste generated during the project. As specified in the guidance for completing the application for an EPA ID No., invoices will be sent to the general invoice e-mail inbox for the appropriate district office (i.e.mailto:laporteinvoices@indot.in.gov).
    - For waste generated during a calendar year, an invoice will be sent out after the biennial report is completed. The biennial report is due March 1st of the following year after the waste is generated and the notice to complete this report will be sent 1-2 months before the due date.

4) Regarding bridge projects, if hazardous waste is encountered, reaching out to INDOT SAM first to determine if the bridge already has an existing EPA ID No. is beneficial. If the bridge already had an assigned EPA ID No., it can be re-activated for the new project; however, the contact and contractor information may need to be updated.

    - In addition, IDEM has indicated that the same EPA ID No. can be used for twin bridges, should the need arise. This is due to EPA ID No.'s being site specific.

5) INDOT SAM has developed a step-by-step reference sheet on how to fill-in an application for an EPA ID No. The guidance can be found at in **Appendix H**.

Indiana Department of Transportation
100 North Senate Avenue, Room N758
Indianapolis, IN 46204
www.in.gov/indot

855 INDOT4U
855-463-6848

INDOT Customer Service:
855-463-6848
INDOT4U.com
INDOT@indot.in.gov

APPENDIX A

RFI/LRFI GUIDANCE AND RFI DETERMINATION FLOWCHART

Determine Level of Environmental Document

A) PCE with No Excavation

Examples of project types that fall under this category:
-Pavement Marking
-Bridge Painting
-Installation / Replacement of Guardrail
-Bridge Deck Overlay
-HMA Overlay
-Shoulder Treatments
-Installation/Repair/ Replacement of Noise Walls and MSE Walls
-Congestion Mitigation

No RFI is Needed

B) PCE with Limited Excavation (up to 3 ft bgs)

Examples of projects that fall under this category:
Can include project types from example **A** but must also include a minimum of one (1) of the following:
– Curb Ramps
- Sidewalk Replacement / Installation
- Installation of Traffic Control and/or Railroad Devices
- Installation of lighting
- Installation of stabilization walls (soil nails)
- Property acquisition for preservation
-Ditch and Shoulder Clipping

Obtain Approval from the District to Generate a Limited RFI

- Generate a Limited RFI
- Proceed with District Recommendation

C) PCE project with Small Structure / Pipe Work

Examples of projects that fall under this category:
Projects can include all aspects from example **A** and **B**, but also include installation/repair/replacement of small structures/pipes.

Obtain Approval from the District to Generate a Hybrid RFI

- Generate a Hybrid RFI
- Proceed with District Recommendation

D) CE Level 1 through Level 4, EA, and EIS

Examples of projects that fall under this category:
Project types that do not fall under the PCE. These include projects such as culvert (mapped within iTAMS) repair and replacement, intersection improvements, new roadway construction, bridge repair / replacement, etc.

Full RFI Needed

If the level of NEPA document is elevated out of a PCE category ONLY due to cultural resources, right-of-way, or ecology, then a Limited or Hybrid RFI is appropriate.

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-ES
Indianapolis, Indiana 46204

PHONE: (855) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation (INDOT)
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

Black text = template
Blue text = example language
Red text = guidance material
Green text = fill in information

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Re: RED FLAG INVESTIGATION
DES # XXXXXXX, State Project (DES's with multiple RFIs use (1 of X), (2 of X), etc. after DES # and include in footer)
Project Description (i.e. Small Structure Replacement, Bridge Project, Bridge Deck Overlay, etc.)
Road, Location Description (i.e. SR 26, 0.42 Mile East of I-65)
Name County, Indiana

PROJECT DETAILS

Explanation of the location of the project area, the scope of work, and work type should be approximately one to two paragraphs. Please note that the narrative does not require a purpose and need statement or current condition/ratings on bridges or roadways. Instead, the project specific details should be discussed with enough detail to justify recommendations, or lack of recommendations, that are being made throughout the text.

Bridge Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

Is the bridge Historical? Yes ☐ No ☐, Select ☐ Non-Select ☐
(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report.)

Culvert Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

Proposed right of way: Temporary ☐ # Acres ___ Permanent ☐ # Acres___ Not Applicable (N/A) ☐

Type and proposed depth of excavation: Depth, location, and extent of excavation. Please provide current available information. (Example: Excavation is anticipated to occur to ten (10) feet below ground surface (ft-bgs)).

Maintenance of Traffic (MOT): Maintain traffic using lane closures, phased laned closure, temporary signal, and/or road closures. Include detour details, if available.

Work in waterway: Yes ☐ No ☐ Below ordinary high water mark: Yes ☐ No ☐

Any other factors influencing recommendations: N/A or Emergency projects (i.e. slide corrections, potential bridge failure, safety issues); 100% state funded project, etc. Expedited review requests should NOT be included in this section. Please refer to the SAM Manual.

General Guidance:

1) Please use the ArcGIS Pro Red Flag Investigation template layers found on the INDOT SAM website (https://www.in.gov/indot/engineering/environmental-services/environmental-policy/site-assessment-and- management/) to map the project area, determine the number of features within the 0.5 mile search radius, and generate the RFI figures.
    - Using Google or Bing aerial imagery (or equivalent) to identify unmapped attributes is recommended.
2) General outline of describing each feature: # of features within the 0.5 mile search radius. Nearest feature including distance and direction to project area. Need for coordination or further investigation, or no impact.
3) For consistency, feature explanations within each section should follow the general order of the features listed in the table from top to bottom in each column.
4) Report the distance of the feature to the project area in hundredths of a mile(s), NOT feet.
    - Note that distances <1 mile are denoted as mile (i.e. 0.25 mile) and distances >1 mile are denoted as miles (i.e. 1.25 miles).
5) Please DO NOT include coordination letters, field visit information, permitting information, etc. in this document.
6) The first time an acronym is used, it should be defined. Please continue to use the acronym throughout the document.
7) For project areas that cover an extensive distance (i.e. new road or road reconstruction), refer to the nearest cross-street or other appropriate location description (such as northern project terminus, eastern segment, etc.) for all features that will impact the project area.
8) Mapped point icons may not represent the borders of a feature. Measure to the approximate property boundary of large features (i.e. religious facilities, airports, cemeteries, hospitals, schools, hazmat sites, etc.).
9) When practical, numbers should be written out and followed by parentheses. Accurate numeric values are crucial to the RFI document. Restating a number in parentheses after spelling it out is a way to ensure the reviewer that the number is correct, i.e. depth of excavation.
10) The below examples are provided using suggested language. Please tailor the Red Flag Investigation to your project specific information.

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities		Recreational Facilities	
Airports[1]		Pipelines	
Cemeteries		Railroads	
Hospitals		Trails	
Schools		Managed Lands	

[1]In order to complete the required airport review, a review of public-use airports within 3.8 miles (20,000 feet) is required.

Please see the Airports section below for specific directions and guidance.

* - Asterix denotes unmapped features identified.

Explanation: If no resources are found, please use the following statement: No infrastructure resources were identified within the 0.5 mile search radius.

If resources are present, please provide a separate paragraph for each item (shown below) and include the number of resources found within the 0.5 mile search radius. Any additional unmapped resources should be added to the total number count followed by an asterisk (*) and included in the title of the resource in the narrative (i.e. Religious Facilities*). If there is no impact, state how close the nearest resource is (hundredths of a mile, i.e. 0.43 mile) and the direction from the project area – see the statement for religious facilities.

Some features are cataloged as segments in GIS (i.e. pipelines, railroads, and trails). Report using the # of segments detailed in the GIS attribute table. See examples below.

NOTE: Religious facilities, schools, cemeteries, and hospitals are not always identified correctly in the GIS layers. It is the document preparer's responsibility to check within the 0.5 mile search radius for potential unmapped features using other desktop resources (i.e. Topographic Maps, Google Maps, Bing Maps, etc.).

Religious Facilities: # religious facilities are located within the 0.5 mile search radius. The nearest facility (name) is located (distance and direction) of the project area. No impact is expected.

-OR-

religious facilities are located within the 0.5 mile search radius. The nearest facility, (name), is located adjacent to the (direction) of the project area (additional location information- see bullet point #8 under general guidance). Coordination with (name) will occur.

-OR-

Religious Facilities*: Five (5) religious facilities, one (1) mapped and four (4) unmapped, are located within the 0.5 mile search radius. The nearest facility, (name), is located (distance and direction) from the project area. No impact is expected.

Religious Facilities*: Although not mapped on the GIS layer, five (5) religious facilities were identified within the 0.5 mile search radius. The nearest facility, (name), is located adjacent to the project area. Coordination with (name) will occur.

-OR-

Religious Facilities: Five (5) religious facilities are located within the 0.5 mile search radius. Although the icon associated with (name) is mapped adjacent to the project area, the facility is actually located (distance and direction) from the project area. No impact is expected.

NOTE: Coordination for religious facilities can be in the form of an Early Coordination Letter (ECL) or another appropriate method (i.e. phone call, letter, email, etc.) that effectively communicates the project scope, extent, and duration, and should be detailed in the environmental document.

Airports: One (1) airport is located within the 0.5 mile search radius. The airport, _____, is a private airport and is located (distance) mile (direction) of the project area. Coordination with the (airport owner) will occur.

Airports: # airports are located within the 0.5 mile search radius. All (#) of the airports are privately owned and are located (distance) mile (direction) of the project area. Coordination with the (airport owners) will occur.

If a project is within 20,000 feet (3.8 miles) of a **public-use** airport, coordination with INDOT Aviation is required. INDOT Aviation does NOT want to be notified about private airports outside the 0.5 mile search radius. Coordination directly with private airports within the 0.5 mile search radius will be required. Use this link for secondary verification of public-use airports.

Airports (**public** airport within 3.8 miles example): Although not located within the 0.5 mile search radius, one (1) public-use airport, _____, is located within 3.8 miles (20,000 feet) of the project area. The public--use airport is located (distance) mile (direction) of the project area; therefore, early coordination with INDOT Aviation will occur.

Note: Military airports and installations fall under the same coordination requirements as public-use airports.

Cemeteries: # cemeteries are located within the 0.5 mile search radius. The nearest cemetery, name, is located adjacent to the (direction) of the project area. A Cemetery Development Plan may be required since this project is within 100 feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

To ensure complete coverage of mapped cemeteries, two databases are currently being used resulting in duplicate symbols. Provide the distance and direction to the nearest cemetery.

Hospitals: # hospitals are located within the 0.5 mile search radius. The nearest hospital, name, is located (distance) mile (direction) of the project area. No impact is expected OR Coordination with the _____hospital will occur.

Schools: See religious facilities above.

NOTE: Check MOT plans (i.e. full road closure requiring a detour) to determine project impact for school and hospital coordination.

Recreational Facilities: See religious facilities.

Pipelines: # pipeline segments are located within the 0.5 mile search radius. # pipeline segment(s), (pipeline name, if available), crosses (or is adjacent to) the project area. Coordination with INDOT Utilities and Railroads should occur.

-OR-

Pipelines: # pipeline segments are located within the 0.5 mile search radius. The nearest segment, _____, is located (distance) mile (direction) of the project area. No impact is expected.

NOTE: If the pipeline is within 0.05 mile of the project area, coordination will occur. Use of 0.05 mile as a benchmark for coordination is only for pipeline segments. Do not apply this benchmark to other features in the 0.5 mile search radius.

Railroads: # railroad segments are located within the 0.5 mile search radius. # railroad segment(s), _____, crosses (or are adjacent to) the project area. Standard coordination will occur with the INDOT Utilities and Railroads by the Project Management Team or their consultant no later than the Ready for Contracts (RFC) date.

Trails: # trail segments are located within the 0.5 mile search radius. # trail (open, planned, or potential trail) segments are located in (or are adjacent to) the project area. Coordination with (the agency managing the trail) will occur. Coordination is necessary with the managing agency even if your project is a trail project.

Managed Lands: # Managed Lands polygons are located within the 0.5 mile search radius. The Managed Land, _____, is located in (or adjacent to) the project area. Coordination with (agency managing the Managed Land) will occur.

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Karst Springs		NWI - Wetlands	
Canal Structures – Historic		Lakes	
NPS NRI Listed		Floodplain - DFIRM	
IDEM 303d Listed Streams and Lakes (Impaired)		Cave Entrance Density	
Rivers and Streams		Sinkhole Areas	
Canal Routes - Historic		Sinking-Stream Basins	

*If unmapped water features are identified that might impact the project area, direct coordination with INDOT ESD Ecology and Waterway Permitting will occur.

Explanation: If no resources are found, please use the following statement: No water resources were identified within the 0.5 mile search radius.

Some features are cataloged as segments in GIS (i.e. IDEM 303d Listed Rivers and Streams (Impaired), and Rivers and Streams). Report using the # of segments detailed in the GIS attribute table. For example: Ten (10) river and stream segments are located within the 0.5 mile search radius. The nearest segment, White River, is located approximately 0.49 mile east of the project area. No impact is expected.

If an impacted river is identified on the GIS maps as being on the National Rivers Inventory (NRI), coordination with the National Park Service will be necessary.

Water Feature Name: # (water feature name(s)) are located within the 0.5 mile search radius. # (water feature name(s)) are located within the project area. A Waters of the US Report is recommended based on mapped features, and coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

-OR-

unmapped (water feature name(s)) have been identified (distance and direction) that might impact the project area. Direct coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

On occasion, ArcPro will either not map a water feature or will not extend a water feature to a known culvert or bridge. In this instance, please use the following recommendation to account for the potential presence of a water feature within or near a culvert or bridge. Do not use this statement when water features are not present or near project area.

Due to the proximity of (feature(s)), it is likely that additional water resources, such as unnamed tributaries, regulated drains, wetlands, and roadside ditches are located in the project area. A Waters of the US Report is recommended and coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

IDEM 303d Listed Rivers and Streams (Impaired): # 303d Listed Rivers and Stream segments are located within the 0.5 mile search radius. (Name of water body) flows through (or is adjacent to) the project area. (Name of water body) is listed as impaired for _____.

Below are recommended statements for impairments. Document preparers should verify impairments using the online IDEM e303d tool https://www.in.gov/idem/nps/online-e303d-tool/ or the EPA "How's My Waterway" tool https://mywaterway.epa.gov/. If there are multiple impaired features impacting the project area, itemize each water body and accompanying recommendations. Please note that if an impairment is followed by the word "cause" on the website, that feature is considered impaired. Also note that an impairment for pathogens is due to E. coli.

- Concerning (nutrient impairment, cyanide, Impaired Biotic Communities (IBC)/Biological Integrity, pH, and Dissolved Oxygen (DO)), Best Management Practices (BMPs) will be used to avoid further degradation to the stream.
- (Name) is listed as impaired for E. coli and/or Chlorides/Sulfates. Workers who are working in or near water with E. coli (and/or chlorides/sulfates) should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure.
- (Name) is listed as impaired for PCBs (and/or mercury or dioxin) in fish tissue. Exposure to PCBs (and/or mercury or dioxin) in fish tissue is considered low, assuming workers are not eating biota surrounding or associated with the water body. Workers will be informed. If sediment/silt in the waterway is disturbed during construction, a Phase II Limited Site Investigation (LSI) or Environmental Site Assessment (ESA) is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.
- (Name) is listed as impaired for metals. If sediment/silt in the waterway will be disturbed during construction, a Phase II LSI or ESA is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

NWI-Wetlands: # wetland polygons are located within the 0.5 mile search radius. One (1) wetland polygon is located adjacent to the southern terminus of the project area. A Waters of the US Report is recommended based on mapped features, and coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

-OR-

wetland polygons are located within the 0.5 mile search radius. One (1) wetland polygon is located 0.49 mile north of the project area. No impact is expected.

Floodplains: One (1) floodplain polygon is located within the 0.5 mile search radius. The project area is located within the floodplain polygon. Coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

-OR-

floodplain polygons are located within the 0.5 mile search radius. The nearest floodplain polygon is located 0.45 mile south of the project area. No impact is expected.

Karst Features: (cave entrance density, sinkhole area, sinking-stream basin, etc.): If karst features are identified within or adjacent to the project area, the following recommendation can be used: Coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

Canal Routes/Canal Structures – Historic: These features, if impacted, may require coordination with INDOT Cultural Resources.

NPS NRI Listed: If an impacted river is identified on the GIS maps as being on the National Rivers Inventory (NRI), coordination with the National Park Service will be necessary.

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells		Mines – Surface	
Mineral Resources		Mines – Underground	

Explanation: If no resources are found, please use the following statement: No mining and mineral exploration resources were identified within the 0.5 mile search radius.

Petroleum Wells: # petroleum wells are located within the 0.5 mile search radius. # petroleum wells are located within or adjacent to the project area. Coordination with IDNR Oil and Gas Division will occur.

Mines – Surface and/or Underground: # (surface or underground) mines are located within the 0.5 mile search radius. # (surface or underground) mines are located within or adjacent to the project area. Coordination with IDNR Reclamation Division will occur.

Mineral Resources: # mineral resource facilities are located within the 0.5 mile search radius. The nearest facility, identified as (name), is located adjacent to the project area. Due to the proposed MOT, which is anticipated to be full road closure with a detour, coordination with the facility will occur.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund		Manufactured Gas Plant Sites	
RCRA Generator/ TSD		Open Dump Waste Sites	
RCRA Corrective Action Sites		Restricted Waste Sites	
State Cleanup Sites		Waste Transfer Stations	
Septage Waste Sites		Tire Waste Sites	
Underground Storage Tank (UST) Sites		Landfill Boundaries	
Voluntary Remediation Program		Confined Feeding Operations (CFO)	
Construction Demolition Waste		Brownfields	
Solid Waste Landfill		Notice of Contamination Sites	
Infectious/Medical Waste Sites		Institutional Controls	
Leaking Underground Storage (LUST) Sites		NPDES Facilities	
		NPDES Pipe Locations	

Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation: If no resources are found, please use the following statement: No hazardous material concerns were identified within the 0.5 mile search radius.

Like other sections in the RFI, only the nearest facility/facilities for each program needs to be discussed. The exception is for a site that is not the nearest but will impact the project area. An example could be a leaking underground storage tank or a previous dry-cleaning site with a contaminated groundwater plume breaching the project area.

Each site is unique. There is no good formula for determining the next steps. The following information is general in nature, and not to be taken as a template, even though these statements are often applicable. A word of caution, don't be fooled by the location of the symbol on the GIS map, especially for large facilities. Some of the facility symbols are incorrectly located, or the facility covers several acres.

If the search radius has several sites (usually identified via street view maps or a site visit) with unknown past uses, or that look like old gas stations or factories, a Phase I Environmental Site Assessment (ESA) may be appropriate. If the use of facilities is known and records are available in IDEM's Virtual File Cabinet (VFC), a Phase I is not needed.

IDEM's VFC can be found at the following link: Virtual File Cabinet. The easiest way to find documents associated with a site is to check the GIS attribute table for the Agency Interest ID. Go to the VFC, select "Advanced Search", select AI ID # under the Query Builder. The page listing documents associated with the site will appear. If the Agency ID # is not available, a search can be completed using either the FID # or the Address (using the Facility Search tab on the IDEM VFC website); however, after finding the site, please look up and include the Agency ID # rather than the FID #.

For example, a site may have been managed under State Cleanup and the Voluntary Remediation Program (VRP). One explanation for both categories is adequate concerning potential impacts, and the impacts can be referred to under subsequent listings (i.e., Refer to the VRP section).

Brownfield, State Cleanup, LUST, UST, VRP, and Institutional Control Sites have the most impact on construction projects. If there is a Site Closure or Institutional Control document, those documents are typically the most informative. For active remediation sites, monitoring reports usually contain most of the information we need. Be aware that some sites can have groundwater contamination that extends beyond the 0.5 mile search radius. Do not rely on distance from the project area as the determining factor for impact/no impact. If a hazmat site is active or has ongoing monitoring and/or remediation activities, coordination with the IDEM PM for the specific site will occur before RFC. Coordination should occur to allow enough time for additional investigation activities, if warranted. Depending on the situation, statements like the following can be used:

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area and was formerly the site of a gas station. According to the No Further Action (NFA) Determination Pursuant to Risk Integrated System of Closure (RISC) issued by IDEM on (month, day, year), contamination may remain in the area surrounding the site and exists in the ROW. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary. Refer to Appendix G of the SAM Manual for the recommended procedures to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area and was formerly the site of a gas station pre-1980. The VFC does not contain UST closure documentation. It is possible that petroleum contamination and/or lead may remain on site. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. IDEM issued a No Further Action Approval Determination Pursuant to Remediation Closure Guide on (month, day, year). Low levels of petroleum contaminated soil and groundwater contamination may remain on the site. An Environmental Restrictive Covenant (ERC) was recorded on the property on (month, day, year). The ERC places restrictions on land, soil, or groundwater use (pick appropriate) note: listing ERC restrictions is only needed when an impact to project area is expected. If excavation occurs in this area, it is possible that petroleum contamination may be encountered. Proper handling, removal, and disposal of soil and/or groundwater may be necessary. Coordination will be conducted with the IDEM Institutional Controls Section (institutionalcontrols@idem.IN.gov) before Stage 3 and prior to submittal of the Environmental Consultation Form (ECF). Refer to Appendix G of the SAM Manual for the recommended procedures to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. This site is an active facility that is currently undergoing quarterly groundwater monitoring /additional investigation/ remediation. (Short description of site activities and location of release). Coordination will be conducted with the IDEM project manager identified in the VFC (name, contact info) before Stage 3 Plans and prior to submittal of the Environmental Consultation Form (ECF).

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. According to the _____report, a _____was formerly located on the _____ corner of the intersection. The report states that the_____ representative made the case that groundwater contamination was coming from the former__onto the _____ site. No other investigation has ever been conducted on this property. A Phase II ESA is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

Please note that potential contamination from metals, solvents, PCBs, and herbicides/pesticides will need a Phase II ESA because they cannot be detected during construction. Laboratory analysis is necessary for detection of these Constituents of Concern (COCs).

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. An Environmental Restrictive Covenant (ERC) was recorded on the property on (month, day, year). No impact is expected.

Occasions arise where monitoring wells are mapped or present within the footprint of a project area. If this occurs, the following statement should be added as a recommendation (modify as needed):

- If groundwater monitoring wells are encountered in the project area, they should be maintained in place. If they cannot be maintained, then the contractor must contact the INDOT Project Manager who will notify the INDOT Permits Group. The INDOT Permits Group will notify the permit holder that the well must be removed prior to construction. The permit holder is responsible for coordination with IDEM and the INDOT Permits Group for replacement or relocation of the well. If a property owner cannot be found in connection with the monitoring well, then well abandonment will be included in the project contract. All well abandonment activities must be completed by an Indiana Licensed Well Driller in accordance with 312 IAC 13-10. Regardless of whether the well is abandoned by the contractor or the property owner, a record of well abandonment, including the well driller's license number, must be provided to the INDOT Project Manager once the well has been abandoned.

For UST sites, it is often a matter of finding the most recent inspection and noting that the date and results of the inspection (site was/was not in compliance). Examples:

- (Facility Name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be in compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9. No impact is expected.

- (Facility name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be out of compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9; however, documentation reviewed does not indicate that a release occurred. No impact is expected.

- (Facility name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be out of compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9. Documentation reviewed indicates that a release occurred. (Next steps taken and possible impacts should be documented here)

Additional Scenario Guidance:

For RCRA sites, the above format can be used; however, the current generator status may be more appropriate, especially when EPA ID #'s have been deactivated.

NPDES Facilities and/or Outfalls – If these features are within or adjacent to the project area, coordination with the facility and/or permit owner should occur (even if the owner is INDOT). The termination date(s) should be checked to determine if the permit is still in effect before making a recommendation.

Notice of Contamination Sites – Note that this layer is managed by INDOT and identifies sites that have known contamination extending into the right-of-way. An impact is likely; however, additional lines of evidence can be used

(i.e. depth of impacts in relation to the proposed depth of excavation, etc.) to generate a 'no impact is expected' determination.

Landfill Boundaries, including Open Dumps – Handle landfill boundary write-ups like an ERC site; however, note that landfill boundaries are estimated and do not represent actual extents of the presence of waste and/or contamination.

Confined Feeding Operations (CFOs) – In addition to environmental impacts, the proposed MOT should be considered when developing recommendations. If a CFO is within or adjacent to a project area, an additional recommendation to perform a site visit before RFC should be included. Site visits should identify historical and current lagoon locations, any historical or current burn/incinerator operations, and status of permits. Be cautious of CFO icons that may be mapped further away from a CFO facility.

E-waste and Auto Salvage Yards – In general, if an e-waste or auto salvage site has inspection information, a determination of impact can be included based on the inspection reports. Unmapped salvage or recycling yards may require the recommendation for a Phase II ESA; however, that will be dependent upon the project scope and professional judgment.

Solid waste facilities and some remediation sites have flammable vapor/gas conditions that can be hazardous. Landfills, active and closed, often have methane gas pockets that can migrate off-site. As stated before, each site is unique, and an in-depth discussion would go far beyond the scope of this guidance. If you have questions, please don't hesitate to contact INDOT SAM.

ECOLOGICAL INFORMATION SUMMARY

The _____ County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert hyperlink for county). A preliminary review of the Indiana Natural Heritage Database by INDOT ESD did indicate the presence of ETR species within the 0.5 mile search radius. Coordination with USFWS and IDNR will occur. If no ETR species are identified within the 0.5 mile search radius include the statement "No further coordination is necessary".

Note: If ETR species are identified within the 0.5 mile search radius, either the statement, "Coordination with USFWS and IDNR will occur", OR the below 2013 Interim Policy must be included as a conclusion statement based on the project activities. The Interim Policy can be found at the following link. https://www.in.gov/indot/engineering/files/USFWS-Interim-Policy_2013.pdf

If the project falls under the 2013 USFWS Interim Policy, the following statement can be used:

Due to the nature of project activities, this project will fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. No further coordination is necessary.

HOWEVER, if a WOTUS is being recommended, please use the following guidance:

Due to the nature of project activities, this project may fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. However, if a Waters of the US Report is prepared for the project, coordination with INDOT EWPSO may be required. Coordination with IDNR and USFWS will occur as needed.

Bat Protocol*:*

If no bats are found in or within 0.50 mile of a project area, here is the statement that should go in the RFI:

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.50 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects."

The following information should be used for all bridge and small structure projects. *Note – if the bridge or culvert inspection report is older than two (2) years, please use the recommendation indicating that additional investigation to confirm the presence or absence of bats will be necessary. INDOT's Indiana Total Assets Management System (ITAMS) website has the most recent bridge and culvert inspection reports. Refer to the SAM Manual for additional guidance.

No report available or no information available from an inspection report on presence/absence of bats: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.50 mile of the project area. The project area is in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Culvert (or Bridge) #XXX-XX-XXXX contains no information about whether bats are present or absent in the culvert *OR* on the bridge (Pick one). Additional investigation to confirm the presence or absence of bats in the culvert *OR* on the bridge (Pick one) will be necessary. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

-OR-

Inspection report indicates no evidence of bats: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.50 mile of the project area. The project area is in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Bridge (Culvert) #XXX-XX-XXXX states that no evidence of bats was seen or heard in the culvert *OR* on the bridge. The range-wide programmatic consultation for the Indiana Bat and Northern Long- eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

-OR-

Inspection report indicates evidence of bats: A review of the USFWS database did indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Bridge (Culvert) #XXX-XX-XXXX states that evidence of bats was seen or heard in the culvert *OR* on the bridge (Pick one). Additional coordination with INDOT District Environmental personnel will be necessary, and the range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

If bats are found in or within 0.50 mile of a project area: A review of the USFWS database indicated the presence of endangered bat species within 0.50 mile of the project area. Coordination with INDOT District Environmental personnel will occur, and the range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects". Coordination with USFWS will occur as needed.

Evidence of Bird Nests in Bridge Report: Yes ☐ No ☐ N/A ☐

*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office may be necessary.

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A. Keep recommendations concise. Information provided in this section should reflect the findings from the above sections. New information should not be introduced in this section. Usually just a statement of the resource impacted, if it is in or adjacent to the project area, and next steps. For example, "One (1) railroad segment is located within the project area. Standard coordination will occur with INDOT Utilities and Railroads by the Project Management Team or their consultant no later than the Ready for Contracts (RFC) date." Write-ups for Hazardous Material Concerns sites should be brought down to the recommendations verbatim.

INFRASTRUCTURE:

Religious Facilities: # religious facilities are located adjacent to the project area. Coordination with (name) and (name) will occur.

Airports: Although not mapped within the 0.5 mile search radius, one (1) public-use airport, (name), is located (distance) miles (direction) of the project area. Coordination with INDOT Aviation will occur.

Trails: # trail segments, (name) trail, cross the project area. Coordination with (the agency managing the trail) will occur.

WATER RESOURCES: To keep from repeating a statement several times, the following should be used:

A Waters of the US Report is recommended based on the presence of mapped features, and coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur for the following features:

- # wetland polygons are located adjacent (or distance and direction, if applicable) to the project area.
- The project area is located within a floodplain polygon (coordination only).
- One (1) stream segment, _____Creek, is located within (or flows through) the project area.

MINING/MINERAL EXPLORATION: N/A

HAZARDOUS MATERIAL CONCERNS: If the hazardous material concerns review identified a site with a specific recommendation, please copy and paste the site and associated information verbatim into this section.

- LUST: One (1) LUST site, (name, address, Agency ID #), is located adjacent to the project area. The site is currently being monitored and remediated for a release of petroleum CoCs which extends into the right-of-way and project area. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater will be necessary. Coordination will be conducted with the IDEM project manager identified in the VFC (name, contact info) before further site activities occur. Refer to Appendix G of the SAM Manual for the recommended procedures to manage and report contamination.

ECOLOGICAL INFORMATION: Copy and paste the ecological recommendation(s) verbatim into this section.

Prepared by: _____(Signature)
Name of document preparer
Job Title
Organization

QA/QC Completed by: _____(Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

General Comment: The Site Location map should depict the project area in a manner that makes it easy to locate. In general, an aerial image should be provided as the base map for most of the figures (excluding the Site Location map). If the aerial image as a base map impedes the ability to easily see all the mapped features (i.e., high density cave entrance polygons, karst features, water features, etc.), then a blank base map can be used.

SITE LOCATION: (Topographic base map scaled ≥ 1:24,000 with 0.5-mile buffer turned on) YES

INFRASTRUCTURE: (Aerial Image Base Map): YES or N/A

WATER RESOURCES: (Aerial Image Base Map): YES or N/A

MINING/MINERAL EXPLORATION: (Aerial Image Base Map): YES or N/A

HAZARDOUS MATERIAL CONCERNS: (Aerial Image Base Map): YES or N/A

ORGANIZATION LETTERHEAD

ATTENTION PREPARERS: PLEASE USE THE ORGANIZATION OR PROJECT SPONSOR LETTERHEAD

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation (INDOT)
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Black text = template
Blue text = example language
Red text = guidance material
Green text = fill in information

Re: RED FLAG INVESTIGATION
DES #XXXXXXX, Local Project (DES's with multiple RFIs use (1 of X), (2 of X), etc. after DES #) and include in footer)
Project description (i.e. Small Structure Replacement, Bridge Project, Bridge Deck Overlay, etc.)
Road, Location Description (i.e. SR 26, 0.42 Mile East of I-65)
Name County, Indiana

PROJECT DETAILS

Explanation of the location of the project area, the scope of work, and work type should be approximately one to two paragraphs. Please note that the narrative does not require a purpose and need statement or current condition/ratings on bridges or roadways. Instead, the project specific details should be discussed with enough detail to justify recommendations, or lack of recommendations, that are being made throughout the text.

Bridge Work Included in Project: Yes ☐ No ☐ Structure #(s) _____
Is the bridge Historical? Yes ☐ No ☐ , Select ☐ Non-Select ☐
(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report.)
Culvert Work Included in Project: Yes ☐ No ☐ Structure #(s) _____
Proposed right of way: Temporary ☐ # Acres ____, Permanent ☐ # Acres ____, Not Applicable (N/A) ☐
Type and proposed depth of excavation: Depth, location, and extent of excavation. Please provide the current available information. (Example: Excavation is anticipated to occur to ten (10) feet below ground surface (ft-bgs)).
Maintenance of Traffic (MOT): Maintain traffic using lane closures, phased laned closure, temporary signal, and/or road closures. Include detour details, if available.
Work in waterway: Yes ☐ No ☐ Below ordinary high water mark: Yes ☐ No ☐

Any other factors influencing recommendations: N/A or Emergency projects (i.e. slide corrections, potential bridge failure, safety issues); 100% state funded projects, etc. Expedited review requests should NOT be included in this section. Please refer to the SAM Manual.

General Guidance:

1) Please use the ArcGIS Pro Red Flag Investigation template layers found on the INDOT SAM website (https://www.in.gov/indot/engineering/environmental-services/environmental-policy/site-assessment-and-management/) to map the project area, determine the number of features within the 0.5 mile search radius, and generate the RFI figures.
    - Using Google or Bing aerial imagery (or equivalent) to identify unmapped attributes is recommended.
2) General outline of describing each feature: # of features within the 0.5 mile search radius. Nearest feature including distance and direction to project area. Need for coordination or further investigation, or no impact.
3) For consistency, feature explanations within each section should follow the general order of the features listed in the table from top to bottom in each column.
4) Report the distance of the feature to the project area in hundredths of a mile(s), NOT feet.
    - Note that distances <1 mile are denoted as mile (i.e. 0.25 mile) and distances >1 mile are denoted as miles (i.e. 1.25 miles).
5) Please DO NOT include coordination letters, field visit information, permitting information, etc. in this document.
6) The first time an acronym is used, it should be defined. Please continue to use the acronym throughout the document.
7) For project areas that cover an extensive distance (i.e. new road or road reconstruction), refer to the nearest cross-street or other appropriate location description (such as northern project terminus, eastern segment, etc.) for all features that will impact the project area.
8) Mapped point icons may not represent the borders of a feature. Measure to the approximate property boundary of large features (i.e. religious facilities, airports, cemeteries, hospitals, schools, hazmat sites, etc.).
9) When practical, numbers should be written out and followed by parentheses. Accurate numeric values are crucial to the RFI document. Restating a number in parentheses after spelling it out is a way to ensure the reviewer that the number is correct, i.e. depth of excavation.
10) The below examples are provided using suggested language. Please tailor the Red Flag Investigation to your project specific information.

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure: Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities		Recreational Facilities	
Airports[1]		Pipelines	
Cemeteries		Railroads	
Hospitals		Trails	
Schools		Managed Lands	

[1]In order to complete the required airport review, a review of public-use airports within 3.8 miles (20,000 feet) is required. Please see the Airports section below for specific directions and guidance.
* - Asterix denotes unmapped features identified.

Explanation: If no resources are found, please use the following statement: No infrastructure resources were identified within the 0.5 mile search radius.

If resources are present, please provide a separate paragraph for each item (shown below) and include the number of resources found within the 0.5 mile search radius. Any additional unmapped resources should be added to the total number count followed by an asterisk (*) and included in the title of the resource in the narrative (i.e. Religious Facilities*). If there is no impact, state how close the nearest resource is (hundredths of a mile i.e. 0.43 mile) and the direction from the project area – see the statement for religious facilities.

Some features are cataloged as segments in GIS (i.e. pipelines, railroads, and trails). Report using the # of segments detailed in the GIS attribute table. See examples below.

NOTE: Religious facilities, schools, cemeteries, and hospitals are not always identified correctly in the GIS layers. It is the document preparer's responsibility to check within the 0.5 mile search radius for potential unmapped features through the use of other desktop resources (i.e. Topographic Maps, Google Maps, Bing Maps, etc.).

Religious Facilities: # religious facilities are located within the 0.5 mile search radius. The nearest facility (name) is located (distance and direction) of the project area. No impact is expected.

-OR-

religious facilities are located within the 0.5 mile search radius. The nearest facility, (name), is located adjacent to the (direction) of the project area (additional location information – see bullet point #8 under general guidance). Coordination with (name) will occur.

Religious Facilities*: Five (5) religious facilities, one (1) mapped and four (4) unmapped, are located within the 0.5 mile search radius. The nearest facility, (name), is located (distance and direction) from the project area. No impact is expected.

-OR-

Religious Facilities*: Although not mapped on the GIS layer, five (5) religious facilities were identified within the 0.5 mile search radius. The nearest facility, (name), is located adjacent to the project area. Coordination with (name) will occur.

Religious Facilities: Five (5) religious facilities are located within the 0.5 mile search radius. Although the icon associated with (name) is mapped adjacent to the project area, the facility is actually located approximately (distance and direction) from the project area. No impact is expected.

NOTE: Coordination for religious facilities can be in the form of an Early Coordination Letter (ECL) or another appropriate method (i.e. phone call, letter, email, etc.) that effectively communicates the project scope, extent, and duration, and should be detailed in the environmental document.

Airports: One (1) airport is located within the 0.5 mile search radius. The airport, _____, is a private airport and is located (distance) mile (direction) of the project area. Coordination with the (airport owner) will occur.

Airports: # airports are located within the 0.5 mile search radius. All (#) of the airports are privately owned and are located (distance) mile (direction) of the project area. Coordination with the (airport owners) will occur.

If a project is within 20,000 feet (3.8 miles) of a **public-use** airport, coordination with INDOT Aviation is required. INDOT Aviation does NOT want to be notified about private airports outside the 0.5 mile search radius. Coordination directly with private airports within the 0.5 mile search radius will be required. Use this link for secondary verification of public-use airports.

Airports (**public** airport within 3.8 miles example): Although not located within the 0.5 mile search radius, one (1) public-use airport, _____, is located within 3.8 miles (20,000 feet) of the project area. The public-use airport is located (distance) mile (direction) of the project area; therefore, early coordination with INDOT Aviation will occur.

Note: Military airports and installations fall under the same coordination requirement as public-use airports.

Cemeteries: # cemeteries are located within the 0.5 mile search radius. The nearest cemetery, name, is located adjacent to the (direction) of the project area. A Cemetery Development Plan may be required since this project is within 100 feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

To ensure complete coverage of mapped cemeteries, two databases are currently being used resulting in duplicate symbols. Provide the distance and direction to the nearest cemetery.

Hospitals: # hospitals are located within the 0.5 mile search radius. The nearest hospital, name, is located (distance) mile (direction) of the project area. No impact is expected OR Coordination with the _____ hospital will occur.

Schools: See religious facilities above.

NOTE: Check MOT plans (i.e. full road closure requiring a detour) to determine project impact for school and hospital coordination.

Recreational Facilities: See religious facilities.

Pipelines: # pipeline segments are located within the 0.5 mile search radius. # pipeline segment(s), (pipeline name, if available), crosses (or is adjacent to) the project area. Coordination with the (name) will occur.

LPAs – please coordinate directly with the pipeline owner/operator.

-OR-

Pipelines: # pipeline segments are located within the 0.5 mile search radius. The nearest segment, _____, is located (distance) mile (direction) of the project area. No impact is expected.

NOTE: If the pipeline is within 0.05 mile of the project area, coordination will occur. Use of 0.05 mile as a benchmark for coordination is only for pipeline segments. Do not apply this benchmark to other features in the 0.5 mile search radius.

Railroads: # railroad segments are located within the 0.5 mile search radius. # railroad segment(s), _____, crosses (or is adjacent to) the project area. Coordination with (name) should occur no later than the Ready for Contracts (RFC) date. LPAs – please coordinate directly with the railroad owner/operator.

Trails: # trail segments are located within the 0.5 mile search radius. # trail (or planned or potential trail) segments are located in the project area. Coordination with (the agency managing the trail) will occur. Coordination is necessary with the managing agency even if your project is a trail project.

Managed Lands: # Managed Lands polygons are located within the 0.5 mile search radius. _____ is located in (or adjacent to) the project area. Coordination with (agency managed the Managed Land) is recommended.

WATER RESOURCES TABLE AND SUMMARY

Water Resources: Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Karst Springs		NWI - Wetlands	
Canal Structures – Historic		Lakes	
NPS NRI Listed		Floodplain - DFIRM	
IDEM 303d Listed Streams and Lakes (Impaired)		Cave Entrance Density	
Rivers and Streams		Sinkhole Areas	
Canal Routes - Historic		Sinking-Stream Basins	

*If unmapped water features are identified that might impact the project area, direct coordination with INDOT ESD Ecology and Waterway Permitting will occur.

Explanation: If no resources are found, please use the following statement: No water resources were identified within the 0.5 mile search radius.

Some features are cataloged as segments in GIS (i.e. IDEM 303d Listed Rivers and Streams (Impaired) and Rivers and Streams). Report using the # of segments detailed in the GIS attribute table. For example: Ten (10) river and stream segments are located within the 0.5 mile search radius. The nearest segment, White River, is located 0.49 mile east of the project area. No impact is expected.

If a water feature is within or adjacent to a project area and there is a potential impact, use the statement A Waters of the US Report is recommended based on mapped features, and coordination with the appropriate agency, if applicable, will occur. Exceptions: floodplains and karst features (see below).

Water Feature Name: # (water feature name(s)) are located within the 0.5 mile search radius. # (water feature name(s)) are located within the project area. A Waters of the US Report is recommended based on mapped features, and coordination with the appropriate agency, if applicable, will occur.

-OR-

unmapped (water feature name(s)) have been identified (distance and direction) that might impact the project area. Direct coordination with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) will occur.

On occasion, ArcPro will either not map a water feature or will not extend a water feature to a known culvert or bridge. In this instance, please use the following recommendation to account for the potential presence of a water feature within or near a culvert or bridge. Do not use this statement when water features are not present or near project area.

Due to the proximity of (feature(s)), it is likely that additional water resources, such as unnamed tributaries, regulated drains, wetlands, and roadside ditches are located in the project area. A Waters of the US Report is recommended and coordination with the appropriate agency, if applicable, will occur.

IDEM 303d Listed Rivers and Streams (Impaired): # 303d Listed Rivers and Stream segments are located within the 0.5 mile search radius. (Name of water body) flows through (or is adjacent to) the project area. (Name of water body) is listed as impaired for _____.

Below are recommended statements for impairments. Document preparers should verify impairments using the online IDEM e303d mapper https://www.in.gov/idem/nps/online-e303d-tool/ or the EPA "How's My Waterway" tool https://mywaterway.epa.gov/. If there are multiple impaired features impacting the project area, itemize each water body and accompanying recommendations. Please note that if an impairment is followed by the word "cause" on the website, that feature is considered impaired. Also note that an impairment for pathogens is due to E. coli.

- Concerning (nutrient impairment, free cyanide, Impaired Biotic Communities (IBC)/Biological Integrity, pH, and Dissolved Oxygen (DO)) Best Management Practices (BMPs) will be used to avoid further degradation to the stream.

- (Name) is listed as impaired for E. coli and/or Chlorides/Sulfates. Workers who are working in or near water with E. coli (and/or chlorides/sulfates) should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure.

- Name) is impaired for PCBs (and/or mercury or dioxin) in fish tissue. Exposure to PCBs (and/or mercury or dioxin) in fish tissue is considered low, assuming workers are not eating biota surrounding or associated with the water body. Workers will be informed. If sediment/silt in the waterway will be disturbed during construction, a Phase II Limited Site Investigation (LSI) or Environmental Site Assessment (ESA) is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

- (Name) is listed as impaired for metals. If sediment/silt in the waterway will be disturbed during construction, a Phase II LSI or ESA is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

NWI-Wetlands: # wetland polygons are located within the 0.5 mile search radius. One (1) wetland polygon is located adjacent to the project area. A Waters of the US Report is recommended based on mapped features, and coordination with the appropriate agency, if applicable, will occur.

OR

wetlands are located within the 0.5 mile search radius. One (1) wetland is located 0.49 mile north of the project area. No impact is expected.

Floodplains: One (1) floodplain polygon is located within the 0.5 mile search radius. The project area is located within the floodplain polygon. Coordination with the appropriate agency occur.

OR

floodplain polygons are located within the 0.5 mile search radius. The nearest floodplain polygon is located 0.45 mile south of the project area. No impact is expected.

Karst Features: (cave entrance density, sinkhole area, sinking-stream basin, etc.): If karst features are identified within or adjacent to the project area, the following recommendation can be used: Coordination with the appropriate agency, if applicable, will occur.

Canal Routes/Canal Structures – Historic: These features, if impacted, may require coordination with INDOT Cultural Resources.

NPS NRI Listed: If an impacted river is identified on the GIS maps as being on the National Rivers Inventory (NRI), coordination with the National Park Service will be necessary.

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells		Mineral Resources	
Mines – Surface		Mines – Underground	

Explanation: If no resources are found, please use the following statement: No mining and mineral exploration resources were identified within the 0.5 mile search radius.

Petroleum Wells: # petroleum wells are located within the 0.5 mile search radius. # petroleum wells are located within or adjacent to the project area. Coordination with IDNR Oil and Gas Division will occur.

Mines – Surface and/or Underground: # (surface or underground) mines are located within the 0.5 mile search radius. # (surface or underground) mines are located within or adjacent to the project area. Coordination with IDNR Reclamation Division will occur.

Mineral Resources: # mineral resource facilities are located within the 0.5 mile search radius. The nearest facility, identified as (name), is located adjacent to the project area. Due to the proposed MOT, which is anticipated to be full road closure with a detour, coordination with the facility will occur.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund		Manufactured Gas Plant Sites	
RCRA Generator/ TSD		Open Dump Waste Sites	
RCRA Corrective Action Sites		Restricted Waste Sites	
State Cleanup Sites		Waste Transfer Stations	
Septage Waste Sites		Tire Waste Sites	
Underground Storage Tank (UST) Sites		Landfill Boundaries	
Voluntary Remediation Program		Confined Feeding Operations (CFO)	
Construction Demolition Waste		Brownfields	
Solid Waste Landfill		Notice of Contamination Sites	
Infectious/Medical Waste Sites		Institutional Controls	
Leaking Underground Storage (LUST) Sites		NPDES Facilities	
		NPDES Pipe Locations	

Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation: If no resources are found, please use the following statement: No hazardous material concerns were identified within the 0.5 mile search radius.

Like other sections in the RFI, only the nearest facility/facilities for each program needs to be discussed. The exception is for a site that is not the nearest but will impact the project area. An example could be a leaking underground storage tank or a previous dry-cleaning site with a contaminated groundwater plume breaching the project area.

Explanation: Each site is unique. There is no good formula for determining the next steps. The following information is general in nature, and not to be taken as a template, even though these statements are often applicable. A word of caution, don't be fooled by the location of the symbol on the GIS map, especially for large facilities. Some of the facility symbols are incorrectly located, or the facility covers several acres.

If the search radius has several sites (usually identified via street view maps or a site visit) with unknown past uses, or that look like old gas stations or factories, a Phase I Environmental Site Assessment (ESA) is appropriate. If the use of facilities is known and records are available in IDEM's Virtual File Cabinet (VFC), a Phase I is not needed.

IDEM's VFC can be found at the following link: Virtual File Cabinet. The easiest way to find documents associated with a site is to check the GIS attribute table for the Agency Interest ID. Go to the VFC, "Search by Document", select Additional Fields, select AI ID #, and input the Agency Interest ID from the attribute table. The page listing documents associated with the site will appear. Find the most recent document and select. If the AI ID # is not available, a search can be completed using either the FID # or the Address (using the Facility Search tab on the IDEM VFC website).

For example, a site may have been managed under State Cleanup and the Voluntary Remediation Program (VRP). One explanation for both categories is adequate concerning potential impacts, and the impacts can be referred to under subsequent listings (i.e., Refer to the VRP section).

Brownfield, State Cleanup, LUST, UST, VRP, and Institutional Control Sites have the most impact on construction projects. If there is a Site Closure or Institutional Control document, those documents are the most informative. For active remediation sites, monitoring reports usually contain most of the information we need. Be aware that some sites can have groundwater contamination that extends beyond the 0.5 mile search radius. Do not rely on distance from the project area as the determining factor for impact/no impact. Depending on the situation, statements like the following can be used.

If a hazmat site is active or has ongoing monitoring and/or remediation activities, coordination with the IDEM PM for the specific site will occur before RFC. Coordination should occur to allow enough time for additional investigation activities, if warranted.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area and was formerly the site of a gas station. According to the No Further Action (NFA) Determination Pursuant to Risk Integrated System of Closure (RISC) issued by IDEM on (month, day, year), contamination remains in the area surrounding the site and exists in the ROW. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater will be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area and was formerly the site of a gas station. The site operated a gas station pre--1980. The UST (it says there was only one) was filled with sand, and no further investigation has ever been done. It is possible that petroleum contamination and/or lead may remain on site. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. IDEM issued a No Further Action Approval Determination Pursuant to Remediation Closure Guide on (month, day, year). Low levels of soil and groundwater contamination remain on the site. An Environmental Restrictive Covenant (ERC) was placed on the property on (month, day, year). The ERC places restrictions on land, soil, or groundwater use (pick appropriate) note: listing ERC restrictions is only needed when an impact to project area is expected. If excavation occurs in this area, it is possible petroleum contamination will (or may) be encountered. Proper handling, removal, and disposal of soil and/or groundwater may be necessary. Coordination will be conducted with the IDEM Institutional Controls section (institutionalcontrols@idem.IN.gov) before Stage 3 Plans and prior to submittal of the Environmental Consultation Form (ECF). Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. This site is an active facility that is currently undergoing quarterly groundwater monitoring / additional investigation / remediation.(Short description of site activities and location of release). Coordination will be conducted with the IDEM project manager identified in the VFC (name, contact info) before Stage 3 Plans and prior to submittal of the Environmental Consultation Form (ECF).

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. According to the _____ report, a _____ was formerly located on the _____ corner of the intersection. The report states that the _____ representative made the case that groundwater contamination was coming from the

the former _____ onto the _____ site. No other investigation has ever been conducted on this property. A Phase II Environmental Site Assessment (ESA) is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan (SOW) will be prepared and submitted to INDOT SAM for review and approval.

Please note that potential contamination from metals, solvents, PCBs, and herbicides/pesticides will need a Phase II ESA because they cannot be detected during construction. Laboratory analysis is necessary for detection of these Constituents of Concern (COCs).

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. An Environmental Restrictive Covenant (ERC) was placed on the property on (month, day, year). No impact is expected.

OR

- (Facility name, address, and AI ID#) is located adjacent to the project area. An Environmental Restrictive Covenant (ERC) was placed on the property on (month, day, year). The ERC prohibits_____. Coordination will be conducted with the IDEM Institutional Controls section (institutionalcontrols@idem.IN.gov) before Stage 3 and prior to submittal of the Environmental Consultation Form (ECF).

- (Facility name, address, and AI ID#) is located (distance and direction) from the project area. According to the _____ report, a _____ was formerly located on the _____ corner of the intersection. The report states that the _____ representative made the case that groundwater contamination was coming from the former _____ onto the _____ site. No other investigation has even been conducted on this property. A Phase II Environmental Site Assessment is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

Occasions arise where monitoring wells are mapped or present within the footprint of a project area. If this occurs, the following statement can be added as a recommendation (modify as needed):

- If groundwater monitoring wells are encountered in the project area, they should be maintained in-place. If they cannot be maintained, then the contractor must contact the INDOT Project Manager who will notify the INDOT Permits Group. The INDOT Permits Group will notify the permit holder that the well must be removed prior to construction. The permit holder is responsible for coordination with IDEM and the INDOT Permits Group for replacement or relocation of the well. If a property owner cannot be found in connection with the monitoring well, then well abandonment will be included in the project contract. All well abandonment activities must be completed by an Indiana Licensed Well Driller in accordance with 312 IAC 13-10. Regardless of whether the well is abandoned by the contractor or the property owner, a record of well abandonment, including the well driller's license number, must be provided to the INDOT Project Manager once the well has been abandoned.

For UST sites, it is often a matter of finding the most recent inspection and noting that the date and results of the inspection (site was/was not in compliance). Examples:

- (Facility Name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be in compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9. No impact is expected.

- (Facility name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be out of compliance with equipment, operating, and maintenance requirements set forth in

Indiana's UST Rule 329 IAC 9; however, documentation reviewed does not indicate that a release occurred. No impact is expected.

- (Facility name, address, and AI ID#). IDEM conducted an Underground Storage Tank Inspection on (Date), and the facility was found to be out of compliance with equipment, operating, and maintenance requirements set forth in Indiana's UST Rule 329 IAC 9. Documentation reviewed indicates that a release occurred. (Next steps taken and possible impacts should be documented here.)

Additional Scenario Guidance:

For RCRA sites, the above format can be used; however, the current generator status may be more appropriate, especially when EPA ID #'s have been deactivated.

Solid waste facilities and some remediation sites have flammable vapor/gas conditions that can be hazardous. Landfills, active and closed, often have methane gas pockets that can migrate off-site.

NPDES Facilities and/or Outfalls – If these features are within or adjacent to the project area, coordination with the facility and/or permit owner should occur (even if the owner is INDOT). The termination date(s) should be checked to determine if the permit is still in effect before making a recommendation.

Notice of Contamination Sites – Note that this layer is managed by INDOT and identifies sites that have known contamination extending into the right-of-way. An impact is likely; however, additional lines of evidence can be used to (i.e. depth of impacts in relation to the proposed depth of excavation, etc.) generate a 'no impact is expected' determination.

Landfill Boundaries, including Antique Landfills and Open Dumps – Handle landfill boundary write-ups like an ERC site; however, note that landfill boundaries are estimated and do not represent actual extents of the presence of waste and/or contamination.

Confined Feeding Operations (CFOs) – In addition to environmental impacts, the proposed MOT should be considered when developing recommendations. If a CFO is within or adjacent to a project area, an additional recommendation to perform a site visit before RFC should be included. Site visits should identify historical and current lagoon locations, any historical or current burn/incinerator operations, and status of permits. Be cautious of CFO icons that may be mapped further away from a CFO facility.

E-waste and Auto Salvage Yards – In general, if an e-waste or auto salvage site has inspection information, a determination of impact can be included based on the inspection reports. Unmapped salvage or recycling yards may require the recommendation for a Phase II ESA; however, that will be dependent upon the project scope and professional judgment.

As stated before, each site is unique, and an in-depth discussion would go far beyond the scope of this guidance. If you have questions, please don't hesitate to contact INDOT SAM.

ECOLOGICAL INFORMATION SUMMARY

The _____ County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert hyperlink for county). A preliminary review of the Indiana Natural Heritage Database by INDOT ESD did indicate the presence of ETR species within the 0.5 mile search

radius. Coordination with USFWS and IDNR will occur. If no ETR species are identified within the 0.5 mile search radius include the statement "No further coordination is necessary".

Note that if ETR species are identified within the 0.5 mile search radius, either the statement "Coordination with USFWS and IDNR will occur", OR the below 2013 Interim Policy must be included as a conclusion statement based on the project activities. The Interim Policy can be found at the following link. https://www.in.gov/indot/engineering/files/USFWS-Interim-Policy_2013.pdf

If the project falls under the USFWS Interim Policy, the following statement can be used; however, if a Waters of the US Report is prepared for the project, coordination will need to occur with IDNR at a minimum.

Due to the nature of project activities, this project will fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. No further coordination is necessary.

HOWEVER, if a WOTUS is being recommended, please use the following guidance:
Due to the nature of project activities, this project may fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. However, if a Waters of the US Report is prepared for the project, coordination with EWPSO may be required. Coordination with IDNR and USFWS will occur as appropriate.

Bat Protocol:

If no bats are found in or within 0.5 mile of a project area, here is the statement that should go in the RFI:

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

The following information should be included for all bridge and small structure projects. *Note – if the bridge or culvert inspection report is older than two (2) years, please use the recommendation indicating that additional investigation to confirm the presence or absence of bats will be necessary. INDOT's Indiana Total Assets Management System (ITAMS) website has the most recent bridge and culvert inspection reports. Refer to the SAM Manual for additional guidance.

No report available or no information available from an inspection report on presence/absence of bats: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Culvert (or Bridge) #XXX-XX-XXXX contains no information about whether bats are present or absent in the culvert *OR* on the bridge (Pick one). Additional investigation to confirm the presence or absence of bats in the culvert *OR* on the bridge (Pick one) will be necessary. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

-OR-

Inspection report indicates no evidence of bats: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Bridge (Culvert) #XXX-XX-XXXX states that no evidence of bats was seen or heard in the culvert *OR* on the bridge (Pick one). The range-wide programmatic

consultation for the Indiana Bat and Northern Long- eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

-OR-

Inspection report indicates evidence of bats: A review of the USFWS database did indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is located in a (describe area, i.e. rural area surrounded by farm fields). The (Month, Day, Year), inspection report for Bridge (Culvert) #XXX-XX-XXXX states that evidence of bats was seen or heard in the culvert *OR* on the bridge (Pick one). Additional coordination with INDOT District Environmental personnel will be necessary, and the range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

If bats are found in or within 0.5 mile of a project area: A review of the USFWS database indicated the presence of endangered bat species within 0.50 mile of the project area. Coordination with INDOT District Environmental personnel will occur, and the range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects". Coordination with USFWS will occur as needed.

Evidence of Birds in Bridge Report: Yes ☐ No ☐ N/A ☐
*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater may be necessary.

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A. Keep recommendations concise. Information provided in this section should reflect the findings from the above sections. New information should not be introduced in this section. Usually just a statement of the resource impacted, if it is in or adjacent to the project area, and next steps. For example, "One (1) railroad segment is located within the project area. Coordination with (owner/operator) will occur no later than the Ready for Contracts (RFC) date." Write-ups for Hazardous Material Concerns sites should be brought down to the recommendation verbatim.

INFRASTRUCTURE:

Religious Facilities: # religious facilities are located adjacent to the project area. Coordination with (name) and (name) will occur.

Airports: Although not mapped within the 0.5 mile search radius, one (1) public-use airport, (name), is located (distance) miles (direction) of the project area. Coordination with INDOT Aviation will occur.

Trails: # trail segments, (name) trail, cross the project area. Coordination with (the agency managing the trail) will occur.

WATER RESOURCES: In order to keep from repeating a statement several times, the following should be used:

A Waters of the US Report is recommended based on mapped features and coordination with the appropriate agency, if applicable, will occur for the following features:

- # wetland polygons are located adjacent (distance and direction, if appropriate) to the project area.

- The project area is located within a floodplain (coordination only).
- One (1) stream segment, _____ Creek, flows through the project area.

Impairment(s), itemized by feature, and NPS NRI Listed recommendations should be updated as a separate "paragraph" within this summary.

MINING/MINERAL EXPLORATION: N/A

HAZARDOUS MATERIAL CONCERNS: If the hazardous material concerns review identified a site with a specific recommendation, please copy and paste the site and associated information verbatim into this section.

- LUST: One (1) LUST site, (name, address, Agency ID #), is located adjacent to the project area. The site is currently being monitored and remediated for a release of petroleum CoCs which extends into the right-of-way and project area. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater will be necessary. Coordination will be conducted with the IDEM project manager identified in the VFC (name, contact info) before further site activities occur. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

ECOLOGICAL INFORMATION: Copy and paste the ecological recommendation(s) verbatim into this section.

Prepared by: _____(Signature)
Name of document preparer
Job Title
Organization

QA/QC Completed by: _____(Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

General Comment: The Site Location map should depict the project area in a manner that makes it easy to locate. In general, an aerial image should be provided as the base map for most of the figures (excluding the Site Location map). If the aerial image as a base map impedes the ability to easily see all the mapped features, then a blank base map can be applied. This is a common issue in areas with high density cave entrance polygons, karst features, and water features.

SITE LOCATION (Topographic map as base map scaled ≥ 1:24,000 with 0.5-mile buffer turned on): YES

INFRASTRUCTURE (Aerial Image Base Map): YES or N/A

WATER RESOURCES (Aerial Image Base Map): YES or N/A

MINING/MINERAL EXPLORATION (Aerial Image Base Map): YES or N/A

HAZARDOUS MATERIAL CONCERNS (Aerial Image Base Map): YES or N/A

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 232-5113
FAX: (317) 233-4929

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division
Indiana Department of Transportation
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Black text = template
Blue text = example language
Red text = guidance material
Green text = fill in information

Re: LIMITED RED FLAG INVESTIGATION
DES XXXXXXX, State or LPA Project
Project Description (i.e. HMA Overlay with Curb Ramps, Signal Install, Railroad Crossing Replacement, etc.)
Road, Location Description (i.e. SR 26, 0.42 Mile East of I-65)
Name County, Indiana

Please review the below guidance prior to generating a Limited Red Flag Investigation:

1) For completion of a Limited Red Flag Investigation RFI (RFI) the following items MUST apply:
   a. The project falls under the PCE **BUT**
      i. Has limited excavation (not associated with maintenance activities or replacement of structures in kind (please see the Limited RFI flow chart for guidance),
      ii. Is within a sensitive ecological area,
      iii. Has a special coordination issue.
   b. The document preparer has contacted the applicable INDOT District and has received approval to complete a Limited RFI for the selected project.
   c. The applicable INDOT District has stated what section(s), in addition to the Hazardous Material Concerns and Ecological information Summary sections, should be included.
2) Continue to use the ArcGIS Pro Red Flag Investigation template layers found on the INDOT website (https://www.in.gov/indot/engineering/environmental-services/environmental-policy/site-assessment-and-management/) to map the project area.
3) In general, the main reason a Limited RFI is being completed is due to excavation along or within a project area. Please tailor the document (both text and figures) to focus on the area(s) where excavation is going to occur.

4) General outline of describing each feature: # of features within the 0.5 mile search radius. Nearest feature including distance and direction to project area. Need for coordination or further investigation, or no impact.
5) For consistency, feature explanations within each section should follow the general order of the features listed in the table from top to bottom in each column.
6) Report the distance of the feature to the project area in hundredths of a mile(s), NOT feet.
7) Note that distances <1 mile are denoted as mile (i.e. 0.25 mile) and distances >1 mile are denoted as miles (i.e. 1.25 miles).
8) Please DO NOT include coordination letters, field visit information, permitting information, etc. in this document.
9) The first time an acronym is used, it should be defined. Please continue to use the acronym throughout the document.
10) For project areas that cover an extensive distance (i.e. new road or road reconstruction), refer to the nearest cross-street or other appropriate location description (such as northern project terminus, eastern segment, etc.) for all features that will impact the project area.
11) Mapped point icons may not represent the borders of a feature. Measure to the approximate property boundary of large features (i.e. religious facilities, airports, cemeteries, hospitals, schools, hazmat sites, etc.).
12) When practical, numbers should be written out and followed by parentheses. Accurate numeric values are crucial to the RFI document. Restating a number in parentheses after spelling it out is a way to ensure the reviewer that the number is correct, i.e. depth of excavation.
13) The below examples are provided using suggested language. Please tailor the Red Flag Investigation to your project specific information.

***Note* The below document is intended to be an example of best practices and is for formatting purposes only.**

PROJECT DESCRIPTION

The Indiana Department of Transportation (INDOT) has identified the need to address the deteriorated condition of the pavement along SR 46 and update select curb ramp locations to comply with ADA standards. This is a PCE project with limited excavation activities, therefore, a request to complete a Limited RFI was submitted to the Seymour District on June 1, 2020, and approval was received on June 10, 2020. The project spans from the SR 229 intersection and proceeds west approximately 6.69 miles through the City of New Point. INDOT proposes to mill 1.5 inches off the existing pavement and overlay with 1.5 inches of hot mix asphalt (HMA) surface material. In addition to the HMA overlay activities, four intersections will have ADA curb ramp work completed to meet ADA-complaint standards. The intersections where ADA curb ramp work is proposed to occur are provided in the below table:

Intersections:	Quadrants:	Depth of Excavation (feet below ground surface (ft-bgs))
SR 46 and 8th Street	All four corners	5 ft-bgs
SR 46 and Bobs Street	SE and SW corner	5 ft-bgs
SR 46 and 1st Street	SW and SW corner	5 ft-bgs
SR 46 and Kalb Street	All four corners	5 ft-bgs

Bridge and/or Culvert Work Included in Project: Yes ☐ No ☒ Structure #(s) _____
If this is a bridge project, is the bridge Historical? Yes ☐ No ☐ , Select ☐ Non-Select ☐
(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report).

Proposed right of way: Temporary ☐ # Acres _____ Permanent ☐ # Acres _____ Not Applicable ☒

Type of excavation: Excavation to a depth of approximately five (5) feet below the ground surface (ft-bgs) will occur at each location requiring ADA curb ramp updates. Please see the above table for specific locations.
Maintenance of traffic: Traffic will be maintained using flaggers. Include detour details if available.
Work in waterway: Yes ☐ No ☒ Below ordinary high water mark: Yes ☐ No ☐
Any other factors influencing recommendations: N/A

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund	N/A	Manufactured Gas Plant Sites	N/A
RCRA Generator/ TSD	N/A	Open Dump Waste Sites	N/A
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	N/A	Waste Transfer Stations	N/A
Septage Waste Sites	N/A	Tire Waste Sites	N/A
Underground Storage Tank (UST) Sites	N/A	Confined Feeding Operations (CFO)	N/A
Voluntary Remediation Program	N/A	Brownfields	N/A
Construction Demolition Waste	N/A	Institutional Controls	1
Solid Waste Landfill	N/A	NPDES Facilities	N/A
Infectious/Medical Waste Sites	N/A	NPDES Pipe Locations	N/A
Leaking Underground Storage (LUST) Sites	3	Notice of Contamination Sites	N/A

Explanation: This Limited RFI is being generated due to the proposed excavation activities at the below intersections:

SR 46 and 8th Street:

Leaking Underground Storage Tank (LUST): Liquid Transport Systems, 8005 State Road 46, Agency ID # 2533, is the site of a commercial tanker service and is located on the southeast corner of the intersection. IDEM issued a *Request to Record Environmental Restrictive Covenant (ERC)* letter, dated September 5, 2018, determining that the site is eligible for no further action status following recommended revisions. Shallow residual chemicals of concern (CoCs) may remain on-site in the vicinity of the former underground storage tank (UST) cavity and have not been fully delineated. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary.

SR 46 and Bobs Street:
No Hazardous Material Concerns were identified at this intersection. No impact is expected.

SR 46 and 1st Street:
No Hazardous Material Concerns were identified at this intersection. No impact is expected.

SR 46 and Kalb Street:

LUST: New Point Food Mart, 1810 South CR 850 East, FID # 24906, is the site of a convenience store and gas station on the northeast corner of the intersection. The IDEM issued a *Deactivated LUST* letter, dated January 28, 2013, following the closure and replacement of UST piping at the facility. No impact is expected.

ECOLOGICAL INFORMATION SUMMARY

The Decatur County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert hyperlink for county). A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did not indicate the presence of ETR species. Due to the nature of project activities, this project will fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. No further coordination is necessary.

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation INDOT Projects".

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

HAZARDOUS MATERIAL CONCERNS:

SR 46 and 8th Street:

Leaking Underground Storage Tank (LUST): Liquid Transport Systems, 8005 State Road 46, Agency ID # 2533 is the site of a commercial tanker service and is located on the southeast corner of the intersection. IDEM issued a *Request to Record Environmental Restrictive Covenant (ERC)* letter, dated September 5, 2018, determining that the site is eligible for no further action status following recommended revisions. Shallow residual chemicals of concern (CoCs) may remain on-site in the vicinity of the former underground storage tank (UST) cavity and have not been fully delineated. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary.

ECOLOGICAL INFORMATION: The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

Prepared by: _____ (Signature)
Name of preparer
Job Title
Organization

QA/QC Completed by: _____(Signature)
Name of Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence:_____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: (For a Limited RFI, the Site Location map should show the full extents of the project area. In this example, the figure would show the full extents of the HMA overlay including the ADA curb ramp locations): YES or N/A

HAZARDOUS MATERIAL CONCERNS (For this example, the main reason that a Limited RFI is being prepared is because of the limited excavation activities associated with the ADA curb ramp locations. Therefore, the most effective method is to provide a figure that zooms in on the curb ramp work, clearly identifies the intersections where work will occur, and include a 0.5 mile search radius around that focused "project area".): YES or N/A

APPENDIX B

RED FLAG INVESTIGATION TEMPLATES – STATE AND LPA PROJECTS

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-ES
Indianapolis, Indiana 46204

PHONE: (855) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation (INDOT)
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Green text = fill in information
Blue text = example language
* Before submitting the document, please change all text to black and delete this box.

Re: RED FLAG INVESTIGATION
DES # XXXXXX, State Project
Project Description (Small Structure Replacement, Bridge Replacement, Bridge Deck Overlay, etc)
Road, Location Description
Name County, Indiana

PROJECT DETAILS

<Enter Description of Project>

Bridge Work Included in Project: Yes ☐ No ☐ Structure #(s) _____
If this is a bridge project, is the bridge Historical? Yes ☐ No ☐ , Select ☐ Non-Select ☐
(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report)

Culvert Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

Proposed right of way: Temporary ☐ # Acres _____ Permanent ☐ # Acres _____, Not Applicable ☐

Type and proposed depth of excavation:

Maintenance of traffic (MOT):

Work in waterway: Yes ☐ No ☐ Below ordinary high water mark: Yes ☐ No ☐

Any other factors influencing recommendations:

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:

Religious Facilities		Recreational Facilities	
Airports[1]		Pipelines	
Cemeteries		Railroads	
Hospitals		Trails	
Schools		Managed Lands	

[1]In order to complete the required airport review, a review of public-use airports within 3.8 miles (20,000 feet) is required.

Explanation:

WATER RESOURCES TABLE AND SUMMARY

Water Resources
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:

Karst Springs		NWI - Wetlands	
Canal Structures – Historic		Lakes	
NPS NRI Listed		Floodplain - DFIRM	
IDEM 303d Listed Streams and Lakes (Impaired)		Cave Entrance Density	
Rivers and Streams		Sinkhole Areas	
Canal Routes - Historic		Sinking-Stream Basins	

*If unmapped water features are identified that might impact the project area, direct coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office will occur.

Explanation:

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:

Petroleum Wells		Mineral Resources	
Mines – Surface		Mines – Underground	

Explanation:

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund		Manufactured Gas Plant Sites	
RCRA Generator/ TSD		Open Dump Waste Sites	
RCRA Corrective Action Sites		Restricted Waste Sites	
State Cleanup Sites		Waste Transfer Stations	
Septage Waste Sites		Tire Waste Sites	
Underground Storage Tank (UST) Sites		Landfill Boundaries	
Voluntary Remediation Program		Confined Feeding Operations (CFO)	
Construction Demolition Waste		Brownfields	
Solid Waste Landfill		Notice of Contamination Sites	
Infectious/Medical Waste Sites		Institutional Controls	
Leaking Underground Storage (LUST) Sites		NPDES Facilities	
		NPDES Pipe Locations	

* Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation:

ECOLOGICAL INFORMATION SUMMARY

The _____ County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert ETR County Website Link). A preliminary review of the Indiana Natural Heritage Database by INDOT ESD did/did not indicate the presence of ETR species within the 0.5 mile search radius. (Insert coordination if applicable)

A review of the USFWS database did/did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation INDOT Projects". (Insert coordination if applicable)

Evidence of Birds in Bridge Report: Yes ☐ No ☐ N/A ☐
*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office may be necessary.

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

INFRASTRUCTURE:

WATER RESOURCES:

MINING/MINERAL EXPLORATION:

HAZARDOUS MATERIAL CONCERNS:

ECOLOGICAL INFORMATION:

Prepared by: _____(Signature)
Name of Document Preparer
Job title
Organization

QA/QC Completed by: _____ (Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES or N/A

INFRASTRUCTURE: YES or N/A

WATER RESOURCES: YES or N/A

MINING/MINERAL EXPLORATION: YES or N/A

HAZARDOUS MATERIAL CONCERNS: YES or N/A

ORGANIZATION LETTERHEAD

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation (INDOT)
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Green text = fill in information
Blue text = example language
* Before submitting the document, please change all text to black and delete this box.

Re: RED FLAG INVESTIGATION
DES # XXXXXX, Local Project
Project Description (i.e. Small Structure Replacement, Bridge Replacement, Bridge Deck Overlay, etc)
Road, Location Description
Name County, Indiana

PROJECT DETAILS

<Enter Description of Project>

Bridge Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

If this is a bridge project, is the bridge Historical? Yes ☐ No ☐ , Select ☐ Non-Select ☐

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report)

Culvert Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

Proposed right of way: Temporary ☐ # Acres _____, Permanent ☐ # Acres _____, Not Applicable ☐

Type and proposed depth of excavation:

Maintenance of traffic (MOT):

Work in waterway: Yes ☐ No ☐ Below ordinary high water mark: Yes ☐ No ☐

Any other factors influencing recommendations:

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities		Recreational Facilities	
Airports[1]		Pipelines	
Cemeteries		Railroads	
Hospitals		Trails	
Schools		Managed Lands	

[1]In order to complete the required airport review, a review of public-use airports within 3.8 miles (20,000 feet) is required.

Explanation:

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Karst Springs		NWI - Wetlands	
Canal Structures – Historic		Lakes	
NPS NRI Listed		Floodplain - DFIRM	
IDEM 303d Listed Streams and Lakes (Impaired)		Cave Entrance Density	
Rivers and Streams		Sinkhole Areas	
Canal Routes - Historic		Sinking-Stream Basins	

*If unmapped water features are identified that might impact the project area, direct coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office will occur.

Explanation:

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells		Mineral Resources	
Mines – Surface		Mines – Underground	

Explanation:

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund		Open Dump Waste Sites	
RCRA Generator/ TSD		Restricted Waste Sites	
RCRA Corrective Action Sites		Waste Transfer Stations	
State Cleanup Sites		Tire Waste Sites	
Septage Waste Sites		Landfill Boundaries	
Underground Storage Tank (UST) Sites		Confined Feeding Operations (CFO)	
Voluntary Remediation Program		Brownfields	
Construction Demolition Waste		Notice of Contamination Sites	
Solid Waste Landfill		Institutional Controls	
Infectious/Medical Waste Sites		NPDES Facilities	
Leaking Underground Storage (LUST) Sites		NPDES Pipe Locations	
Manufactured Gas Plant Sites			

*Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation:

ECOLOGICAL INFORMATION SUMMARY

The _____ County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert ETR County Website Link). A preliminary review of the Indiana Natural Heritage Database by INDOT ESD did/did not indicate the presence of ETR species within the 0.5 mile search radius. (Insert coordination if applicable)

A review of the USFWS database did/did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation INDOT Projects". (Insert coordination if applicable)

Evidence of Birds in Bridge Report: Yes ☐ No ☐ N/A ☐
*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office may be necessary.

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

INFRASTRUCTURE:

WATER RESOURCES:

MINING/MINERAL EXPLORATION:

HAZARDOUS MATERIAL CONCERNS:

ECOLOGICAL INFORMATION:

Prepared by: _____(Signature)
Name of document preparer
Job Title
Organization

QA/QC Completed by: _____(Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES or N/A

INFRASTRUCTURE: YES or N/A

WATER RESOURCES: YES or N/A

MINING/MINERAL EXPLORATION: YES or N/A

HAZARDOUS MATERIAL CONCERNS: YES or N/A

APPENDIX C

HYBRID RED FLAG INVESTIGATION GUIDANCE AND TEMPLATE

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-ES
Indianapolis, Indiana 46204

PHONE: (855) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division
(ESD) Indiana Department of Transportation
100 N Senate Avenue, Room
N758-ES Indianapolis, IN 46204

From: Requestor's Name
Company or District
Name Address
City, State
e-mail

Black text = template
Blue text = example language
Red text = guidance material
Green text = fill in

Re: HYBRID RED FLAG INVESTIGATION
DES # XXXXXX, State Project or Local Project
Project Description (i.e. HMA Overlay with Curb Ramps, Signal Install, etc.)
Road Name, Location Description
Name County, Indiana

Please review the below guidance prior to generating a Hybrid Red Flag Investigation:

1) The following format is recommended for projects that do not fit under the Limited RFI guidance (i.e. potential for permitting), and may have components of a full RFI (more extensive excavation), but includes project scopes that would normally be summarized using a Limited RFI format. Example project scopes may include, but are not limited to:
    a. HMA overlay projects with pipe repair and/or replacement.
    b. HMA overlay projects that include culvert repair and/or replacement, ADA curb ramp upgrades and signal instillation at various intersections.
    c. Projects that with pipes, culvert(s), and ADA curb ramp upgrades, with no HMA overlay.
    d. Combinations of above projects.
2) Like a traditional Limited RFI, portions of the project that would typically fall under the PCE guidance do not need to be the focus of the review. For example, the HMA overlay portion of the project would be included in the narrative and depicted on the Site Location figure for reference but would not be the focus in the explanations due to the limited impacts associated with the HMA areas. *Note: projects that have long stretches of road with **only HMA overlay** do not need explanations because they will not impact the project from a NEPA perspective. For example, a LUST site adjacent to or within the HMA only portion(s) of the project area does not need to be considered or reviewed.*

3) Continue to use the ArcPro Red Flag Investigation template layers found on the INDOT SAM Website to map the project area and 0.5 mile buffer. The culvert and/or pipe locations and, if applicable, ADA curb ramp locations, should be called out with text labels on the maps.

4) In general, the main reason an RFI is being completed for these types of projects is due to:
   a. Water resources with impairments that are located within the project area that includes culvert and/or pipe repair, replacement, or upgrade.
   b. Excavation along or within the project area associated with the repair, replacement, or upgrade of pipes and/or culverts along the project area and, potentially, ADA curb ramp locations, if included. Please tailor the document (both text and maps) to focus on the area(s) where excavation is going to occur, this typically includes the pipe and/or culvert and ADA curb ramp upgrade locations.

5) This guidance document shows section explanations that are recommended for each type of work that may be in a project and the manner of formatting. For this example, no features classified under the Mining and Mineral Exploration layer were identified within the search area. An explanation of no impact was included for this table.

***Note* The below document is intended to be an example of best practices and is for formatting purposes only.**

PROJECT DESCRIPTION:

Indiana Department of Transportation (INDOT) has identified the need to address the deteriorated condition of the pavement along SR 46. This will include updating select curb ramp locations to comply with ADA standards and replacement of pipes. This is a PCE project with limited excavation activities, therefore, a request to complete a Hybrid RFI was submitted to the Seymour District on April 1, 2024, and approval was received on April 10, 2024. The project spans from the SR 229 intersection and proceeds west approximately 6.69 miles through the City of New Point. INDOT proposes to mill 1.5 inches off the existing pavement and overlay with 1.5 inches of hot mix asphalt (HMA) surface material. Four intersections will have ADA curb ramp work completed to meet ADA-complaint standards. The intersections where ADA curb ramp work is proposed to occur are provided in the below table:

Intersections:	Quadrants:	Depth of Excavation (feet below ground surface (ft-bgs))
SR 46 and 8th Street	All four corners	5 ft-bgs
SR 46 and Bobs Street	SE and SW corner	5 ft-bgs
SR 46 and 1st Street	SW and SW corner	5 ft-bgs
SR 46 and Kalb Street	All four corners	5 ft-bgs

A total of five (5) maintenance pipes/culverts will be replaced:

Structure #	Depth of Excavation (feet below ground surface (ft-bgs))
CLV 046.011-14.36	5 ft-bgs
CLV 046-011-14.86	5 ft-bgs
CLV 046.011-15.25	5 ft bgs
CLV 046.011-15.75	5 ft bgs
CLV 046.011-15.90	5 ft bgs

Bridge Work Included in Project: Yes ☐ No ☒ Structure #(s)_____

If this is a bridge project, is the bridge Historical? Yes ☐ No ☐, Select ☐ Non-Select ☐

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report)

Culvert Work Included in Project: Yes ☒ No ☐ Structure #(s): See table above

Proposed right of way: Temporary ☐ # Acres _____ Permanent ☐ # Acres _____ Not Applicable ☒

Type of excavation: Excavation to a depth of approximately 5 feet below the ground surface (ft-bgs) will occur at the locations requiring ADA curb ramp updates. Excavation to a depth of approximately 5 ft-bgs will occur at the pipe replacements. Please see the above table(s) for specific locations.

Maintenance of traffic (MOT): Traffic will be maintained using flaggers.

Work in waterway: Yes ☒ No ☐ Below ordinary high water mark: Yes ☒ No ☐

Any other factors influencing recommendations: N/A

CULVERT AND MAINTENANCE PIPE WORK

Provide the total attribute counts in the tables for each section; however, only provide explanations for those attributes that will impact the project or have recommendations. For water resource features, coordination will occur with INDOT ESD Ecology, Waterway Permitting, and Stormwater Office (EWPSO) except for the 303d Impaired Streams. If an impaired stream or lake will impact an area with excavation (i.e. culvert and/or pipe location), an explanation with appropriate recommendations must be included.

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities	1	Recreational Facilities	11
Airports[1]	N/A	Pipelines	1
Cemeteries	1	Railroads	2
Hospitals	1	Trails	2
Schools	3	Managed Lands	3

[1]A review of public-use airports within 3.8 miles (20,000 feet) is required.

Explanation:

Airports: Although not located within the 0.5 mile search radius, one (1) public-use airport, (name), is located within 3.8 miles (20,000 feet) of the project area. The public-use airport is located approximately (distance and direction) of the (direction) termini of the project area; therefore, early coordination with INDOT Aviation will occur.

CLV 046-011-15.80

Pipelines: One (1) pipeline segment, owned by Indiana Gas Co. Inc., is located 0.02 mile north of the small culvert. Coordination with INDOT Utilities and Railroads should occur.

Trails: One (1) potential trail segment, Decatur Trail #1 is located within the project area and one (1) planned trail segment, Decatur Trail #2, is adjacent to the project area. Coordination with Decatur County Recreation Board will occur.

CLV 046-011-14.86

Cemeteries: One (1) cemetery, Zenor Cemetery, is located 0.02 mile southwest of the culvert. A Cemetery Development Plan may be required since this project is within one hundred (100) feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

CLV 046.011-15.90

Schools: One (1) school, Decatur High School, is located adjacent to the project area. Coordination with Decatur County Schools will occur.

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Karst Springs	N/A	NWI – Wetlands	76
Canal Structures – Historic	N/A	Lakes	47
NPS NRI Listed	N/A	Floodplain – DFIRM	N/A
IDEM 303d Listed Streams and Lakes (Impaired)	7	Cave Entrance Density	N/A
Rivers and Streams	139	Sinkhole Areas	N/A
Canal Routes – Historic	N/A	Sinking-Stream Basins	N/A

*Direct coordination with INDOT ESD Ecology and Waterway Permitting will occur on all water resources except for the IDEM 303d Listed Streams and Lakes (Impaired).

Explanation:

CLV 046-011-15.80:

IDEM 303d Listed Streams and Lakes (Impaired): One (1) IDEM 303d segment, Salt Creek, flows through the project area and is impaired for Impaired Biotic Communities (IBC), E. coli, and Dissolved Oxygen (DO). Best Management Practices (BMPs) will be used to avoid further degradation of the stream. Workers who are working in or near water with E. coli should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure.

CLV 046.011-16.20:

IDEM 303d Listed Streams and Lakes (Impaired): One (1) IDEM 303d segment, unnamed tributary (UNT) to Lost Fork, is impaired for Impaired Biotic Communities (IBC) and Dissolved Oxygen (DO). Best Management Practices (BMPs) will be used to avoid further degradation of the stream.

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells	N/A	Mines - Surface	N/A
Mineral Resources	N/A	Mines - Underground	N/A

Explanation: No mining and mineral exploration resources were identified that will impact the project area.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund	N/A	Manufactured Gas Plant Sites	N/A
RCRA Generator/ TSD	N/A	Open Dump Waste Sites	N/A
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	N/A	Waste Transfer Stations	N/A
Septage Waste Sites	N/A	Tire Waste Sites	N/A
Underground Storage Tank (UST) Sites	N/A	Landfill Boundaries	1
Voluntary Remediation Program	N/A	Confined Feeding Operations (CFO)	1
Construction Demolition Waste	N/A	Brownfields	N/A
Solid Waste Landfill	N/A	Notice of Contamination Sites	N/A
Infectious/Medical Waste Sites	N/A	Institutional Controls	1
Leaking Underground Storage (LUST) Sites	3	NPDES Facilities	N/A
		NPDES Pipe Locations	N/A

*Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Curb Ramp Locations:

SR 46 and 8th Street

Leaking Underground Storage Tank (LUST): Liquid Transport Systems, 8005 State Road 46, AI ID # 2533, is the site of a commercial tanker service and is located on the southeast corner of the intersection. The IDEM issued a *Request to Record Environmental Restrictive Covenant (ERC)* letter, dated September 5, 2018, determining that the site is eligible for no further action status following recommended revisions. It appears shallow residual chemicals of concern (CoCs) may remain on-site in the vicinity of the former underground storage tank (UST) cavity and have not been fully delineated. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary. Refer to Appendix G of the SAM Manual for the recommended procedure to manage and report contamination.

Culverts and Maintenance Pipes:

CLV 046.011-15.75:

Leaking Underground Storage Tank (LUST): Bill's Service Station, 1500 E SR 46, AI ID# 05000, is located adjacent to the northwest of the project area. According to the May 13, 2017, Further Site Investigation report, groundwater contamination was encountered during a January 2016 UST removal. No other information was available in the VFC. A Phase II Environmental Site Assessment is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

ECOLOGICAL INFORMATION SUMMARY

The Decatur County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at https://www.in.gov/dnr/nature-preserves/files/np_decatur.pdf. A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did indicate the presence of ETR species. Coordination with IDNR and USFWS will occur.

Note: If ETR species are identified within the 0.5 mile search radius, either the statement, "Coordination with USFWS and IDNR will occur", OR the below 2013 Interim Policy must be included as a conclusion statement based on the project activities. The Interim Policy can be found at the following link: USFWS 2013 Interim Policy

If the project falls under the 2013 USFWS Interim Policy, the following statement can be used:

Due to the nature of project activities, this project will fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. No further coordination is necessary.

HOWEVER, if a WOTUS is being recommended, please use the following guidance:

Due to the nature of project activities, this project may fall under the guidelines set forth under USFWS Interim Policy for the Review of Highway Transportation Projects in Indiana dated May 29, 2013. However, if a Waters of the US Report is prepared for the project, coordination with INDOT EWPSO may be required. Coordination with IDNR and USFWS will occur as needed.

Bat Protocol:

If no bats are found in or within 0.50 mile of a project area, here is the statement that should go in the RFI: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.50 mile of the project area. The project area is in a mixed area consisting of the Town of New Point, farmland, and some commercial. Additional investigation to confirm the presence or absence of bats in the structures will be necessary. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation INDOT Projects".

If bats are found in or within 0.50 mile of a project area: A review of the USFWS database indicated the presence of endangered bat species within 0.50 mile of the project area. Coordination with INDOT District Environmental personnel will occur, and the range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects". Coordination with USFWS will occur as needed.

Evidence of Bird Nests in Bridge Report: Yes ☐ No ☐ N/A ☐
*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office may be necessary

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A. Keep recommendations concise. New information should not be introduced in this section. Usually just a statement of the resource impacted, if it is in or adjacent to the project area, and next steps. For example, "One (1) railroad segment is located within the project area. Standard coordination will occur with INDOT Utilities and Railroads by the Project Management Team or their consultant no later than the Ready for Contracts (RFC) date." *Explanations for Hazardous Material Concerns sites should be brought down to the recommendations verbatim.*

INFRASTRUCTURE:

CLV 046-011-15.80

Pipelines: Three (3) pipeline segments are located within the project area. Coordination with INDOT Utilities and Railroads should occur.

Trails: One (1) potential trail segment, Decatur Trail #1 is located within the project area and one (1) planned trail segment, Decatur Trail #2, is adjacent to the project area. Coordination with Decatur County Recreation Board will occur.

CLV 046-011-14.86

Cemeteries: One (1) cemetery, Zenor Cemetery, is located 0.02 mile southwest of the culvert. A Cemetery Development Plan may be required since this project is within one hundred (100) feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

CLV 046.011-15.90

Schools: One (1) school, Decatur High School, is located adjacent to the project area. Coordination with Decatur County Schools will occur.

Airports: Although not located within the 0.5-mile search radius, one (1) public-use airport, (name), is located within 3.8 miles (20,000 feet) of the project area. The public-use airport is located approximately (distance and direction) of the (direction) of the project area; therefore, early coordination with INDOT Aviation will occur.

WATER RESOURCES:

Direct coordination with INDOT ESD Ecology and Waterway Permitting will occur on all water resources except for the IDEM 303d Listed Streams and Lakes (Impaired).

CLV 046-011-15.80

IDEM 303d Listed Streams and Lakes (Impaired): One (1) IDEM 303d segment, Salt Creek, flows through the project area and is impaired for Impaired Biotic Communities (IBC), E. coli, and Dissolved Oxygen (DO). Best Management Practices (BMPs) will be used to avoid further degradation of the stream. Workers who are working in or near water with E. coli should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure.

IDEM 303d Listed Streams and Lakes (Impaired): An unnamed tributary (UNT) to Lost Fork is impaired for Impaired Biotic Communities (IBC) and Dissolved Oxygen (DO). Best Management Practices (BMPs) will be used to avoid further degradation of the stream.

MINING/MINERAL EXPLORATION: N/A

HAZARDOUS MATERIAL CONCERNS:

SR 46 and 8th Street

Leaking Underground Storage Tank (LUST): Liquid Transport Systems, 8005 State Road 46, AI ID # 2533 is the site of a commercial tanker service and is located on the southeast corner of the intersection. The IDEM issued a *Request to Record Environmental Restrictive Covenant (ERC)* letter, dated September 5, 2018, determining that the site is eligible for no further action status following recommended revisions. It appears shallow residual CoCs may remain on-site in the vicinity of the former UST cavity and have not been fully delineated. If excavation occurs in this area, proper handling, removal, and disposal of soil and/or groundwater may be necessary.

CLV 046.011-15.75

Leaking Underground Storage Tank (LUST): Bill's Service Station, 1500 E SR 46, AI ID# 05000, is located adjacent to the northwest of the project area. According to the May 13, 2017, Further Site Investigation report, groundwater contamination was encountered during a January 2016 UST removal. No other information was available in the VFC. A Phase II Environmental Site Assessment is recommended to occur before RFC. Prior to any investigation activities, a scope of work plan will be prepared and submitted to INDOT SAM for review and approval.

ECOLOGICAL INFORMATION:

Coordination with IDNR and USFWS will occur. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects". Additional investigation to confirm the presence or absence of bats in the structure(s) will be necessary.

Prepared by: _____(Signature)
Name of document preparer
Job Title
Organization

QA/QC Completed by: _____(Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

GRAPHICS:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

For this example, the main reason that an RFI is being prepared is because of the excavation activities associated with the ADA curb ramp locations and maintenance pipes. Therefore, the most effective method is to provide a map or multiple maps that zoom in on the areas of curb ramp and maintenance pipes work, and clearly identify the intersections/locations where work will occur. The Site Location map would show the full extent of the project area and the map would show the full extents of the HMA overlay including the ADA curb ramp locations.

SITE LOCATION: YES

INFRASTRUCTURE: YES

WATER RESOURCES: YES

MINING/MINERALS EXPLANATION: N/A

HAZARDOUS MATERIAL CONCERNS: YES

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-ES
Indianapolis, Indiana 46204

PHONE: (855) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management (SAM)
Environmental Policy Office - Environmental Services Division (ESD)
Indiana Department of Transportation (INDOT)
100 N Senate Avenue, Room N758-ES
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Green text = fill in information
Blue text = example language
* Before submitting the document, please change all text to black and delete this box.

Re: RED FLAG INVESTIGATION
DES # XXXXXX, State Project
Project Description (i.e. Small Structure Replacement, Bridge Replacement, Bridge Deck Overlay, etc)
Road, Location Description
Name County, Indiana

PROJECT DETAILS

<Enter Description of Project>

Intersections:	Quadrants:	Depth of Excavation (feet below ground surface (ft-bgs))

Structure #	Depth of Excavation (feet below ground surface (ft-bgs))

Bridge Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

If this is a bridge project, is the bridge Historical? Yes ☐ No ☐ , Select ☐ Non-Select ☐

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report).

Culvert Work Included in Project: Yes ☐ No ☐ Structure #(s) _____

Proposed right of way: Temporary ☐ # Acres _____ Permanent ☐ # Acres _____, Not Applicable ☐

Type and proposed depth of excavation:

Maintenance of traffic (MOT):

Work in waterway: Yes ☐ No ☐ Below ordinary high water mark: Yes ☐ No ☐

State Project: ☐ **LPA**: ☐

Any other factors influencing recommendations:

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities		Recreational Facilities	
Airports[1]		Pipelines	
Cemeteries		Railroads	
Hospitals		Trails	
Schools		Managed Lands	

[1]In order to complete the required airport review, a review of public-use airports within 3.8 miles (20,000 feet) is required.

Explanation:

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Karst Springs		NWI - Wetlands	
Canal Structures – Historic		Lakes	
NPS NRI Listed		Floodplain - DFIRM	
IDEM 303d Listed Streams and Lakes (Impaired)		Cave Entrance Density	
Rivers and Streams		Sinkhole Areas	
Canal Routes - Historic		Sinking-Stream Basins	

*If unmapped water features are identified that might impact the project area, direct coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office will occur.

Explanation:

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells		Mineral Resources	
Mines – Surface		Mines – Underground	

Explanation:

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund		Open Dump Waste Sites	
RCRA Generator/ TSD		Restricted Waste Sites	
RCRA Corrective Action Sites		Waste Transfer Stations	
State Cleanup Sites		Tire Waste Sites	
Septage Waste Sites		Landfill Boundaries	
Underground Storage Tank (UST) Sites		Confined Feeding Operations (CFO)	
Voluntary Remediation Program		Brownfields	
Construction Demolition Waste		Notice of Contamination Sites	
Solid Waste Landfill		Institutional Controls	
Infectious/Medical Waste Sites		NPDES Facilities	
Leaking Underground Storage (LUST) Sites		NPDES Pipe Locations	
Manufactured Gas Plant Sites			

* Unless otherwise noted, site specific details presented in this section were obtained from documents reviewed on the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC).

Explanation:

ECOLOGICAL INFORMATION SUMMARY

The _____ County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is provided at (insert ETR County Website Link). A preliminary review of the Indiana Natural Heritage Database by INDOT ESD did/did not indicate the presence of ETR species within the 0.5 mile search radius.

A review of the USFWS database did/did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation INDOT Projects".

Evidence of Birds in Bridge Report: Yes ☐ No ☐ N/A ☐
*If yes, further coordination with INDOT Ecology, Waterway Permitting, and Stormwater Office may be necessary.

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

INFRASTRUCTURE:

WATER RESOURCES:

MINING/MINERAL EXPLORATION:

HAZARDOUS MATERIAL CONCERNS:

ECOLOGICAL INFORMATION:

Prepared by: _____(Signature)
Name of Document Preparer
Job title
Organization

QA/QC Completed by: _____ (Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES or N/A

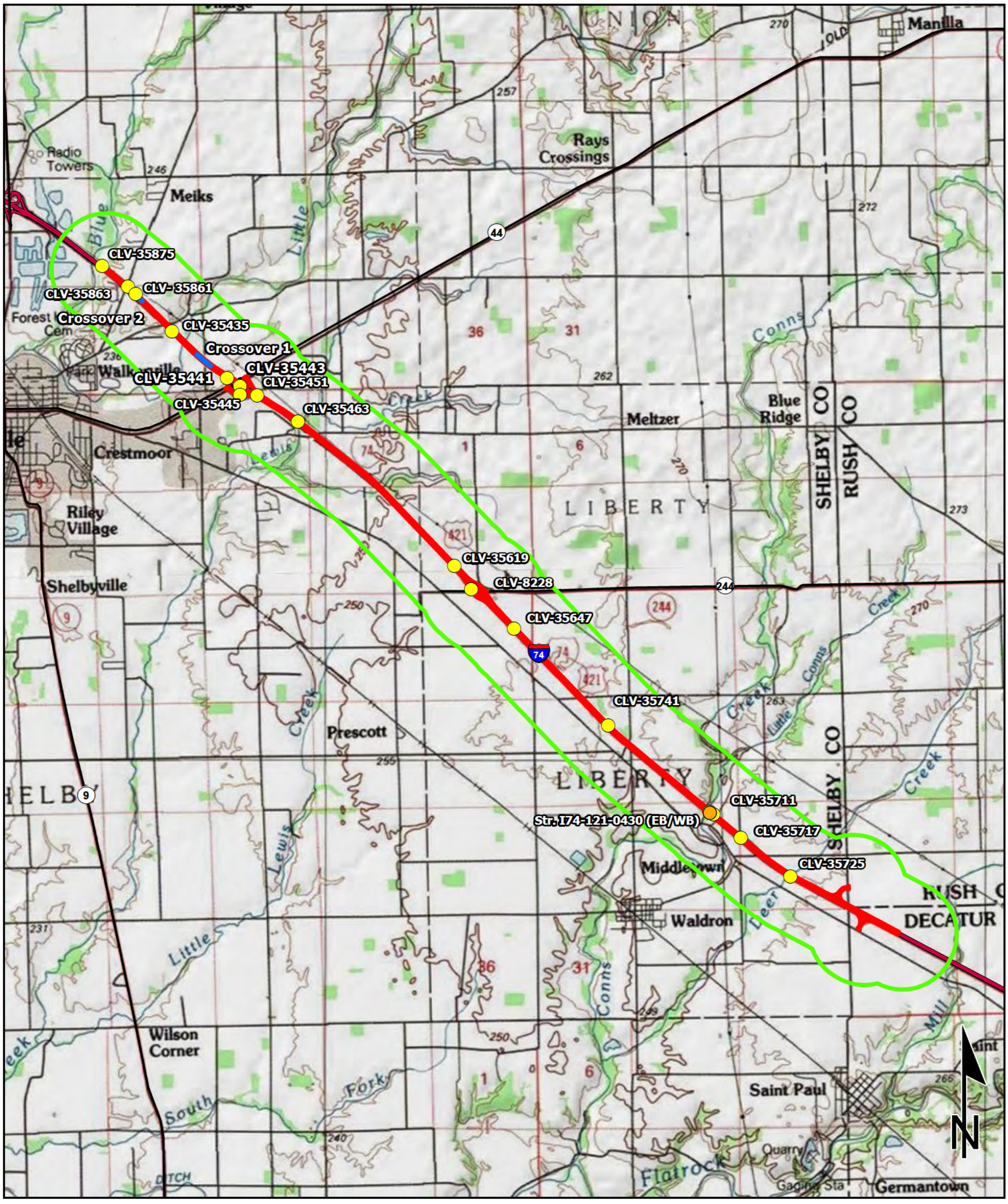
INFRASTRUCTURE: YES or N/A

WATER RESOURCES: YES or N/A

MINING/MINERAL EXPLORATION: YES or N/A

HAZARDOUS MATERIAL CONCERNS: YES or N/A

Red Flag Investigation - Site Location Map
I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244
Des. No. [redacted], HMA Overlay and Preventative Maintenance
Des. No. [redacted], Bridge Deck Overlay
Shelby and Decatur Counties, Indiana



Sources:

1 0.5 0 1 Miles

Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library

Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

- Bridge Deck Overlay
- Culvert Replacement
- Crossover
- Half Mile Buffer
- HMA Overlay

SHELBYVILLE, RAYS CROSSING, WALDRON, AND ADAMS QUADRANGLES INDIANA 7.5 MINUTE SERIES (TOPOGRAPHIC)

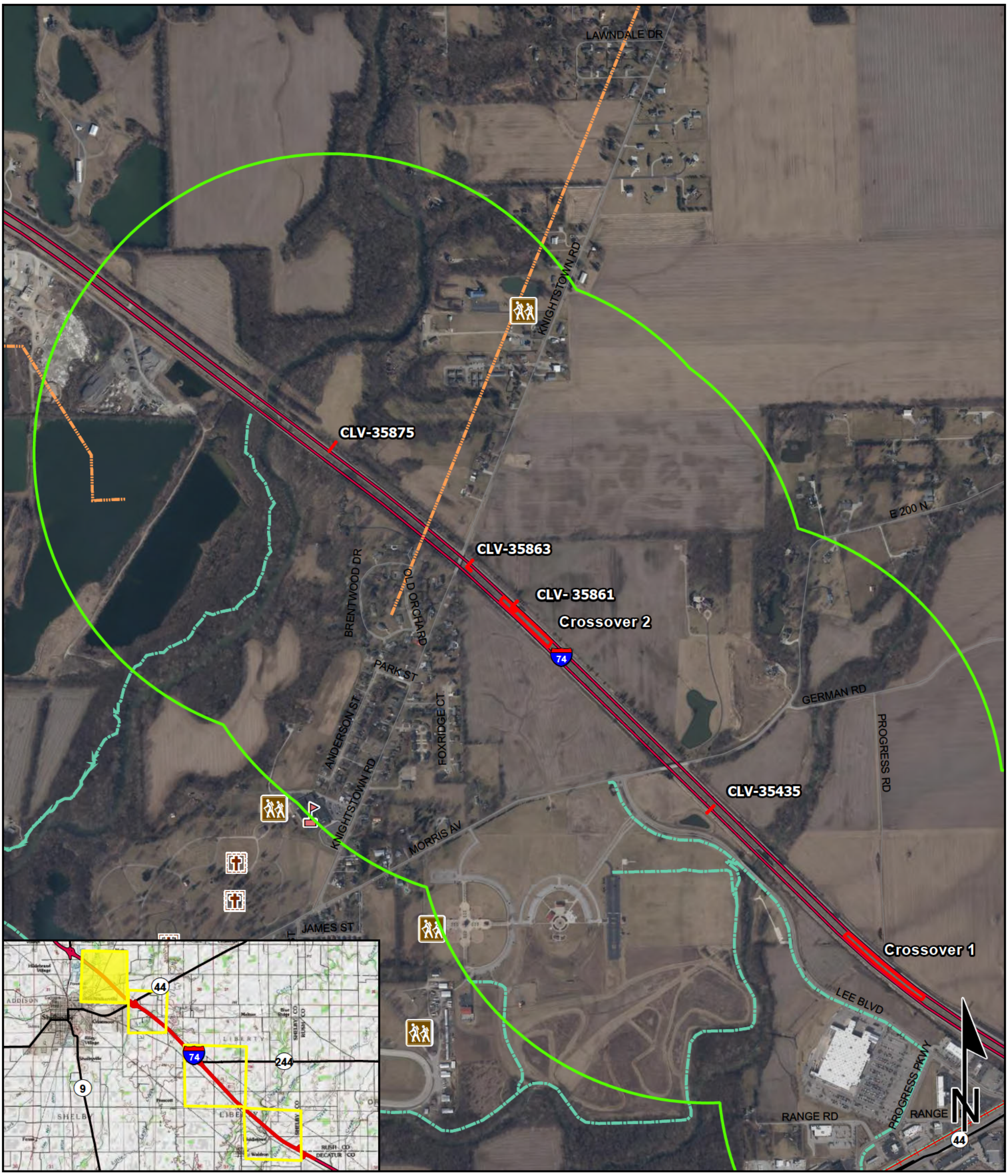
Red Flag Investigation - Infrastructure

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244

Des. No. [redacted], HMA Overlay and Preventative Maintenance

Des. No. 2[redacted], Bridge Deck Overlay

Shelby and Decatur Counties, Indiana



0.2 0.1 0 0.2 Miles

Sources:

Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library

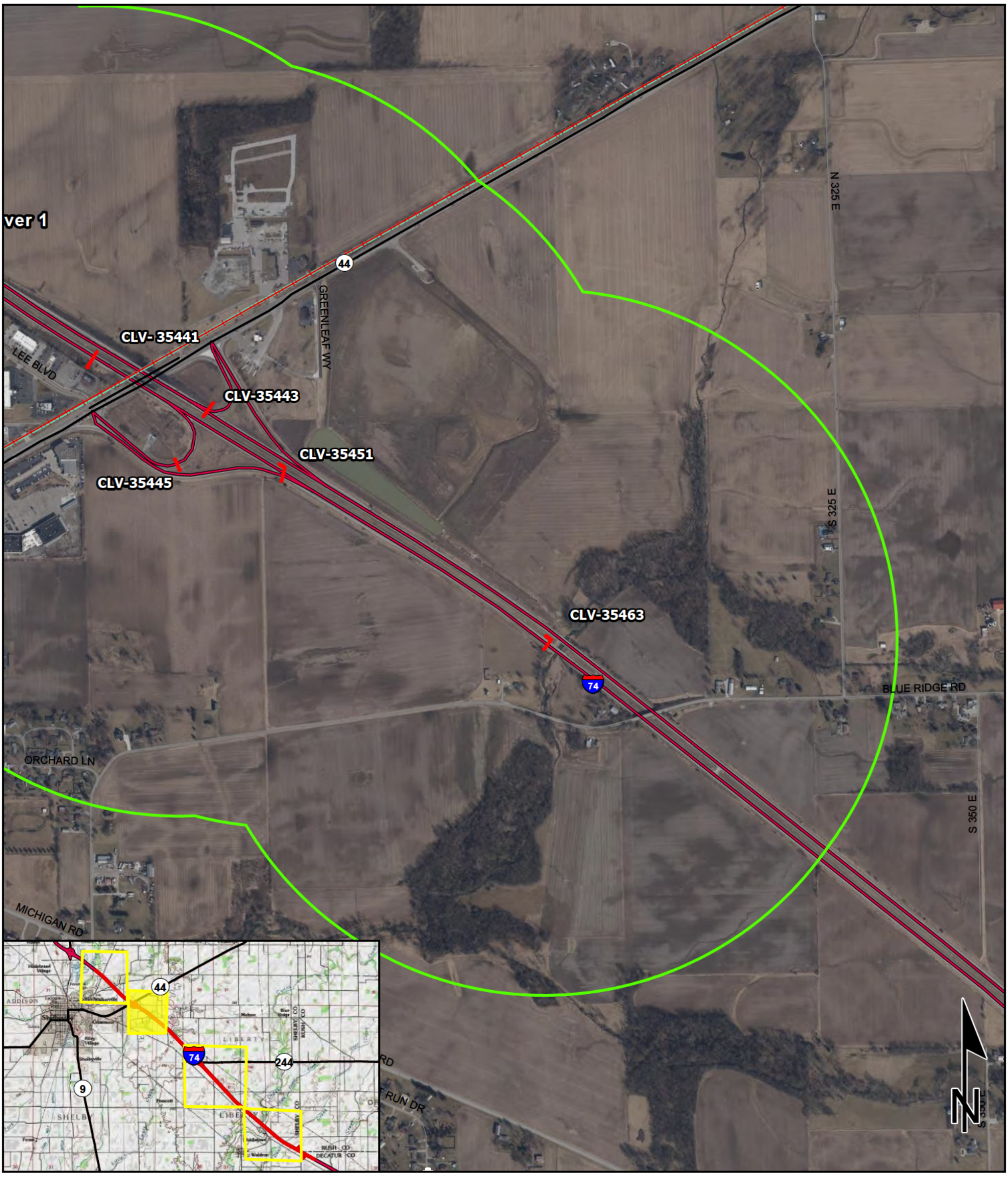
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

- Religious Facility
- Airport
- Cemeteries
- Hospital
- School
- Recreation Facility
- Pipeline
- Railroad
- Trails
- Managed Lands
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244
Des. No. [redacted], HMA Overlay and Preventative Maintenance
Des. No. [redacted], Bridge Deck Overlay
Shelby and Decatur Counties, Indiana



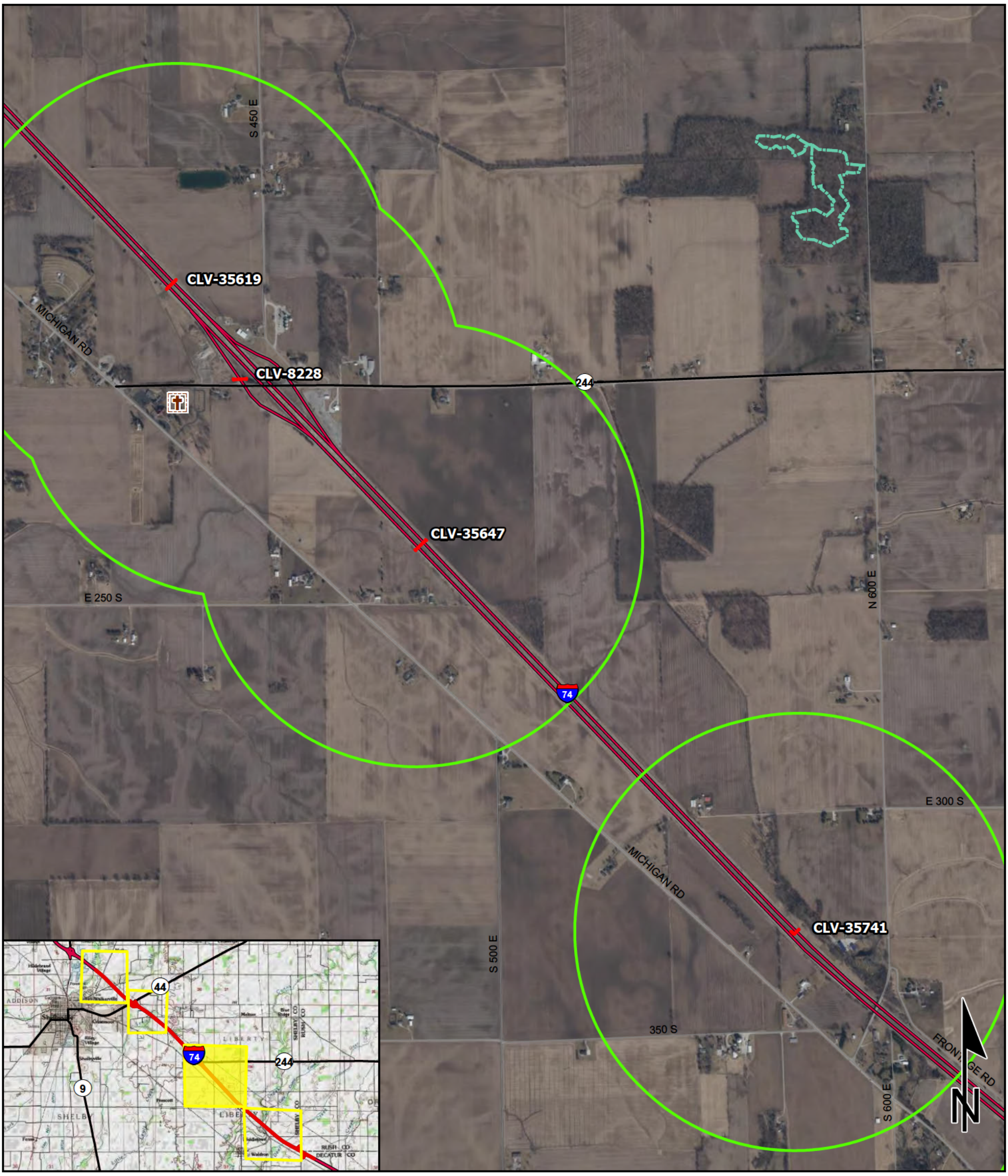
Sources:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

0.15 0.07 0 0.15 Miles

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

- Religious Facility
- Airport
- Cemeteries
- Hospital
- School
- Recreation Facility
- Pipeline
- Railroad
- Trails
- Managed Lands
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244
Des. No. [redacted], HMA Overlay and Preventative Maintenance
Des. No. [redacted], Bridge Deck Overlay
Shelby and Decatur Counties, Indiana



0.25 0.13 0 0.25 Miles

Sources:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

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- Religious Facility
- Airport
- Cemeteries
- Hospital
- School
- Recreation Facility
- Pipeline
- Railroad
- Trails
- Managed Lands
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

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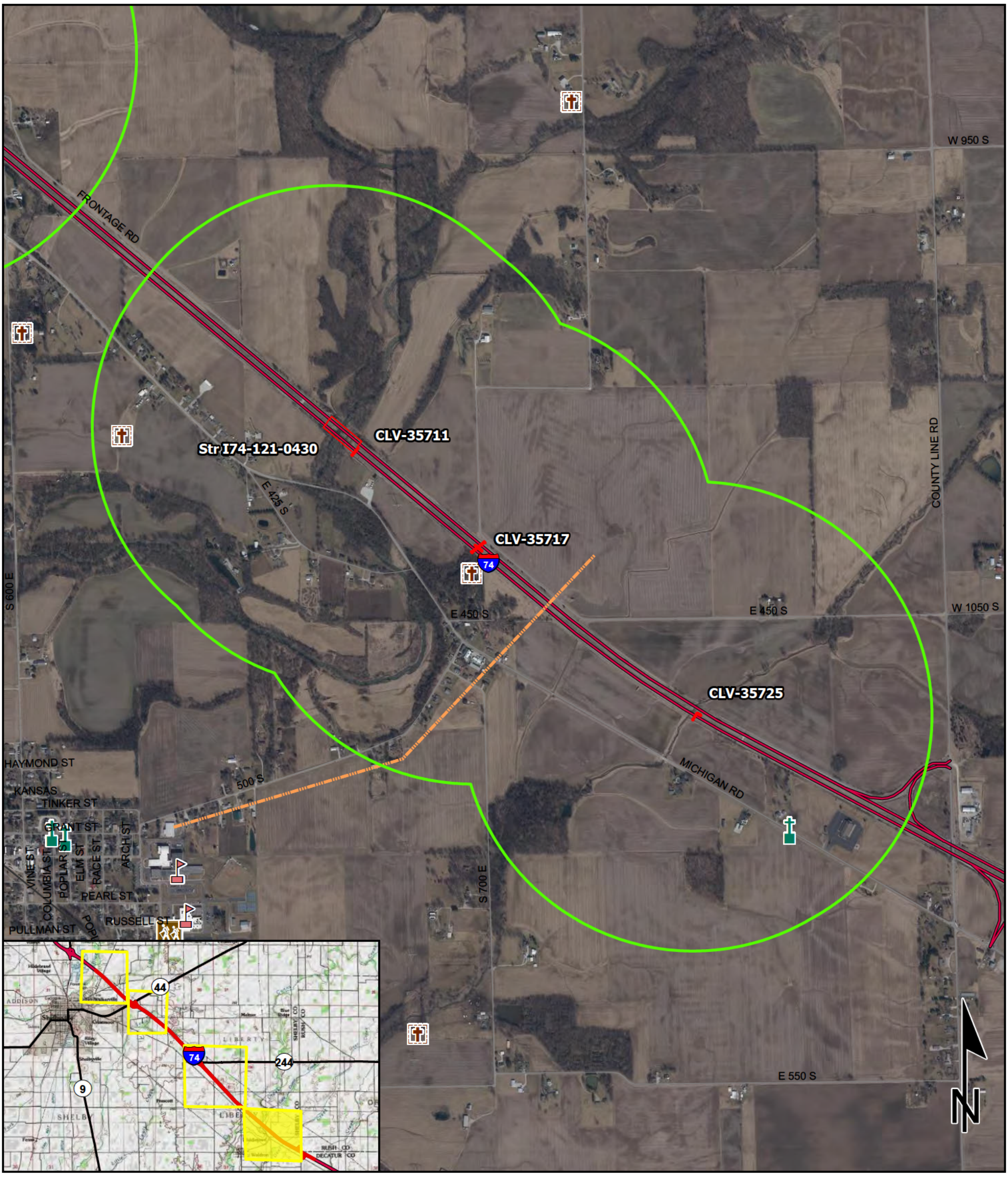
Shelby and Decatur Counties, Indiana



0.25 0.13 0 0.25 Miles

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Red Flag Investigation - Water Resources

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244

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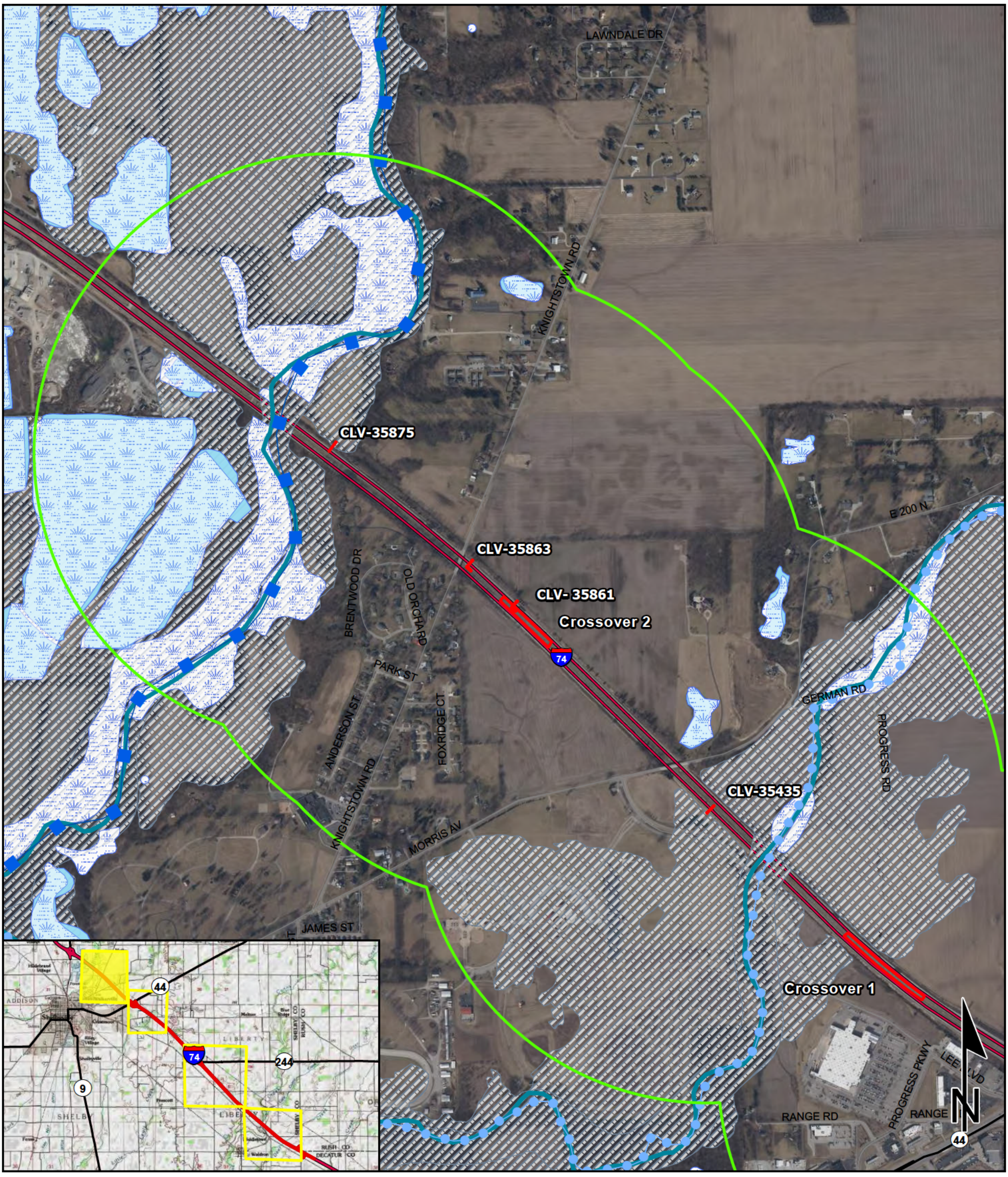
Des. No. [redacted], Bridge Deck Overlay

Shelby and Decatur Counties, Indiana



0.2 0.1 0 0.2 Miles

Sources:

Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library

Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

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- NWI - Point
- Karst Spring
- NWI- Line
- Impaired_Stream_Lake
- NPS NRI listed
- River
- Canal Structure - Historic
- Canal Route - Historic
- Wetlands
- Lake
- Floodplain - DFIRM
- Cave Entrance Density
- Sinkhole Area
- Sinking-Stream Basin
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

Red Flag Investigation - Water Resources
Page 2 of 4
I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244
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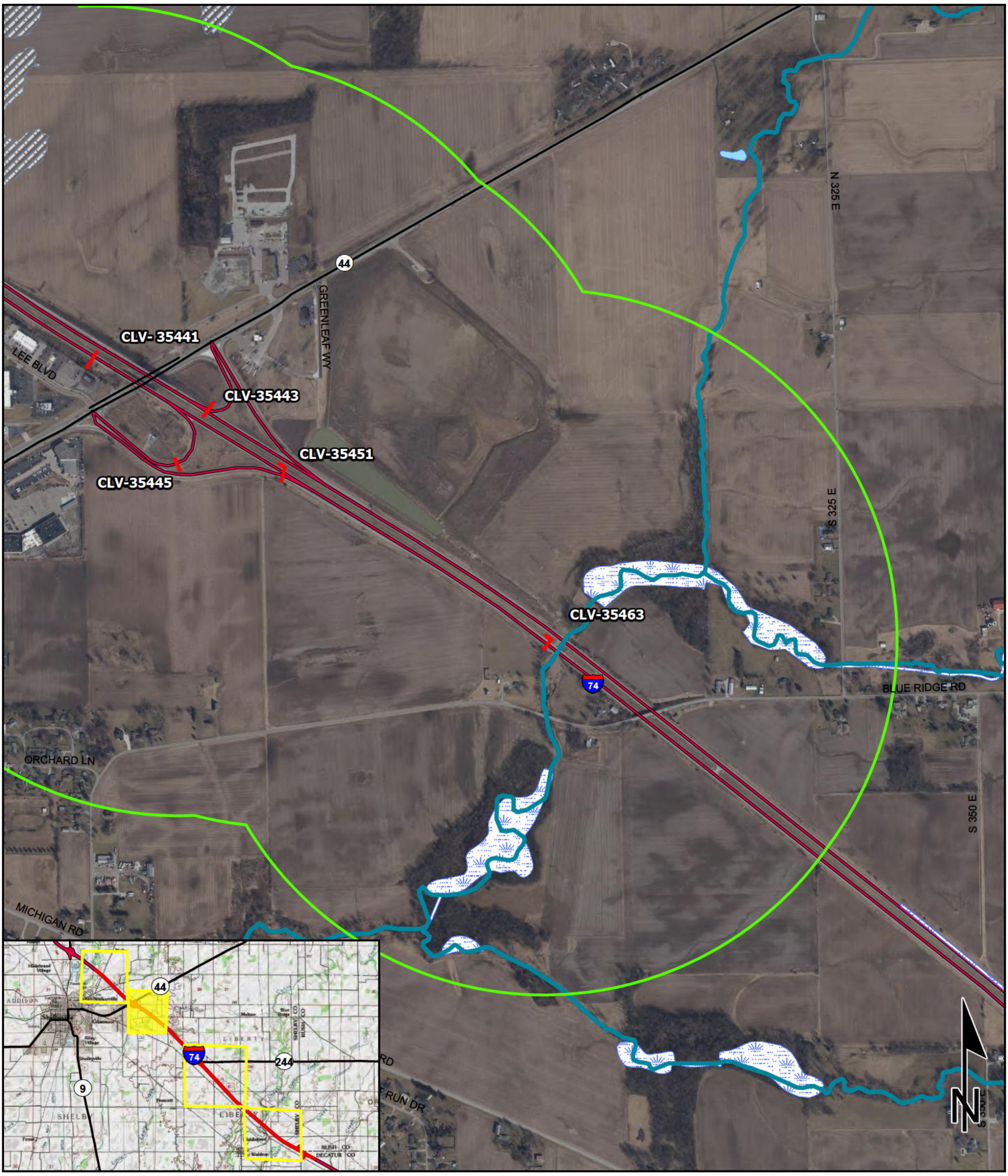
Shelby and Decatur Counties, Indiana



0.15 0.07 0 0.15 Miles

Sources:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
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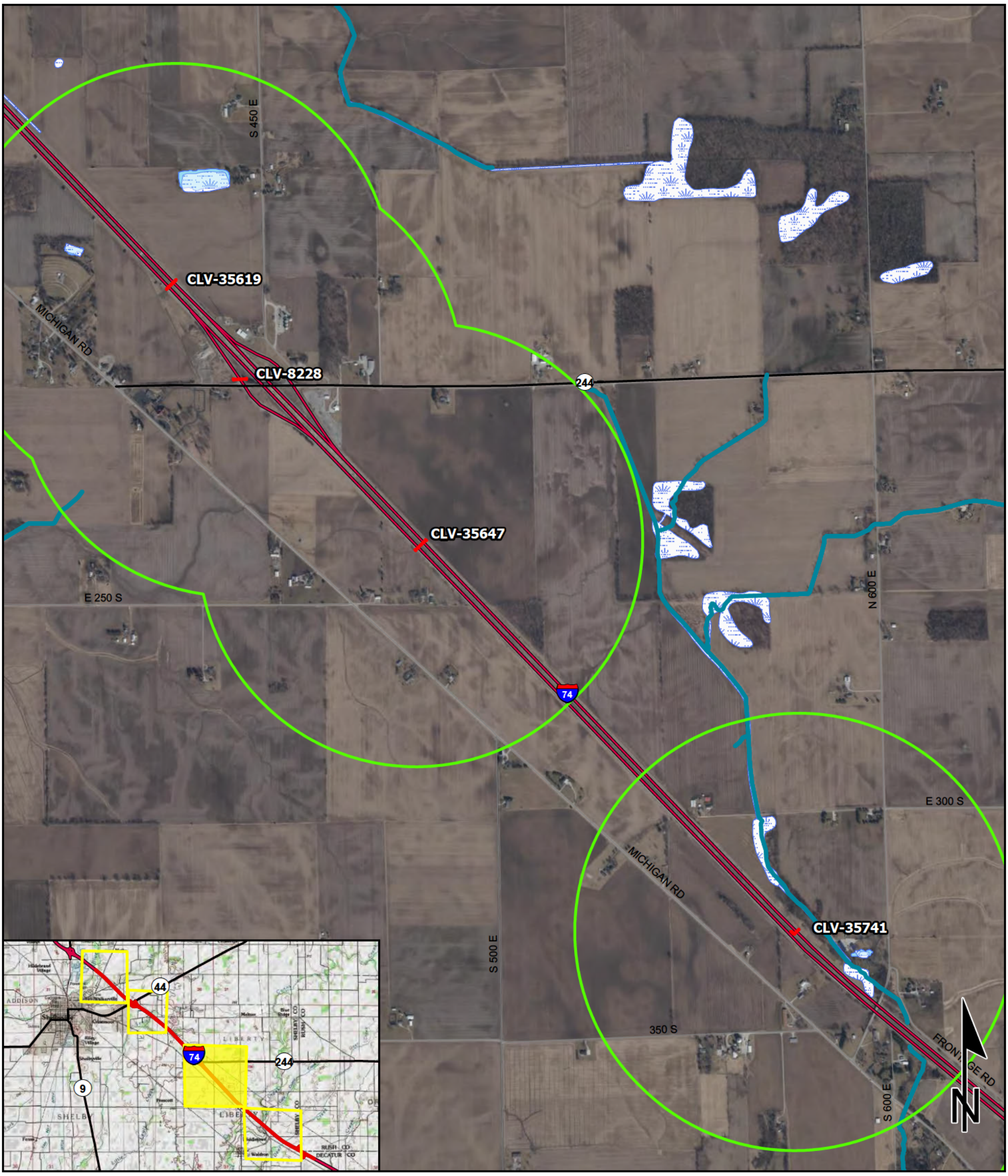

0.25 0.13 0 0.25 Miles

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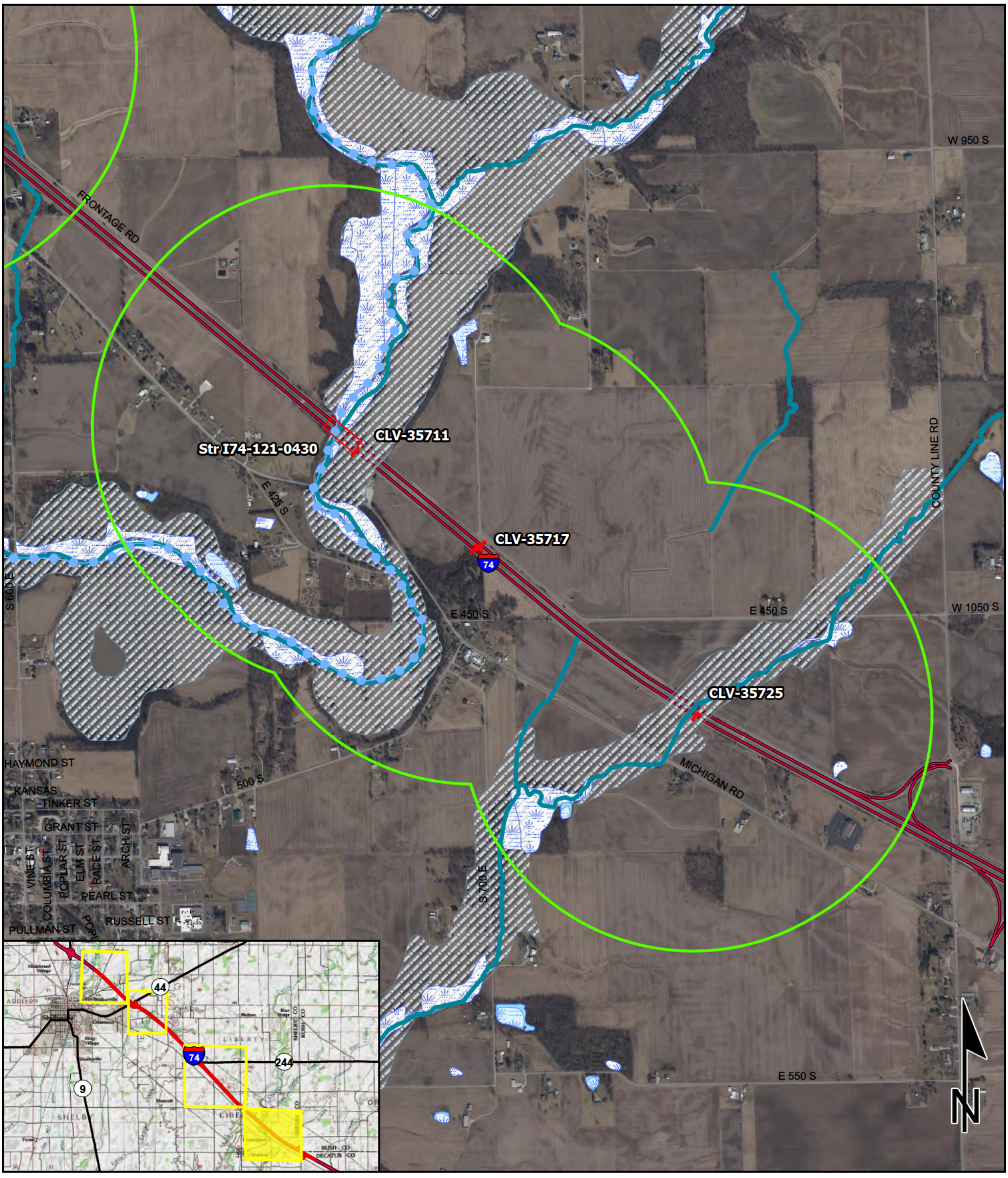

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Red Flag Investigation - Mining and Mineral Resources

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244

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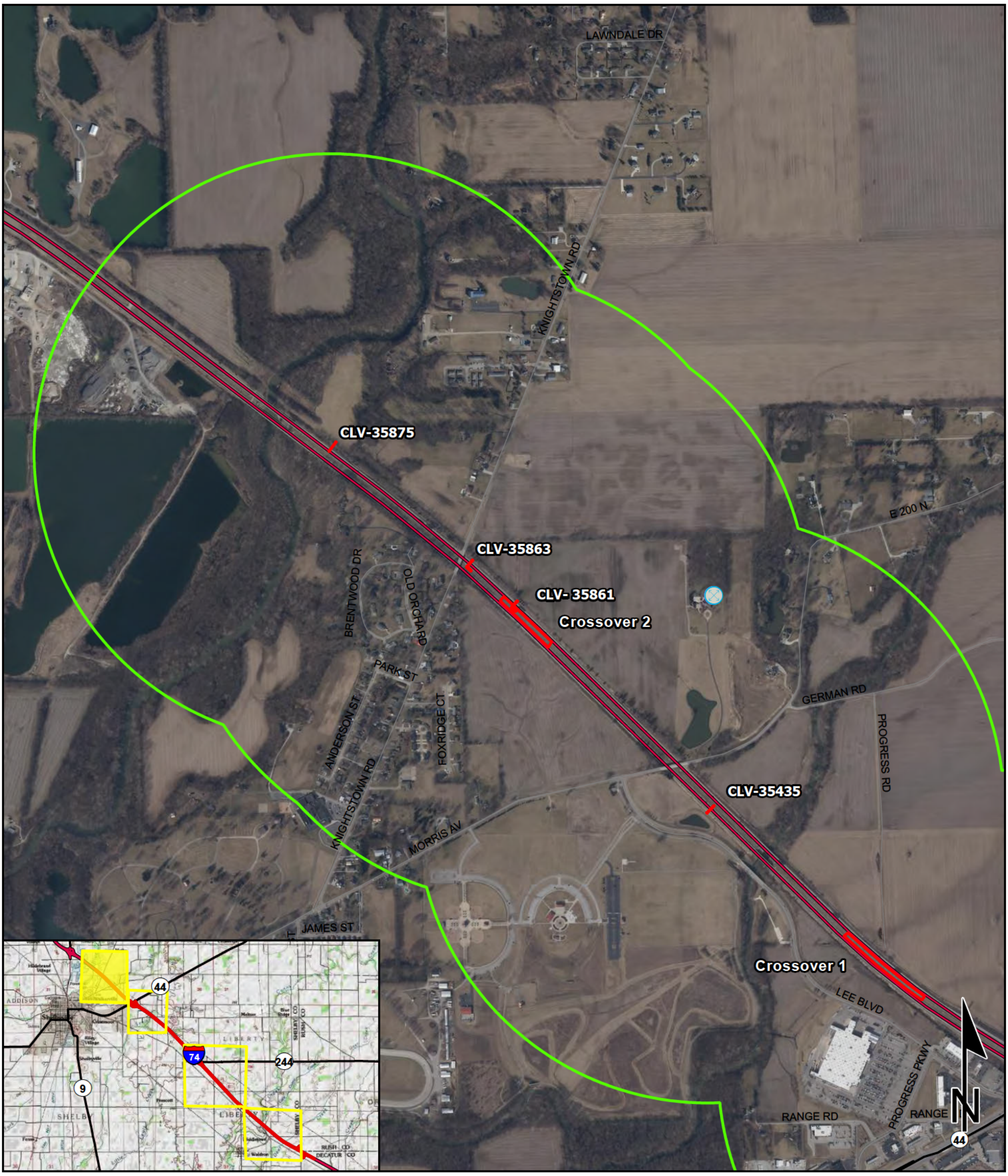
Des. No. [redacted], Bridge Deck Overlay

Shelby and Decatur Counties, Indiana



0.2 0.1 0 0.2 Miles

Sources:

Non Orthophotography

Data - Obtained from the State of Indiana Geographical Information Office Library

Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

- Oil and Gas Wells
- Mineral Resources
- Mine - Surface
- Mine - Underground
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

Red Flag Investigation - Mining and Mineral Resources

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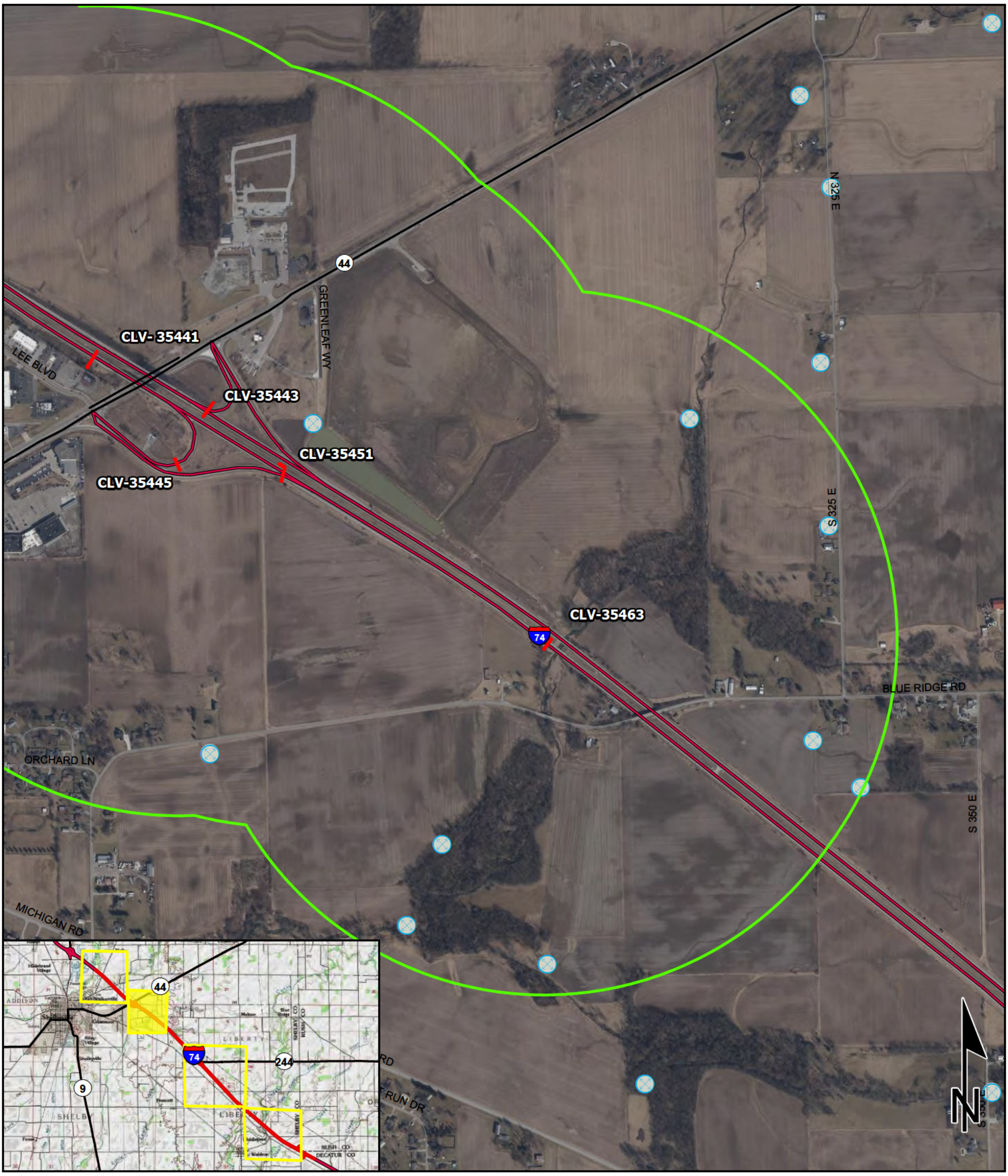

0.15 0.07 0 0.15 Miles

Sources:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
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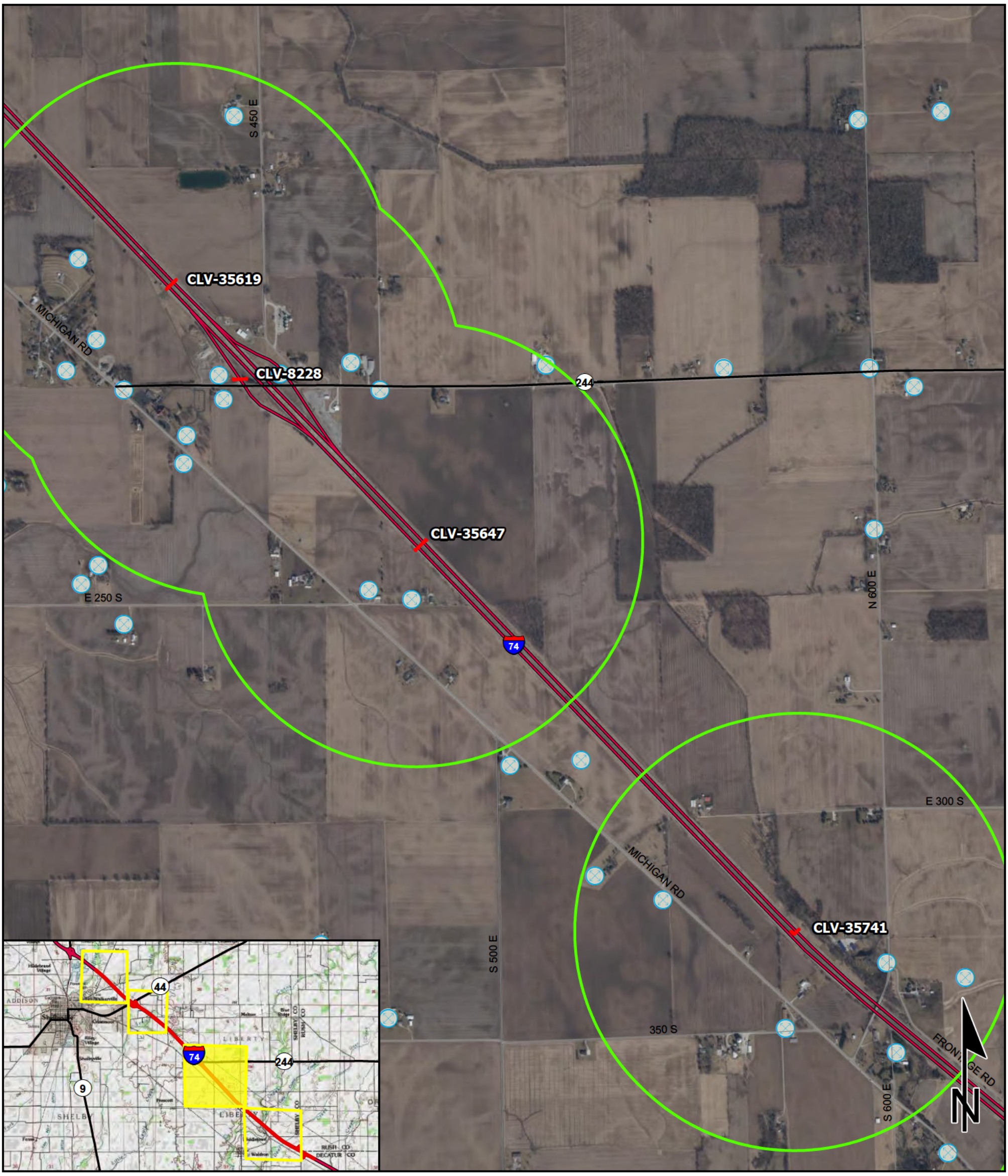

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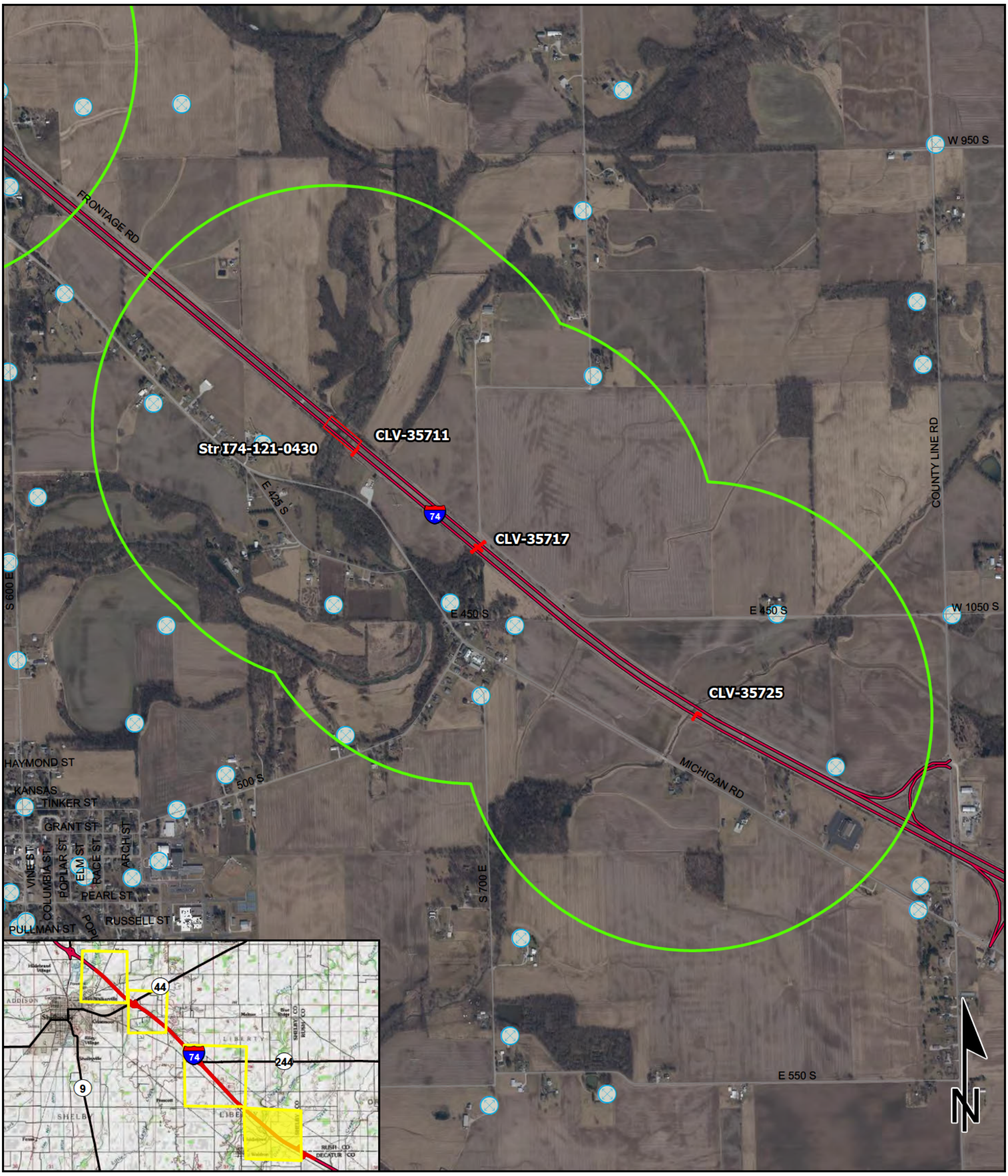

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Red Flag Investigation - Hazardous Material Concerns

I-74, 0.81 Mile East of SR 9 to 5.15 Miles East of SR 244

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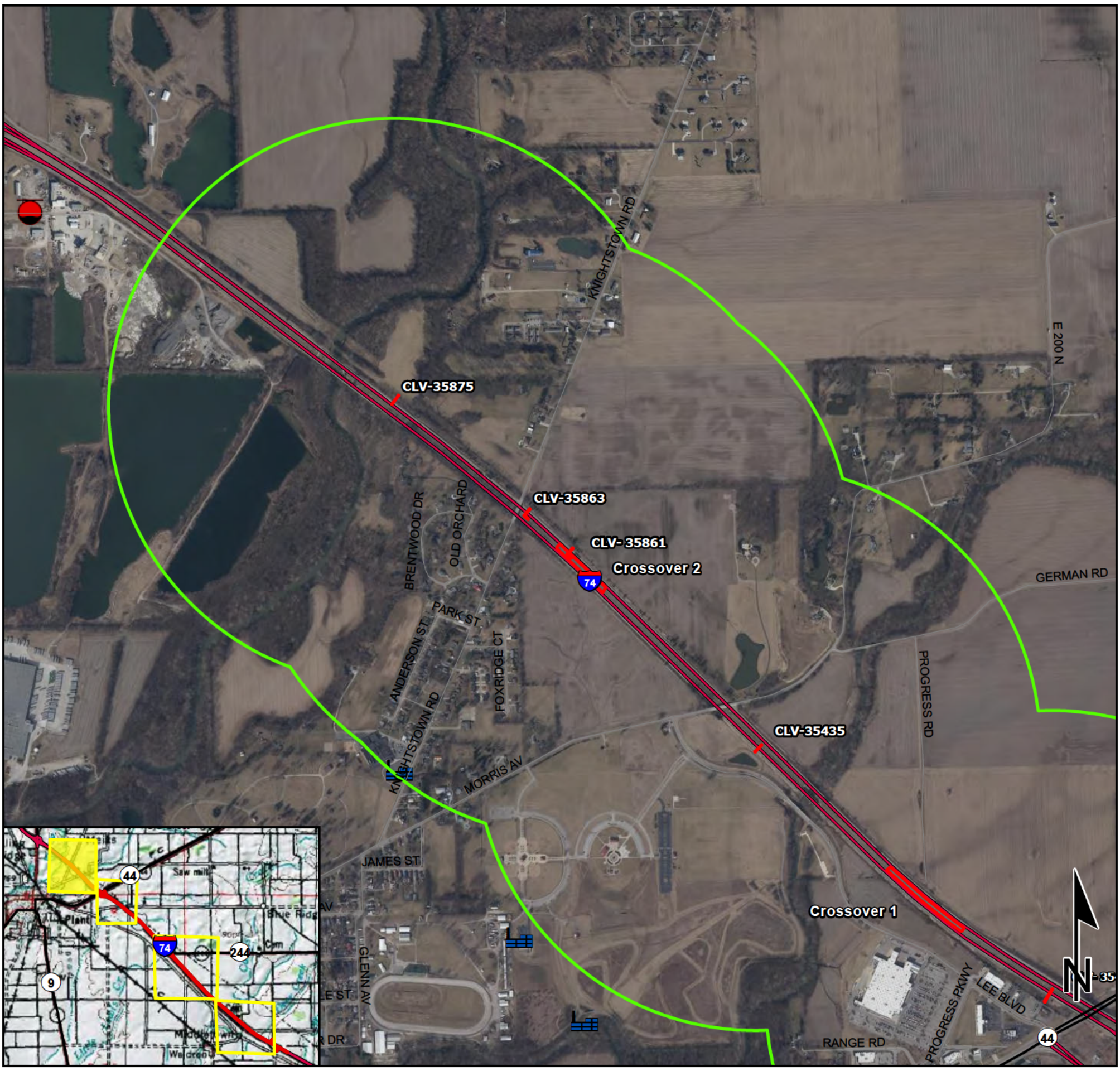
Shelby and Decatur Counties, Indiana



- Brownfield
- RCRA Corrective Action Sites
- Confined Feeding Operation
- Notice_Of_Contamination
- Construction/Demolition Site
- Infectious/Medical Waste Site
- Leaking Underground Storage Tank
- Manufactured Gas Plant
- NPDES Facilites
- NPDES Pipe Locations
- Open Dump Waste Site
- RCRA Generator/TSD
- Restricted Waste Site
- Septage Waste Site
- Solid Waste Landfill
- State Cleanup Site
- Superfund
- Tire Waste Site
- Underground Storage Tank
- Voluntary Remediation Program
- Waste Transfer Station
- Institutional Controls
- County Boundary
- Project Area
- Half Mile Radius
- Toll
- Interstate
- State Route
- US Route
- Local Road

0.2 0.1 0 0.2 Miles

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Red Flag Investigation - Hazardous Material Concerns

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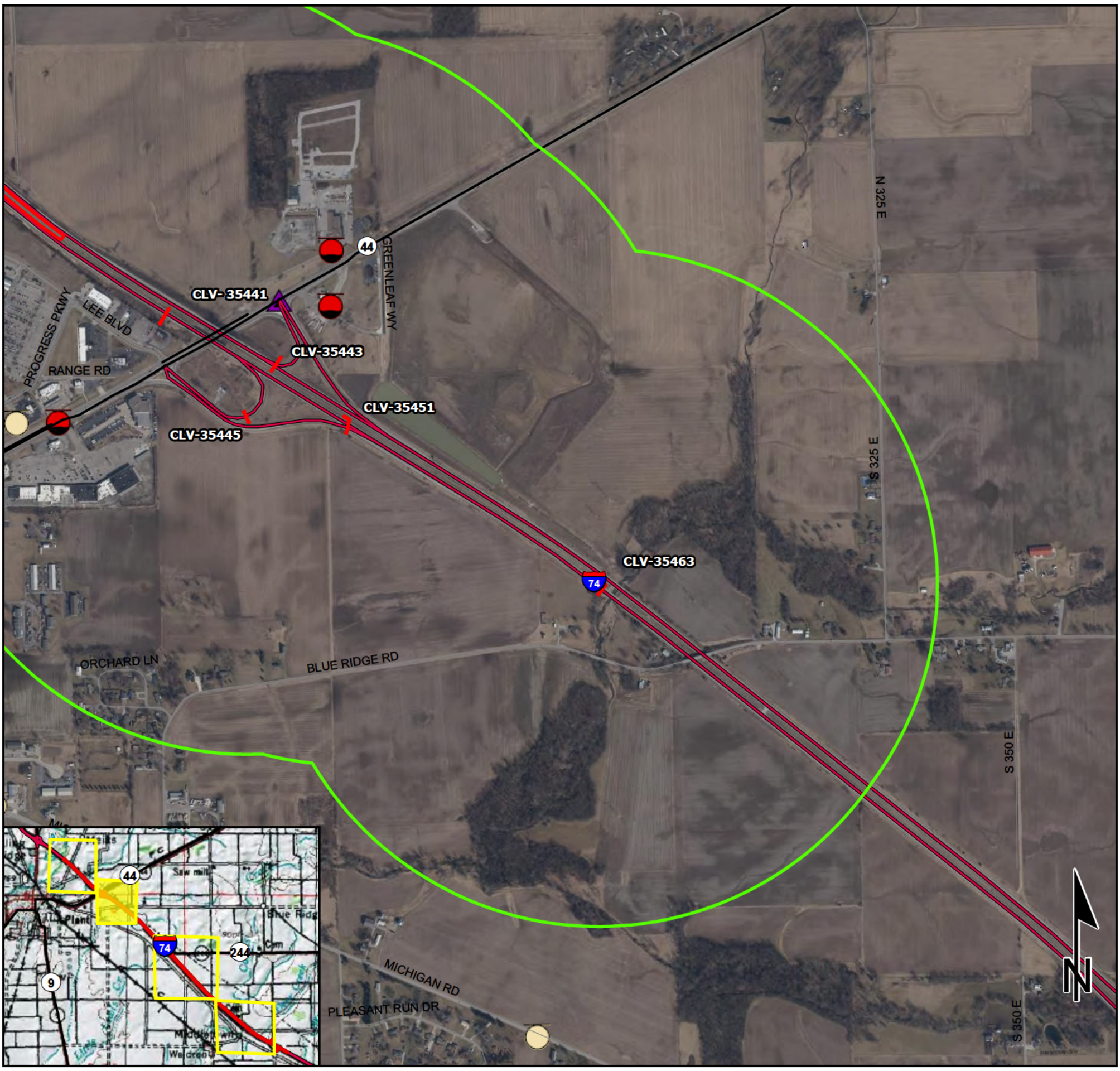

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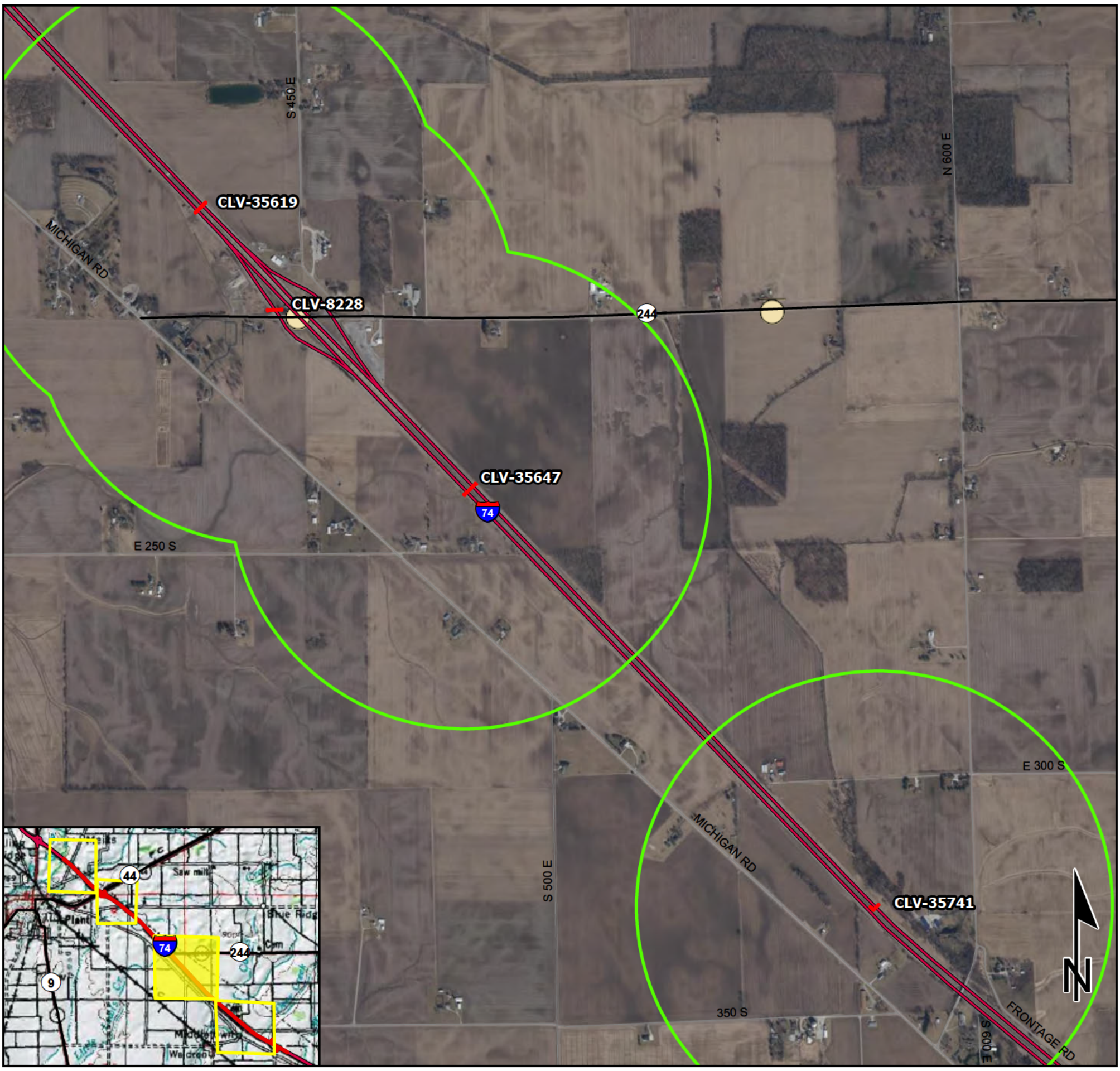

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0.25 0.13 0 0.25 Miles

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Red Flag Investigation - Hazardous Material Concerns

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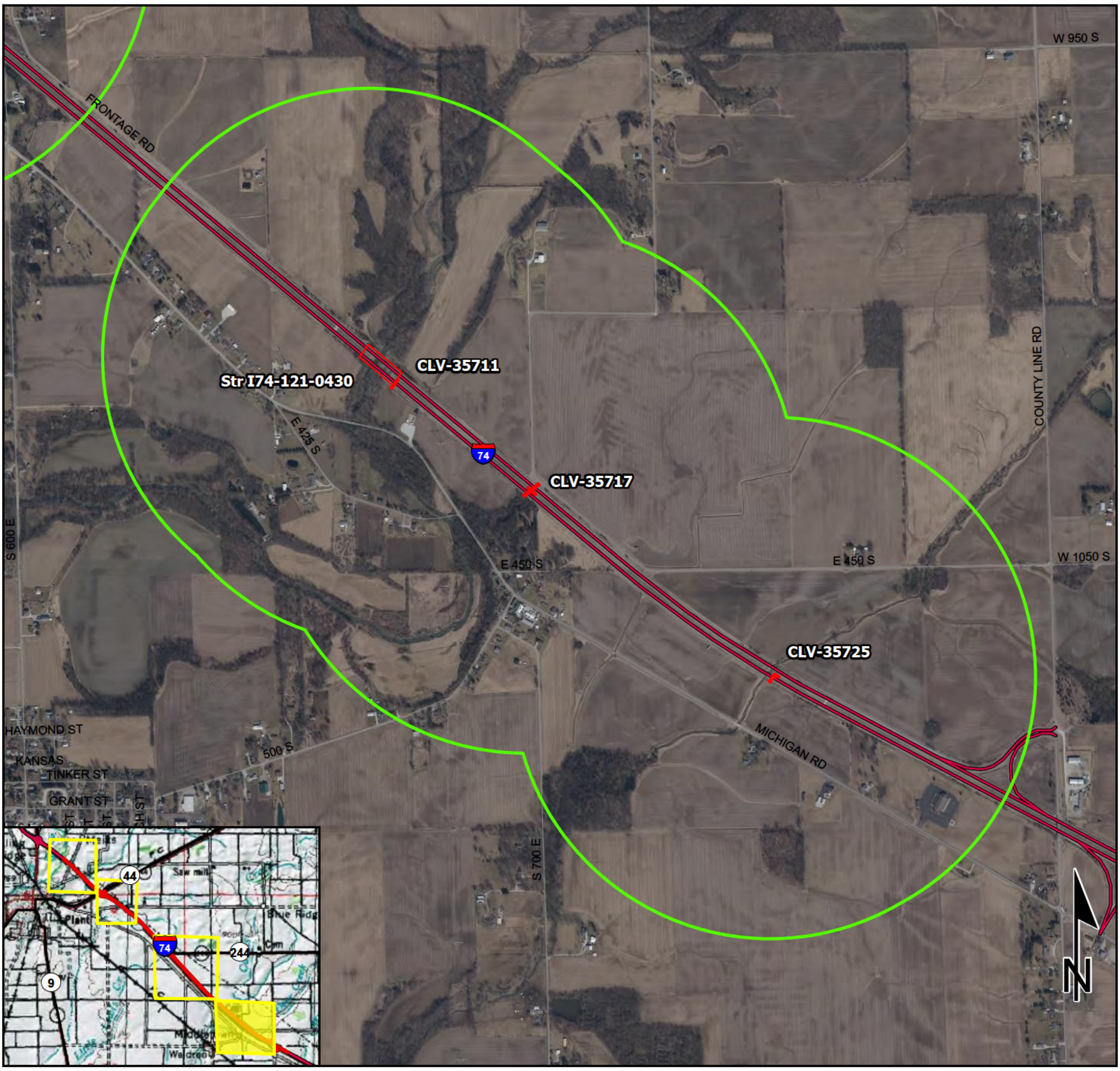
Shelby and Decatur Counties, Indiana



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0.25 0.13 0 0.25 Miles

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Map Projection: UTM Zone 16 N **Map Datum:** NAD83

APPENDIX D

RED FLAG INVESTIGATION ADDENDUM GUIDANCE

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 463-6848
(855) INDOT4U

Eric Holcomb, Governor
Michael Smith, Commissioner

Date: month, day, year

To: Site Assessment & Management
Environmental Policy Office – Environmental Services Division
Indiana Department of Transportation
100 N Senate Avenue, Room N642
Indianapolis, IN 46204

From: Requestor's Name
Company or District Name
Address
City, State
e-mail

Black text = template
Blue text = example language
Red text = guidance material
Green text = fill in information

Re: RED FLAG INVESTIGATION ADDENDUM
DES #XXXXXX, State Project / LPA Project
Project description
Road, Location Description
Name County, Indiana

A review of the original RFI signed on (date), for the above DES # indicated substantive changes have occurred within the project area limits that will impact the project. Brief description of project or updates following the approval of the original RFI (for example, project scope, project extent, depth of excavation, etc. Please be clear and concise regarding the changes to the project).

Note: An RFI addendum is needed if there will be additional impacts to the project area that weren't captured on the original RFI. If no additional impacts are expected, no RFI addendum is needed - you can note in the NEPA document that you completed a review to make this determination.

The following features and/or items were not detailed in the original RFI document (date) but have since been identified as having an impact on the project area and requiring additional coordination. This document should be attached to the original, signed RFI (The RFI may not be signed if the project is an LPA).

1. Infrastructure –
   Cemeteries: As indicated above, the project extents have expanded to include storm sewer installation activities approximately 0.25 mile north of Broadway Street. As such, the _____ Cemetery identified in the original RFI (date), is now adjacent to the project area. Coordination with INDOT Cultural Resources will occur.

2. Hazardous Material Concerns –

LUST: (Facility name, address, and AI#). This site is located adjacent to the project area at the intersection of First and Main Street. The initial RFI (date), indicated that a No Further Action Approval letter had been issued and no impact was expected; however, after re-checking the IDEM VFC, the facility had an emergency response on (date) that resulted in a release of free product likely extending into the project area. Coordination with IDEM will occur and proper handling, removal, and disposal of soil and/or groundwater will be necessary.

3. Ecological Information: A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is in a commercial area. The (date), inspection report for Culvert (#) states that no evidence of bats was seen or heard under the culvert. Preparation of the Scoping Sheet for the Indiana Bat and Northern Long-Eared Bat Range-Wide Programmatic Information Consultation will be required.

Prepared by: _____(Signature)
Name of Document Preparer
Job title
Organization

QA/QC Completed by: _____ (Signature)
Name of Consulting Firm's Secondary Reviewer
Job Title
Organization

INDOT ESD concurrence: _____(Signature)

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES or N/A

INFRASTRUCTURE: YES or N/A

WATER RESOURCES: YES or N/A

MINING/MINERAL EXPLORATION: YES or N/A

HAZARDOUS MATERIAL CONCERNS: YES or N/A

APPENDIX E

ARCGIS PRO GUIDANCE

ArcGIS Pro Guidance: Red Flag Investigation

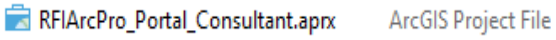
INDOT Environmental Services Division

Site Assessment & Management Team

Contents

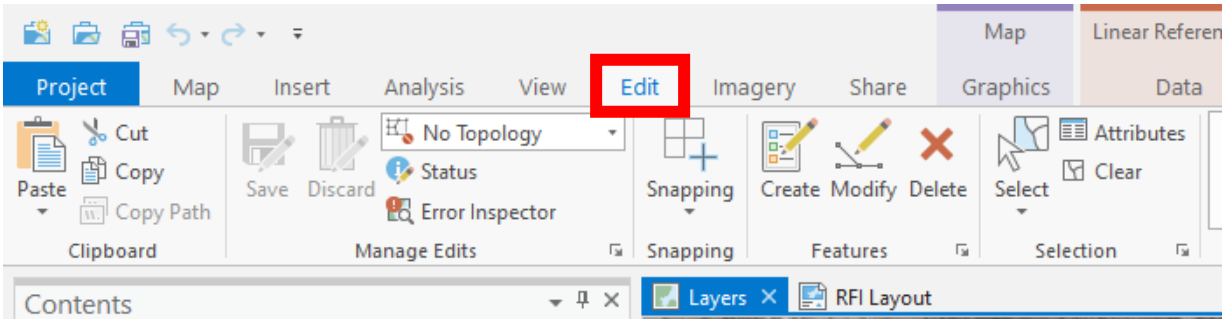
Accessing the Red Flag Investigation Map

- Go to the INDOT Environmental Services Site Assessment & Management website: https://www.in.gov/indot/engineering/environmental-services/environmental-policy/site-assessment-and-management/
- Click Red Flag Investigation Template ArcGIS PRO → save file to desktop.
- Right click folder and click extract all → open folder and click RFIArcPro_Portal_Consultant.aprx:



Finding a Project Site

- Verify you are in the Layers tab to create project area; you will use the RFI layout tab to create the map PDF's later.

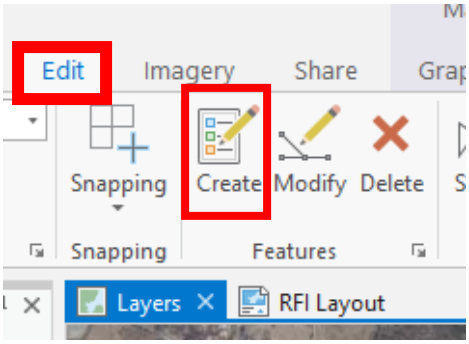


- Find the project site on the map using the zoom +/- tools.

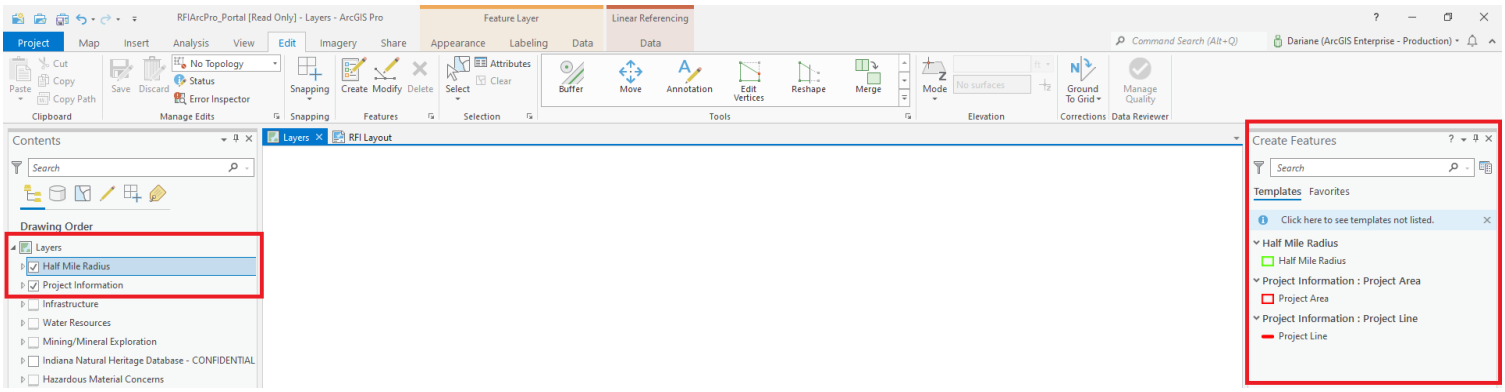
Creating A Project Area

Step 1 – Create Area

- Click the Edit tab on the topmost ribbon.
- Select the create feature for either a line or polygon.
  - Select feature class – turn on half mile buffer layer and project information layer.



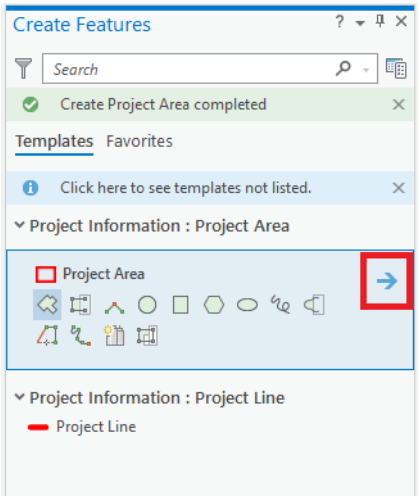
- Draw the feature and double click to finish.

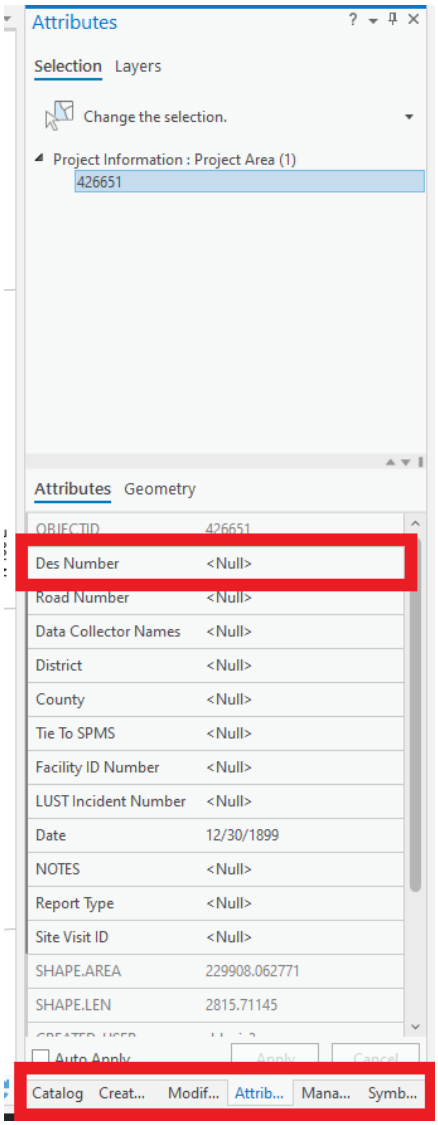


- Click on project area line or polygon to isolate. The half mile buffer will turn cyan if selected.

Step 2 – Add DES Number to Area

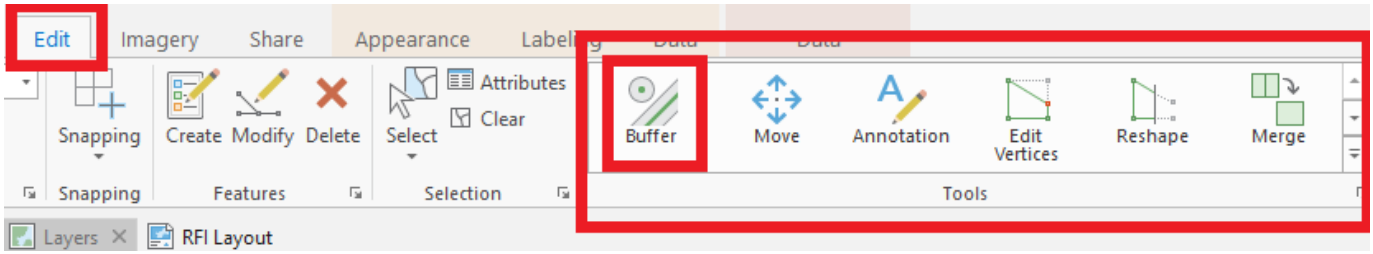
- Select project area and right click to open Attribute table.
- Enter DES number in associated field.



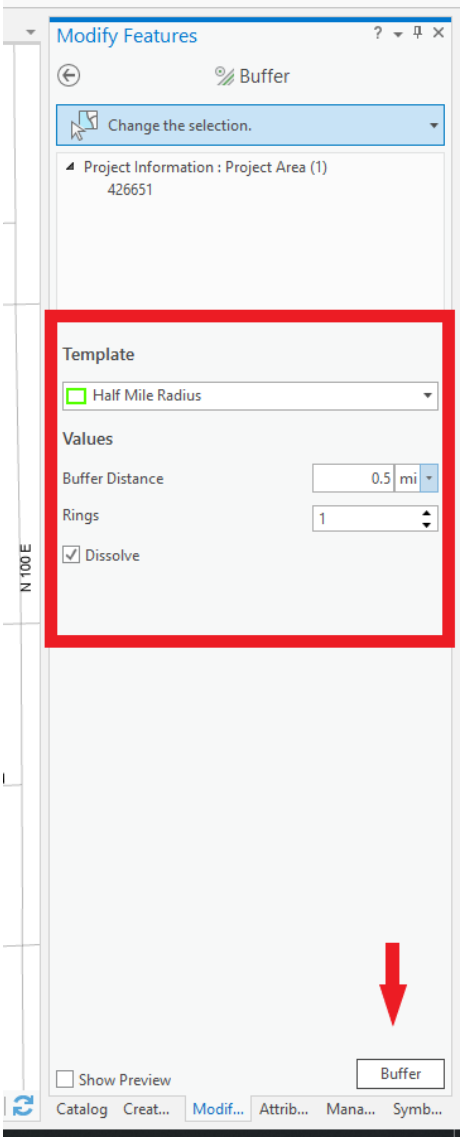


Step 3- Generating Buffer

- Click the Edit tab
- Select Tools
    - Scroll to find Buffer option in the tool list (See Other Useful Functions section to see how to make the Buffer option a favorite tool)

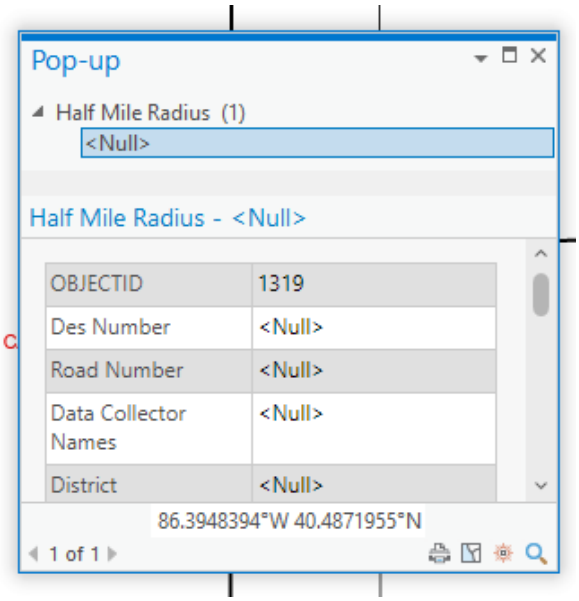


    - Select Buffer → Template = Half Mile Radius
    - Enter 0.5 mile value

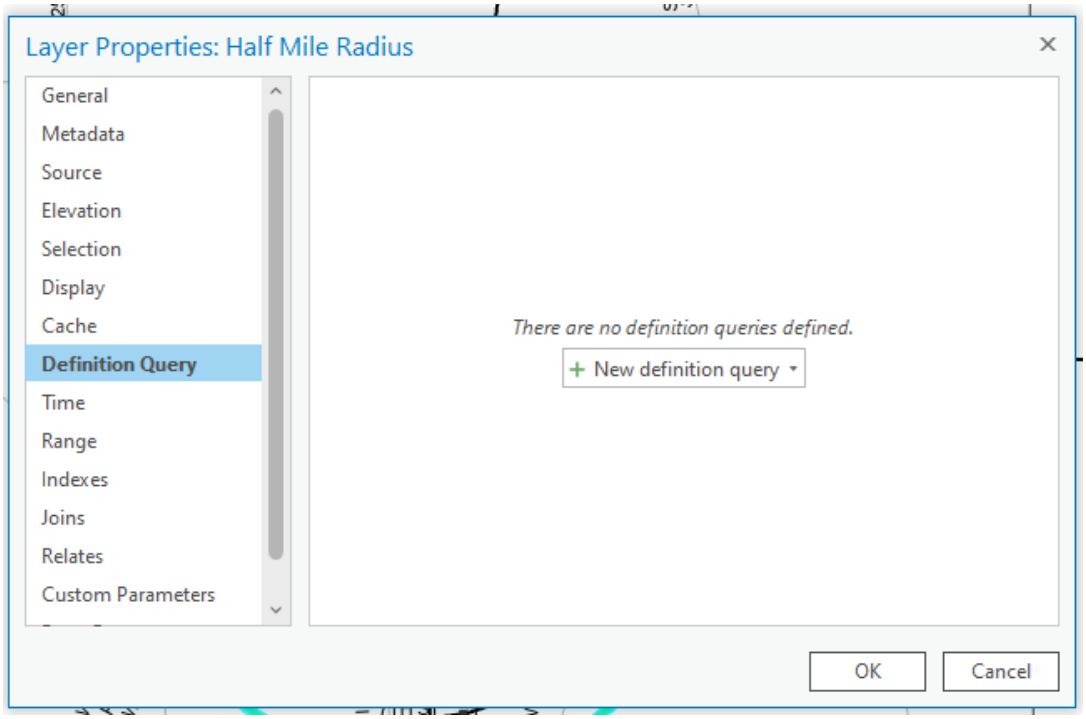


Step 4 – Selecting and Isolating Project Areas and Buffers

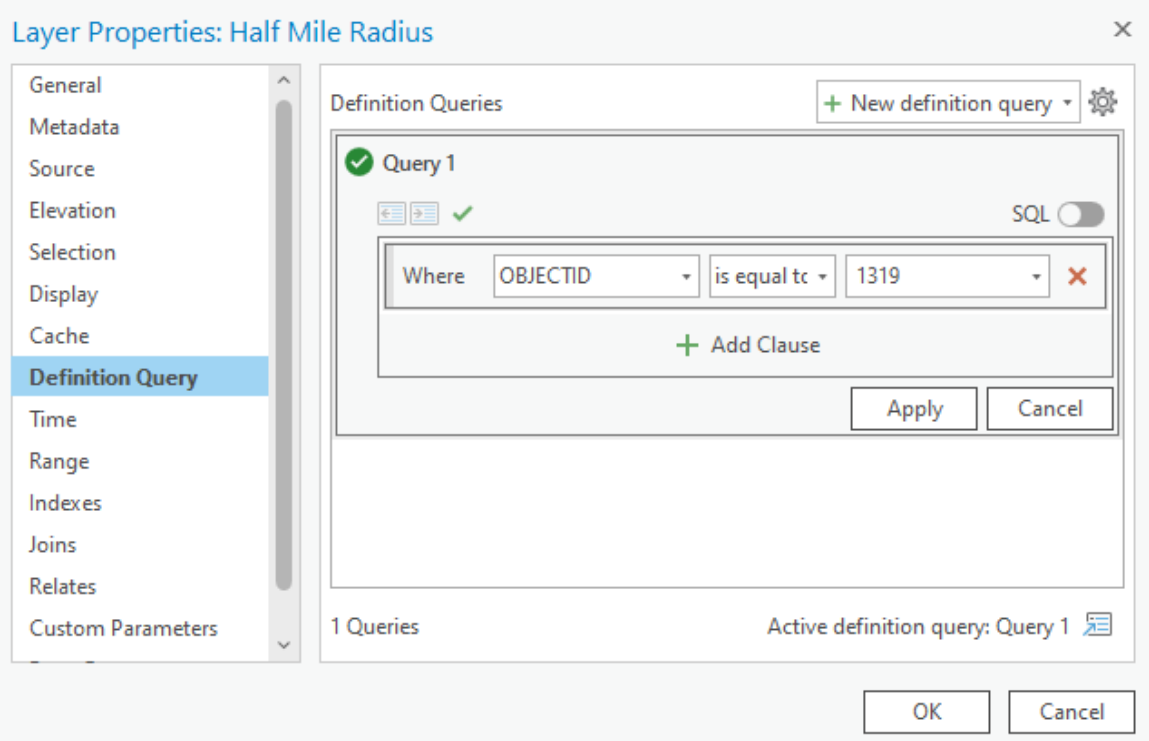
- Select and highlight in cyan the half mile buffer, an attribute table will pop up containing the object ID



- Once you record the object ID, select the half mile buffer layer and right click, and select properties
- Scroll down to definition query

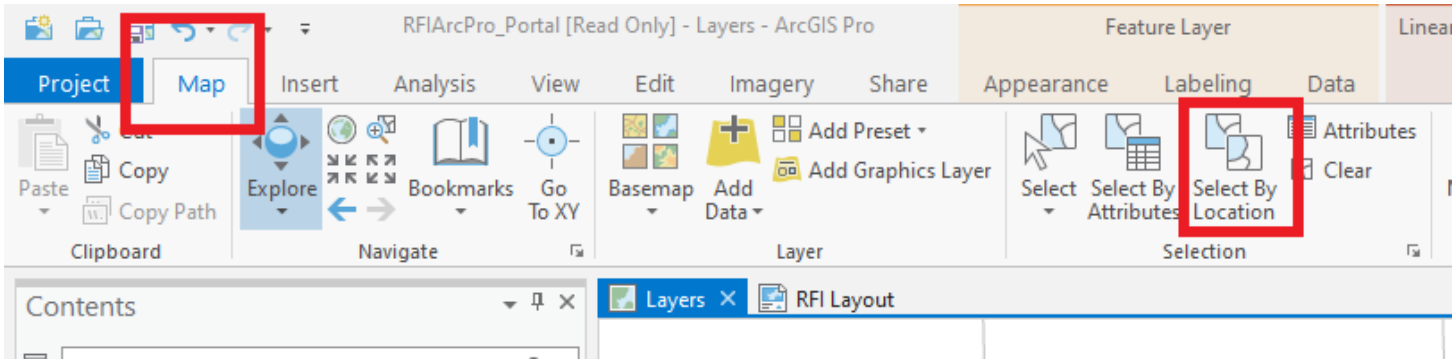


- Select new definition query, add the object ID of the buffer, click apply
    - This can be done to isolate multiple project areas and buffers

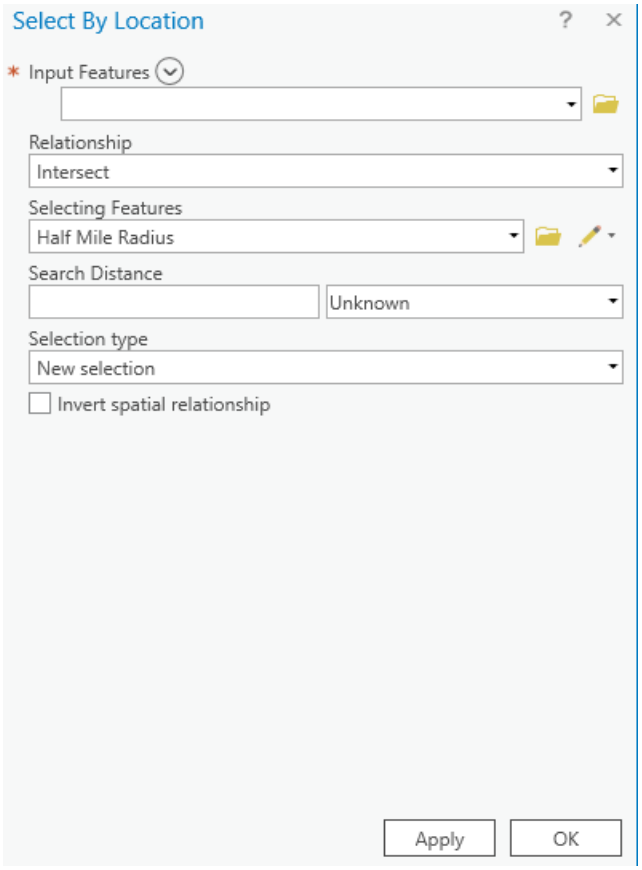


Step 5 – Creating a Resource Attribute Table

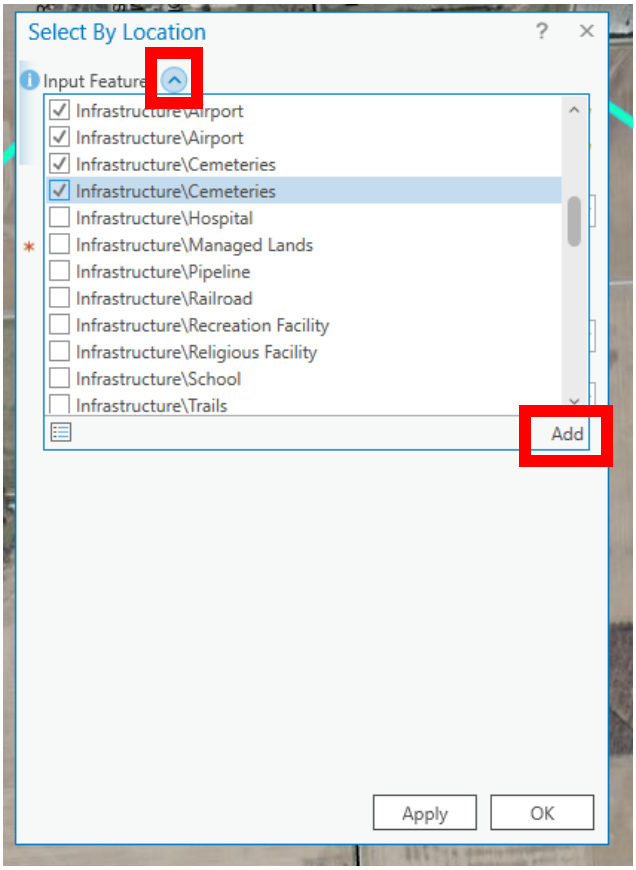
- Resources include the surrounding project area's infrastructure, water resources, mining and mineral, hazmat, etc.
- The attribute tables are used to obtain the number of each resource mapped within the 0.5 mile search radius of the project area.
- Select Map tab
- Select by location



- Input features
  - Use the drop down function to select all features needed in the query or select the down arrow next to "Input Features", select all boxes needed in the query and select the add button in the bottom right corner.

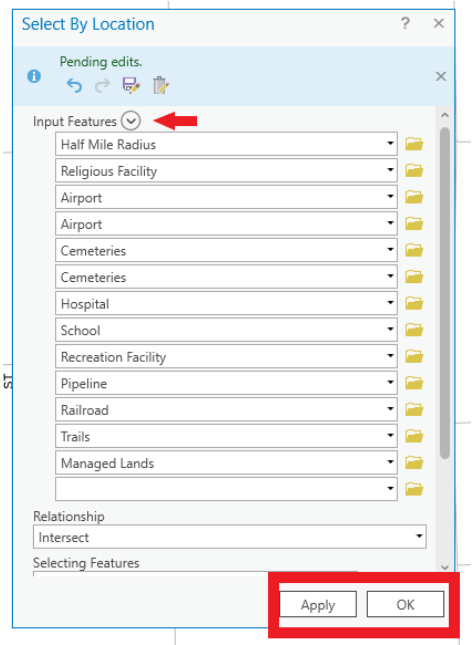


^Good option for individual feature searching



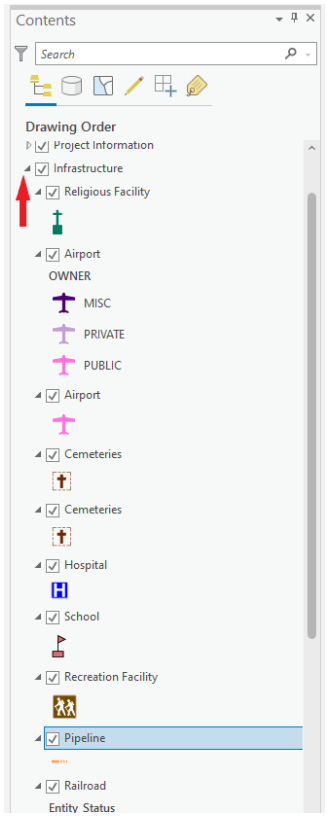
^Good option for bulk feature selections

- Relationship = intersect
- Selecting Feature = Half Mile Radius
- Leave Search Distance Blank
  - Note: the image and transportation layers should be unchecked
- Click Apply or OK button

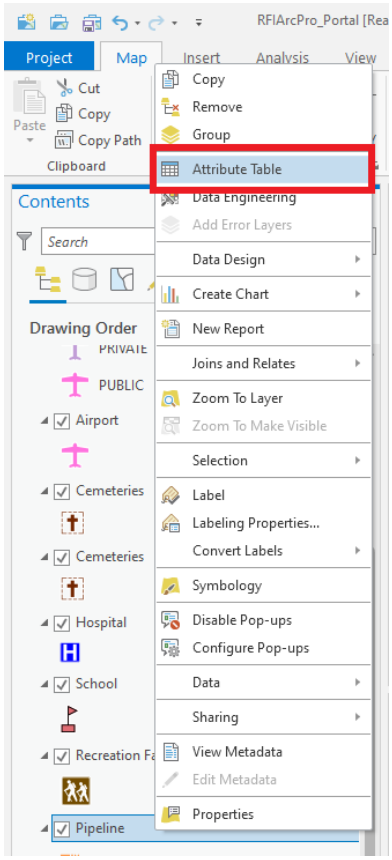


- To see the number of intersecting features in 0.5 mile buffer
  - View layers in right side column

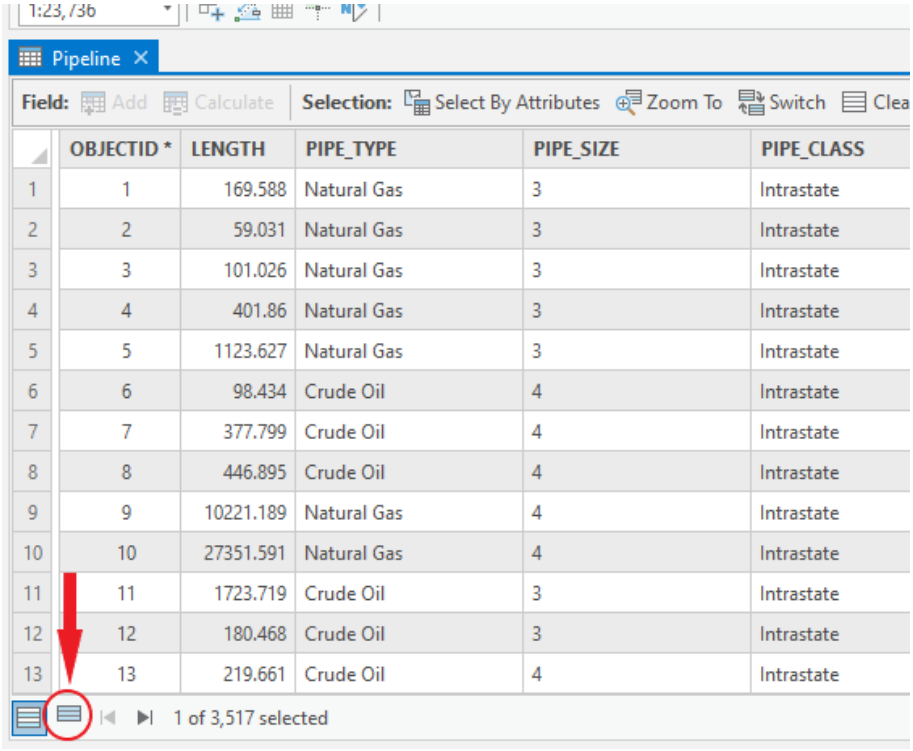
- Click on wanted layer



- Right click on layer and other options will pop up, select attribute table

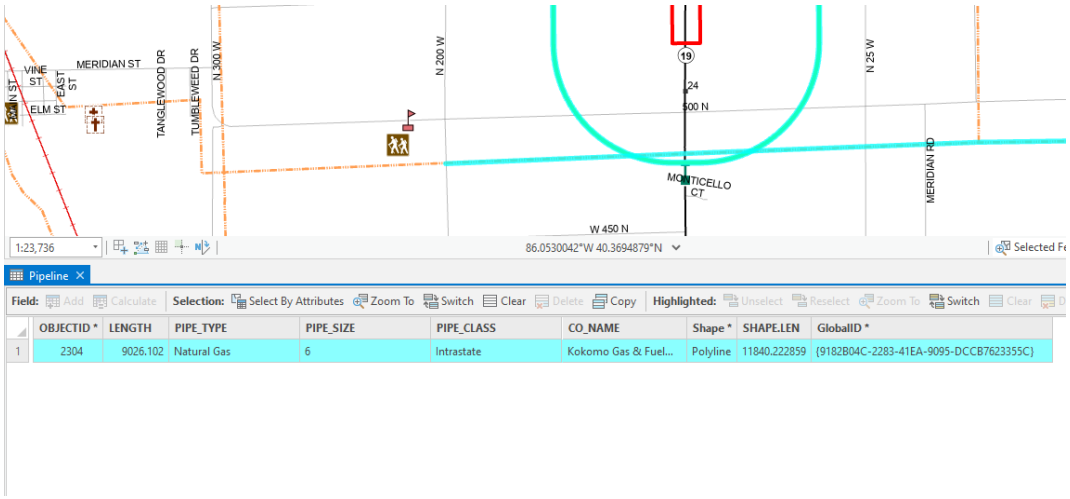


- The attribute table will pop up, in order to see only the features intersecting your buffer, select the second tab with four lines



	OBJECTID *	LENGTH	PIPE_TYPE	PIPE_SIZE	PIPE_CLASS
1	1	169.588	Natural Gas	3	Intrastate
2	2	59.031	Natural Gas	3	Intrastate
3	3	101.026	Natural Gas	3	Intrastate
4	4	401.86	Natural Gas	3	Intrastate
5	5	1123.627	Natural Gas	3	Intrastate
6	6	98.434	Crude Oil	4	Intrastate
7	7	377.799	Crude Oil	4	Intrastate
8	8	446.895	Crude Oil	4	Intrastate
9	9	10221.189	Natural Gas	4	Intrastate
10	10	27351.591	Natural Gas	4	Intrastate
11	11	1723.719	Crude Oil	3	Intrastate
12	12	180.468	Crude Oil	3	Intrastate
13	13	219.661	Crude Oil	4	Intrastate

- This second tab only shows the number of features intersecting or within the project area and/or half mile buffer

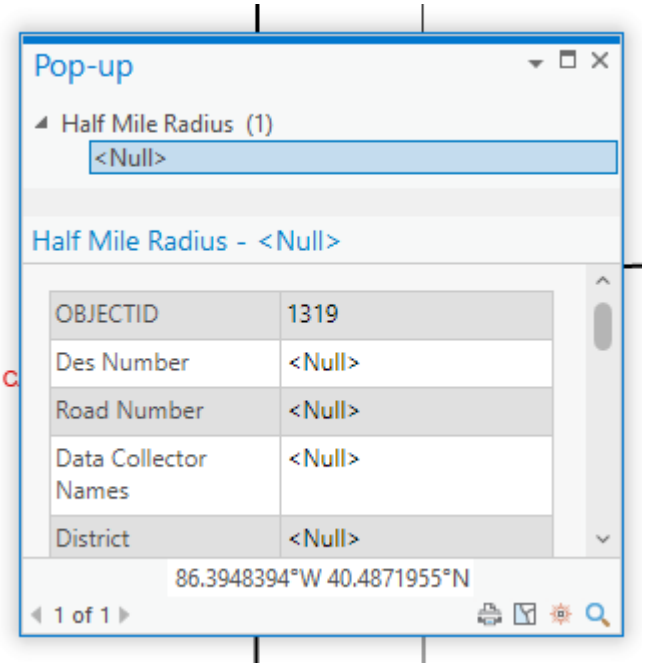


	OBJECTID *	LENGTH	PIPE_TYPE	PIPE_SIZE	PIPE_CLASS	CO_NAME	Shape *	SHAPE.LEN	GlobalID *
1	2304	9026.102	Natural Gas	6	Intrastate	Kokomo Gas & Fuel...	Polyline	11840.222859	{9182B04C-2283-41EA-9095-DCCB7623355C}

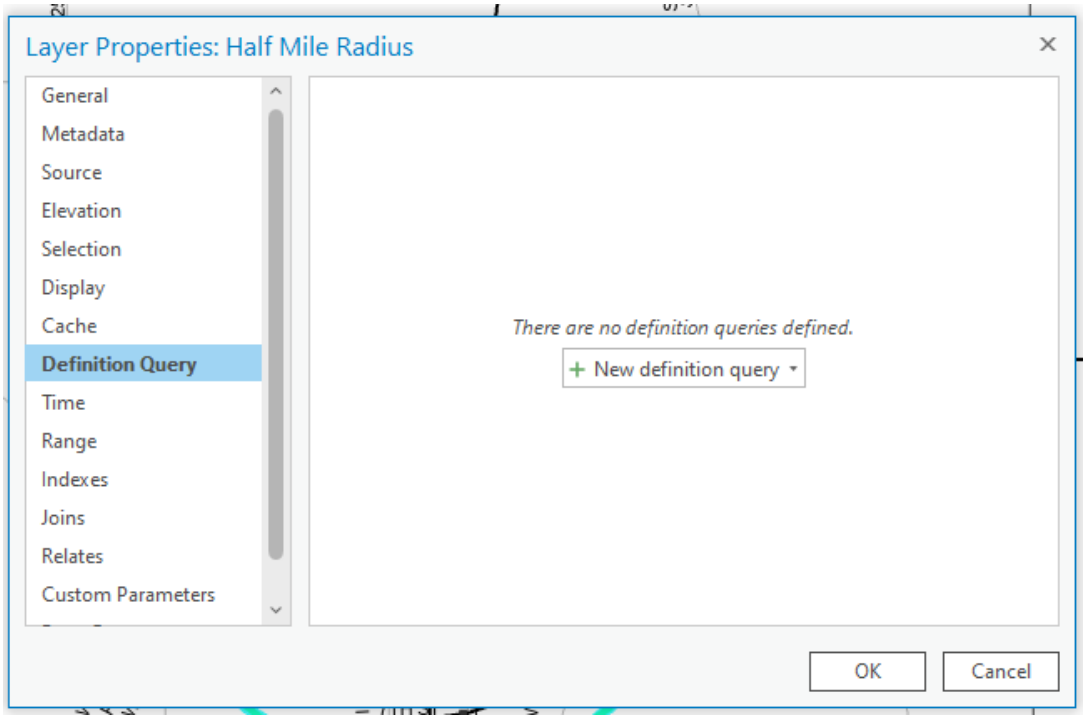
Other Useful Functions

Selecting and Isolating Multiple Project Areas

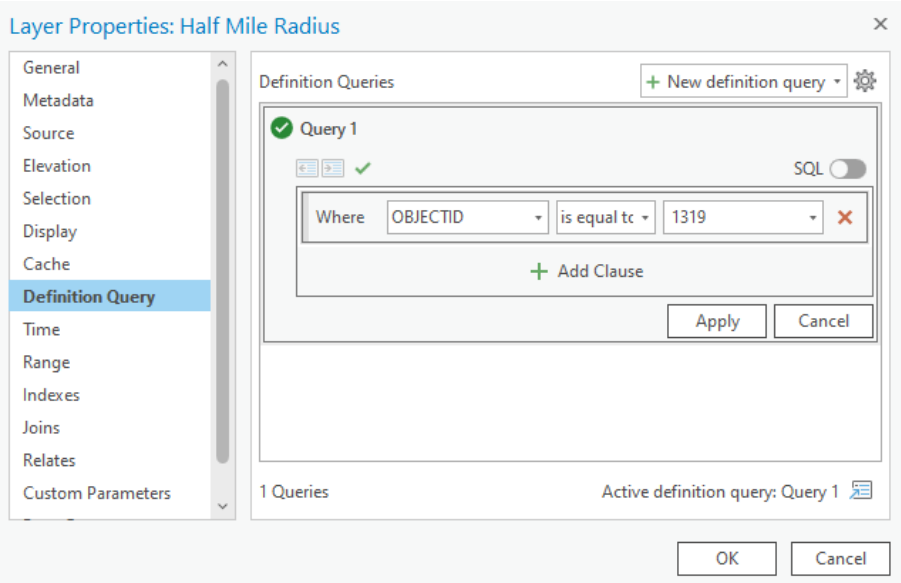
- Select and highlight in cyan the half mile buffer, an attribute table will pop up containing the object ID



- Once you record the object ID, select the half mile buffer layer and right click, and select properties
- Scroll down to definition query

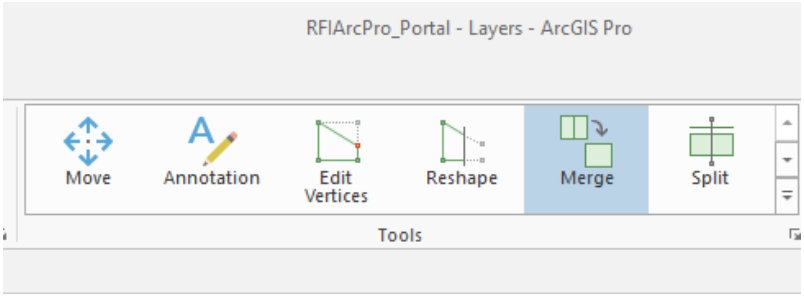


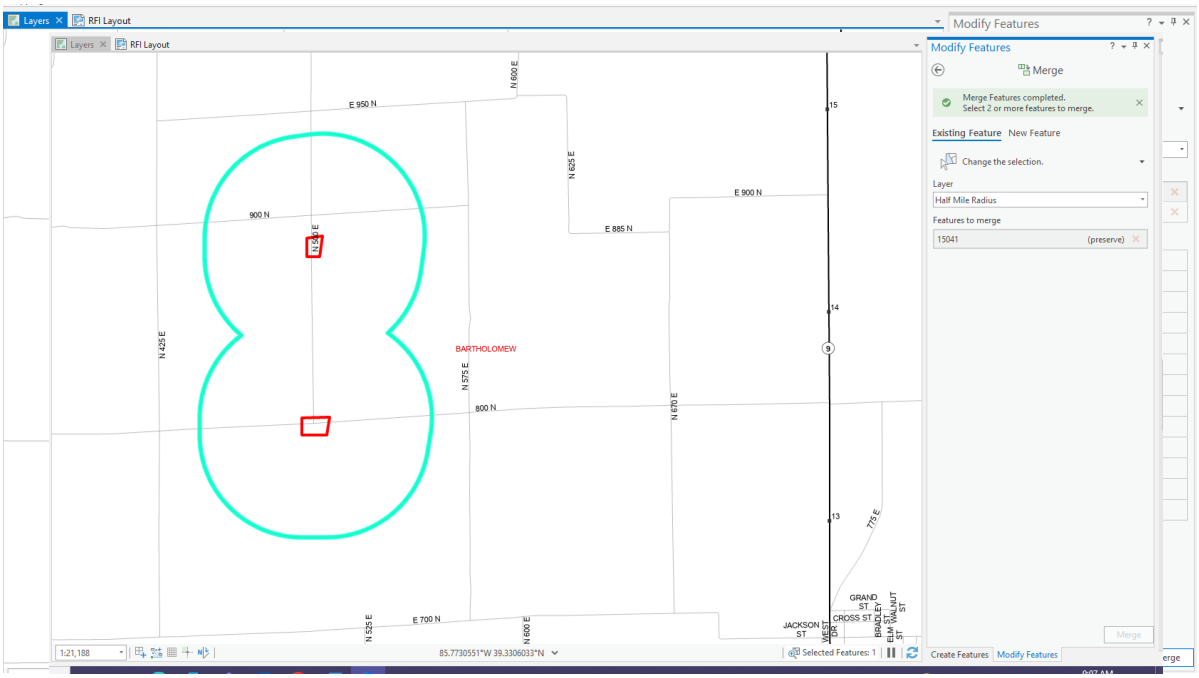
- Select new definition query, add the object ID of the buffer, click apply
  - This can be done to isolate multiple project areas and buffers



Merging Half Mile Buffer

- Select Edit tab
- Select the Merge tool
- Select the features you want to merge until both buffers are cyan

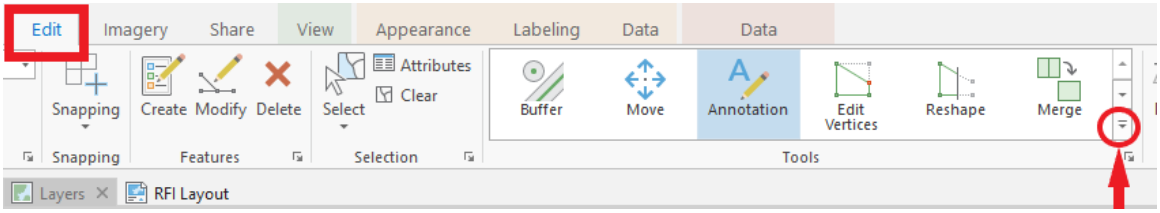




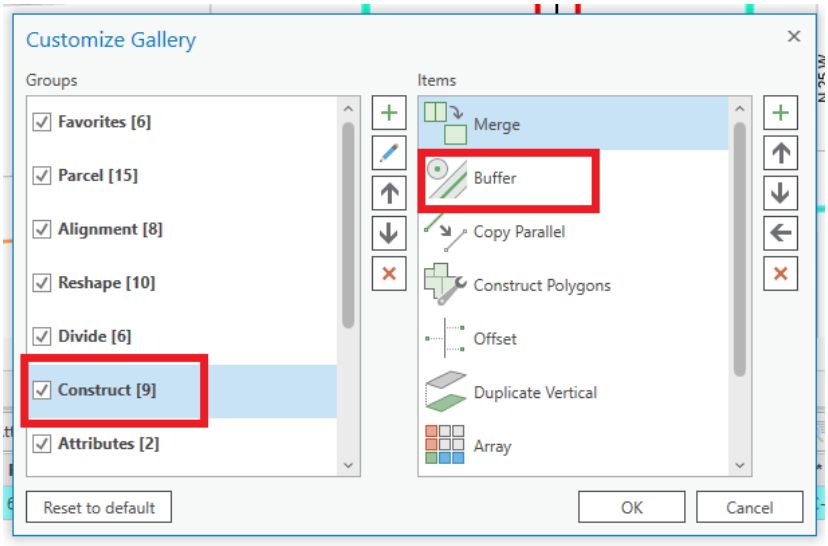
- Hold the shift key and click on each buffer. Then go to the bottom of the table and click ‘Merge’ button.

Adding Buffer Tool to Favorites

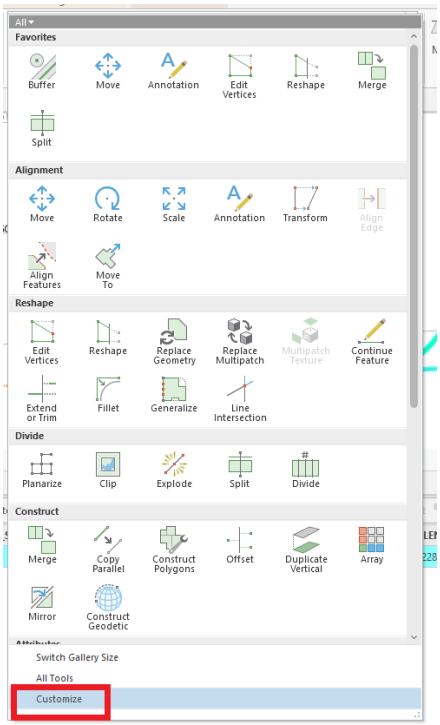
- Go to Edit tab
- Click the down arrow on the tool bar → select customize



- In the groups section, scroll down to the construct subsection (default section for buffer tool)



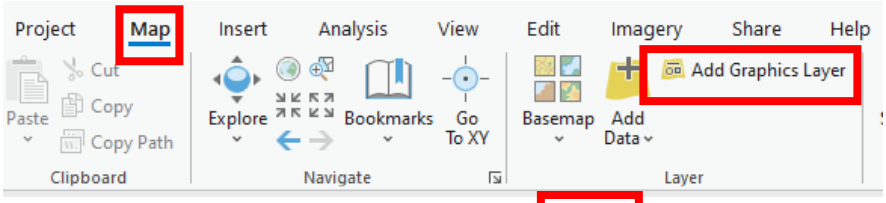
- Click the buffer tool and drag and drop into favorites section
- Then move favorites to the top of your groups list

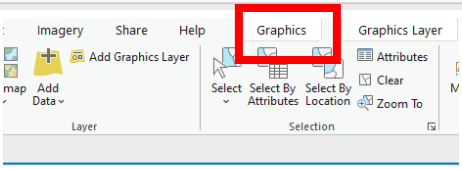


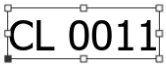
- Note: You can rearrange all your tools dragging and dropping in this section

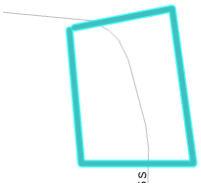
Adding Callouts

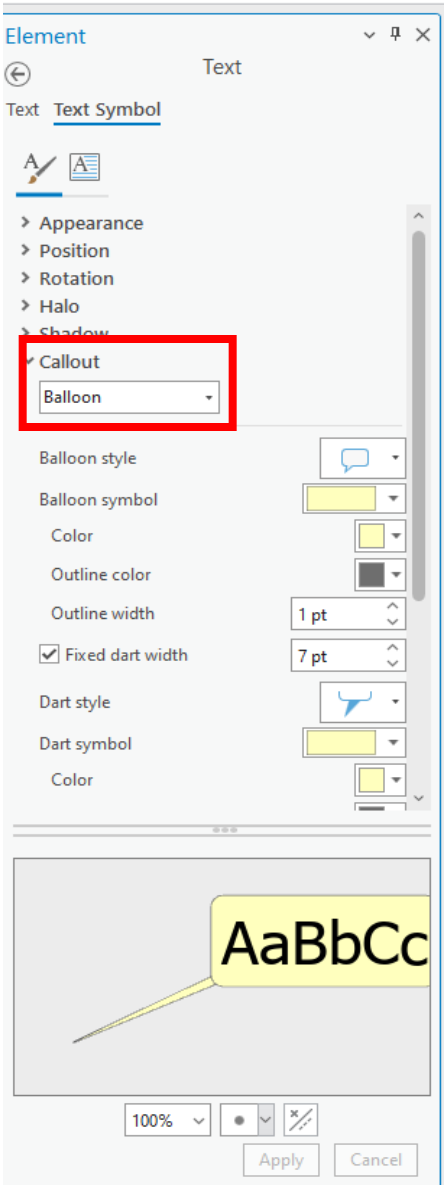
- Callout labels are helpful for identifying multiple pipe numbers on maps.
- To add a call out go to the Map Tab -> select Add Graphics Layer
- A new tab labeled Graphics will pop up -> insert a text box







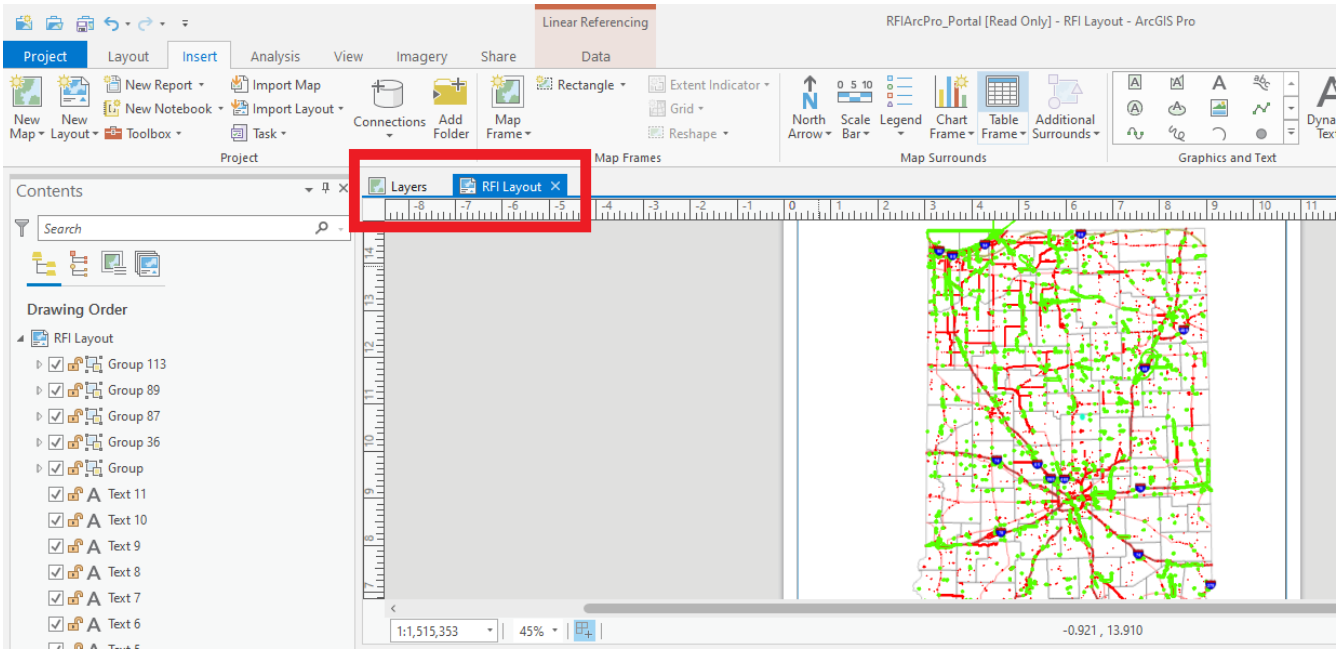




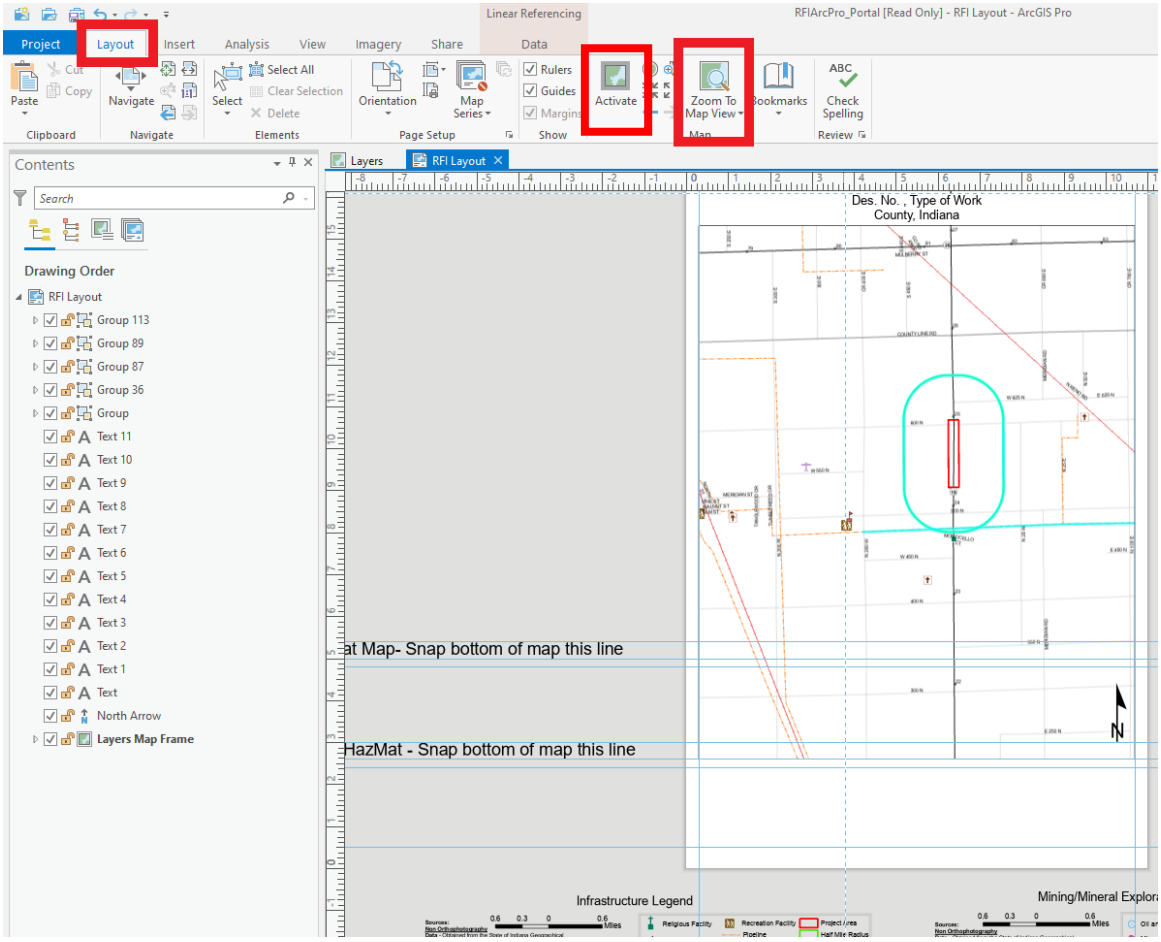
Generating RFI Maps

Step 1 – Switching to Layout View

- Switch from Layers tab to RFI Layout tab



- Select Layout tab, click Zoom to Map View tool, use the Activate tool to adjust your project area



Step 2- Updating Title Blocks

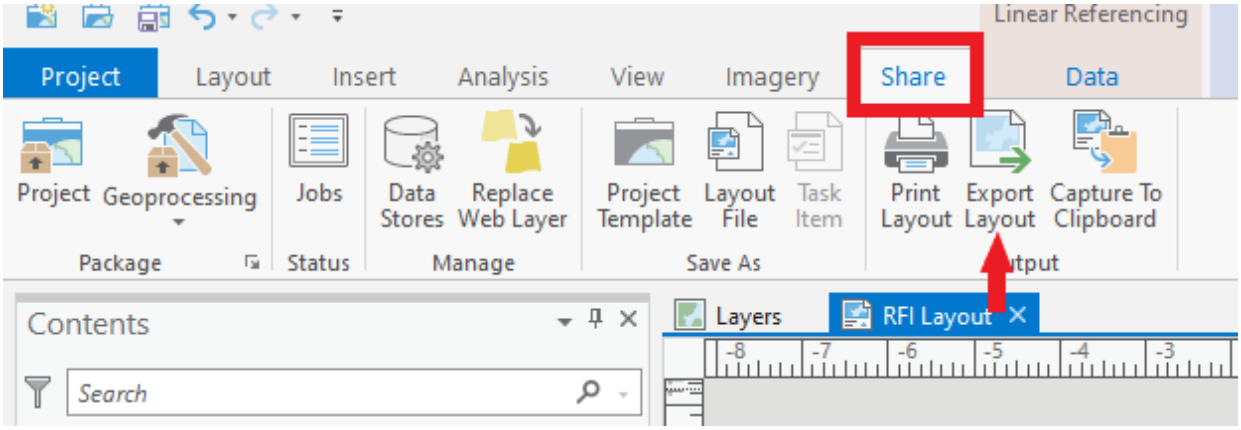
- Double click text box element
  - Format text box according to your project information

Step 3 – Adding Applicable Legends

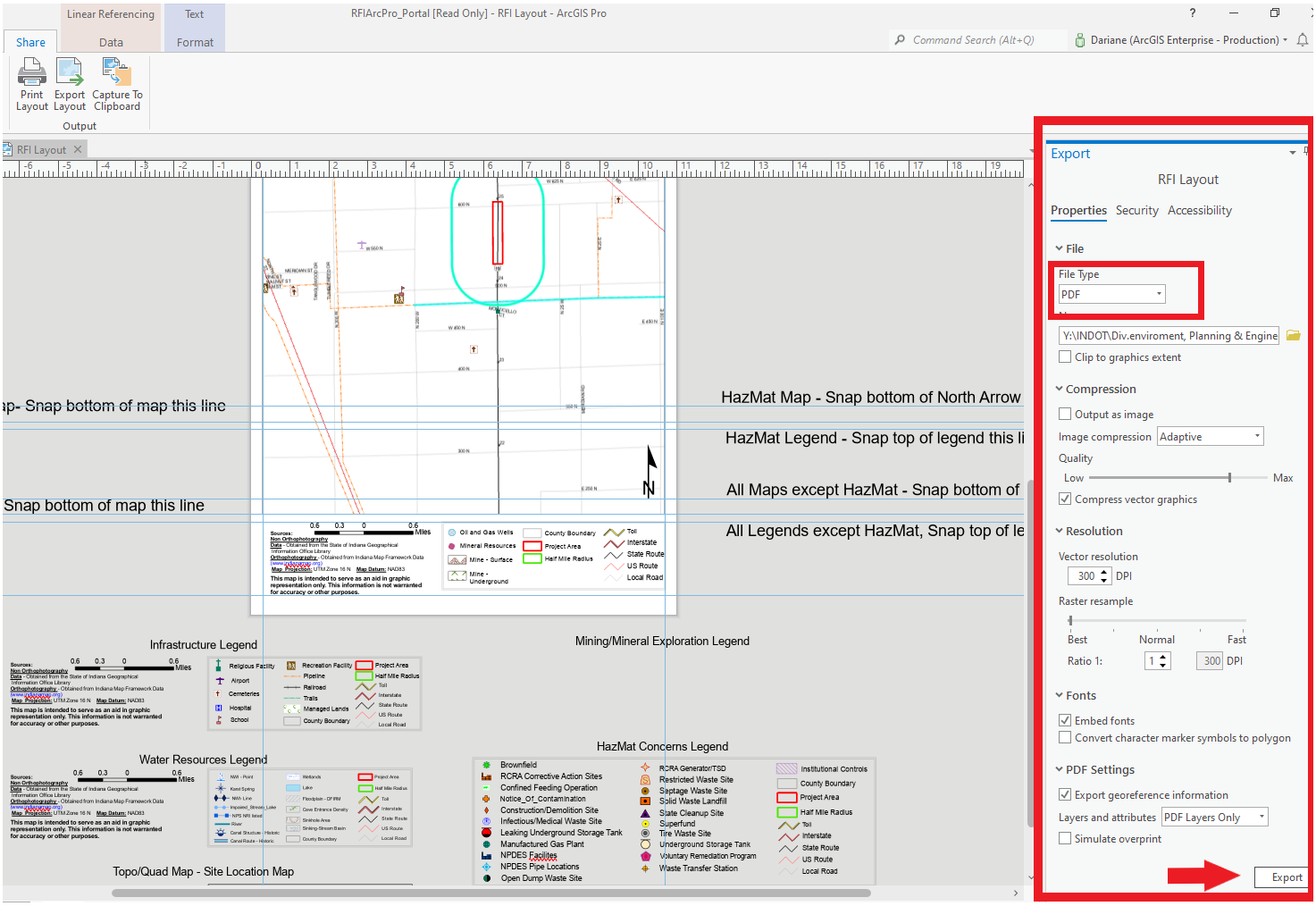
- Select legend elements and move onto page
  - Tip: Resizing the hazmat legend may be necessary due to the size

Step 4 – Printing the Files to PDF

- Go to Share tab



- Export Layout
- File Type = PDF
- Click export



ArcGIS Pro: Shapefile Instructions

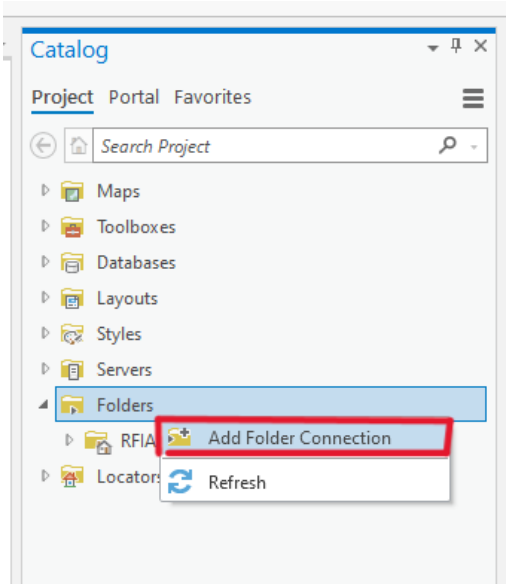
INDOT Environmental Services Division

Site Assessment & Management Team

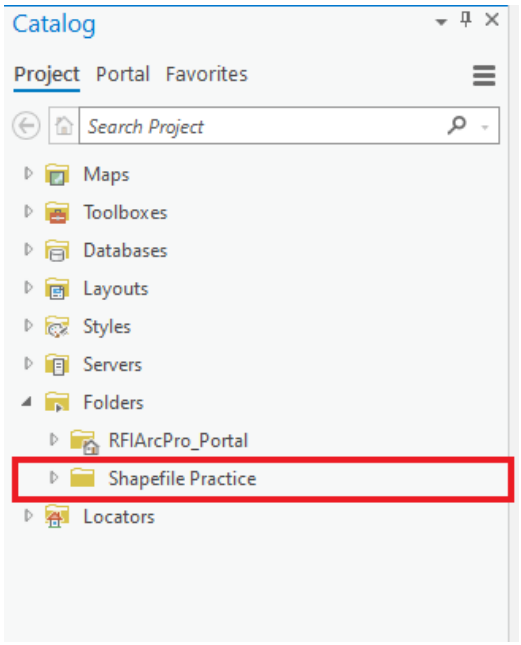
Contents

Create a Folder Connection

1. Open Arc Pro
2. Open Catalog pane
    a. Right click –> add folder connection



    b. Make a folder for your shapefile on your interface

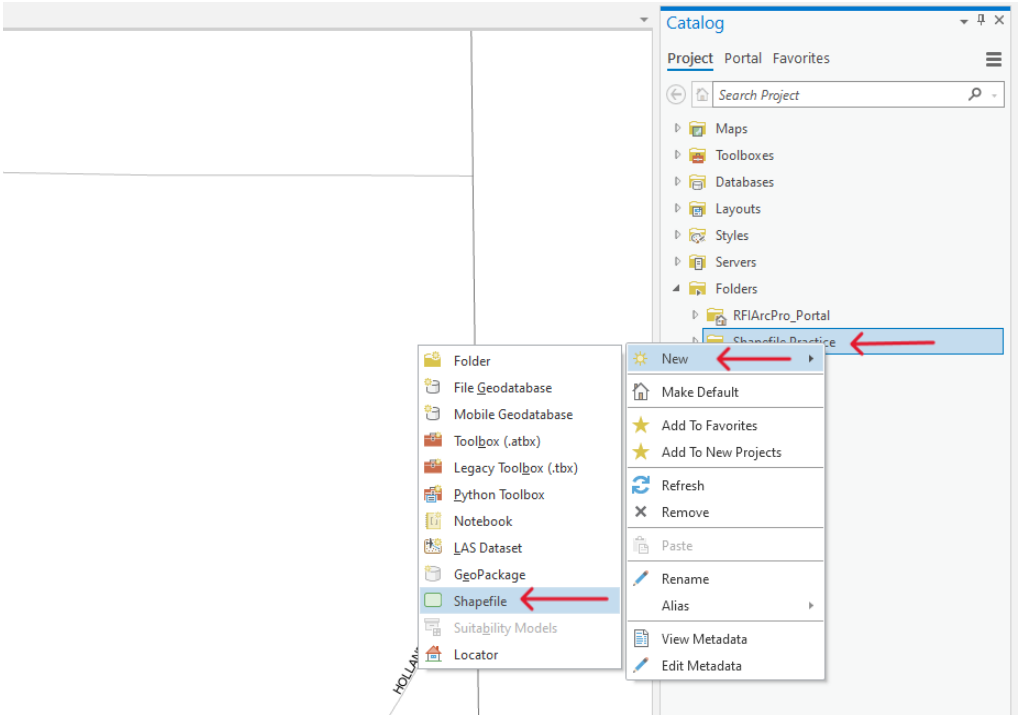


    c. Name a folder for the project and hit save
    d. Verify completion via Catalog page and open the folder drop down, you should see the folder you just created

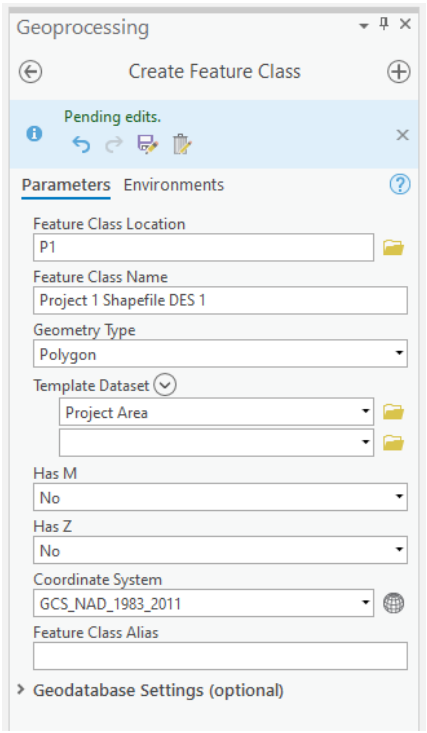
How to Create Shapefiles Two Ways

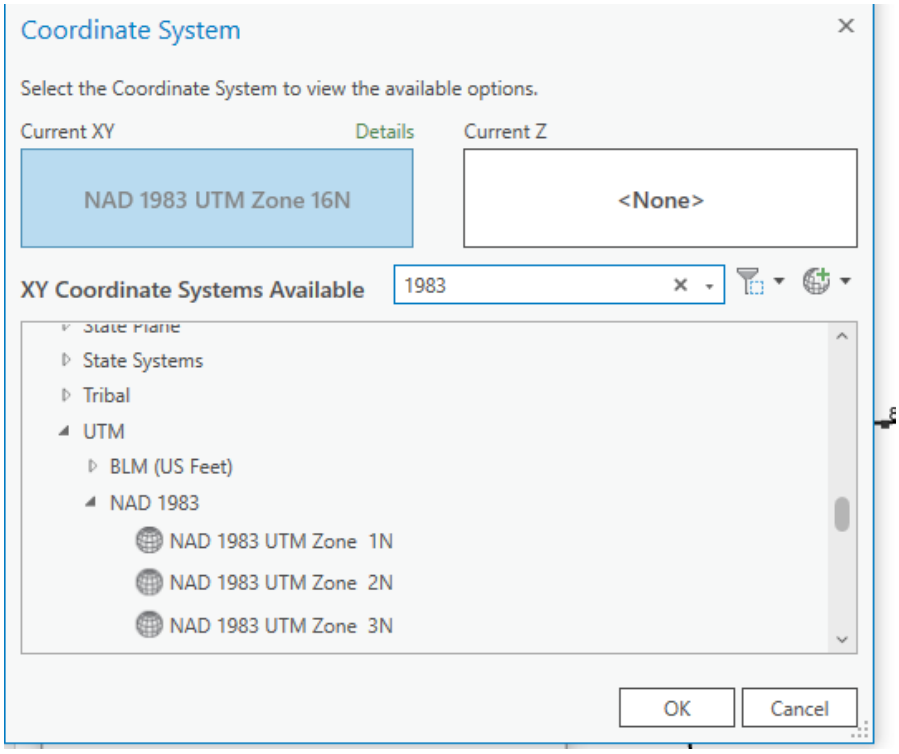
Option 1

1. Go to catalog –> select the folder you created –> right click –> new –> select Shapefile

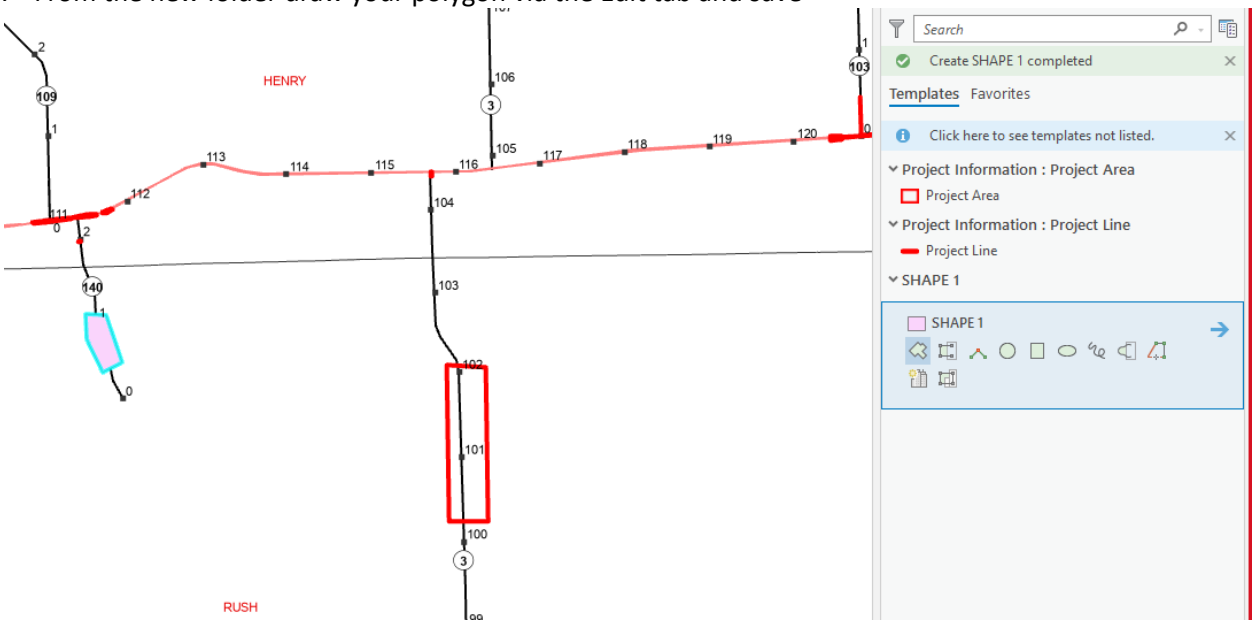


2. Update the shapefile information accordingly and click on the globe function to select the geographic coordinate system –> Projected Coordinate Systems -> UTM –> NAD 1983 UTM Zone 16N –> run



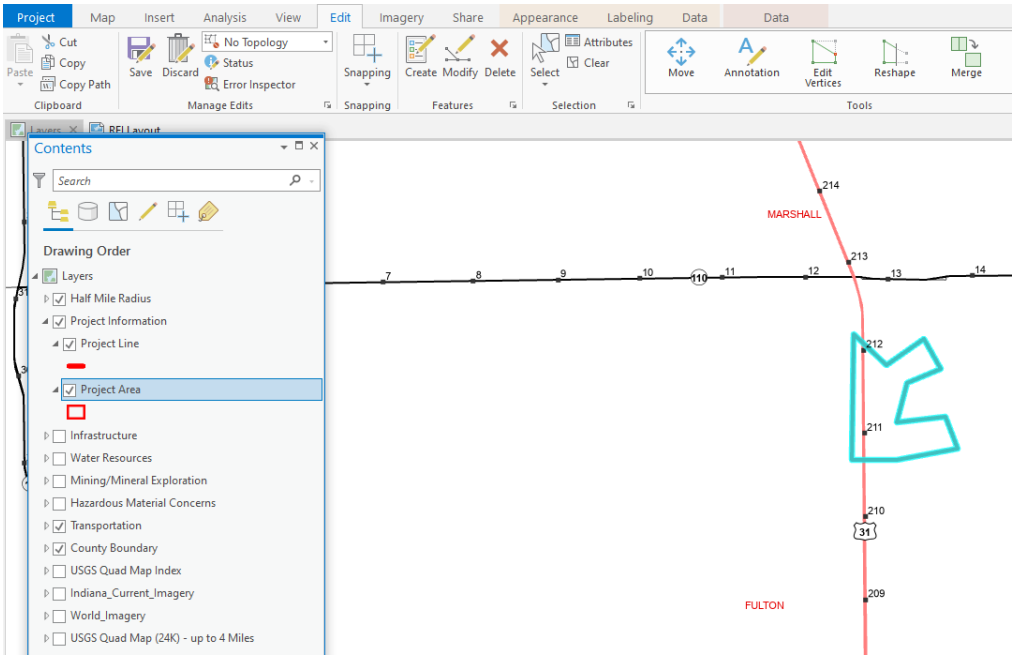


3. From the new folder draw your polygon via the Edit tab and save

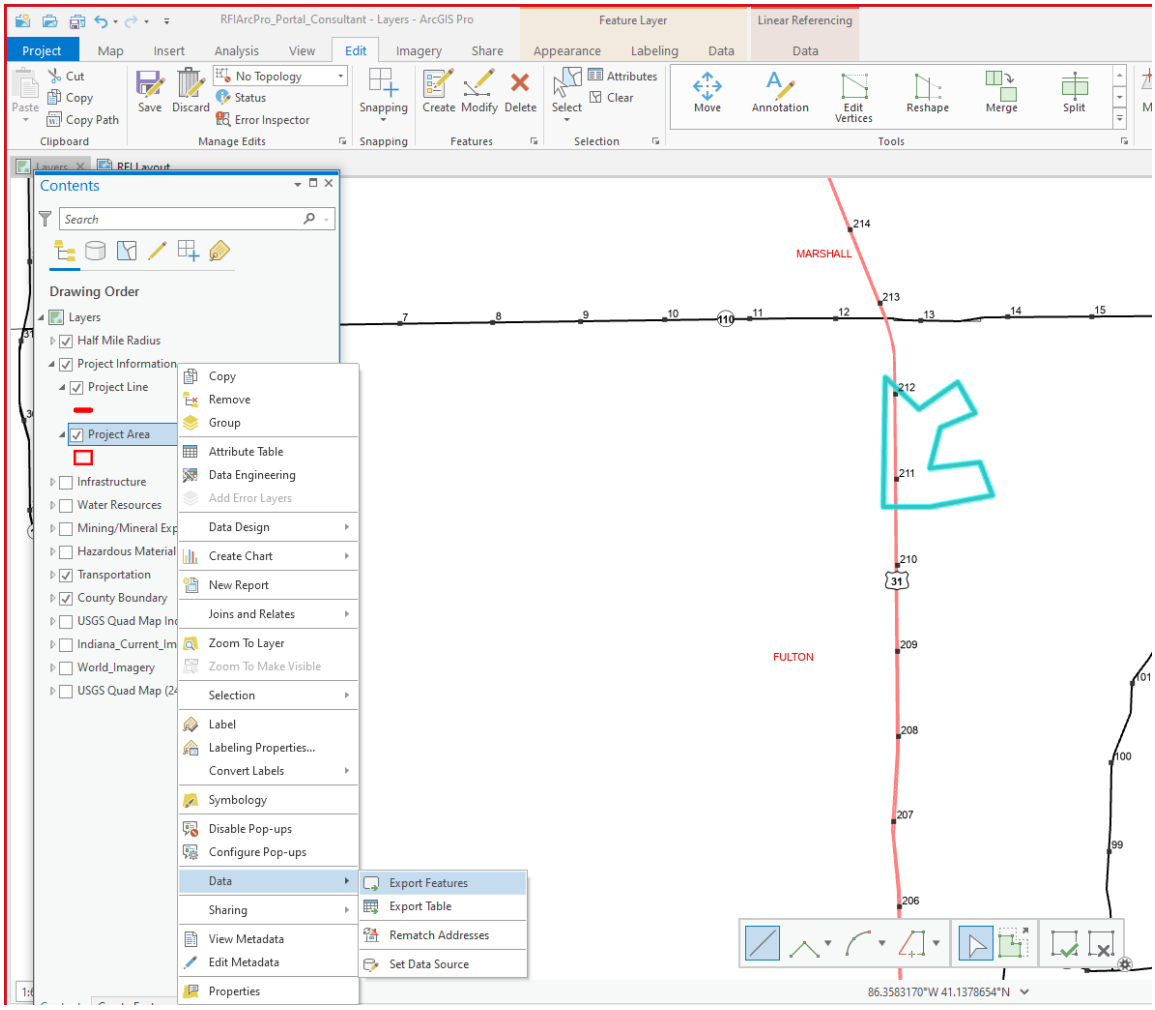


Option 2

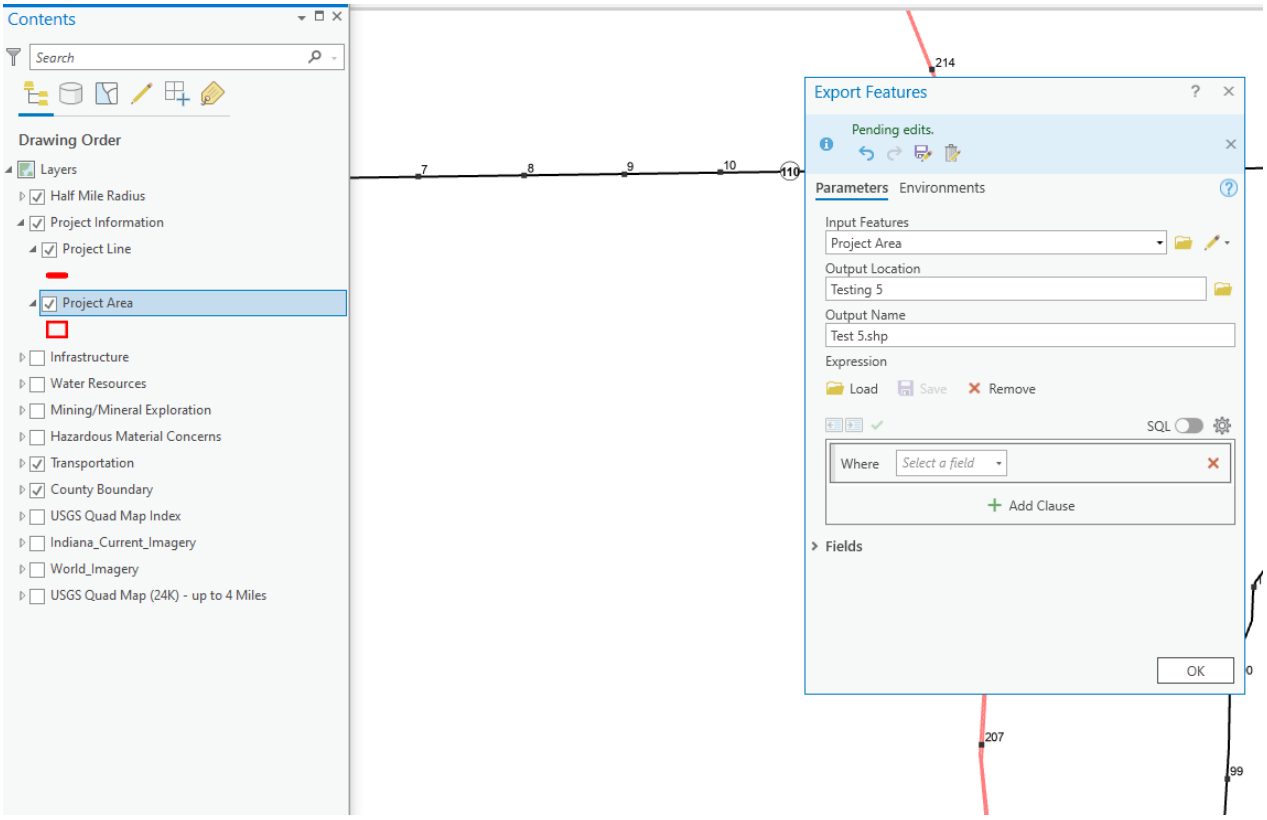
1. Draw a polygon via the Edit tab



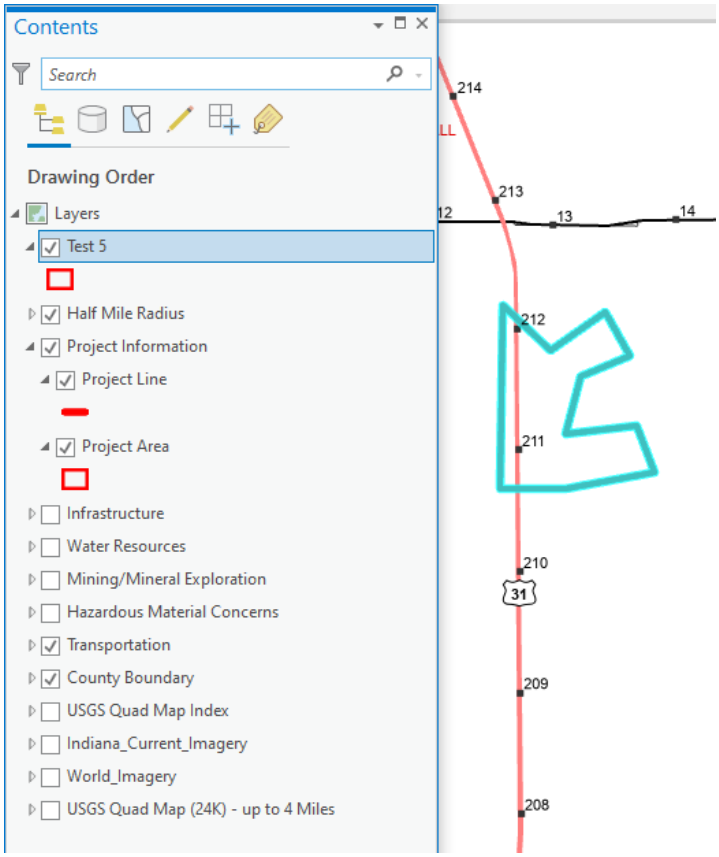
2. Right click on Project area -> data -> select export features


RFIArcPro_Portal_Consultant - Layers - ArcGIS Pro
Feature Layer
Linear Referencing
Project
Map
Insert
Analysis
View
Edit
Imagery
Share
Appearance
Labeling
Data
Data
Cut
Copy
Copy Path
Paste
Clipboard
Save
Discard
No Topology
Status
Error Inspector
Manage Edits
Snapping
Snapping
Create
Modify
Delete
Features
Select
Attributes
Clear
Selection
Move
Annotation
Edit Vertices
Reshape
Merge
Split
Tools
Contents
Search
Drawing Order
Layers
Half Mile Radius
Project Information
Project Line
Project Area
Infrastructure
Water Resources
Mining/Mineral Exp
Hazardous Material
Transportation
County Boundary
USGS Quad Map Inc
Indiana_Current_Im
World_Imagery
USGS Quad Map (24
Copy
Remove
Group
Attribute Table
Data Engineering
Add Error Layers
Data Design
Create Chart
New Report
Joins and Relates
Zoom To Layer
Zoom To Make Visible
Selection
Label
Labeling Properties...
Convert Labels
Symbology
Disable Pop-ups
Configure Pop-ups
Data
Sharing
View Metadata
Edit Metadata
Properties
Export Features
Export Table
Rematch Addresses
Set Data Source
MARSHALL
FULTON
214
213
212
211
210
209
208
207
206
7
8
9
10
110
11
12
13
14
15
31
101
100
99
86.3583170°W 41.1378654°N

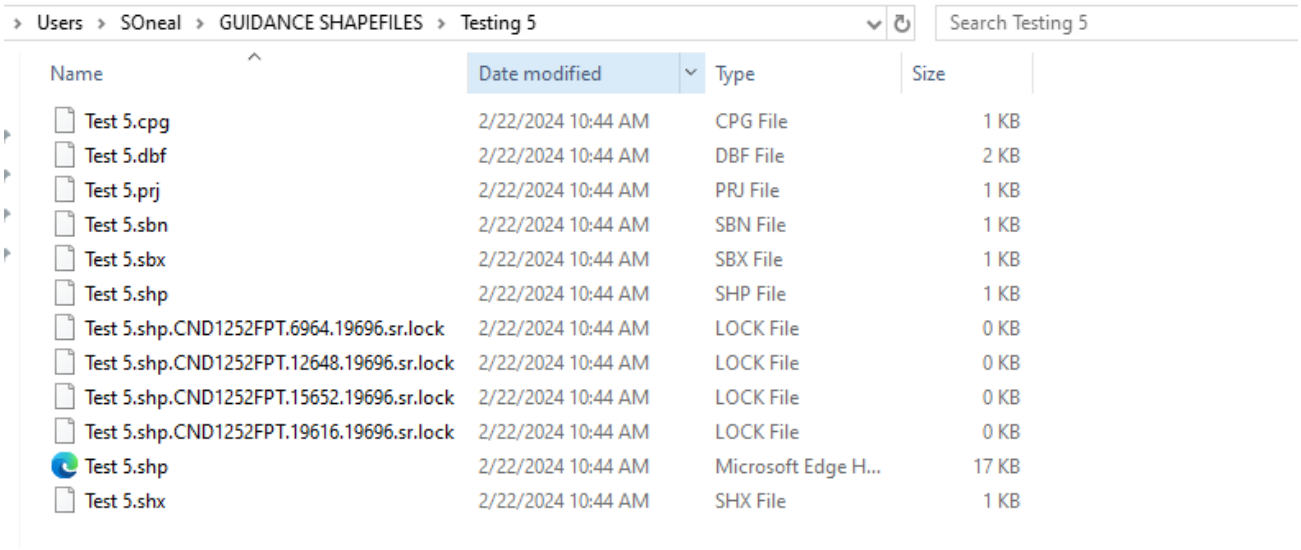
3. Update the Export Features pop up window with the Output folder location you want to save the shapefile in and then fill in the output name



4. After selecting ok the shapefile will appear in your contents layers

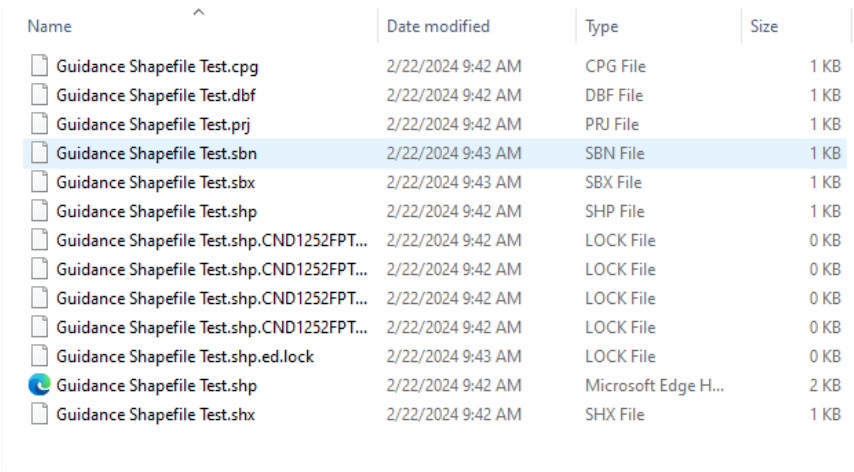


5. After completing the above step the shapefile will save in automatically into the folder you created

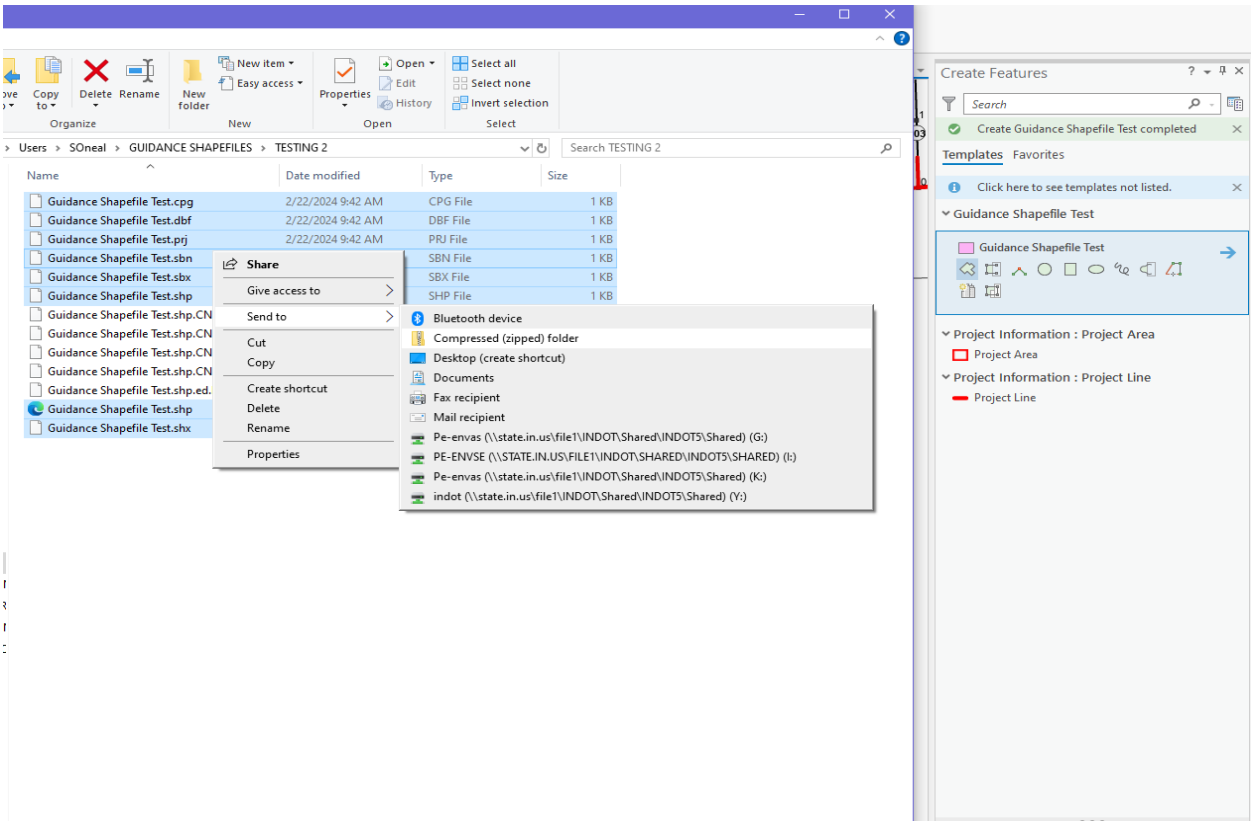


Attach Shapefile to Email RFI Submission

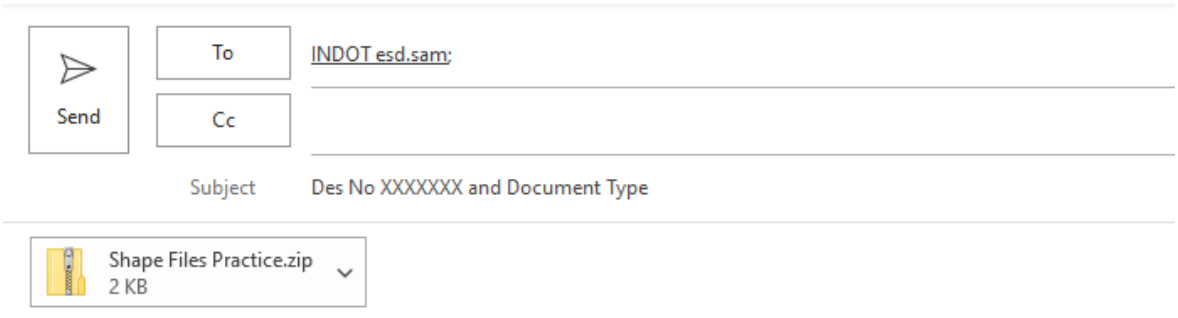
1. Open the shapefile you created from your folder



2. Make it a zip file –> right click –> send to –> compressed zipped folder



3. Attach zip to RFI Submission email, the same process above can be applied for the half mile buffer



Dear INDOT SAM,

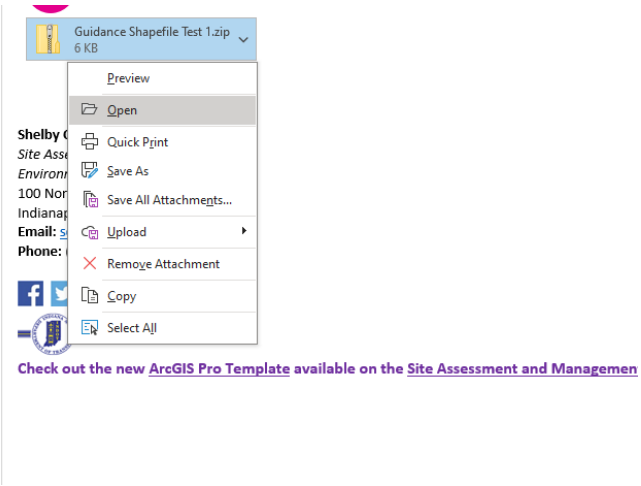
Please find the ProjectWise link to the following report below. Per request, here is the project specific information:

Document Name: Red Flag Investigation
ProjectWise Link: RFI_DES_XXXXXXX_US231 Bridge_Project_Original_(Initials)_4-2-2024.pdf
State of Review: First Submittal
Des No. XXXXXXX
Brief Description of Project: Small Structure Replacement
County and District: Allen County, Fort Wayne District
Lead Firm: No, _____ is the lead firm.

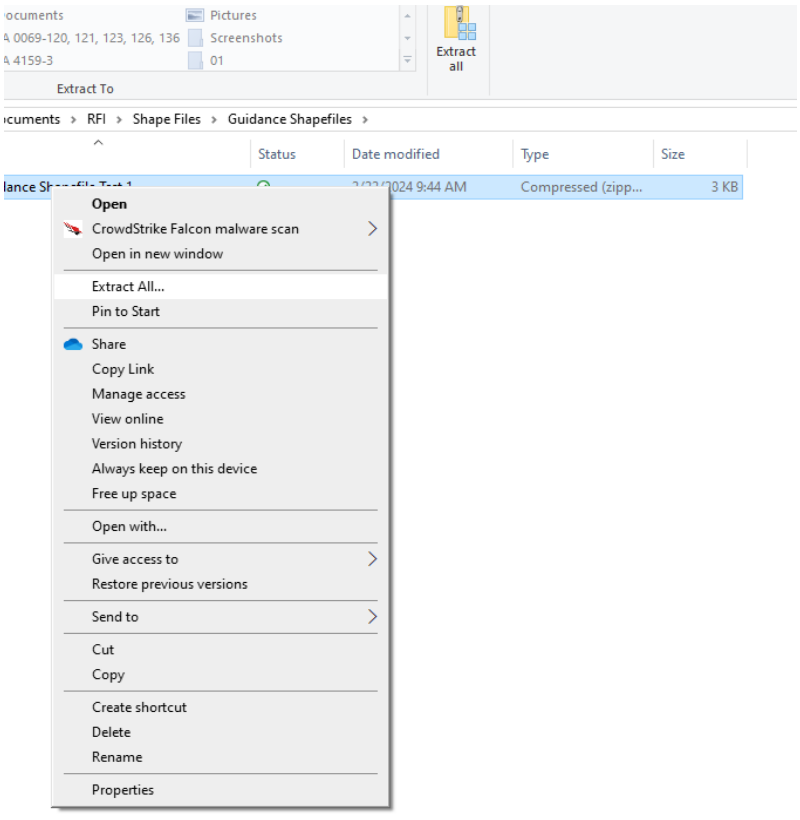
Sincerely,
(Name)
(Signature Block)

How to Extract Shapefile into ArcPro

1. Open email and download shapefile to a folder of your choosing.

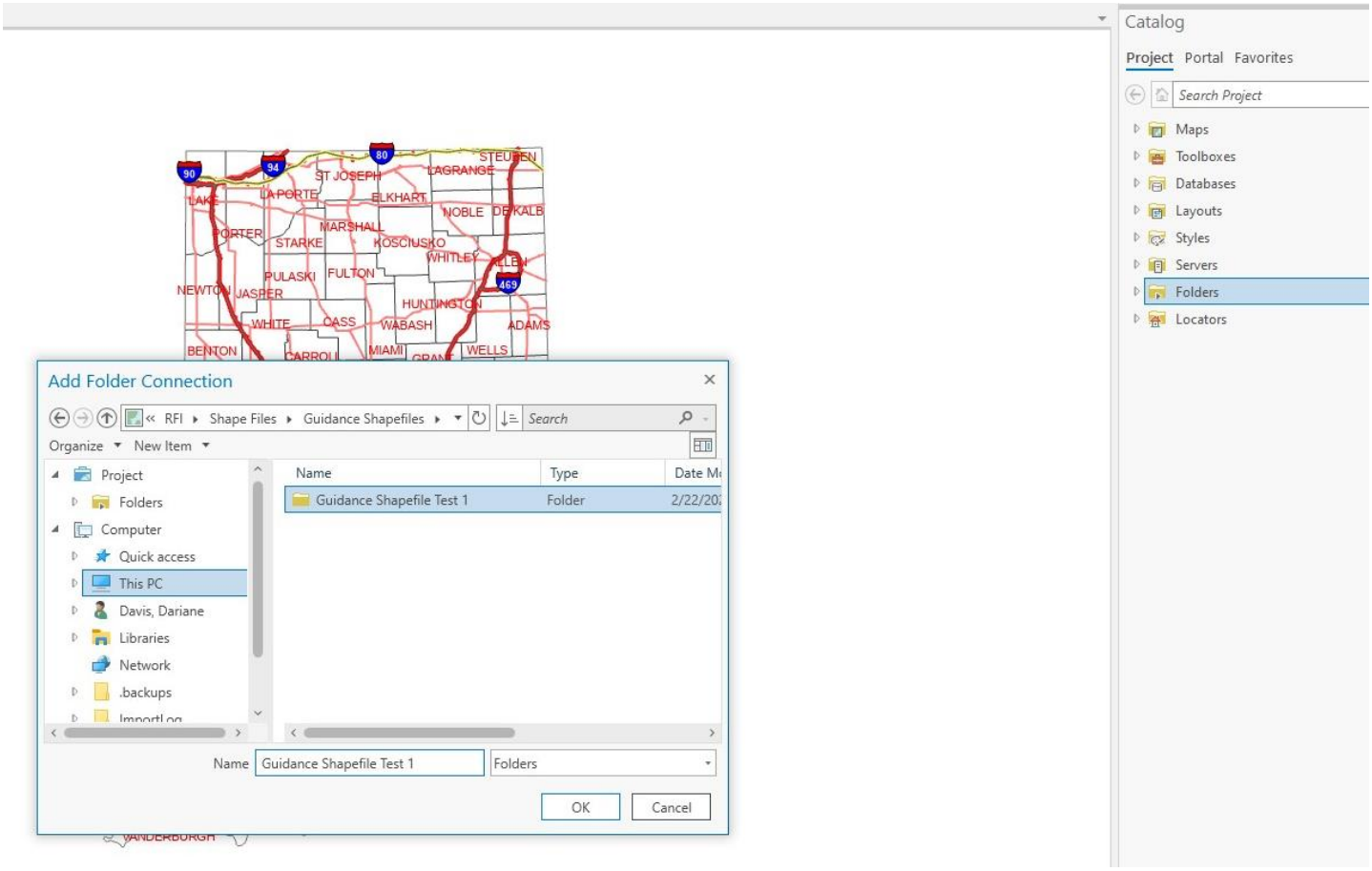


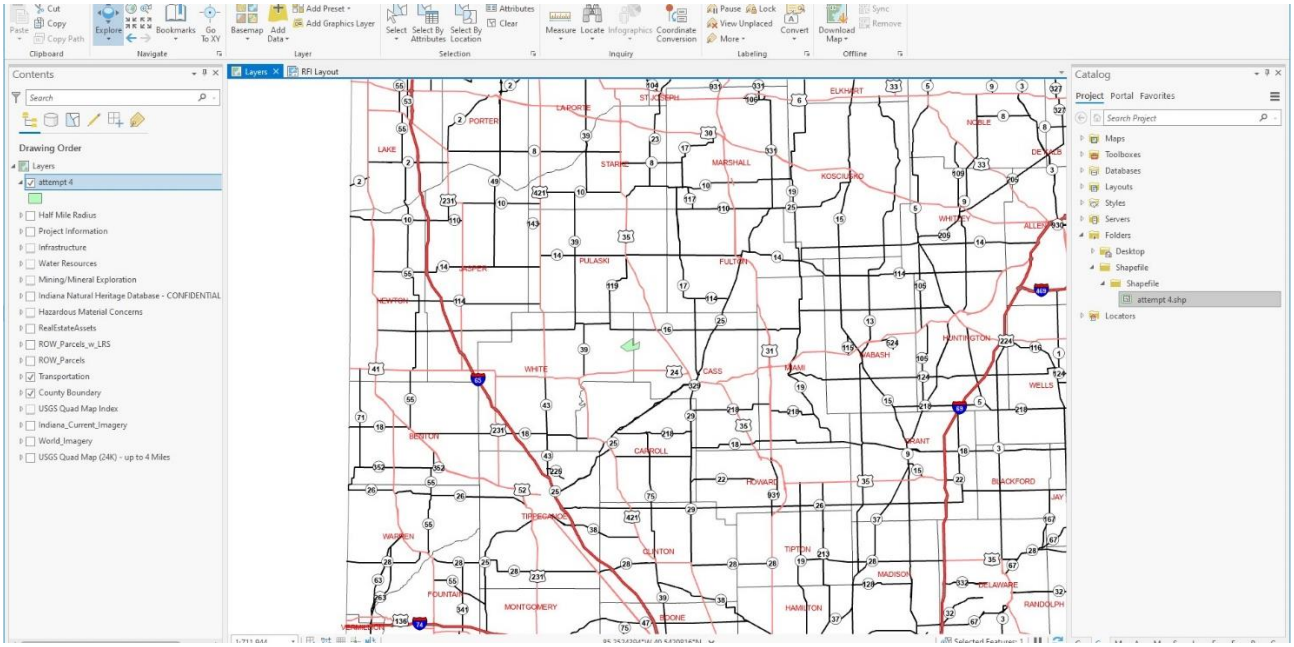
2. Extract data/unzip the zip file



3. Open ArcPro and go to ‘Catalog.’ Right click on ‘Folders’ and select ‘Add Folder Connection.’

4. Select the folder you downloaded the shapefile into and click ‘OK.’ This should make your shapefile appear under the folders tab.





Once you see the shape file under the folders tab, drag and drop it into the ‘Contents’ tab with the other layers. This should make the shapefile appear on the mapper.

5. With the shapefile now mapped, select ‘Project Area’ and click ‘Trace.’ Trace over the shapefile. Once your project area is made, you can turn off the shapefile layer and add a buffer like normal.

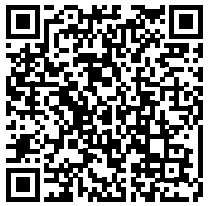
ArcGIS Pro shortcuts: Application and map navigation

General application	
Open Project	**Ctrl + O**
New Project	**Ctrl + N**
Save Project	**Ctrl + S**
Exit	**Alt + F4**
Show/Hide ribbon	**Ctrl + F1**
Copy	**Ctrl + C**
Cut	**Ctrl + X**
Paste	**Ctrl + V**
Undo	**Ctrl + Z**
Redo	**Ctrl + Y**
Delete	**Delete**
Enable access keys and show KeyTips on the ribbon	**Alt; F10**
Move through tabs on the ribbon or in a pane	**Right and Left Arrow keys**
Move through commands on the ribbon, pane, view, or dialog box	**Tab; Shift + Tab**
Move through elements in a list	**Up and Down Arrow keys**
Expand a drop-down menu or list	**Alt + Down Arrow key**
Collapse a drop-down menu or list	**Esc**
Execute a command	**Enter; Spacebar**
Open a context menu	**Shift + F10; Windows Menu key**
Move between the ribbon and an active view or pane	**F10**
Choose a view or pane to activate from a list	**Ctrl + Tab; Alt + F7**
Change the active view	**Ctrl + F6**
Close a view	**Ctrl + F4**

Tasks	
Run a step	**Alt + X**
Continue to next step	**Alt + C**
Skip	**Alt + S**

Map navigation	
Regardless of active tool	
Zoom to full extent	**Insert**
Zoom out incrementally	**Minus key (-)**
Zoom in incrementally	**Plus key (+)**
Navigate with the Explore tool while using another tool	**Hold C**
Zoom to layer's extent	**Alt + click layer(s) in Contents pane**
Zoom continuously	**Z + drag; Right-click and drag**
Zoom out incrementally	**X + click**
Rotate about the center of the view	**V + drag**
In a scene, look around	**B + drag; B + arrow keys**
Go to the previous extent	**<**
Go to the next extent	**>**
Roam (pan in the direction of the pointer)	**Hold Q**
Decrease roam speed	**Q + Shift**
Increase roam speed	**Q + Ctrl**
Nudge the view	**Arrow keys**
In a map, zoom out incrementally; or in a scene, move camera up	**U**
In a map, zoom in incrementally; or in a scene, move camera down	**J**
Jump one screen size up	**Page Up**
Jump one screen size down	**Page Down**
Jump one screen size to the left	**Home**
Jump one screen size to the right	**End**
Cancel map drawing	**Esc**
Refresh map view	**F5**
Using selection tools	
Toggle Intersect and Within selection modes	**Y**
Specify a radius when selecting by circle	**R**

With Explore tool activated	
Zoom in by drawing a rectangle	**Shift + drag**
Center and zoom in on pointer location	**Shift + click**
Center on pointer location	**Ctrl + click**
Rotate clockwise	**A; V + Right Arrow key**
Rotate counterclockwise	**D; V + Left Arrow key**
In a scene, look straight down (perpendicular)	**P**
In a scene, tilt camera up	**W**
In a scene, tilt camera down	**S**



For a complete list of ArcGIS Pro shortcuts, see
links.esri.com/arcgis-pro-shortcuts

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ArcGIS Pro shortcuts: Contents pane, layouts, and tables

Contents pane

Return keyboard focus to the map view from the Contents pane	**Esc**
Contract selected items	**Minus key (-); Left Arrow key**
Expand selected items	**Plus key (+); Right Arrow key**
Expand or contract all items on that hierarchical level	**Ctrl + click an expansion control; Ctrl + Plus key (+) or Minus key (-); Ctrl + Left or Right Arrow key**
Expand or contract all items on all levels	**Ctrl + Shift + click an expansion control; Ctrl + Shift + Plus key (+) or Minus key (-); Ctrl + Shift + Left or Right Arrow key**
Turn selected layers on or off	**Spacebar**
Turn on or off all layers when a single layer is selected	**Ctrl + Spacebar**
Turn on or off all layers at that hierarchical level	**Ctrl + click a check box**
Turn on or off all layers at all hierarchical levels	**Ctrl + Shift + click a check box**
Rename the selected item	**F2**
Open the Properties dialog box for a selected item	**F12; Enter**
Select multiple layers in the Contents pane	**Ctrl + click; Shift + click; Ctrl + Up and Down Arrow keys; Shift + Up and Down Arrow keys**
Lock or unlock the item selected in the Contents pane (layout only)	**Ctrl + L**
Lock or unlock all items on the same hierarchical level in the Contents pane (layout only)	**Ctrl + Shift + L**
Zoom to the extent of that layer	**Alt + click a layer name**
Delete the item selected in the Contents pane	**Delete**

Table

Open the table of the layer or table selected in the Contents pane	**Ctrl + T; Ctrl + double-click a layer or table name**
Close the active table	**Ctrl + F4**
Select all records	**Ctrl + A; Shift + click upper left cell**
Select a row or clear the selection	**Ctrl + Spacebar**
Move to the next record and select it exclusively	**Ctrl + Enter**
Switch the selection	**Ctrl + U; Ctrl + click upper left cell**
Continuously select records	**Shift + Down Arrow key; Shift + Up Arrow key**
Clear the selection	**Ctrl + Shift + A**
Select the previous row in the same column	**Shift + Enter**
Zoom the view to selected features	**Ctrl + Shift + =**
Zoom the view to current feature	**Ctrl + =**
Flash the active feature in the view	**Ctrl + 8**
Zoom to and select the feature	**Double-click gray cell to the left of a record**
Pan to and select the feature	**Ctrl + double-click the gray cell to the left of a record**
Go to the next column	**Tab**
Go to the previous column	**Shift + Tab**
Go to the next row	**Enter**
Go to the first cell in a row	**Home; Ctrl + Left Arrow key**
Go to the first cell in the first row	**Ctrl + Home**
Go to the last cell in a row	**End; Ctrl + Right Arrow key**
Go to the last cell of the last row	**Ctrl + End**
Go to the cell in the direction of the arrow key	**Arrow keys**
Go to the first row in the current column	**Ctrl + Up Arrow key**
Go to the last row in the current column	**Ctrl + Down Arrow key**
Increase or decrease the scale of the table	**Ctrl + Mouse wheel**
Reset the table scale to 100 percent	**Ctrl + 0 (zero)**
Scroll the table window horizontally	**Shift + Mouse wheel**
Remove field sorting	**Ctrl + Shift + U**
Open the Custom Sort dialog box	**Ctrl + Shift + S**
Hide the field	**Ctrl + double-click**
Open the current feature's pop-up	**Ctrl + I**
Switch between showing field names and aliases	**Ctrl + Shift + N**

Editing Tables

Copy the value in the cell	**Ctrl + C; Ctrl + Insert**
Copy the selected records	**Ctrl + Shift + C**
Edit the contents of a cell	**F2**
Apply the current edit	**Enter**
Cancel what has been edited in the cell and restore the original value	**Esc**
Insert a new line	**Shift + Enter**

Layout

Navigate the layout while a map frame is activated	**Hold 1**
Select all the elements on the page and in the Contents pane	**Ctrl + A**
Clear the selection of all the elements on the page and in the Contents pane	**Ctrl + Backspace**
Continuously select elements	**Shift + Down Arrow key; Shift + Up Arrow key**
Delete the selected elements	**Delete**
Copy the selected element	**Ctrl + C**
Cut the selected element	**Ctrl + X**
Paste the contents of the clipboard	**Ctrl + V**
Switch the visibility of the selected elements	**Spacebar**
Nudge selected elements 1/10 of the current page unit	**Shift + arrow keys**
Nudge selected elements 1/100 of the current page unit	**Ctrl + arrow keys**
Pan in the direction of the arrow key	**Arrow keys**
Zoom to the full page	**Insert**
Lock or unlock the layout item selected in the Contents pane	**Ctrl + L**
Lock or unlock all items on the same hierarchical level in the Contents pane	**Ctrl + Shift + L**

ArcGIS Pro® shortcuts: Editing

General editing

Pan	**C + drag**
Zoom out	**X + drag**
Zoom in	**Z + drag**
Show vertices of features near the pointer	**Hold T**
Temporarily toggle snapping	**Hold Spacebar**
Cancel an unfinished edit	**Esc; Ctrl + Delete**
Finish current edit to a new or existing feature	**F2**
Undo	**Ctrl + Z**
Redo	**Ctrl + Y**
Deactivate current tool	**Esc**

Format text

Underline	**Ctrl + U**
All caps	**Ctrl + Shift + A**
Lowercase	**Ctrl + Shift + K**
Superscript	**Ctrl + Shift + Plus key (+)**
Subscript	**Ctrl + =**

Selection tools

Add to selection	**Shift + click**
Remove from selection	**Ctrl + click**
Select only this feature	**Ctrl + Shift + click**

Move

Move anchor; if anchor is offscreen, place anchor at click location	**Ctrl + click**

Scale

Open Scale dialog box	**F**
Toggle secondary anchor	**S**
Move anchor; if anchor is offscreen, place anchor at click location	**Ctrl + click**

Rotate

Open Angle dialog box	**A**
Toggle secondary anchor	**S**
Move anchor; if anchor is offscreen, place anchor at click location	**Ctrl + click**

Create annotation

Find text (replace text string with label expression or field value)	**Ctrl + W**
Next (step through selection when using Find text)	**N**
Specify absolute x,y,z	**F6**

Create point features

Specify absolute x,y,z	**F6**

Create polyline and polygon features

Specify absolute x,y,z	**F6**
Specify direction	**A**
Specify distance	**D**
Specify direction and distance	**G**
Specify deflection angle	**F**
Specify segment deflection	**F7**
Constrain segments parallel to an existing segment you're pointing to	**P**
Constrain segments perpendicular to an existing segment you're pointing to	**E**
Cancel an unfinished edit	**Esc; Ctrl + Delete**
Square and finish	**F3**
Finish part	**F4; Shift + double-click**
Temporarily toggle snapping	**Hold Spacebar**

Create arc segments

Specify radius	**R**

Create endpoint arc segments

Specify radius	**R**

Create by tracing

Open Options dialog box	**O**
Switch side of offset	**Tab**
Trace only selected features	**Ctrl**

Streaming

Open Options dialog box	**O**
Toggle streaming	**F8**

Create a circle

Specify absolute x,y,z	**F6**
Specify radius	**R**

Create an ellipse

Specify absolute x,y,z	**F6**
Specify direction	**A**
Constrain to circle	**Shift**

Create a rectangle

Specify absolute x,y,z	**F6**
Specify direction	**A**
Constrain to square	**Shift**

Topology error inspector

Move cursor	**Up and Down Arrow keys**
Zoom to current error	**Z; Spacebar**
Select parent features causing error	**F**
Show topology rule	**D**
Mark error as exception	**X**
Clear current exception	**E**

Edit tables

Copy the value in the cell	**Ctrl + C; Ctrl + Insert**
Copy the selected records	**Ctrl + Shift + C**
Edit the contents of a cell	**F2**
Apply the current edit	**Enter**
Cancel what has been edited in the cell and restore the original value	**Esc**
Insert a new line	**Shift + Enter**

Edit vertices

In a 3D scene, change elevation of z-enabled vertex	**H + drag**
Move Bezier handle that is overlapping a vertex	**Ctrl + drag**
Move Bezier segment	**Ctrl + drag**
Create a new vertex on a segment	**A + click**
Delete vertex	**D + click**

ArcGIS Pro shortcuts: Raster and imagery

Stereo map navigation	
Decelerated change in x,y	**Caps Lock + move pointer**
Accelerated change in x,y	**Shift + move pointer**
Roam (pan in the direction of the pointer)	**Hold Q**
Zoom in	**Plus key (+); Ctrl + rotate mouse wheel**
Zoom out	**Minus (-); Ctrl + rotate mouse wheel**
Change z-value	**Z + move pointer horizontally; Rotate mouse wheel**
Accelerated change in z	**Shift + Z + move pointer horizontally; Shift + rotate mouse wheel**
Decelerated change in z	**Caps Lock + Z + move pointer horizontally; Caps Lock + rotate mouse wheel**
Toggle surface snapping	**B**
Toggle terrain following	**T**
Switch between roaming cursor mode and fixed cursor mode	**F8**
Temporarily turn off fixed cursor mode	**~**
Adjust x-parallax	**Ctrl + Left or Right Arrow key**
Adjust y-parallax	**Ctrl + Up or Down Arrow key**
Return to default parallax	**Ctrl + F7**
Set source as best model	**M**
Pan to center of stereo pair	**E**
Open Overview window	**O**
Open magnifier window	**W**

Georeferencing	
Toggle visibility of georeferencing layer	**L**
Toggle visibility of control point ScreenTip	**H**
Specify value for Move, Scale, or Rotate	**A**
Cancel creation of a control point	**Esc**
Temporarily disable snapping	**Hold Spacebar**
Refresh Control Point table	**F5**
Orthomapping (GCP Manager)	
Refresh GCP list in GCP Manager	**F5**
Toggle Dynamic Range Adjustment	**Ctrl + D**
Toggle GCP display	**Ctrl + G**
Zoom to full extent	**Ctrl + F**
Pixel editor	
Toggle visibility of operational layer	**L**
Refresh Edits Log	**F5**

For a complete list of ArcGIS Pro shortcuts, see
links.esri.com/arcgis-pro-shortcuts

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ArcGIS Pro shortcuts: Exploratory analysis

Shortcut \ Tool	Selected Line of Sight observer or target	Selected view dome	Selected viewshed	Selected slice
W	N/A	N/A	Tilt observer up	Rotate plane heading forward
A	Rotate counterclockwise	N/A	Rotate observer heading left	Rotate plane heading left
S	N/A	N/A	Tilt observer down	Rotate plane heading backward
D	Rotate clockwise	N/A	Rotate observer heading right	Rotate plane heading right
Ctrl + Up Arrow key	Move observer away from scene camera	Move view dome away from camera	Move observer forward	Move plane forward
Ctrl + Down Arrow key	Move observer toward scene camera	Move view dome toward camera	Move observer backward	Move plane backward
Ctrl + Right Arrow key	Move observer right, perpendicular to scene camera heading	Move view dome right, perpendicular to scene camera heading	Move viewshed right, perpendicular to the observer heading	Move slice right
Ctrl + Left Arrow key	Move observer left, perpendicular to scene camera heading	Move view dome left, perpendicular to scene camera heading	Move viewshed left, perpendicular to the observer heading	Move slice left
Ctrl + Shift + Up Arrow key	Move observer and all its targets away from scene camera	N/A	N/A	N/A
Ctrl + Shift + Down Arrow key	Move observer and all its targets toward scene camera	N/A	N/A	N/A
Ctrl + Shift + Right Arrow key	Move observer and all its targets right, perpendicular to scene camera heading	N/A	N/A	N/A
Ctrl + Shift + Left Arrow key	Move observer and all its targets left, perpendicular to scene camera heading	N/A	N/A	N/A
Ctrl + U	Increase observer elevation	Increase view dome elevation	Increase observer elevation	Increase plane elevation
Ctrl + J	Decrease observer elevation	Decrease view dome elevation	Decrease observer elevation	Decrease plane elevation
C	Turn the Explore tool on and off to navigate	Turn the Explore tool on and off to navigate	Turn the Explore tool on and off to navigate	Turn the Explore tool on and off to navigate
Delete	Delete the observer and all associated targets	Delete the selected view dome	Delete the selected viewshed	Delete the selected slice

ArcGIS Pro shortcuts: Animation, time, and range

Animation	
Play/Pause	**Spacebar**
Next keyframe	**Ctrl + Right Arrow key**
Previous keyframe	**Ctrl + Left Arrow key**
Append: Add a new keyframe using the selected transition type at the current view	**Ctrl + Insert**
Insert a keyframe at the current time or update a keyframe if one exists at the current time	**Shift + Insert**
Delete the current keyframe	**Ctrl + Shift + Delete**
Range slider	
Play/Pause	**Ctrl + Shift + Spacebar**
Next step	**Ctrl + Shift + Up Arrow key**
Previous step	**Ctrl + Shift + Down Arrow key**
Time slider	
Play/Pause	**Ctrl + Spacebar**
Next step	**Ctrl + Shift + Right Arrow key**
Previous step	**Ctrl + Shift + Left Arrow key**

For a complete list of ArcGIS Pro shortcuts, see
links.esri.com/arcgis-pro-shortcuts

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APPENDIX F

ORPHAN UST DISCOVERY MANAGEMENT AND FLOWCHART

Discovery of Contaminated Materials or Orphan Underground Storage Tanks (USTs) in INDOT Owned Right-of-Way

INDOT Environmental Services Divisions (ESD) Site Assessment and Management (SAM)

SAM Team Lead Phone Number: (317) 982-0912

Personal Safety is always first priority. Do not endanger yourself by entering hazardous environments. Stay upwind of spills. Never taste spilled material or inhale smells to identify spills.

Discovery of Suspicious Material

*Staining, chemical odor, free phase product, sheen

Notify Project Engineer/ Project Supervisor

Collect Information

- Location of encountered contamination (address, parcel #, intersection information, etc)
- Date and Time (when impacts were encountered)
- Cause of spill (if known)
- Number, estimated size, and material of encountered USTs (ex: Two (2) 10,000 gallon steel USTs)
- Type and visual estimated amount of impacted media (ex: Petroleum impacted soils and 100 square feet)
- Nearby receptors (ex: utility corridor, ditches, waterways or waterbodies, and/or water wells)

Contact INDOT ESD SAM Team

1) INDOT SAM can call IDEM to report a spill while an environmental subcontractor is being obtained

OR

2) Hire an environmental subcontractor who will then report the spill to IDEM. INDOT SAM has 3 on-call contracted consultants that can be

INDOT ESD Responsibilities

- Work alongside the environmental subcontractor to develop a sampling plan
- Review analytical results
- Assist with determining appropriate PPE needed based on the site conditions
- Assist with soil disposal recommendations based on the site conditions
- Review and approve soil management plans (if applicable)

IDEM Spill Line

888-233-7745

Record Incident Number assigned by IDEM

Sampling Procedures

* Determine Contents of the Tank(s) and sample impacted soil and/or ground water as appropriate

- Empty
- Sand and/or aggregate
- Water
- Product and/ or sludge
- Multiple Layers (product, sludge, water)

Develop a plan to sample and analyze each phase/material separately

After results are received, remove contents and properly dispose

Will the tank remain in place?

N

1) Remove tank
2) Perform confirmatory testing on bottom and side walls of excavation

Y

Close in place

Add pay items to contract as a change order

Final Reporting

Environmental Professional will generate a report including:

A) Summary of activities and site conditions
B) Tables
C) Figures
D) Boring Logs (if applicable)
E) Analytical data

The report should be submitted to INDOT ESD for review and approval and then submitted to IDEM

Environmental Professional

Someone who is overseen by or is one of the following:

1) A registered professional engineer under IC 25-31-1;
2) A licensed professional geologist under IC 25-17.6;
3) A certified hazardous materials manager (CHMM) as certified by the Institute of Hazardous Material Management; or
4) A professional soil scientist registered under IC 25-31.5-4.

Orphan Underground Storage Tank Discovery: Guidance and Flow Chart

An orphan tank is understood to be a tank that was not previously identified through reasonable search and due diligence. IDEM's tank program provides limited regulation of tanks, depending on the size, purpose, and contents. Many of the orphan tanks INDOT encounters are outside of the scope of the IDEM tank program. As the Responsible Party/Generator, INDOT must balance many other factors outside of IDEM regulations regarding orphan management.

Preference is given to removal of an orphan tank; however, there are instances where filling the tank in place may be necessary due to the site and/or tank location. In either case, the first step is to identify the contents, remove the contents (if appropriate), and assess potential contamination in the soil and groundwater surrounding the tank.

Steps:

1. Determine contents of the tank:
    a. Empty
    b. Filled with sand/aggregate
    c. Water
    d. Product
    e. Combination of any of the above
2. Develop and email the INDOT SAM inbox (esd.sam@indot.in.gov) a sampling plan and write the description for tank contents prior to sampling. Include following in the plan:
    a. Location (intersection or address)
    b. Date and time the tank was discovered
    c. Number and size of the UST(s) (i.e. one (1) 500-gallon UST)
    d. Include pictures of UST(s) and site
3. Upon receiving the analytical data email the lab results and conclusion to the INDOT SAM inbox.
4. Remove tank contents if directed by INDOT SAM
5. Determine with INDOT SAM and INDOT Project Manager if the tank needs to be removed or filled in place. If removed, dispose of it in accordance with state and federal regulations.
6. Email the final report the SAM inbox (esd.sam@indot.in.gov)

APPENDIX G

FLOW CHART - MANAGEMENT OF POTENTIAL OR KNOWN CONTAMINATION

AND

IDEM EMERGENCY RESPONSE QUICK REFERENCE SHEET

Recommended Management of Potential or Known Contaminated Materials in **INDOT Owned Right-of-Way**

INDOT Environmental Services Division (ESD)
Site Assessment and Management (SAM) Team Lead:
ESD.SAM@indot.in.gov

Potential or Identified Presence of Contamination

* sites identified in the Red Flag Investigation (RFI) report with potential and/or known contamination.
* sites with confirmed presence of contamination following completion of a Phase II Environmental Site Assessment (ESA)

Develop Commitments and Contract

*Sites with potential and/or known contamination (all forms) included in the project commitments

*Contract should include costs to handle, sample, transport, and dispose of contaminated media (soil and/or groundwater) and associated reporting based on the scope of work. If a Phase II ESA was completed, commitments should be generated based on the final recommendations.

*Contract should include an experienced environmental professional[1] that is knowledgeable of IDEM regulations, sampling and reporting protocols, and RCRA guidance. INDOT SAM has 3 on-call contracts in place that can be used for sampling.

Sites with Potential for Contamination

*Recommend environmental professional is available when construction activities, specifically excavation, are occurring in the vicinity of a target site.

Contamination Encountered

Staining, chemical odor, free phase product, sheen on surface of water, elevated PID readings, etc encountered.

Immediately Notify INDOT Project Engineer/Project Supervisor and INDOT ESD SAM

*environmental professional should:

1. Collect representative samples
   a. Compare analytical to the IDEM Uncontaminated Soil Policy and RCRA guidance.
2. If media needs to be disposed at a landfill:
   a. Report to IDEM spill line – 888-233-7745
   b. Prepare waste disposal documentation
      i. Manifests MUST be signed by INDOT personnel
3. Document removal and sampling activities (including closure samples)
   a. Coordination with INDOT SAM should occur and be on-going
   b. INDOT does not chase or delineate contamination – focus should be to handle and remove contamination within the project footprint.

*if contamination is not encountered, sampling, waste disposal, spill reporting, etc. is NOT needed.

Sites with Known Contamination

*Environmental professional is on-site/available when construction activities, specifically excavation, are occurring in the vicinity of a target site.

Contamination Encountered

Sites with known contamination above the IDEM Uncontaminated Soil Policy and/or RCRA guidance levels – identified from the RFI or a Phase II ESA.

Immediately Notify INDOT Project Engineer/Project Supervisor and INDOT ESD SAM

*environmental professional should:

1. Report to IDEM spill line – 888-233-7745[2] (unless active project coordination with IDEM and/or EPA is already occurring)
2. Handle, transport, and dispose of media based on recommendations and analytical results
   a. Manifests MUST be signed by INDOT personnel
3. Document removal and sampling activities (including closure sampling)
   a. Coordination with INDOT SAM should occur and be on-going
   b. INDOT does not chase or delineate contamination – focus should be to handle and remove contamination within the project footprint.

Final Reporting

1) Environmental Professional will generate a report including:
   a. Summary of activities and site conditions
   b. Tables
   c. Figures
   d. Analytical data

The report should be submitted to INDOT ESD SAM (esd.sam@indot.in.gov) for review and approval and then submitted to IDEM (upon request).

Environmental Professional[1]

Someone who is overseen by or is one of the following:

1. A registered professional engineer under IC 25-31-1;

2. A licensed professional geologist under IC 25-17.6;

3. A certified hazardous materials manager (CHMM) as certified by the Institute of Hazardous Material Management; or

4. A professional soil scientist registered under IC 25-31.5-4.

Collect Information[2]

*Location of encountered contamination (address, parcel #, intersection information, etc.)
*Date and Time (when impacts were encountered)
*Cause of spill (if known)
*Number, estimated size, and material of encountered USTs (example: Two 10,000 gallon steel USTs)
*Type and visual estimated amount of impacted media (example: Petroleum impacted soils and 100 square feet)
*Nearby receptors (example: utility corridor, ditches, waterways or waterbodies, and/or water wells)

INDOT ESD SAM Responsibilities

*work alongside the environmental subcontractor
*review analytical results
*assist with soil disposal recommendations based on the site conditions
*review and approve environmental documents.

GUIDANCE DOCUMENT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Emergency Response Quick Reference Sheet

Office of Land Quality

317-232-8603 • 800-451-6027 **www.idem.IN.gov** 100 N. Senate Ave., Indianapolis, IN 46204

Contact numbers and evaluation techniques for environmental threats

IMPORTANT: PERSONAL SAFETY, ESPECIALLY YOURS, IS ALWAYS THE FIRST PRIORITY.

- Do not endanger yourself by entering hazardous environments.
- Stay upwind of spills and air releases.
- Never taste spilled materials.
- Never inhale smells to identify spills.
- Never touch unknown materials without proper Personal Protective Equipment.
- Be aware of highway, water, and night-time safety issues.
- The burden of providing information and performing spill responses ALWAYS falls on the responsible party, not you.
- Please let us know if you need additional guidance or do not feel comfortable being involved in a situation.

State contact numbers:

IDEM Emergency Response, 24-hour spill reporting hotline 888-233-7745
IDEM, general information 800-451-6027
IDEM, complaints.....317-232-4464
IERC (Indiana Emergency Response Commission).....317-232-2222
ISFM (Indiana State Fire Marshal) 317-232-2222
ISDH (Indiana State Department of Health) 800-382-9480
IDNR (Indiana Department of Natural Resources), customer service center 877-463-6367
OISC (Office of the Indiana State Chemist) 765-494-1492
IOSHA (Indiana Occupational Safety and Health) 317-232-2655
Board of Animal Health 317-544-2400
Illinois Environmental Protection Agency, 24 hours spill reporting 217-782-7860
Michigan Department of Environmental Quality, 24 hour spill reporting 800-292-4706
Ohio Environmental Protection Agency, 24 hour spill reporting 800-282-9378
Kentucky Department of Environmental Protection, 24 hour spill reporting 800-928-2380

Federal contacts:

NRC (National Response Center).....800-424-8802
U.S. EPA Region V, spill reporting.....312-353-2318
Agency for Toxic Substance and Disease Registry (ATSDR).....800-232-4636
ATSDR emergency response 24-hour line.....770-488-7100
U.S. Coast Guard, Marine Safety Office, Louisville, KY 502-779-5300
U.S. Coast Guard, Marine Safety Office, Chicago, IL.....773-768-4093
FBI (Federal Bureau of Investigations), Indianapolis Field Office 317-595-4000
National Transportation Safety Board, Railroad, Pipelines, Hazmat.....844-373-9922

Other contacts:

Indiana 811, Know what's below, Call before you dig. .....811 or 800-382-5544
Chemtrec, chemical data information 800-424-9300

Quick Reference Information Sheet

For assessing spills and threats to water

CONTACTS

1. **Spiller information**: name, address, contact numbers
2. **Landowner information** (if different): name, address, contact numbers
3. **Spill location** (if different): facility name, address, directions, contact numbers
4. **Other contacts**: for lease holders, contractors, response agencies

CIRCUMSTANCES

5. **Spilled material/description**. Safety Data Sheet. What is it used for?
6. **Date and time** of spill (when found vs. when spill likely began).
7. **Cause** of spill.
8. Has the spill led to threats of **human** safety? Any evacuations? Any injuries?
9. Has the **release stopped**? Can it be stopped without compromising safety?
10. Was there an immediate or any **spill response**? Many fire and street departments initially dam or absorb spills with kitty litter or sand. Spillers are ultimately responsible for initiating and completing a spill response.

SPILL CHARACTERISTICS

11. Describe **area affected**, estimate square feet or miles of affected water.
12. Describe **amount spilled**, amount contained, and capacity of containers or vessels.
13. **Amount recovered** or why no recovery (very few exceptions).

SPILLS TO WATER

14. Are there **surface waters** nearby or involved? Roadside ditches, streams, ponds?
15. Are the surface waters **standing, flowing, discharging**? To where?
16. Do you see **fish** or other animals in or near the water? Are they alive, stressed, dead?
17. Are there ditches, low areas, storm drains inlets, field tile risers to water?

SPILLS TO SOIL

18. Are there **sandy or gravelly native soils**, backfill areas, dry wells nearby/involved?
19. Are there **water wells**, **pipelines**, **phone lines**, or **utilities** that spills might follow?

SPILLS TO TILES, SEWERS, STORM DRAINS

20. For impacted **storm drains/storm sewers**, are there signs of the spilled material in **manholes or catchment basins**? Check where the storm drain exits into surface water. Can spilled materials be safely contained and collected from catchment basins or storm drain outlets before entering water?
21. For impacted **combined or sanitary sewer systems**, contact the wastewater utility. Will the material be safely treated? Will it upset or flow through the plant? Can they safely separate and contain it without hurting their plant? Are they experiencing any bypass events where spilled materials may discharge directly to water? Check bypass outfalls for spilled material. **Call IDEM Emergency Response Section at 888-233-7745 immediately for upset plants**. Non-emergency treatment plant questions will be advised during normal business hours by calling IDEM, Office of Water Quality (OWQ), at 317-232-8670.

APPENDIX H

ADDITIONAL FORMS AND POLICIES

Acronyms and Abbreviations List

ADA	Americans with Disabilities Act
AI ID	Agency Interest Identification
ASTM	American Society for Testing and Materials
bgs	below ground surface
BIAS	Bridge Inspection Application System
BMPs	Best Management Practices
CE	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFO	Confined Feeding Operations
CHMM	Certified Hazardous Materials Manager
CoCs	Chemicals/Contaminants of Concern
DES No.	Designation Number
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
EPO	Environmental Policy Office
ESA	Environmental Site Assessment
ESD	Environmental Services Division
ETR	endangered, threatened, or rare
EWPO	Ecology and Waterway Permitting Office
FAA	Federal Aviation Administration
FID	Facility Identification
ft	feet
GIS	Geographic Information System
HMA	hot mix asphalt
IAC	Indiana Administrative Code
IBC	Impaired Biotic Communities
IDEM	Indiana Department of Environmental Management
ID No.	Identification Number
IDNR	Indiana Department of Natural Resources
IHMM	Institute of Hazardous Materials Management
INDOT	Indiana Department of Transportation
IOSHA	Indiana Occupational Safety and Health Administration
IPaC	Information for Planning and Consultation
ITAP	INDOT Technical Application Pathway
LBP	Lead-Based Paint
LPA	Local Public Agency
LUST	Leaking Underground Storage Tank
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MOT	Maintenance of Traffic

Acronyms and Abbreviations List

MTG	Migration to Groundwater
MYSE or IB	Myotis septentrionalis or Indiana Bat
MYSO or NLEB	Myotis sodalis or Northern Long-Eared Bat
N/A	Not Applicable
NEPA	National Environmental Policy Act
NFA	No Further Action
NPD	Non-rule Policy Document
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRI	National Rivers Inventory
NWI	National Wetlands Inventory
OLQ	Office of Land Quality
PCBs	Polychlorinated Biphenyls
PCE	Programmatic Categorical Exclusion
PE	Professional Engineer
PM	Project Manager
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
PSCS	Professional Services Contracting System
PW	ProjectWise
RCG	Remediation Closure Guide
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RFC	Ready for Contracts
RFI	Red Flag Investigation
RISC	Risk Integrated System of Closure
ROW	Right-of-Way
SAM	Site Assessment & Management
SOW	Scope of Work or Statement of Work
SR	State Road
TCLP	Toxicity Characteristic Leaching Procedure
TSD	Treatment, Storage, and Disposal
UAB	Urbanized Area Boundary
US	United States
USDA	US Department of Agriculture
USFWS	US Fish & Wildlife Service
UST	Underground Storage Tank
VFC	Virtual File Cabinet
VRP	Voluntary Remediation Program

U. S. Fish and Wildlife Service Interim Policy
For the
Review of Highway Transportation Projects in Indiana
5/29/2013

The intent of this interim policy is to make early coordination more efficient by reducing and streamlining the flow of early coordination between USFWS, INDOT and other coordinating agencies. The potential to impact wildlife habitat is the guiding criteria on when and how coordination should be initiated with the USFWS. This policy is intended to fulfill legal requirements for coordination under Section 7 of the Endangered Species Act (ESA). This policy can be used by all state, local and/or county highway agencies within the State of Indiana to fulfill early coordination with the USFWS.

This interim policy is an excerpt from the 09-27-2010 Draft Programmatic Agreement developed between INDOT and the USFWS and has been modified to reflect our current policy direction for the review of highway transportation projects in Indiana.

Classification of Coordination Types with U.S. Fish & Wildlife Service

There will be two types of coordination with the USFWS.

A. **Programmatic Coordination**
If construction activities meet the criteria established below, the USFWS agrees that the potential for impacts from these types of projects is minimal. In these cases, "**Programmatic Coordination**" constitutes the USFWS's early coordination roll, including Section 7 consultation requirements of the ESA of 1973, as amended. For these projects, no submittal of information to the USFWS is necessary. However, the standard recommendations as listed in Appendix A of this document should be included in the NEPA document. Only those projects that meet ALL of the following criteria qualify for programmatic coordination. If it is unclear whether the project fits under the below criteria, contact the appropriate USFWS office for clarification.

1. The project impacts less than 0.5 acre of forested R/W (temporary and/or permanent), all of which is within 75 feet of the edge of the existing roadway or pavement.

2. The project impacts less than 300 feet of natural perennial and intermittent streams without relocation, with the following exceptions:

    a. Assumed non-jurisdictional roadway ditches.
    b. Assumed jurisdictional waterways in disturbed areas where no wooded riparian habitat exists such as maintained legal and/or agricultural drains or waterways within residential, commercial and/or urban areas.

3. The project impacts less than 0.1 acre of wetlands, including both permanent and temporary impacts.

4. The project does not occur in the streams listed in Appendix B.

5. The project does not occur in the National Lakeshore in Lake, Porter, and LaPorte Counties

6. The project does not impact a **surface karst feature** within the Karst region of Indiana as discussed in Appendix C.

7. The project does not impact any natural area or wildlife habitat protected under the Federal Highway Administration's Section 4(f) Evaluation (49 USC Section 303, 23CFR 774) and/or Section 6(f) (16 USC Section 4601-F) of the Land and Water Conservation Fund Act.

B. Full Coordination

For all projects which do not qualify for programmatic coordination, an early coordination letter should be provided to the USFWS describing the entire project and its impacts to wildlife habitats within the project's impact area. If a response letter is deemed necessary, the USFWS will provide it within 30 days of receipt of the early coordination letter; otherwise, after 30 days, the preparer will incorporate the standard recommendations listed in Appendix A of this guidance into the NEPA document and Section 7 requirements will be considered fulfilled. In these cases the USFWS has determined that the project does not require a site-specific response.

If the USFWS requests an extension of time to provide their response, a reasonable extension of time shall be given, if possible.

Section 7 Evaluation

The USFWS concurs that projects that qualify for Programmatic Coordination or receive no USFWS response to full coordination have an effect determination of "Not Likely to Adversely Affect" any Endangered or Threatened species. This determination will satisfy requirements under the authority of the ESA of 1973, as amended.

Project Impact Modifications

If, during the development of the proposed project, changes occur that result in exceeding any of the criteria listed in Section A, or additional impacts are identified that could affect a threatened or endangered species, the project should not advance until full coordination is conducted with the USFWS.

If new information becomes available concerning federally listed species, proposed species, or other significant fish and wildlife resources, which might preclude the use of this interim policy, or require that the policy be amended (e. g. new counties or waterways be added), it will be the responsibility of the USFWS to inform INDOT as soon as possible. If INDOT staff discovers that such changes may affect a project that has already completed consultation, INDOT should notify the USFWS to reinitiate Section 7 consultation.

Appendix A
Standard Recommendations

1. Do not clear trees or understory vegetation outside the construction zone boundaries. (**This restriction is not related to the "tree clearing" restriction for potential Indiana Bat habitat.)**

2. Restrict below low-water work in streams to placement of culverts, piers, pilings and/or footings, shaping of the spill slopes around the bridge abutments, and placement of riprap.

   Culverts should span the active stream channel, should be either embedded or a 3-sided or open-arch culvert, and be installed where practicable on an essentially flat slope. When an open-bottomed culvert or arch is used in a stream, which has a good natural bottom substrate, such as gravel, cobbles and boulders, the existing substrate should be left undisturbed beneath the culvert to provide natural habitat for the aquatic community.

3. Restrict channel work and vegetation clearing to the minimum necessary for installation of the stream crossing structure.

4. Minimize the extent of hard armor (riprap) in bank stabilization by using bioengineering techniques whenever possible. If rip rap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat.

5. Implement temporary erosion and sediment control methods within areas of disturbed soil. All disturbed soil areas upon project completion will be vegetated following INDOT's standard specifications.

6. Avoid all work within the inundated part of the stream channel during the fish spawning season (April 1 through June 30); except for work within sealed structures such as caissons or cofferdams that were installed prior to the spawning season. No equipment shall be operated below Ordinary High Water Mark during this time unless the machinery is within the caissons or on the cofferdams.

7. Evaluate wildlife crossings under bridge/culverts projects in appropriate situations. Suitable crossings include flat areas below bridge abutments with suitable ground cover, high water shelves in culverts, amphibian tunnels and diversion fencing.

Appendix B:

Waterways

Programmatic Coordination does NOT apply for the following waterways and full coordination is required if impacts occur below the ordinary high water mark.

Streams and Rivers

Note: This involves work in the streams listed below and in all tributaries within 200' of the confluence.

Blue River, including South Fork (Crawford, Harrison,
Eel River (Miami, Wabash Counties)
Flatrock River (Shelby County)
Fish Creek (Steuben County and LaGrange)
Lost River (Martin, Orange Counties)
Ohio River
Patoka River (Gibson, Pike Counties)
Pigeon River
Salamonie River
Sugar Creek (Johnson, Shelby Counties)
Tippecanoe River
Wabash River
White River Main channel (Gibson, Pike, Knox Counties)
White River East Fork (downstream from Williams Dam)

Appendix C:

Karst Region

Programmatic Coordination does NOT apply in the Karst Region where surface karst features will be affected, and Full Coordination is required.

Note: The existing Karst Agreement was developed between INDOT, USFWS, Indiana Department of Environmental Management (IDEM) and Indiana Department of Natural Resources (IDNR) to ensure the development of State highway projects evaluated and considered remediation for potential impacts to Karst features within the designated "Karst Region" of Indiana. The document is binding on the projects developed by INDOT and although recommended, it is not binding on local, LPA and/or city/county highway projects.

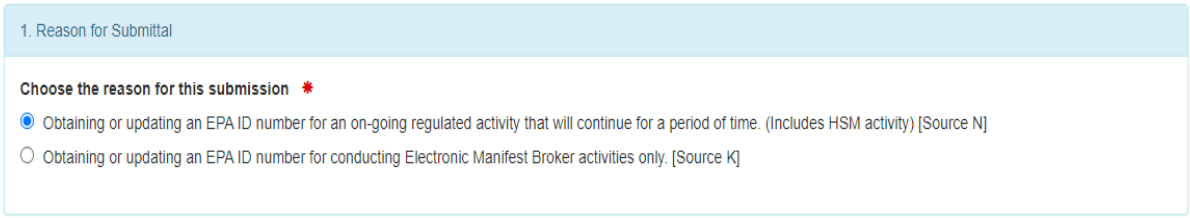
Karst regions are located within the following counties

Putnam	Martin	Floyd
Morgan	Lawrence	Harrison
Owen	Orange	Crawford
Monroe	Dubois	
Greene	Washington	

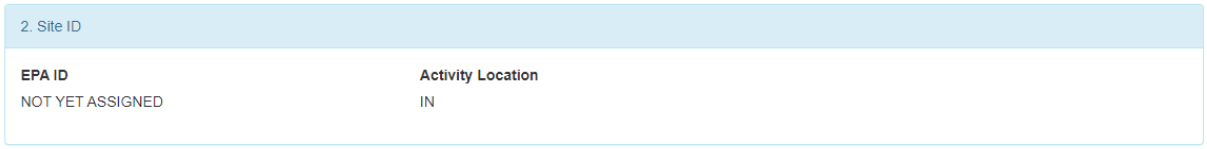
1. This guidance is for obtaining a new EPA ID number following the generation of hazardous waste. The hazardous waste has been identified through sampling and has associated analytical to support the hazardous nature. This guidance does not cover re-activating a previously acquired EPA ID number as that guidance is currently pending. In the interim, contact INDOT ESD SAM (esd.sam@indot.in.gov) for assistance with checking to see if there is an existing EPA ID number and/or re-activating an EPA ID number or any other general questions. Please do not contact IDEM without checking with Site Assessment and Management (SAM).

   Log in to RCRA Info Home. If you don't have an account, just click on "Register" and it will take you through the process.
   https://rcrainfo.epa.gov/rcrainfoprod/action/industry/secured/home

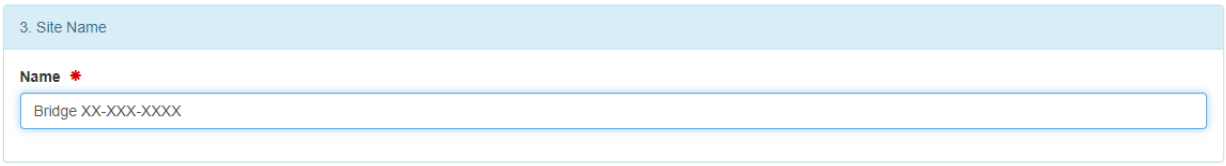
2. Choose Indiana from the Dropdown List. Item 1. Request New Site ID –



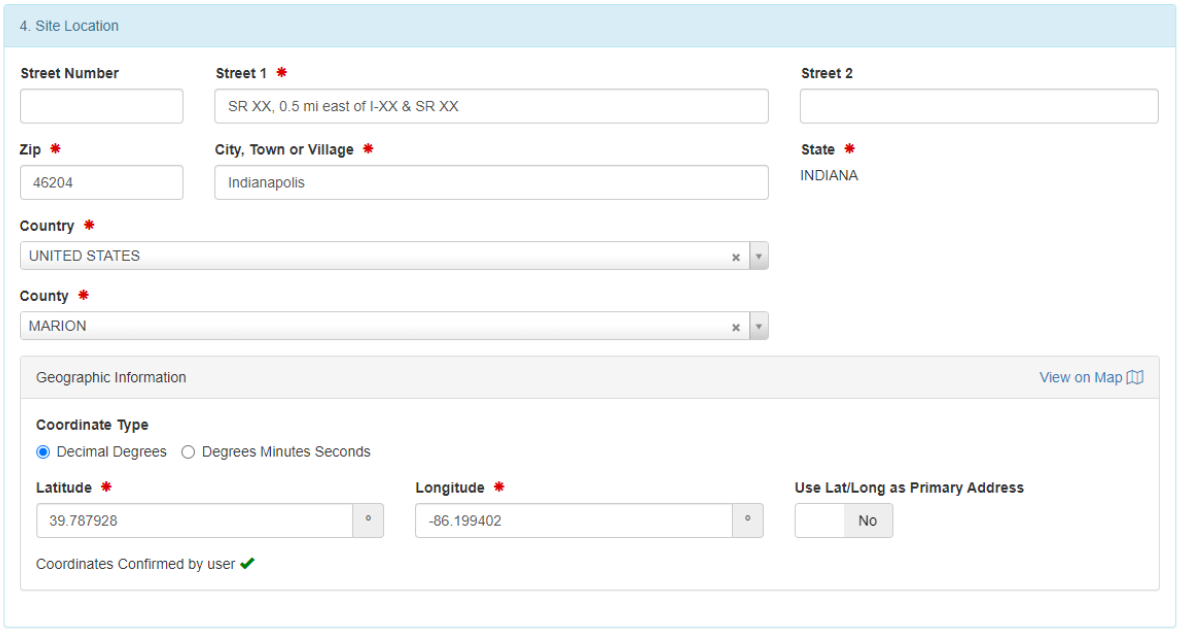
   Skip Item 2.



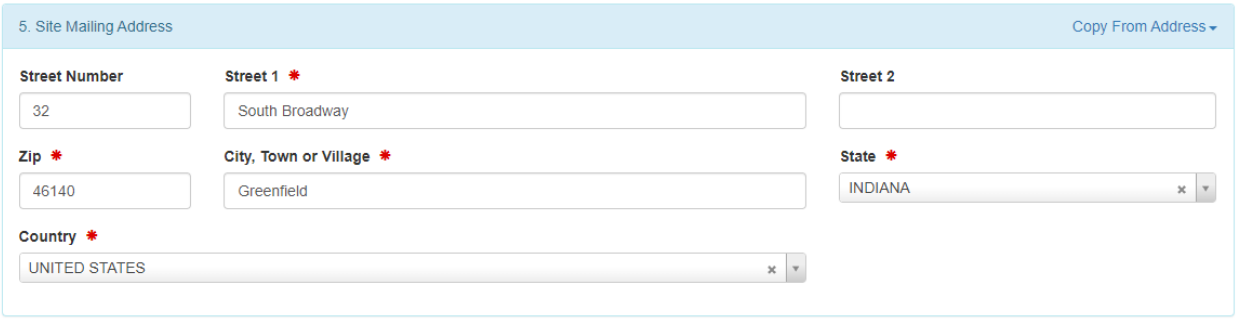
   Item 3. Under Site Name, please enter the bridge (INDOT asset name/structure number - please don't use the NBI number). If these are twin bridges, please add the designation – i.e. NBL and SBL. One EPA number can be obtained for twin bridges on interstates or multiple lane limited access highways.



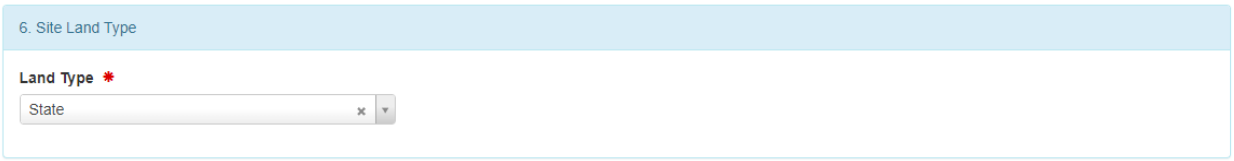
   Item 4. Use the Street/Road number with a distance from the nearest intersection. Put in the zip code, and the City, Town should automatically populate. Select the county from the drop down list. You will need to have the latitude and longitude, which is usually in BIAS or SPMS.



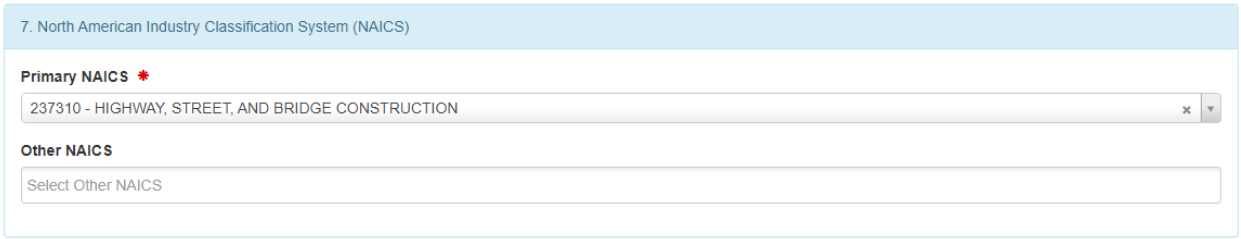
Item 5. The District Office address that corresponds with the bridge should go here.



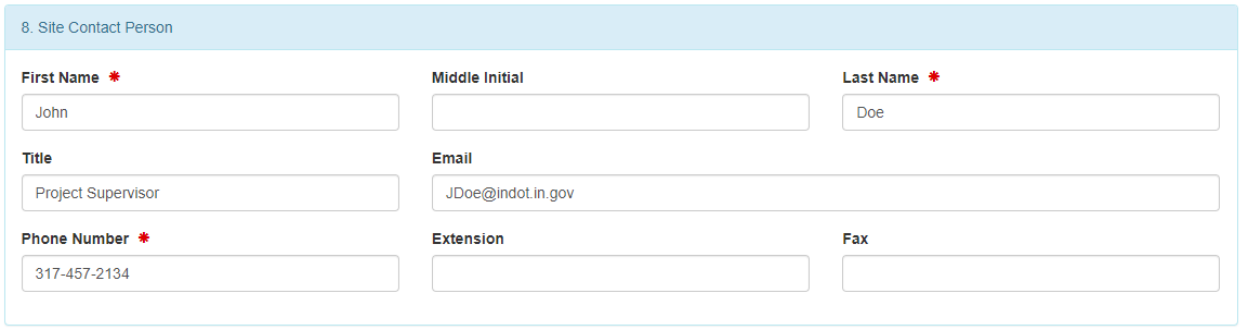
Item 6. This should be “State”



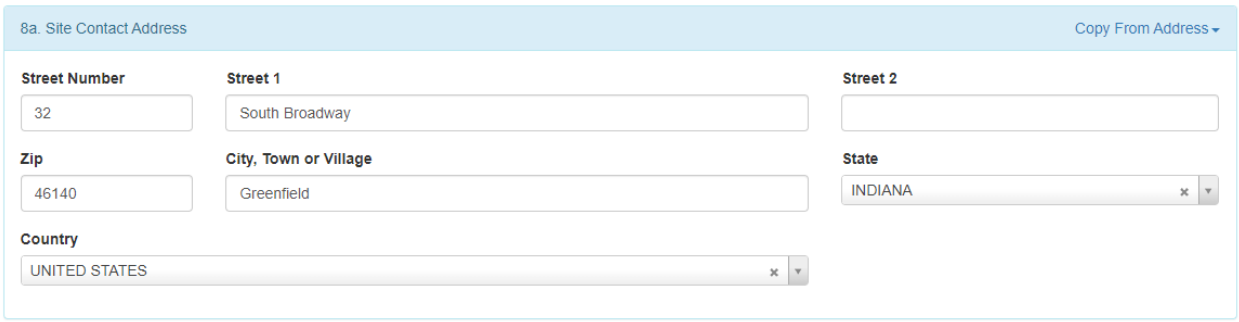
Item 7. The Primary NAICS Code used for bridges is 237310



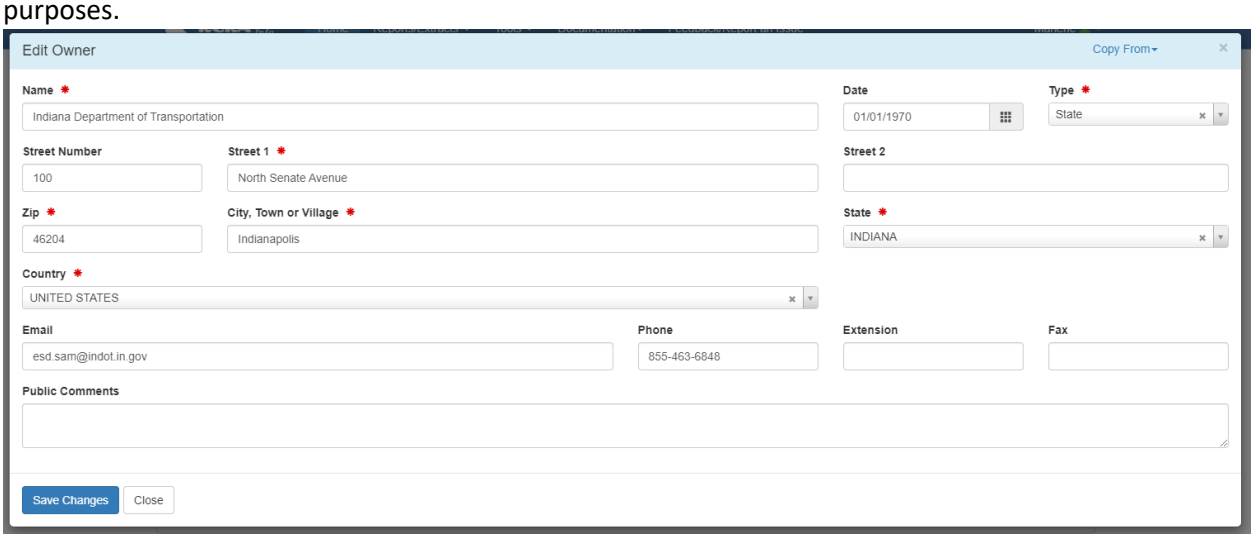
Item 8. The Project Engineer/Supervisor (INDOT Employee Only). Note to INDOT Employee – if you leave employment with INDOT, please enter a new contact in this Item.



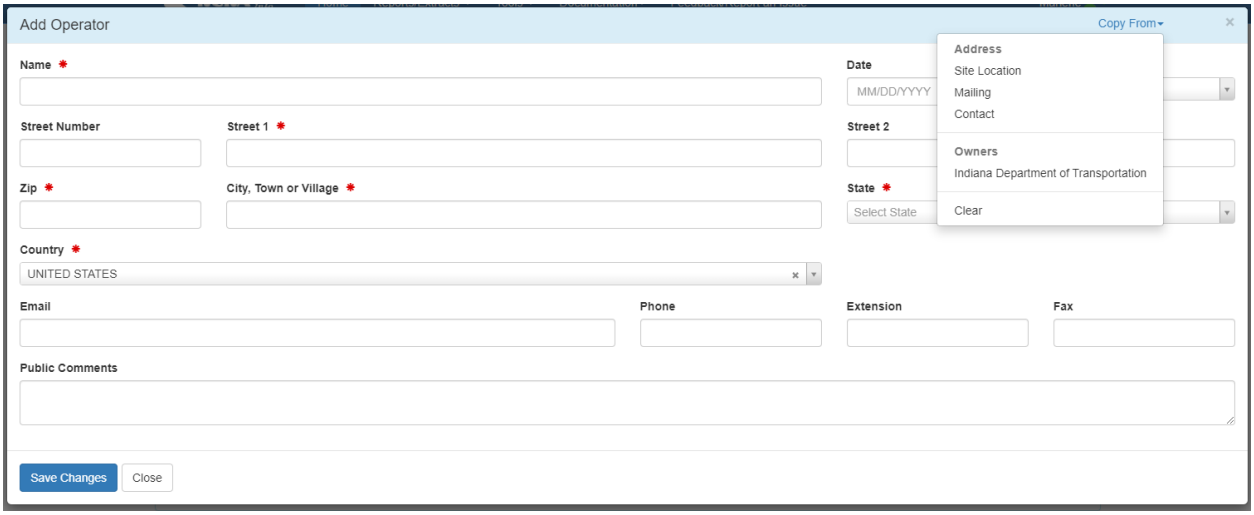
Item 8a. District Office address that corresponds with the bridge should go here.



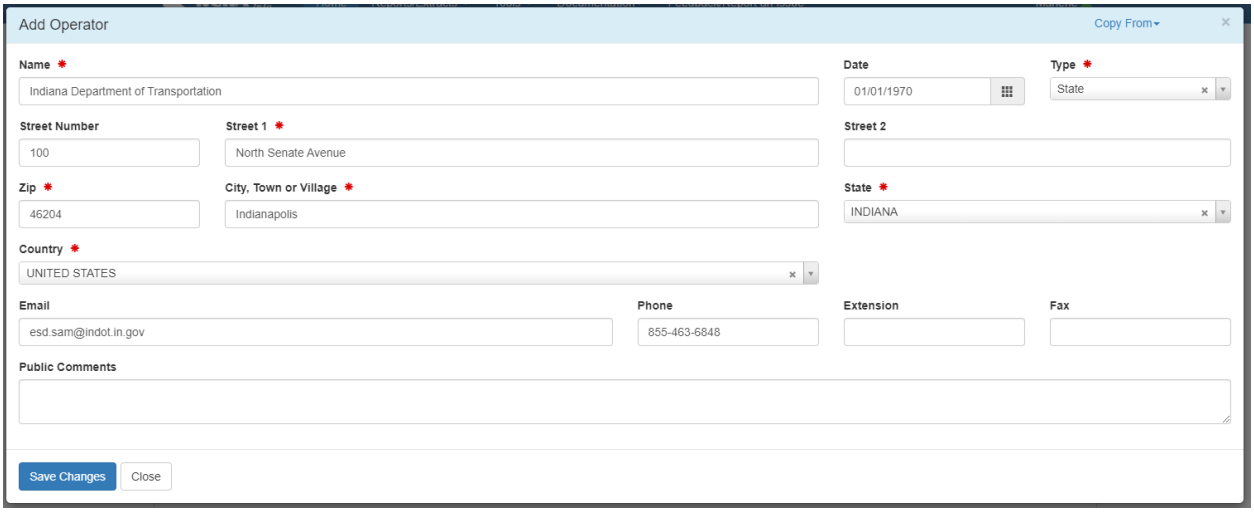
Item 9a. Legal Owner – Select "Add" and it will take you to this screen. The owner should be designated as a Central Office location since legal ownership documentation would be found with the real estate division. Please fill out this section as shown. Be sure to put in the date that the bridge was built. Using a default of January 1 since most bridges don't have a month and day for being built, just make sure that the year is correct. The below year is just for example purposes.



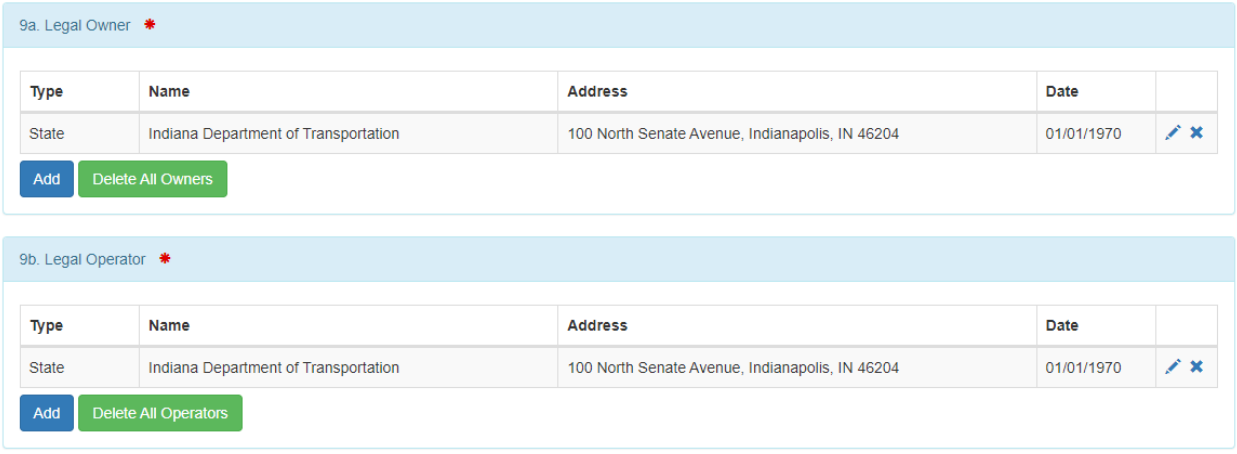
Item 9b. Legal Operator – Select "Add" and it will take you to this screen. Select "Copy From" in the top right-hand corner of the box and select "Owners Indiana Department of Transportation". The Operator information will automatically populate. Save changes.



Below is the populated box.



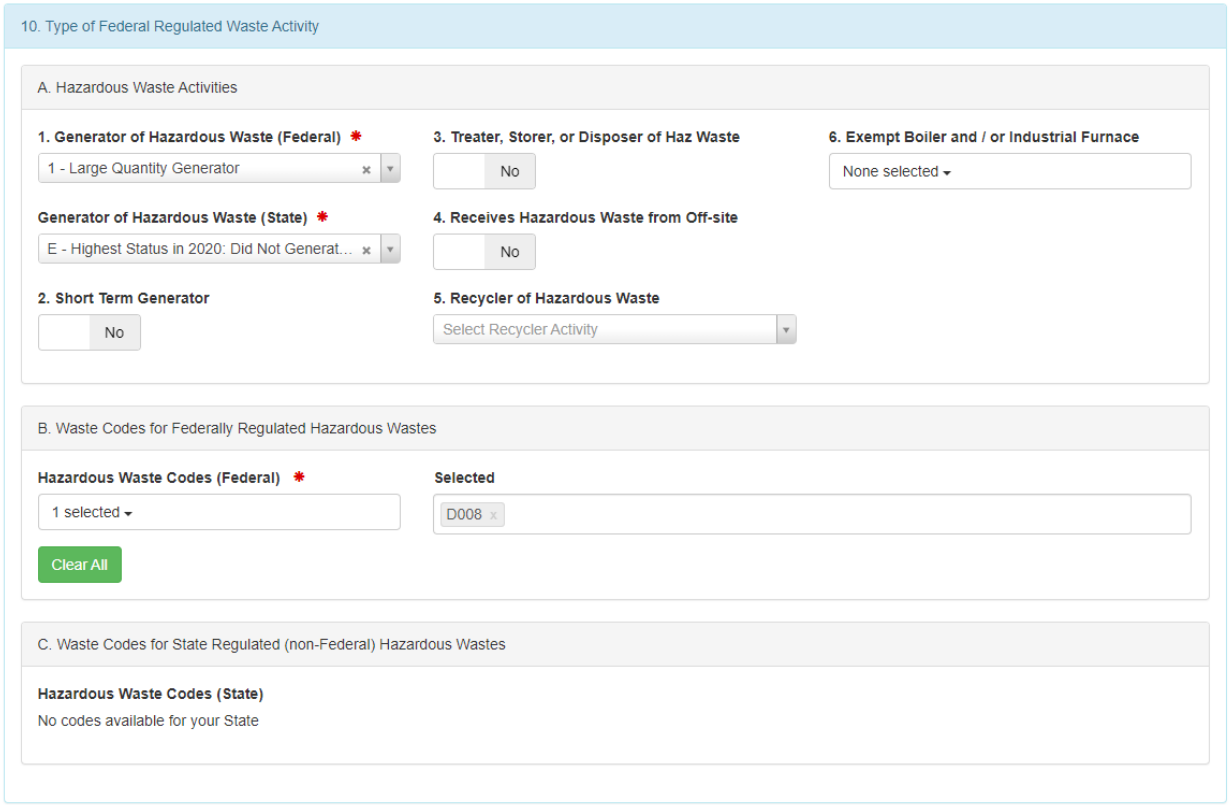
Items 9a. and 9b. should look like this.



Item 10.A. Under A.1., select 1-Large Quantity Generator (if this changes later, it can be changed in the year end reporting). Under Generator of Hazardous Waste (State), select E – Highest Status in (previous year-in this case 2020): Did not Generate Hazardous Waste.

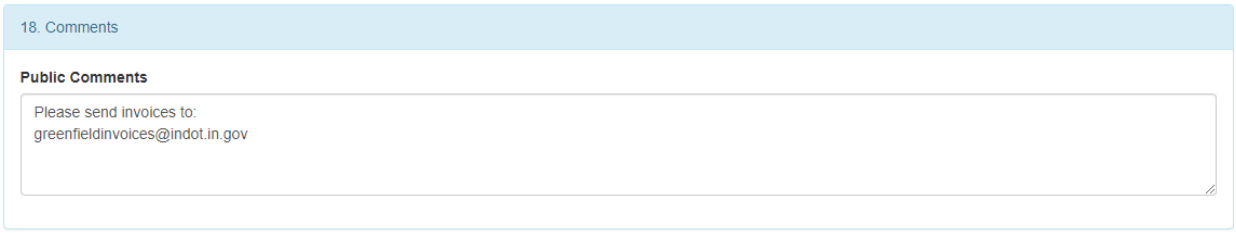
Item 10.B. If the waste is hazardous for lead, please select D008. If additional RCRA Metals test for hazardous, here are the codes to add.
Item 10.C. is left blank.

	Hazardous Waste Code	EPA Allowable Limits
Arsenic	D004	5.0 ppm (mg/L)
Barium	D005	100.0 ppm (mg/L)
Cadmium	D006	1.0 ppm (mg/L)
Chromium	D007	5.0 ppm (mg/L)
Lead	D008	5.0 ppm (mg/L)
Mercury	D009	0.2 ppm (mg/L)
Selenium	D010	1.0 ppm (mg/L)
Silver	D011	5.0 ppm (mg/L)



Items 11 through 17. No changes should be made.

Item 18. Please include the District Office invoicing e-mail in the district where the bridge is located. Annual invoices for Large Quantity Generator Status will be issued in the year following the hazardous waste generation and will be based on the previously completed annual reporting that is due by March 31. Currently, the amount is $1,565. Please see the "Annual Reporting Guidance" document for completing annual reporting electronically. The Item 8. Site Contact person will be responsible for completing the annual reporting.



Hit review and make sure that all information has been entered. If an entry is not made in an item with a red asterisk next to it, it will need to be completed. Hit Review again, and it will give you the option to submit. Make sure to have your user name, your password, and the answers to your security questions.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHROMIUM
CAS # 7440-47-3

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about chromium. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chromium occurs from ingesting contaminated food or drinking water or breathing contaminated workplace air. Chromium(VI) at high levels can damage the nose and can cause cancer. Chromium has been found at 1,036 of the 1,591 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is chromium?

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium is present in the environment in several different forms. The most common forms are chromium(0), chromium(III), and chromium(VI). No taste or odor is associated with chromium compounds.

Chromium(III) occurs naturally in the environment and is an essential nutrient. Chromium(VI) and chromium(0) are generally produced by industrial processes.

The metal chromium, which is the chromium(0) form, is used for making steel. Chromium(VI) and chromium(III) are used for chrome plating, dyes and pigments, leather tanning, and wood preserving.

What happens to chromium when it enters the environment?

❑ Chromium enters the air, water, and soil mostly in the chromium(III) and chromium(VI) forms.
❑ In air, chromium compounds are present mostly as fine dust particles which eventually settle over land and water.
❑ Chromium can strongly attach to soil and only a small amount can dissolve in water and move deeper in the soil to underground water.
❑ Fish do not accumulate much chromium in their bodies from water.

How might I be exposed to chromium?

❑ Eating food containing chromium(III).
❑ Breathing contaminated workplace air or skin contact during use in the workplace.
❑ Drinking contaminated well water.
❑ Living near uncontrolled hazardous waste sites containing chromium or industries that use chromium.

How can chromium affect my health?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat.

Breathing high levels of chromium(VI) can cause irritation to the nose, such as runny nose, nosebleeds, and ulcers and holes in the nasal septum.

Ingesting large amounts of chromium(VI) can cause stomach upsets and ulcers, convulsions, kidney and liver damage, and even death.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Skin contact with certain chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

How likely is chromium to cause cancer?

Several studies have shown that chromium(VI) compounds can increase the risk of lung cancer. Animal studies have also shown an increased risk of cancer.

The World Health Organization (WHO) has determined that chromium(VI) is a human carcinogen.

The Department of Health and Human Services (DHHS) has determined that certain chromium(VI) compounds are known to cause cancer in humans.

The EPA has determined that chromium(VI) in air is a human carcinogen.

How can chromium affect children?

We do not know if exposure to chromium will result in birth defects or other developmental effects in people. Birth defects have been observed in animals exposed to chromium(VI).

It is likely that health effects seen in children exposed to high amounts of chromium will be similar to the effects seen in adults.

How can families reduce the risk of exposure to chromium?

❑ Children should avoid playing in soils near uncontrolled hazardous waste sites where chromium may have been discarded.

❑ Although chromium(III) is an essential nutrient, you should avoid excessive use of dietary supplements containing chromium.

Is there a medical test to show whether I've been exposed to chromium?

Since chromium(III) is an essential element and naturally occurs in food, there will always be some level of chromium in your body. There are tests to measure the level of chromium in hair, urine, and blood. These tests are most useful for people exposed to high levels. These tests cannot determine the exact levels of chromium that you may have been exposed to or predict how the levels in your tissues will affect your health.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 100 μg chromium(III) and chromium(VI) per liter of drinking water (100 μg/L).

The Occupational Safety and Health Administration (OSHA) has set limits of 500 μg water soluble chromium(III) compounds per cubic meter of workplace air (500 $\mu g/m^3$), 1,000 $\mu g/m^3$ for metallic chromium(0) and insoluble chromium compounds, and 52 $\mu g/m^3$ for chromium(VI) compounds for 8-hour work shifts and 40-hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Chromium. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	**STATUS:** Effective	**POLICY NUMBER:** WASTE-0064-NPD-R1	
AGENCY NONRULE POLICY DOCUMENT **SUBJECT:** Uncontaminated Soil Policy	**AUTHORIZED:** Brian Rockensuess, Commissioner		
	SUPERSEDES: WASTE-0064-NPD	**ISSUING OFFICE(S):** Office of Land Quality	
	ORIGINALLY EFFECTIVE: April 10, 2015	**RENEWED/REVISED:** April 10, 2024	

Disclaimer: *This non-rule policy document (NPD) is being established by the Indiana Department of Environmental Management (IDEM), consistent with its authority in state law under the Indiana Code at IC 13-14-1-11.5. It is intended solely to provide guidance and shall be used in conjunction with applicable rules or laws. It does not replace applicable rules and laws, and if it conflicts with these rules or laws, the rules or laws shall control. Pursuant to IC 13-14-1-11.5, this policy will be available for public inspection for at least 45 days prior to presentation to the appropriate State Environmental Board, and may be put into effect by IDEM 30 days afterward. If the non-rule policy is presented to more than one board, it will be effective 30 days after presentation to the last. IDEM also will submit the policy to the Indiana Register for publication.*

1.0 PURPOSE

The solid waste rules in the Indiana Administrative Code at 329 IAC 10-3-1(1) and 329 IAC 11-3-1(1) exclude from regulation the disposal of uncontaminated dirt (soil) and, alternatively, would consider contaminated soil to be a solid waste that is subject to solid waste regulations. Neither the rules nor the laws define 'uncontaminated,' so the policy of IDEM's solid waste program has been to interpret the presence of any non-natural constituent in a soil as being a contaminant, making the soil subject to the solid waste regulations.

IDEM has developed risk-based non-rule policy documents (NPDs) to address and drive the cleanup of contaminated soil. These NPDs include IDEM's Risk-based Closure Guide (R2) and the Remediation Program Guide (RPG). For the purpose of this Uncontaminated Soil Poincy, Table A-6: 2022 Screening Levels shall be used as the screening levels when determining the applicability of the policy.

This NPD applies to soils, which do not include waste streams that are specifically regulated by 329 IAC 10 and which contain human introduced constituents (or chemicals) below Table A-6: 2022 residential screening levels, and designates how those soils may be managed when excavated. Soils with concentrations of a human introduced chemical not exceeding Table A-6: 2022 residential screening levels are considered uncontaminated if they are handled in accordance with this NPD. Soils with concentrations of human introduced chemicals or contaminants exceeding Table A-6: 2022 residential screening levels are considered contaminated soil and are not exempt from the solid waste rules under this NPD.

This NPD is to provide consistent standards for excavated soil remaining on-site, reused on-site, or taken offsite for reuse or disposal.

2.0 SCOPE

The scope of this NPD applies to how excavated soil may be managed when found to contain human introduced chemicals below Table A-6: 2022 residential screening levels.

The scope of this NPD does not include soils impacted by spilled materials subject to the IDEM Spill Rule at 327 IAC 2-6.

This NPD is not intended to address naturally occurring chemical constituents in soil.

This NPD does not exempt from regulation historical fill material made up of specifically regulated wastes and waste streams, which include, but are not limited to, coal ash, foundry sand, or other waste streams. Such materials are considered solid waste and must either be disposed in a permitted landfill or be approved for a legitimate use project.

This NPD also does not address situations when soil is intermingled with regulated solid waste. Examples include, but are not limited to, ash and debris mixed with soil after a fire, municipal wastewater treatment sludge mingled with soil from a lagoon liner, or similar situations where soil has become part of a waste. If soil can be physically separated from the wastes and is found to be uncontaminated, as specified in this NPD, it would no longer need to be handled as a waste.

In general, this NPD is not intended to address soils containing identifiable industrial wastes, solid wastes, or hazardous wastes that are inseparable from the soil.

3.0 DEFINITIONS

3.1. "Agency" – The Indiana Department of Environmental Management (IDEM).

3.2. "Chemical" – A substance with unique properties consisting of a combination of one or more elements.

3.3. "Contaminant" – "Contaminant" for purposes of environmental management laws, means any solid, semi-solid, liquid, or gaseous matter, or any odor, radioactive material, pollutant (as defined by the federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), as in effect on January 1, 1989), hazardous waste (as defined in the federal Solid Waste Disposal Act [42 U.S.C. 6901 et seq.], as in effect on January 1, 1989), any constituent of a hazardous waste, or any combination of the items described in this section, from whatever source, that:

(1) is injurious to human health, plant or animal life, or property;
(2) interferes unreasonably with the enjoyment of life or property, or otherwise violates:
(A) environmental management laws; or
(B) rules adopted under environmental management laws
(329 IAC 10-2-41, IC 13-11-2-42)

3.4. "Contaminants of concern" – Chemicals that are the focus of screening, investigation or closure in Office of Land Quality remediation programs. For petroleum sites, potentially harmful chemicals within a mixture that are present in sufficient quantity to serve as indicator compounds for that particular mixture.

3.5. "Dirt" – The term "dirt" is used in state rules at 329 IAC 10-3-1(1)(1), but is not defined in statute or rule. For the purpose of this policy, 'dirt' and 'soil' are considered synonymous terms. See 'Soil'.

3.6. "Endangered species" – Any species listed as endangered or threatened under rules of the Indiana Natural Resources Commission at 312 IAC 9-3-19, 312 IAC 9-4-14, 312 IAC 9-5-4, 312 IAC9-6-9, 312 IAC 9-9-4. (329 IAC 10-2-64)

3.7. "Flood plain" – The areas adjoining a river, stream, or lake that are inundated by the base flood. (329 IAC 10-2-75 and 329 IAC 10-2-22)

3.8. "Hazardous waste" – Hazardous waste as defined in the Code of Federal Regulations at 40 CFR 261 subpart B and Indiana Code at IC13-11-2-99.

3.9. "Karst physiographic feature" – Characteristic physiographic features present in karst terrains including any of the following: sinkholes, sinking streams, caves, large springs, blind valleys, grikes, karren, solution widened joints or bedding planes, loss of drilling fluid during core

drilling, anastomosis and conduits of less than one meter but more than two and five-tenths (2.5) millimeters, and karst aquifers.

3.10. “Non-rule policy” - The term IDEM assigns to those policies identified in IC 13-14-1-11.5 as any policy that: A. Interprets, supplements, or implements a statute or rule; B. Has not been adopted in compliance with IC 4-22-2; C. Is not intended by IDEM to have the effect of law; and D. Does not apply solely to the internal IDEM organization (is not an administrative policy).

3.11. “Remediation Closure Guide” – IDEM’s Remediation Closure Guide (RCG) was an NPD describing selected approaches to investigation and risk-based closure of contaminated or potentially contaminated sites. Its purpose is to provide for consistent application of Indiana Code (IC) 13-12-3-2 and IC 13-25-5-8.5, which form the statutory basis for risk-based cleanup in Indiana.

3.12. “Screening levels” – Screening levels and, more specifically, the 2022 residential screening levels, can be found in Table A-6 Screening Levels and are attached to this NPD.

3.13. “Soil” – Unconsolidated earth material composing the superficial geologic strata (material overlying bedrock), consisting of clay, silt, sand or gravel as classified by the U.S. Natural Resources Conservation Service. For the purpose of this NPD, ‘dirt’ and ‘soil’ are considered to be synonymous terms. (40 CFR 268.2(k) [not inclusive])

3.14. “Solid waste" - As defined in 329 IAC 10-2-174:
(a) Has the meaning as set forth in IC 13-11-2-205(a).
(b) The following are examples of other discarded material:
(1) Ash residue.
(2) Contaminated sediments.
(3) Commercial solid waste.
(4) Construction/demolition waste.
(5) Hazardous waste.
(6) Household waste.
(7) Infectious waste.
(8) Liquid waste.
(9) Pollution control waste.
(10) Municipal solid waste.
(11) Regulated hazardous waste.
(12) Residential waste.
(13) Industrial process waste.

3.15. “Wetlands“ – Areas classified as jurisdictional wetlands or jurisdictional waters of the United States by the United States Army Corps of Engineers under the authority from the federal Clean Water Act, 33 U.S.C. 1344, and areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include (1) swamps, (2) marshes (3) bogs, and (4) similar areas. (329 IAC10-2-207 and IC 13-11-2-265.7)

4.0 ROLES

4.1 The Site Owner/Consultant/Operator or other person responsible for the soil shall:
Be responsible for conducting an investigation of the soils and the site or area where the soil will be removed to determine if the soil contains contaminants. This can include, but is not limited to:

- Reviewing site records to determine previous uses of the property, including uses that may have adversely impacted the site. This could include, but is not limited to, records of ownership and taxation, property transfer disclosures, or descriptions of property use (i.e., Sanborn Maps.)
- Reviewing or inspecting the site to determine the presence of stained soil(s) or other indications of contaminated soil, if deemed necessary. During the record review or site inspection, conducting a characterization of the soil(s).

- Determining if the soil contains human introduced chemicals. This will likely require collecting and analyzing representative samples of the soil in accordance with SW846 or other accepted methods and standards.
- Inspecting for stained soils or other wastes and/or other indications of contamination during excavation.
- If present, determining if the concentration of the human introduced chemicals or contaminant in the soil are at levels greater than the 2022 residential soil screening levels.
- Maintaining records/documentation used as a basis for determining the concentration of the human introduced chemicals in the soil.
- If human introduced chemicals are present, maintaining records of where and how much soil was placed on-site or where and how much soil was sent off-site.
- Ensuring that the soils containing any level of human introduced chemicals are not placed in an environmentally sensitive area.

4.2 Excavator/Transporter responsible for the relocation of soils shall:

- Ensure that the soils containing any level of human introduced chemicals are not placed in an environmentally sensitive area.

4.3 IDEM Compliance and Response Branch

- IDEM has been tasked with protecting the environment and shall be responsible for:
  a. Answering questions related to this NPD, and
  b. Investigating improper application of this NPD.

5.0 POLICY

This NPD is meant to aid in determining and explaining when, through the use of Table A-6: 2022 residentialscreening levels, soil containing detectable levels of human introduced chemicals is considered “uncontaminated”. As “uncontaminated”” soil, the exclusion in 329 IAC 10-3-1(1) will apply according to the qualifications listed below.

Use of Residential Screening Levels

For excavated soils containing detectable amounts of human introduced chemicals, the residential screening levels provided in Table A-6: 2022 Screening Levels (also referred to as Screening Levels Table) should be used when the soils are:

- Not subject to RCRA hazardous waste regulatory requirements, and
- Going to be deposited on-site, or
- Used as fill on-site or off-site, or
- Managed in a way other than disposal at a municipal solid waste landfill

There are two residential screening levels in Table A-6; the “Migration to Groundwater” and the “Direct Contact” screening levels. The lower of the two screening levels must be used as the residential screening level when comparing the concentrations of the human introduced chemicals in the soil with the residential screening level.

Placement in Environmentally Sensitive Areas

In order to protect the environment, soils with any detectable levels of human introduced chemicals cannot be placed in environmentally sensitive areas.

Environmentally sensitive areas include the following locations:

- Areas of karst physiographic features.
- A wetland, floodway, or standing water, where the standing water reflects the water table.

Additionally, any placement of soil, on-site or off-site, could be subject to other regulations that include, but may not be limited to, the following regulations:

- 327 IAC 15-5 - Storm Water Run-Off Associated with Construction Activity.
- 327 IAC 15-6 - Storm Water Discharges Exposed to Industrial Activity.
- IC 14-28 - Flood Control Act (i.e., IC 14-28-1-22 Construction permits).
- 312 IAC 10 - Flood Plain Management (i.e., 312 IAC 10-4-1 License requirements for construction in a floodway).
- 312 IAC 10-2-39 - Unreasonable detrimental effects upon fish, wildlife, or botanical resources, and IC 14-28-1-22.
- Section 401 of the federal Clean Water Act - State Certification of Water Quality.
- 326 IAC 6-4 - Fugitive Dust Emissions.
- 326 IAC 6-5 - Fugitive Particulate Matter Emission Limitations
- IC 14-21 - Historic Preservation and Archeology.
- Section 404 of the federal Clean Water Act – Wetlands.
- The critical habitat of an endangered species as defined by the Code of Federal Regulations, 50 CFR 17.

Determination/Approval

At any given time, there are large numbers of excavations and large volumes of soil being excavated and moved throughout the state. Putting in place a formal process to require the review and assessment of every excavation by IDEM is not practical or an efficient use of IDEM's time. Therefore, this NPD is meant to be self-implementing.

The owner/operator will still be responsible for adhering to the statutory requirements, rules, and for following this NPD, but will not be required to obtain approval from IDEM.

Case-by-Case Site-Specific Levels

When a screening level does not exist Table A-6: 2022 Screening Levels, facilities may develop a site-specific risk analysis to establish a site specific 'screening level'. If a case-by-case site-specific risk analysis is necessary, the owner/operator must submit a written proposal to the IDEM Industrial Waste Compliance Section. A written approval from IDEM will be required before excavation may begin. The written proposal will be routed by the IDEM Industrial Waste Compliance Section to the IDEM Office of Land Quality Science Services Branch, Risk Services Section.

More Information and/or Questions

If there are questions regarding the application of this NPD, please contact staff of the Industrial Waste Compliance Section of IDEM's Office of Land Quality, at (317) 234-6923 or, toll free in Indiana, at (800) 451-6027, ext. 4-6923.

6.0 REFERENCES

6.1. Indiana Administrative Codes:

A. 329 IAC 3.1, Hazardous Waste Management Permit Program and Related Hazardous Waste Management

B. 329 IAC 10, Solid Waste Land Disposal Facilities

C. 329 IAC 11-3-1(1), Solid Waste Processing Facilities; Exclusions; general

D. 2022 A-6 of the Remediation Closure Guidance

https://www.in.gov/idem/cleanups/files/risc_screening_table_2022_a6.pdf

6.2. Indiana Statutes:

A. IC 13-13, Department of Environmental Management

6.3 Agency Policies:

A. Remediation Closure Guide NPD (Waste-0046-R1)

B. Contained-In Determination NPD (Waste-0061)

7.0 SIGNATURES

Commissioner
Indiana Department of Environmental Management

4/2/24
Date

Assistant Commissioner
Office of Land Quality

3/5/2024
Date

Assistant Commissioner
Office of Legal Counsel and Criminal Investigations

4/10/24
Date

This policy is consistent with agency requirements.

Quality Improvement Program
Office of Planning and Assessment
Indiana Department of Environmental Management

4-11-2024
Date

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Acenaphthene	83-32-9	5000 N	45000 N	100000 L	110 N	530 N				
Acephate	30560-19-1	27 N	250 N	520 N	0.026 N	6 N				
Acetaldehyde	75-07-0	110 N	340 N	1900 N	0.077 N	19 N			9.4 N	39 N
Acetochlor	34256-82-1	1800 N	16000 N	34000 N	5.6 N	350 N				
Acetone	67-64-1	98000 N	100000 L	100000 L	74 N	18000 N				
Acetone Cyanohydrin	75-86-5	100000 L	100000 L	100000 L					2.1 N	8.8 N
Acetonitrile	75-05-8	1100 N	3400 N	19000 N	0.54 N	130 N			63 N	260 N
Acetophenone	98-86-2	2500 S	2500 S	2500 S	12 N	1900 N				
Acetylaminofluorene, 2-	53-96-3	2 C	6 C	320 C	0.015 C	0.16 C			0.022 C	0.094 C
Acrolein	107-02-8	0.2 N	0.6 N	3.4 N	0.00017 N	0.042 N			0.021 N	0.088 N
Acrylamide	79-06-1	3.4 C	46 C	2400 C	0.0021 C	0.5 C			0.1 C	1.2 C
Acrylic Acid	79-10-7	28 N	83 N	460 N	0.0017 N	0.42 N			0.21 N	0.88 N
Acrylonitrile	107-13-1	3.5 C	11 C	370 N	0.0023 C	0.52 C			0.41 C	1.8 C
Adiponitrile	111-69-3	100000 L	100000 L	100000 L					6.3 N	26 N
Alachlor	15972-60-8	140 C	410 C	18000 N	0.033 M	2 M				
Aldicarb	116-06-3	88 N	820 N	1800 N	0.015 M	3 M				
Aldicarb Sulfone	1646-88-4	88 N	820 N	1800 N	0.0088 M	2 M				
Aldicarb sulfoxide	1646-87-3				0.018 M	4 M				
Aldrin	309-00-2	0.55 C	1.8 C	59 N	0.03 C	0.0092 C			0.0057 C	0.025 C
Allyl Alcohol	107-18-6	4.9 N	15 N	82 N	0.00086 N	0.21 N			0.1 N	0.44 N
Allyl Chloride	107-05-1	2.4 N	6.9 N	38 N	0.013 N	2.1 N			1 N	4.4 N
Aluminum	7429-90-5	100000 L	100000 L	100000 L	600000 N	20000 N			5.2 N	22 N
Aluminum Phosphide	20859-73-8	43 N	470 N	790 N		8 N				
Ametryn	834-12-8	800 N	7400 N	16000 N	3.2 N	150 N				
Aminobiphenyl, 4-	92-67-1	0.36 C	1.1 C	60 C	0.0031 C	0.03 C			0.0047 C	0.02 C
Aminophenol, m-	591-27-5	7100 N	66000 N	100000 L	12 N	1600 N				
Aminophenol, o-	95-55-6	350 N	3300 N	7000 N	0.61 N	79 N				
Aminophenol, p-	123-30-8	1800 N	16000 N	34000 N	3 N	400 N				
Amitraz	33089-61-1	220 N	2100 N	4300 N	84 N	8.2 N				
Ammonia	7664-41-7								520 N	2200 N
Ammonium Perchlorate	7790-98-9	77 N	820 N	1400 N		14 N				
Ammonium Picrate	131-74-8	180 N	1600 N	3400 N	3.8 N	40 N				
Ammonium Sulfamate	7773-06-0	22000 N	100000 L	100000 L		4000 N				
Amyl Alcohol, tert-	75-85-4	110 N	340 N	1900 N	0.026 N	6.3 N			3.1 N	13 N
Aniline	62-53-3	620 N	4000 C	12000 N	0.89 C	130 C			1 N	4.4 N
Anthracene	120-12-7	25000 N	100000 L	100000 L	1200 N	1800 N				
Anthraquinone, 9,10-	84-65-1	180 N	570 C	3400 N	2.9 C	14 C				
Antimony (metallic)	7440-36-0	43 N	470 N	790 N	5.4 M	6 M			0.31 N	1.3 N
Antimony Pentoxide	1314-60-9	55 N	580 N	980 N		9.7 N				
Antimony Tetroxide	1332-81-6	43 N	470 N	790 N		7.8 N				
Antimony Trioxide	1309-64-4	100000 L	100000 L	100000 L					0.21 N	0.88 N
Arsenic, Inorganic	7440-38-2	9.5 C	30 C	920 N	5.9 M	10 M			0.0065 C	0.029 C
Arsine	7784-42-1	0.38 N	4.1 N	6.9 N		0.07 N			0.052 N	0.22 N
Asbestos (units in fibers)	1332-21-4					7000000 M				
Asulam	3337-71-1	3200 N	30000 N	63000 N	3.7 N	720 N				
Atrazine	1912-24-9	34 C	100 C	5200 N	0.039 C	3 C				
Auramine	492-80-8	8.7 C	26 C	1400 C	0.14 C	0.78 C			0.11 C	0.49 C
Avermectin B1	65195-55-3	35 N	330 N	700 N	280 N	8 N				
Azinphos-methyl	86-50-0	270 N	2500 N	5200 N	0.34 N	56 N			10 N	44 N

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Azobenzene	103-33-3	78 C	260 C	12000 C	0.19 C	1.2 C			0.91 C	4 C
Azodicarbonamide	123-77-3	12000 N	40000 N	100000 L	140 N	20000 N			0.0073 N	0.031 N
Barium	7440-39-3	21000 N	100000 L	100000 L	1700 M	2000 M			0.52 N	2.2 N
Benfluralin	1861-40-1	550 N	5800 N	9800 N	18 N	28 N				
Benomyl	17804-35-2	4500 N	41000 N	87000 N	17 N	970 N				
Bensulfuron-methyl	83055-99-6	18000 N	100000 L	100000 L	20 N	3900 N				
Bentazon	25057-89-0	2700 N	25000 N	52000 N	2.5 N	570 N				
Benz[a]anthracene	56-55-3	15 C	210 C	12000 C	2.1 C	0.3 C			0.17 C	2 C
Benzaldehyde	100-52-7	1200 S	1200 S	1200 S	0.84 C	190 C				
Benzene	71-43-2	17 C	51 C	1800 S	0.051 M	5 M	28 C	120 C	3.6 C	16 C
Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	27 N	230 C	520 N	0.033 N	6 N				
Benzenethiol	108-98-5	110 N	1200 N	1300 S	0.23 N	17 N				
Benzidine	92-87-5	0.0074 C	0.1 C	5.2 C	0.000057 C	0.0011 C			0.00015 C	0.0018 C
Benzo(e)pyrene	192-97-2	8 N	73 N	160 N	43 N	1.8 N			0.0021 N	0.0088 N
Benzo(j)fluoranthene	205-82-3	5.9 C	18 C	980 C	16 C	0.65 C			0.26 C	1.1 C
Benzo[a]pyrene	50-32-8	1.5 C	21 C	500 N	4.7 M	0.2 M			0.0021 N	0.0088 N
Benzo[b]fluoranthene	205-99-2	15 C	210 C	12000 C	60 C	2.5 C			0.17 C	2 C
Benzo[k]fluoranthene	207-08-9	150 C	2100 C	100000 L	590 C	25 C			1.7 C	20 C
Benzoic Acid	65-85-0	100000 L	100000 L	100000 L	300 N	75000 N				
Benzotrichloride	98-07-7	0.74 C	2.5 C	110 C	0.0013 C	0.03 C				
Benzyl Alcohol	100-51-6	8800 N	82000 N	100000 L	9.7 N	2000 N				
Benzyl Chloride	100-44-7	15 C	48 C	530 N	0.019 C	0.89 C			0.57 C	2.5 C
Beryllium and compounds	7440-41-7	220 N	2300 N	3800 N	63 M	4 M			0.012 C	0.051 C
Bifenox	42576-02-3	800 N	7400 N	16000 N	15 N	100 N				
Biphenthrin	82657-04-3	1300 N	12000 N	27000 N	27000 N	300 N				
Biphenyl, 1,1'-	92-52-4	66 N	200 N	1100 N	0.17 N	0.83 N			0.42 N	1.8 N
Bis(2-chloro-1-methylethyl) ether	108-60-1	1000 S	1000 S	1000 S	5.2 N	710 N				
Bis(2-chloroethoxy)methane	111-91-1	270 N	2500 N	5200 N	0.27 N	59 N				
Bis(2-chloroethyl)ether	111-44-4	3.2 C	10 C	810 C	0.00074 C	0.14 C			0.085 C	0.37 C
Bis(2-ethylhexyl)phthalate	117-81-7	550 C	1600 C	34000 N	29 M	6 M			12 C	51 C
Bis(chloromethyl)ether	542-88-1	0.0012 C	0.0036 C	0.48 C	0.0000034 C	0.00072 C			0.00045 C	0.002 C
Bisphenol A	80-05-7	4500 N	41000 N	87000 N	1200 N	770 N				
Boron And Borates Only	7440-42-8	22000 N	100000 L	100000 L	260 N	4000 N			21 N	88 N
Boron Trichloride	10294-34-5	100000 L	100000 L	100000 L		42 N			21 N	88 N
Boron Trifluoride	7637-07-2	4300 N	47000 N	79000 N		26 N			14 N	57 N
Bromate	15541-45-4	14 C	47 C	2000 C	1.6 M	10 M				
Bromo-2-chloroethane, 1-	107-04-0	0.49 N	1.5 N	8.5 N	0.00068 N	0.12 N			0.063 N	0.26 N
Bromo-3-fluorobenzene, 1-	1073-06-9	32 N	350 N	590 N	0.094 N	4.9 N				
Bromo-4-fluorobenzene, 1-	460-00-4	32 N	320 S	320 S	0.088 N	4.6 N				
Bromoacetic acid	79-08-3				0.24 M	60 M				
Bromobenzene	108-86-1	410 N	680 S	680 S	0.84 N	62 N			63 N	260 N
Bromochloromethane	74-97-5	210 N	630 N	3500 N	0.41 N	83 N			42 N	180 N
Bromodichloromethane	75-27-4	4.1 C	13 C	930 S	0.43 M	80 M			0.76 C	3.3 C
Bromoform	75-25-2	270 C	860 C	920 S	0.42 M	80 M			26 C	110 C
Bromomethane	74-83-9	9.5 N	30 N	160 N	0.038 N	7.5 N			5.2 N	22 N
Bromophos	2104-96-3	550 N	5800 N	9800 N	3 N	35 N				
Bromopropane, 1-	106-94-5	310 N	940 N	970 S	1.3 N	210 N			100 N	440 N
Bromoxynil	1689-84-5	74 C	220 C	12000 C	0.1 C	6.1 C				
Bromoxynil Octanoate	1689-99-2	94 C	320 C	13000 C	0.42 C	2.4 C				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Butadiene, 1,3-	106-99-0	1.1 C	3.3 C	42 N	0.0077 C	0.71 C			0.94 C	4.1 C
Butanol, N-	71-36-3	7600 S	7600 S	7600 S	8.3 N	2000 N				
Butyl alcohol, sec-	78-92-2	21000 S	21000 S	21000 S	99 N	24000 N			31000 N	130000 N
Butyl Alcohol, t-	75-65-0	20000 C	65000 C	100000 L	6.1 C	1500 C			5200 N	22000 N
Butyl Benzyl Phthalate	85-68-7	4100 C	12000 C	100000 L	46 C	160 C				
Butylate	2008-41-5	5500 N	58000 N	98000 N	8.9 N	460 N				
Butylated hydroxyanisole	25013-16-5	38000 C	100000 L	100000 L	56 C	1500 C			490 C	2200 C
Butylated hydroxytoluene	128-37-0	2100 C	6400 C	100000 L	20 C	34 C				
Butylbenzene, n-	104-51-8	110 S	110 S	110 S	64 N	1000 N				
Butylbenzene, sec-	135-98-8	150 S	150 S	150 S	120 N	2000 N				
Butylbenzene, tert-	98-06-6	180 S	180 S	180 S	31 N	690 N				
Butylphthalyl Butylglycolate	85-70-1	88000 N	100000 L	100000 L	5900 N	13000 N				
Cacodylic Acid	75-60-5	1800 N	16000 N	34000 N	2.3 N	400 N				
Cadmium (Diet)	7440-43-9	9.9 N	100 N	190 N					0.01 N	0.044 N
Cadmium (Water)	7440-43-9				7.5 M	5 M			0.01 N	0.044 N
Calcium Cyanide	592-01-8	110 N	1200 N	2000 N		20 N				
Caprolactam	105-60-2	43000 N	100000 L	100000 L	49 N	9900 N			2.3 N	9.6 N
Captafol	2425-06-1	50 C	150 C	3400 N	0.14 C	4 C			0.65 C	2.9 C
Captan	133-06-2	3400 C	10000 C	100000 L	4.4 C	310 C			43 C	190 C
Carbaryl	63-25-2	8800 N	82000 N	100000 L	33 N	1800 N				
Carbofuran	1563-66-2	450 N	4100 N	8700 N	0.31 M	40 M				
Carbon Disulfide	75-15-0	740 S	740 S	740 S	4.8 N	810 N			730 N	3100 N
Carbon Tetrachloride	56-23-5	9.1 C	29 C	460 S	0.039 M	5 M	6.5 C	28 C	4.7 C	20 C
Carbonyl Sulfide	463-58-1	94 N	280 N	1600 N	9.9 N	210 N			100 N	440 N
Carbosulfan	55285-14-8	880 N	8200 N	18000 N	25 N	51 N				
Carboxin	5234-68-4	8800 N	82000 N	100000 L	20 N	1900 N				
Ceric oxide	1306-38-3	100000 L	100000 L	100000 L					0.94 N	3.9 N
Chloral Hydrate	302-17-0	11000 N	100000 L	100000 L	8.1 N	2000 N				
Chloramben	133-90-4	1300 N	12000 N	27000 N	1.4 N	290 N				
Chloramines, Organic	E701235					4000 M				
Chloranil	118-75-2	18 C	57 C	3000 C	0.029 C	1.8 C				
Chlordane (alpha)	5103-71-9	50 N	500 N	930 N	9.7 N	3.6 N				
Chlordane (gamma)	5103-74-2	50 N	500 N	930 N	27 N	10 N				
Chlordane (technical mixture)	12789-03-6	24 C	77 C	900 N	5.4 M	2 M			0.28 C	1.2 C
Chlordecone (Kepone)	143-50-0	0.76 C	2.3 C	120 C	0.025 C	0.035 C			0.0061 C	0.027 C
Chlorfenvinphos	470-90-6	62 N	570 N	1200 N	0.6 N	11 N				
Chlorimuron, Ethyl-	90982-32-4	8000 N	74000 N	100000 L	12 N	1800 N				
Chlorine	7782-50-5	0.25 N	0.78 N	4.3 N	39 M	4000 M			0.15 N	0.64 N
Chlorine Dioxide	10049-04-4	3200 N	34000 N	58000 N		800 M			0.21 N	0.88 N
Chlorite (Sodium Salt)	7758-19-2	3200 N	35000 N	59000 N		1000 M				
Chloro-1,1-difluoroethane, 1-	75-68-3	1200 S	1200 S	1200 S	990 N	100000 N			52000 N	220000 N
Chloro-1,3-butadiene, 2-	126-99-8	0.14 C	0.44 C	61 C	0.002 C	0.19 C			0.094 C	0.41 C
Chloro-2-methylaniline HCl, 4-	3165-93-3	17 C	50 C	2700 C	0.031 C	1.7 C				
Chloro-2-methylaniline, 4-	95-69-2	76 C	230 C	5200 N	0.08 C	7 C			0.36 C	1.6 C
Chloroacetaldehyde, 2-	107-20-0	36 C	120 C	5100 C	0.012 C	2.9 C				
Chloroacetic Acid	79-11-8				0.24 M	60 M				
Chloroacetophenone, 2-	532-27-4	60000 N	100000 L	100000 L					0.031 N	0.13 N
Chloroaniline, p-	106-47-8	38 C	110 C	870 N	0.031 C	3.7 C				
Chlorobenzene	108-90-7	390 N	760 S	760 S	1.4 M	100 M			52 N	220 N

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure						GroundWater				Vapor Exposure					
		Direct Contact						Soil MTG		Tap		GroundWater				Indoor Air			
		Residential		Com/Ind		Excavation		Residential		Residential		Residential		Com/Industrial		Residential		Com/Ind	
Name	CASRN	(mg/kg)		(mg/kg)		(mg/kg)		(mg/kg)		(µg/L)		(µg/L)		(µg/L)		(µg/m^3)		(µg/m^3)	
Chlorobenzene sulfonic acid, p-	98-66-8	8800	N	82000	N	100000	L	9.3	N	2000	N								
Chlorobenzilate	510-15-6	69	C	210	C	11000	C	0.2	C	3.1	C					0.91	C	4	C
Chlorobenzoic Acid, p-	74-11-3	2700	N	25000	N	52000	N	2.6	N	510	N								
Chlorobenzotrifluoride, 4-	98-56-6	31	C	96	C	290	S	0.46	C	6.5	C					3.3	C	14	C
Chlorobutane, 1-	109-69-3	730	S	730	S	730	S	5.2	N	640	N								
Chlorodifluoromethane	75-45-6	1700	S	1700	S	1700	S	810	N	100000	N					52000	N	220000	N
Chloroethanol, 2-	107-07-3	2200	N	23000	N	39000	N	1.6	N	400	N								
Chloroform	67-66-3	4.5	C	14	C	1900	C	0.44	M	80	M					1.2	C	5.3	C
Chloromethane	74-87-3	150	N	460	N	1300	S	0.98	N	190	N					94	N	390	N
Chloromethyl Methyl Ether	107-30-2	0.28	C	0.89	C	110	C	0.00028	C	0.065	C					0.041	C	0.18	C
Chloronaphthalene, Beta-	91-58-7	6700	N	60000	N	100000	L	77	N	750	N								
Chloronitrobenzene, o-	88-73-3	25	C	77	C	4100	C	0.045	C	2.4	C					0.01	N	0.044	N
Chloronitrobenzene, p-	100-00-5	62	N	380	C	1200	N	0.22	C	12	C					2.1	N	8.8	N
Chlorophenol, 2-	95-57-8	550	N	5800	N	9800	N	1.8	N	91	N								
Chloropicrin	76-06-2	2.8	N	8.2	N	46	N	0.0049	N	0.83	N					0.42	N	1.8	N
Chlorothalonil	1897-45-6	450	C	1400	C	27000	N	1.8	C	40	C								
Chlorotoluene, o-	95-49-8	910	S	910	S	910	S	4.7	N	240	N								
Chlorotoluene, p-	106-43-4	250	S	250	S	250	S	4.8	N	250	N								
Chlorozotocin	54749-90-5	0.032	C	0.096	C	5.2	C	0.000014	C	0.0032	C					0.00041	C	0.0018	C
Chlorpropham	101-21-3	450	N	4100	N	8700	N	1.3	N	71	N								
Chlorpyrifos	2921-88-2	88	N	820	N	1800	N	2.5	N	8.4	N								
Chlorpyrifos Methyl	5598-13-0	880	N	8200	N	18000	N	11	N	120	N								
Chlorsulfuron	64902-72-3	4500	N	41000	N	87000	N	17	N	990	N								
Chlorthal-dimethyl	1861-32-1	880	N	8200	N	18000	N	2.9	N	120	N								
Chlorthiophos	60238-56-4	71	N	660	N	1400	N	1.4	N	2.8	N								
Chromium(III), Insoluble Salts	16065-83-1	100000	L	100000	L	100000	L	1000000	R	22000	N								
Chromium(VI)	18540-29-9	4.2	C	63	C	2700	C	0.14	C	0.35	C					0.00012	C	0.0015	C
Chromium, Total	7440-47-3							1000000	R	100	M								
Chrysene	218-01-9	1500	C	21000	C	100000	L	1800	C	250	C					17	C	200	C
Clofentezine	74115-24-5	1100	N	11000	N	22000	N	280	N	230	N								
Cobalt	7440-48-4	32	N	350	N	590	N	5.4	N	6	N					0.0031	C	0.014	C
Coke Oven Emissions	E649830															0.016	C	0.2	C
Copper	7440-50-8	4300	N	47000	N	79000	N	920	M	1300	M								
Copper Cyanide	544-92-3	550	N	5800	N	9800	N			100	N								
Cresol, m-	108-39-4	4500	N	41000	N	87000	N	15	N	930	N					630	N	2600	N
Cresol, o-	95-48-7	4500	N	41000	N	87000	N	15	N	930	N					630	N	2600	N
Cresol, p-	106-44-5	1800	N	16000	N	34000	N	5.9	N	370	N					630	N	2600	N
Cresol, p-chloro-m-	59-50-7	8800	N	82000	N	100000	L	33	N	1400	N								
Cresols	1319-77-3	8800	N	82000	N	100000	L	24	N	1500	N					630	N	2600	N
Crotonaldehyde, trans-	123-73-9	5.2	C	17	C	720	C	0.0016	C	0.4	C								
Cumene	98-82-8	270	S	270	S	270	S	15	N	450	N					420	N	1800	N
Cupferron	135-20-6	35	C	100	C	5600	C	0.12	C	3.5	C					0.45	C	1.9	C
Cyanazine	21725-46-2	9.1	C	27	C	1500	C	0.0082	C	0.88	C								
Cyanide (CN-)	57-12-5	32	N	150	N	560	N	40	M	200	M					0.83	N	3.5	N
Cyanogen	460-19-5	110	N	1200	N	2000	N			20	N								
Cyanogen Bromide	506-68-3	9800	N	100000	L	100000	L			1800	N								
Cyanogen Chloride	506-77-4	5500	N	58000	N	98000	N			1000	N								
Cyclohexane	110-82-7	120	S	120	S	120	S	270	N	13000	N					6300	N	26000	N
Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	380	C	1100	C	34000	N	3.3	C	28	C								

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Cyclohexanone	108-94-1	5100 S	5100 S	5100 S	6.6 N	1400 N			730 N	3100 N
Cyclohexene	110-83-8	280 S	280 S	280 S	0.91 N	70 N			1000 N	4400 N
Cyclohexylamine	108-91-8	22000 N	100000 L	100000 L	20 N	3800 N				
Cyfluthrin	68359-37-5	2200 N	21000 N	43000 N	630 N	120 N				
Cypermethrin	52315-07-8	6300 N	59000 N	100000 L	4500 N	1400 N				
Cyromazine	66215-27-8	45000 N	100000 L	100000 L	51 N	9900 N				
Dalapon	75-99-0	2700 N	25000 N	52000 N	0.83 M	200 M				
Daminozide	1596-84-5	420 C	1300 C	67000 C	0.19 C	43 C			5.5 C	24 C
DDD, p,p`- (DDD)	72-54-8	2.7 N	25 N	52 N	0.3 N	0.063 N			0.41 C	1.8 C
DDE, p,p'-	72-55-9	28 C	93 C	590 N	2.2 C	0.46 C			0.29 C	1.3 C
DDT	50-29-3	27 C	85 C	940 N	16 C	2.3 C			0.29 C	1.3 C
Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDI	1163-19-5	620 N	5700 N	12000 N	1500 N	140 N				
Demeton	8065-48-3	3.5 N	33 N	70 N		0.42 N				
Di(2-ethylhexyl)adipate	103-23-1	6300 C	19000 C	100000 L	580 M	400 M				
Diallate	2303-16-4	120 C	380 C	20000 C	0.16 C	5.4 C				
Diazinon	333-41-5	62 N	570 N	1200 N	1.3 N	10 N				
Dibenz[a,h]anthracene	53-70-3	1.5 C	21 C	1200 C	19 C	0.25 C			0.017 C	0.2 C
Dibenzo(a,e)pyrene	192-65-4	0.59 C	1.8 C	98 C	17 C	0.065 C			0.026 C	0.11 C
Dibenzofuran	132-64-9	110 N	1200 N	2000 N	2.9 N	7.9 N				
Dibenzothiophene	132-65-0	1100 N	12000 N	20000 N	24 N	65 N				
Dibromo-3-chloropropane, 1,2-	96-12-8	0.074 C	0.64 C	86 C	0.0017 M	0.2 M			0.0017 C	0.02 C
Dibromoacetic acid	631-64-1				0.25 M	60 M				
Dibromobenzene, 1,3-	108-36-1	43 N	160 S	160 S	0.1 N	5.3 N				
Dibromobenzene, 1,4-	106-37-6	1100 N	12000 N	20000 N	2.5 N	130 N				
Dibromochloromethane	124-48-1	120 C	390 C	800 S	0.43 M	80 M				
Dibromoethane, 1,2-	106-93-4	0.5 C	1.6 C	180 C	0.00028 M	0.05 M			0.047 C	0.2 C
Dibromomethane (Methylene Bromide)	74-95-3	34 N	99 N	550 N	0.041 N	8.3 N			4.2 N	18 N
Dibutyl Phthalate	84-74-2	8800 N	82000 N	100000 L	45 N	900 N				
Dibutyltin Compounds	E1790660	27 N	250 N	520 N		6 N				
Dicamba	1918-00-9	2700 N	25000 N	52000 N	2.9 N	570 N				
Dichloramine	3400-09-7					4000 M				
Dichloro-2-butene, 1,4-	764-41-0	0.029 C	0.094 C	13 C	0.00013 C	0.013 C			0.0067 C	0.029 C
Dichloro-2-butene, cis-1,4-	1476-11-5	0.1 C	0.32 C	44 C	0.00012 C	0.013 C			0.0067 C	0.029 C
Dichloro-2-butene, trans-1,4-	110-57-6	0.1 C	0.32 C	44 C	0.00012 C	0.013 C			0.0067 C	0.029 C
Dichloroacetic Acid	79-43-6	150 C	460 C	7000 N	0.25 M	60 M				
Dichlorobenzene, 1,2-	95-50-1	380 S	380 S	380 S	12 M	600 M			210 N	880 N
Dichlorobenzene, 1,4-	106-46-7	36 C	110 C	16000 C	1.4 M	75 M			2.6 C	11 C
Dichlorobenzidine, 3,3'-	91-94-1	17 C	51 C	2700 C	0.17 C	1.3 C			0.083 C	0.36 C
Dichlorobenzophenone, 4,4'-	90-98-2	800 N	7400 N	16000 N	9.4 N	78 N				
Dichlorodifluoromethane	75-71-8	120 N	370 N	850 S	6 N	200 N			100 N	440 N
Dichloroethane, 1,1-	75-34-3	50 C	160 C	1700 S	0.16 C	28 C	130 C	550 C	18 C	77 C
Dichloroethane, 1,2-	107-06-2	6.4 C	20 C	730 N	0.028 M	5 M	50 C	210 C	1.1 C	4.7 C
Dichloroethylene, 1,1-	75-35-4	320 N	1000 N	1200 S	0.05 M	7 M	300 N	1300 N	210 N	880 N
Dichloroethylene, cis-1,2-	156-59-2	220 N	2300 N	2400 S	0.41 M	70 M				
Dichloroethylene, trans-1,2-	156-60-5	98 N	300 N	1600 N	0.62 M	100 M			42 N	180 N
Dichlorophenol, 2,4-	120-83-2	270 N	2500 N	5200 N	0.45 N	46 N				
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	980 N	9600 N	19000 N	0.36 M	70 M				
Dichloropropane, 1,2-	78-87-5	22 N	66 N	360 N	0.033 M	5 M			4.2 N	18 N
Dichloropropane, 1,3-	142-28-9	1500 S	1500 S	1500 S	2.6 N	370 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Dichloropropanol, 2,3-	616-23-9	270 N	2500 N	5200 N	0.25 N	59 N				
Dichloropropene, 1,3-	542-75-6	25 C	82 C	1600 S	0.034 C	4.7 C			7 C	31 C
Dichlorvos	62-73-7	27 C	79 C	870 N	0.016 C	2.6 C			0.34 C	1.5 C
Dicrotophos	141-66-2	2.7 N	25 N	52 N	0.0028 N	0.6 N				
Dicyclopentadiene	77-73-6	1.8 N	5.4 N	30 N	0.043 N	0.63 N			0.31 N	1.3 N
Dieldrin	60-57-1	0.48 C	1.4 C	75 C	0.015 C	0.018 C			0.0061 C	0.027 C
Diesel Engine Exhaust	E17136615								0.094 C	0.41 C
Diethanolamine	111-42-2	180 N	1600 N	3400 N	0.16 N	40 N			0.21 N	0.88 N
Diethyl Phthalate	84-66-2	71000 N	100000 L	100000 L	120 N	15000 N				
Diethylene Glycol Monobutyl Ether	112-34-5	2700 N	24000 N	51000 N	2.6 N	600 N			0.1 N	0.44 N
Diethylene Glycol Monoethyl Ether	111-90-0	5300 N	48000 N	100000 L	4.8 N	1200 N			0.31 N	1.3 N
Diethylformamide	617-84-5	110 N	1200 N	2000 N	0.082 N	20 N				
Diethylstilbestrol	56-53-1	0.022 C	0.066 C	3.5 C	0.0056 C	0.00051 C			0.00028 C	0.0012 C
Difenzoquat	43222-48-6	7300 N	68000 N	100000 L		1700 N				
Diflubenzuron	35367-38-5	1800 N	16000 N	34000 N	6.5 N	290 N				
Difluoroethane, 1,1-	75-37-6	1400 S	1400 S	1400 S	560 N	83000 N			42000 N	180000 N
Difluoropropane, 2,2-	420-45-1	690 S	690 S	690 S	2700 N	63000 N			31000 N	130000 N
Dihydrosafrole	94-58-6	140 C	450 C	26000 C	0.037 C	3 C			2.2 C	9.4 C
Diisopropyl Ether	108-20-3	2300 S	2300 S	2300 S	7.6 N	1500 N			730 N	3100 N
Diisopropyl Methylphosphonate	1445-75-6	530 S	530 S	530 S	9.1 N	1600 N				
Dimethipin	55290-64-7	2000 N	18000 N	37000 N	1.9 N	440 N				
Dimethoate	60-51-5	200 N	1800 N	3900 N	0.2 N	44 N				
Dimethoxybenzidine, 3,3'-	119-90-4	4.8 C	14 C	750 C	0.011 C	0.47 C				
Dimethyl methylphosphonate	756-79-6	4500 C	14000 C	100000 L	1.9 C	460 C				
Dimethylamino azobenzene [p-]	60-11-7	1.7 C	5 C	270 C	0.0043 C	0.05 C			0.022 C	0.094 C
Dimethylaniline HCl, 2,4-	21436-96-4	13 C	40 C	2100 C	0.023 C	1.3 C				
Dimethylaniline, 2,4-	95-68-1	38 C	110 C	3400 N	0.042 C	3.7 C				
Dimethylaniline, N,N-	121-69-7	220 N	830 S	830 S	0.18 C	25 C				
Dimethylbenz(a)anthracene, 7,12-	57-97-6	0.0064 C	0.084 C	4.7 C	0.02 C	0.001 C			0.00014 C	0.0017 C
Dimethylbenzidine, 3,3'-	119-93-7	0.69 C	2.1 C	110 C	0.0086 C	0.065 C				
Dimethylformamide	68-12-2	3600 N	15000 N	64000 N	0.25 N	61 N			31 N	130 N
Dimethylhydrazine, 1,1-	57-14-7	0.08 N	0.24 N	1.3 N	0.000019 N	0.0042 N			0.0021 N	0.0088 N
Dimethylhydrazine, 1,2-	540-73-8	0.012 C	0.041 C	2.2 C	0.0000013 C	0.00028 C			0.00018 C	0.00077 C
Dimethylphenol, 2,4-	105-67-9	1800 N	16000 N	34000 N	8.5 N	360 N				
Dimethylphenol, 2,6-	576-26-1	53 N	490 N	1000 N	0.26 N	11 N				
Dimethylphenol, 3,4-	95-65-8	88 N	820 N	1800 N	0.43 N	18 N				
Dimethylterephthalate	120-61-6	11000 N	100000 L	100000 L	10 N	1900 N				
Dimethylvinylchloride	513-37-1	15 C	48 C	470 S	0.021 C	3.3 C			2.2 C	9.4 C
Dinitroaniline, 3,5-	618-87-1	35 N	330 N	700 N	0.083 N	7.7 N			2.1 N	8.8 N
Dinitrobenzene, 1,2-	528-29-0	8.8 N	82 N	180 N	0.035 N	1.9 N				
Dinitrobenzene, 1,3-	99-65-0	8.8 N	82 N	180 N	0.036 N	2 N				
Dinitrobenzene, 1,4-	100-25-4	8.8 N	82 N	180 N	0.036 N	2 N				
Dinitro-o-cresol, 4,6-	534-52-1	7.1 N	66 N	140 N	0.051 N	1.5 N				
Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	180 N	1600 N	3400 N	15 N	23 N				
Dinitrophenol, 2,4-	51-28-5	180 N	1600 N	3400 N	0.87 N	39 N				
Dinitrotoluene Mixture, 2,4/2,6-	E1615210	11 C	34 C	1800 C	0.03 C	1.1 C				
Dinitrotoluene, 2,4-	121-14-2	24 C	74 C	3400 N	0.065 C	2.4 C			0.32 C	1.4 C
Dinitrotoluene, 2,6-	606-20-2	5 C	15 C	520 N	0.013 C	0.49 C				
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	11 N	110 N	200 N	0.029 N	1.9 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure					GroundWater				Vapor Exposure					
		Direct Contact					Soil MTG		Tap		GroundWater				Indoor Air	
		Residential		Com/Ind		Excavation	Residential		Residential		Residential		Com/Industrial		Residential	Com/Ind
Name	CASRN	(mg/kg)		(mg/kg)		(mg/kg)	(mg/kg)		(µg/L)		(µg/L)		(µg/L)		(µg/m^3)	(µg/m^3)
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	11	N	110	N	200 N	0.029	N	1.9	N						
Dinitrotoluene, Technical grade	25321-14-6	17	C	51	C	1600 N	0.027	C	1	C						
Dinoseb	88-85-7	88	N	820	N	1800 N	1.2	M	7	M						
Dioxane, 1,4-	123-91-1	74	C	240	C	13000 C	0.019	C	4.6	C					5.6 C	25 C
Dioxin: Hexachlorodibenzo-p-dioxin, Mixture	34465-46-8	0.0014	C	0.0047	C	0.21 C	0.0036	C	0.00013	C					0.000022 C	0.000094 C
Dioxin: TCDD, 2,3,7,8-	1746-01-6	0.000067	C	0.00022	C	0.0013 N	0.0003	M	0.00003	M					0.00000074 C	0.0000032 C
Diphenamid	957-51-7	2700	N	25000	N	52000 N	100	N	530	N						
Diphenyl Ether	101-84-8	48	N	140	N	780 N	0.068	N	0.83	N					0.42 N	1.8 N
Diphenyl Sulfone	127-63-9	71	N	660	N	1400 N	0.73	N	15	N						
Diphenylamine	122-39-4	8800	N	82000	N	100000 L	48	N	1300	N						
Diphenylhydrazine, 1,2-	122-66-7	9.5	C	29	C	1500 C	0.05	C	0.78	C					0.13 C	0.56 C
Diquat	2764-72-9	200	N	1800	N	3900 N	3.3	M	20	M						
Direct Black 38	1937-37-7	1	C	3.1	C	160 C	1100	C	0.11	C					0.013 C	0.058 C
Direct Blue 6	2602-46-2	1	C	3.1	C	160 C	3500	C	0.11	C					0.013 C	0.058 C
Direct Brown 95	16071-86-6	1.1	C	3.4	C	180 C			0.12	C					0.015 C	0.065 C
Disulfoton	298-04-4	3.5	N	33	N	70 N	0.019	N	0.5	N						
Dithiane, 1,4-	505-29-3	1100	N	12000	N	20000 N	2	N	200	N						
Diuron	330-54-1	180	N	1600	N	3400 N	0.3	N	36	N						
Dodine	2439-10-3	1800	N	16000	N	34000 N	41	N	400	N						
Endosulfan	115-29-7	660	N	7000	N	12000 N	27	N	100	N						
Endosulfan Sulfate	1031-07-8	530	N	4900	N	10000 N	44	N	110	N						
Endothall	145-73-3	1800	N	16000	N	34000 N	0.48	M	100	M						
Endrin	72-20-8	27	N	250	N	520 N	1.6	M	2	M						
Epichlorohydrin	106-89-8	27	N	82	N	440 N	0.0088	N	2	N					1 N	4.4 N
Epoxybutane, 1,2-	106-88-7	220	N	670	N	3700 N	0.19	N	42	N					21 N	88 N
EPTC	759-94-4	5500	N	58000	N	98000 N	7.9	N	750	N						
Ethanol, 2-(2-methoxyethoxy)-	111-77-3	3500	N	33000	N	70000 N	3.2	N	800	N						
Ethephon	16672-87-0	450	N	4100	N	8700 N	0.42	N	100	N						
Ethion	563-12-2	45	N	410	N	870 N	0.17	N	4.3	N						
Ethoxyethanol Acetate, 2-	111-15-9	3600	N	14000	N	24000 S	0.5	N	120	N					63 N	260 N
Ethoxyethanol, 2-	110-80-5	3600	N	15000	N	63000 N	0.32	N	80	N					42 N	180 N
Ethyl Acetate	141-78-6	870	N	2600	N	11000 S	0.59	N	140	N					73 N	310 N
Ethyl Acrylate	140-88-5	66	N	210	N	1100 N	0.062	N	14	N					8.3 N	35 N
Ethyl Chloride (Chloroethane)	75-00-3	2100	S	2100	S	2100 S	47	N	8300	N					4200 N	18000 N
Ethyl Ether	60-29-7	10000	S	10000	S	10000 S	17	N	3900	N						
Ethyl Methacrylate	97-63-2	1100	S	1100	S	1100 S	3	N	630	N					310 N	1300 N
Ethyl Tertiary Butyl Ether (ETBE)	637-92-3	1800	C	5600	C	100000 L	3.5	C	700	C					350 C	1500 C
Ethylbenzene	100-41-4	81	C	250	C	480 S	16	M	700	M					11 C	49 C
Ethylene Cyanohydrin	109-78-4	6200	N	57000	N	100000 L	5.7	N	1400	N						
Ethylene Diamine	107-15-3	9800	N	100000	L	100000 L	8.3	N	1800	N						
Ethylene Glycol	107-21-1	71000	N	100000	L	100000 L	65	N	16000	N					420 N	1800 N
Ethylene Glycol Monobutyl Ether	111-76-2	8800	N	82000	N	100000 L	8.2	N	2000	N					1700 N	7000 N
Ethylene Oxide	75-21-8	0.028	C	0.25	C	34 C	0.000028	C	0.0067	C					0.0034 C	0.041 C
Ethylene Thiourea	96-45-7	7.1	N	66	N	140 N	0.0072	N	1.6	N					2.2 C	9.4 C
Ethyleneimine	151-56-4	0.038	C	0.12	C	10 C	0.00001	C	0.0024	C					0.0015 C	0.0065 C
Ethylphthalyl Ethyl Glycolate	84-72-0	100000	L	100000	L	100000 L	2600	N	58000	N						
Ethyl-p-nitrophenyl Phosphonate	2104-64-5	0.88	N	8.2	N	18 N	0.055	N	0.089	N						
Fenamiphos	22224-92-6	22	N	210	N	430 N	0.088	N	4.4	N						
Fenpropathrin	39515-41-8	2200	N	21000	N	43000 N	58	N	64	N						

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure					GroundWater		Vapor Exposure					
		Direct Contact					Soil MTG	Tap	GroundWater		Indoor Air			
		Residential		Com/Ind		Excavation	Residential	Residential	Residential	Com/Industrial	Residential		Com/Ind	
Name	CASRN	(mg/kg)		(mg/kg)		(mg/kg)	(mg/kg)	(µg/L)	(µg/L)	(µg/L)	(µg/m^3)		(µg/m^3)	
Fenvalerate	51630-58-1	2200	N	21000	N	43000	N	6300 N	500	N				
Fluometuron	2164-17-2	1100	N	11000	N	22000	N	3.7 N	240	N				
Fluoranthene	206-44-0	3400	N	30000	N	68000	N	1800 N	800	N				
Fluorene	86-73-7	3400	N	30000	N	68000	N	110 N	290	N				
Fluoride	16984-48-8	4300	N	47000	N	79000	N		4000	M			14	N
Fluorine (Soluble Fluoride)	7782-41-4	6600	N	70000	N	100000	L	12000 M	4000	M			14	N
Fluridone	59756-60-4	7100	N	66000	N	100000	L	3200 N	1400	N				
Flurprimidol	56425-91-3	3500	N	33000	N	70000	N	63 N	690	N				
Flusilazole	85509-19-9	180	N	1600	N	3400	N	100 N	31	N				
Flutolanil	66332-96-5	45000	N	100000	L	100000	L	840 N	7900	N				
Fluvalinate	69409-94-5	880	N	8200	N	18000	N	5800 N	200	N				
Folpet	133-07-3	8000	N	74000	N	100000	L	7.5 N	1600	N				
Fomesafen	72178-02-0	880	N	8200	N	18000	N	13 N	190	N				
Fonofos	944-22-9	180	N	1600	N	3400	N	0.92 N	24	N				
Formaldehyde	50-00-0	150	C	500	C	18000	N	0.016 C	3.9	C			2.2	C
Formic Acid	64-18-6	41	N	120	N	670	N	0.0025 N	0.63	N			0.31	N
Fosetyl-AL	39148-24-8	100000	L	100000	L	100000	L	13000 N	50000	N				
Furan	110-00-9	110	N	1200	N	2000	N	0.14 N	19	N				
Furazolidone	67-45-8	2	C	6	C	320	C	0.0077 C	0.2	C				
Furfural	98-01-1	290	N	2600	N	5400	N	0.16 N	38	N			52	N
Furium	531-82-8	5	C	15	C	820	C	0.014 C	0.51	C			0.065	C
Furmecyclox	60568-05-0	250	C	770	C	41000	C	0.23 C	11	C			3.3	C
Glufosinate, Ammonium	77182-82-2	530	N	4900	N	10000	N	0.53 N	120	N				
Glutaraldehyde	111-30-8	8400	N	70000	N	100000	L	8.1 N	2000	N			0.083	N
Glycidaldehyde	765-34-4	32	N	210	N	570	N	0.0069 N	1.7	N			1	N
Glyphosate	1071-83-6	8800	N	82000	N	100000	L	62 M	700	M				
Guanidine	113-00-8	1100	N	12000	N	20000	N	0.9 N	200	N				
Guanidine Chloride	50-01-1	1800	N	16000	N	34000	N		400	N				
Guanidine Nitrate	506-93-4	2700	N	25000	N	52000	N	2.9 N	600	N				
Haloxyfop, Methyl	69806-40-2	4.5	N	41	N	87	N	0.17 N	0.76	N				
Heptachlor	76-44-8	1.8	C	6.3	C	200	N	0.66 M	0.4	M			0.022	C
Heptachlor Epoxide	1024-57-3	0.98	C	3.3	C	25	N	0.082 M	0.2	M			0.011	C
Heptanal, n-	111-71-7	34	N	100	N	210	S	0.028 N	6.3	N			3.1	N
Heptane, N-	142-82-5	31	N	58	S	58	S	0.93 N	6	N			420	N
Hexabromobenzene	87-82-1	220	N	2300	N	3900	N	4.7 N	40	N				
Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	18	N	160	N	340	N		4	N				
Hexachlorobenzene	118-74-1	1.1	N	9.6	C	20	N	0.25 M	1	M			0.061	C
Hexachlorobutadiene	87-68-3	17	C	17	S	17	S	0.054 C	1.4	C			1.3	C
Hexachlorocyclohexane, Alpha-	319-84-6	1.2	C	3.6	C	190	C	0.0084 C	0.072	C			0.016	C
Hexachlorocyclohexane, Beta-	319-85-7	4.2	C	13	C	670	C	0.029 C	0.25	C			0.053	C
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	0.99	N	10	N	19	N	0.023 M	0.2	M			0.091	C
Hexachlorocyclohexane, Technical	608-73-1	4.2	C	13	C	670	C	0.029 C	0.25	C			0.055	C
Hexachlorocyclopentadiene	77-47-4	2.5	N	7.5	N	16	S	3.1 M	50	M			0.21	N
Hexachloroethane	67-72-1	25	C	80	C	1100	N	0.04 C	3.3	C			2.6	C
Hexachlorophene	70-30-4	27	N	250	N	520	N	160 N	6	N				
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	120	C	380	C	7800	N	0.073 C	9.7	C				
Hexamethylene diisocyanate biuret	4035-89-6	100000	L	100000	L	100000	L						0.42	N
Hexamethylene diisocyanate isocyanurate	3779-63-3	100000	L	100000	L	100000	L						0.42	N
Hexamethylene Diisocyanate, 1,6-	822-06-0	4.3	N	13	N	72	N	0.0041 N	0.021	N			0.01	N

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Hexamethylphosphoramide	680-31-9	35 N	330 N	700 N	0.035 N	8 N				
Hexane, Commercial	E5241997	140 S	140 S	140 S	38 C	280 C			140 C	610 C
Hexane, N-	110-54-3	140 S	140 S	140 S	210 N	1500 N			730 N	3100 N
Hexanedioic Acid	124-04-9	100000 L	100000 L	100000 L	200 N	40000 N				
Hexanol, 1-,2-ethyl- (2-Ethyl-1-hexanol)	104-76-7	21 N	63 N	270 S	0.0045 N	0.83 N			0.42 N	1.8 N
Hexanone, 2-	591-78-6	280 N	1300 N	3300 S	0.18 N	38 N			31 N	130 N
Hexazinone	51235-04-2	2900 N	27000 N	58000 N	5.9 N	640 N				
Hexythiazox	78587-05-0	2200 N	21000 N	43000 N	9.8 N	110 N				
Hydramethylnon	67485-29-4	1500 N	14000 N	30000 N	1000000 R	340 N				
Hydrazine	302-01-2	0.45 C	1.4 C	48 N	0.000045 C	0.011 C			0.0057 C	0.025 C
Hydrazine Sulfate	10034-93-2	3.2 C	11 C	460 C		0.26 C			0.0057 C	0.025 C
Hydrogen Chloride	7647-01-0	100000 L	100000 L	100000 L		42 N			21 N	88 N
Hydrogen Cyanide	74-90-8	32 N	150 N	540 N	0.3 N	1.5 N			0.83 N	3.5 N
Hydrogen Fluoride	7664-39-3	4300 N	47000 N	79000 N		28 N			15 N	61 N
Hydrogen Sulfide	7783-06-4	100000 L	100000 L	100000 L		4.2 N			2.1 N	8.8 N
Hydroquinone	123-31-9	130 C	380 C	21000 C	0.18 C	13 C				
Imazalil	35554-44-0	120 C	380 C	20000 C	3.1 C	9 C				
Imazaquin	81335-37-7	22000 N	100000 L	100000 L	490 N	4900 N				
Imazethapyr	81335-77-5	100000 L	100000 L	100000 L	830 N	47000 N				
Indeno[1,2,3-cd]pyrene	193-39-5	15 C	210 C	12000 C	200 C	2.5 C			0.17 C	2 C
Iodine	7553-56-2	1100 N	12000 N	20000 N	240 N	200 N				
Iprodione	36734-19-7	3500 N	33000 N	70000 N	4.5 N	740 N				
Iron	7439-89-6	77000 N	100000 L	100000 L	7100 N	14000 N				
Isobutyl Alcohol	78-83-1	10000 S	10000 S	10000 S	24 N	5900 N				
Isophorone	78-59-1	8000 C	24000 C	100000 L	5.2 C	780 C			2100 N	8800 N
Isopropalin	33820-53-0	1700 N	18000 N	30000 N	18 N	40 N				
Isopropanol	67-63-0	7800 N	24000 N	100000 L	1.7 N	410 N			210 N	880 N
Isopropyl Methyl Phosphonic Acid	1832-54-8	8800 N	82000 N	100000 L	8.6 N	2000 N				
Isoxaben	82558-50-7	4500 N	41000 N	87000 N	40 N	730 N				
JP-7	E1737665	100000 L	100000 L	100000 L		630 N			310 N	1300 N
Lactofen	77501-63-4	710 N	6600 N	14000 N	93 N	100 N				
Lactonitrile	78-97-7	18 N	160 N	340 N	0.016 N	4 N				
Lanthanum	7439-91-0	5.5 N	58 N	98 N		1 N				
Lanthanum Acetate Hydrate	100587-90-4	1.8 N	17 N	36 N		0.42 N				
Lanthanum Chloride Heptahydrate	10025-84-0	2.1 N	22 N	37 N		0.37 N				
Lanthanum Chloride, Anhydrous	10099-58-8	3.1 N	33 N	56 N		0.57 N				
Lanthanum Nitrate Hexahydrate	10277-43-7	1.8 N	19 N	32 N		0.32 N				
Lead acetate	301-04-2	36 C	110 C	6000 C		3.7 C			0.35 C	1.5 C
Lead and Compounds	7439-92-1	400	800	1000	270	15 M			0.15 N	
Lead Phosphate	7446-27-7	1100 C	3800 C	100000 L		91 C			2.3 C	10 C
Lead subacetate	1335-32-6	200 C	600 C	32000 C		21 C			2.6 C	11 C
Lewisite	541-25-3	0.55 N	5.8 N	9.8 N	0.00076 N	0.09 N				
Linuron	330-55-2	690 N	6300 N	13000 N	2.3 N	130 N				
Lithium	7439-93-2	220 N	2300 N	3900 N	240 N	40 N				
Lithium Perchlorate	7791-03-9	77 N	820 N	1400 N		14 N				
Malathion	121-75-5	1800 N	16000 N	34000 N	2 N	390 N				
Maleic Anhydride	108-31-6	8800 N	80000 N	100000 L	7.7 N	1900 N			0.73 N	3.1 N
Maleic Hydrazide	123-33-1	45000 N	100000 L	100000 L	41 N	10000 N				
Malononitrile	109-77-3	8.8 N	82 N	180 N	0.0083 N	2 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure					GroundWater		Vapor Exposure					
		Direct Contact					Soil MTG	Tap	GroundWater		Indoor Air			
Name	CASRN	Residential (mg/kg)		Com/Ind (mg/kg)		Excavation (mg/kg)		Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential ($µg/m^3$)		Com/Ind ($µg/m^3$)	
Mancozeb	8018-01-7	2700	N	25000	N	52000	N	15 N	540	N				
Maneb	12427-38-2	450	N	4100	N	8700	N	2.8 N	98	N				
Manganese (Non-diet)	7439-96-5	2500	N	26000	N	46000	N	560 N	430	N			0.052	N	0.22	N
MCPA	94-74-6	45	N	410	N	870	N	0.039 N	7.5	N						
MCPB	94-81-5	390	N	3600	N	7600	N	0.52 N	65	N						
MCPP	93-65-2	88	N	820	N	1800	N	0.095 N	16	N						
Mephosfolan	950-10-7	8	N	74	N	160	N	0.053 N	1.8	N						
Mepiquat Chloride	24307-26-4	2700	N	25000	N	52000	N	4 N	600	N						
Mercaptobenzothiazole, 2-	149-30-4	350	N	2100	C	7000	N	3.7 C	63	C						
Mercuric Chloride (and other Mercury salts)	7487-94-7	32	N	350	N	590	N	2.1 M	2	M			0.31	N	1.3	N
Mercury (elemental)	7439-97-6	3.1	S	3.1	S	3.1	S	2.1 M	2	M			0.31	N	1.3	N
Merphos	150-50-5	3.2	N	35	N	59	N	1.2 N	0.6	N						
Metalaxyl	57837-19-1	5300	N	49000	N	100000	L	6.7 N	1200	N						
Methacrylonitrile	126-98-7	11	N	100	N	190	N	0.0086 N	1.9	N			31	N	130	N
Methamidophos	10265-92-6	4.5	N	41	N	87	N	0.0042 N	1	N						
Methanol	67-56-1	100000	L	100000	L	100000	L	81 N	20000	N			21000	N	88000	N
Methidathion	950-37-8	130	N	1200	N	2700	N	0.14 N	29	N						
Methomyl	16752-77-5	2200	N	21000	N	43000	N	2.2 N	500	N						
Methoxy-5-nitroaniline, 2-	99-59-2	150	C	470	C	25000	C	0.1 C	15	C						
Methoxychlor	72-43-5	450	N	4100	N	8700	N	43 M	40	M						
Methoxyethanol Acetate, 2-	110-49-6	150	N	510	N	2500	N	0.0086 N	2.1	N			1	N	4.4	N
Methoxyethanol, 2-	109-86-4	360	N	2000	N	6200	N	0.053 N	13	N			7.3	N	31	N
Methyl Acetate	79-20-9	29000	S	29000	S	29000	S	83 N	20000	N						
Methyl Acrylate	96-33-3	210	N	610	N	3400	N	0.18 N	42	N			21	N	88	N
Methyl Ethyl Ketone (2-Butanone)	78-93-3	28000	S	28000	S	28000	S	23 N	5600	N			5200	N	22000	N
Methyl Hydrazine	60-34-4	1.4	N	4.4	N	24	N	0.00019 N	0.042	N			0.021	N	0.088	N
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	3400	S	3400	S	3400	S	28 N	6300	N			3100	N	13000	N
Methyl Isocyanate	624-83-9	6.4	N	19	N	110	N	0.012 N	2.1	N			1	N	4.4	N
Methyl Mercury	22967-92-6	11	N	120	N	200	N		2	N						
Methyl Methacrylate	80-62-6	2400	S	2400	S	2400	S	6.1 N	1400	N			730	N	3100	N
Methyl methanesulfonate	66-27-3	77	C	230	C	12000	C	0.033 C	7.9	C			1	C	4.4	C
Methyl Parathion	298-00-0	22	N	210	N	430	N	0.15 N	4.5	N						
Methyl Phosphonic Acid	993-13-5	5300	N	49000	N	100000	L	4.9 N	1200	N						
Methyl Styrene (Mixed Isomers)	25013-15-4	390	S	390	S	390	S	0.75 N	23	N			42	N	180	N
Methyl tert-Butyl Ether (MTBE)	1634-04-4	660	C	2100	C	8900	S	0.63 C	140	C			110	C	470	C
Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	27	N	250	N	520	N	0.072 N	6	N						
Methyl-2-Pentanol, 4-	108-11-2	2500	S	2500	S	2500	S	27 N	6300	N			3100	N	13000	N
Methyl-5-Nitroaniline, 2-	99-55-8	840	C	2600	C	34000	N	0.91 C	82	C						
Methylaniline Hydrochloride, 2-	636-21-5	59	C	180	C	9300	C	0.052 C	6	C			0.76	C	3.3	C
Methylarsonic acid	124-58-3	880	N	8200	N	18000	N		200	N						
Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	18	N	160	N	340	N		4	N						
Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	27	N	230	C	520	N		6	N						
Methylcholanthrene, 3-	56-49-5	0.077	C	1	C	56	C	0.42 C	0.011	C			0.0016	C	0.019	C
Methylene Chloride	75-09-2	490	N	3200	N	3300	S	0.025 M	5	M			630	N	2600	N
Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	17	C	230	C	3400	N	0.37 C	1.6	C			0.024	C	0.29	C
Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	170	C	500	C	27000	C	0.77 C	7	C			2.2	C	9.4	C
Methylenebisbenzenamine, 4,4'-	101-77-9	4.8	C	14	C	750	C	0.042 C	0.47	C			0.061	C	0.27	C
Methylenediphenyl Diisocyanate	101-68-8	100000	L	100000	L	100000	L						0.63	N	2.6	N
Methylnaphthalene, 1-	90-12-0	250	C	390	S	390	S	1.2 C	11	C						

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Methylnaphthalene, 2-	91-57-6	340 N	3000 N	6800 N	3.7 N	36 N				
Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	0.91 C	2.8 C	150 C	0.00065 C	0.094 C			0.012 C	0.051 C
Methylstyrene, Alpha-	98-83-9	500 S	500 S	500 S	25 N	780 N				
Metolachlor	51218-45-2	13000 N	100000 L	100000 L	64 N	2700 N				
Metribuzin	21087-64-9	2200 N	21000 N	43000 N	3 N	490 N				
Metsulfuron-methyl	74223-64-6	22000 N	100000 L	100000 L	38 N	4900 N				
Mineral oils	8012-95-1	0.34 S	0.34 S	0.34 S	47000 N	60000 N				
Mirex	2385-85-5	0.5 C	1.7 C	74 C	0.13 C	0.0088 C			0.0055 C	0.024 C
Molinate	2212-67-1	180 N	1600 N	3400 N	0.34 N	30 N				
Molybdenum	7439-98-7	550 N	5800 N	9800 N	41 N	100 N			2.1 N	8.8 N
Monochloramine	10599-90-3	11000 N	100000 L	100000 L		4000 M				
Monomethylaniline	100-61-8	180 N	1600 N	3400 N	0.28 N	38 N				
Myclobutanil	88671-89-0	2200 N	21000 N	43000 N	110 N	450 N				
N,N'-Diphenyl-1,4-benzenediamine	74-31-7	27 N	250 N	520 N	7.5 N	3.6 N				
Naled	300-76-5	220 N	2300 N	3900 N	0.36 N	40 N				
Naphtha, High Flash Aromatic (HFAN)	64742-95-6	3200 N	35000 N	59000 N		150 N			100 N	440 N
Naphthalene	91-20-3	28 C	86 C	3100 N	0.079 C	1.2 C	110 C	460 C	0.83 C	3.6 C
Naphthylamine, 2-	91-59-8	4.2 C	13 C	670 C	0.04 C	0.39 C				
Napropamide	15299-99-7	11000 N	98000 N	100000 L	270 N	2000 N				
Nickel Acetate	373-02-4	940 N	8100 N	19000 N		220 N			0.015 N	0.061 N
Nickel Carbonate	3333-67-3	940 N	8100 N	19000 N		220 N			0.015 N	0.061 N
Nickel Carbonyl	13463-39-3	1100 N	11000 N	21000 N		0.029 N			0.015 N	0.061 N
Nickel Hydroxide	12054-48-7	1100 N	11000 N	21000 N		200 N			0.015 N	0.061 N
Nickel Oxide	1313-99-1	1200 N	12000 N	21000 N		200 N			0.021 N	0.088 N
Nickel Refinery Dust	E715532	1100 N	11000 N	21000 N		220 N			0.015 N	0.061 N
Nickel Soluble Salts	7440-02-0	2100 N	22000 N	38000 N	510 N	390 N			0.094 N	0.39 N
Nickel Subsulfide	12035-72-2	5.7 C	19 C	800 C		0.45 C			0.015 N	0.061 N
Nickelocene	1271-28-9	8.4 C	25 C	1300 C		0.86 C			0.015 N	0.061 N
Nitrate (measured as nitrogen)	14797-55-8	100000 L	100000 L	100000 L		10000 M				
Nitrate + Nitrite (measured as nitrogen)	E701177					10000 M				
Nitrite (measured as nitrogen)	14797-65-0	11000 N	100000 L	100000 L		1000 M				
Nitroaniline, 2-	88-74-4	880 N	8000 N	18000 N	1.6 N	190 N			0.052 N	0.22 N
Nitroaniline, 4-	100-01-6	350 N	1100 C	7000 N	0.32 C	38 C			6.3 N	26 N
Nitrobenzene	98-95-3	71 C	220 C	3100 S	0.018 C	1.4 C			0.7 C	3.1 C
Nitrocellulose	9004-70-0	100000 L	100000 L	100000 L	260000 N	60000000 N				
Nitrofurantoin	67-20-9	6200 N	57000 N	100000 L	12 N	1400 N				
Nitrofurazone	59-87-0	5.9 C	18 C	930 C	0.011 C	0.6 C			0.076 C	0.33 C
Nitroglycerin	55-63-0	8.8 N	82 N	180 N	0.017 N	2 N				
Nitroguanidine	556-88-7	8800 N	82000 N	100000 L	9.7 N	2000 N				
Nitromethane	75-52-5	76 C	240 C	2100 N	0.028 C	6.4 C			3.2 C	14 C
Nitropropane, 2-	79-46-9	0.9 C	2.8 C	390 C	0.00051 C	0.097 C			0.048 C	0.21 C
Nitropyrene, 4-	57835-92-4	5.9 C	18 C	980 C	0.66 C	0.19 C			0.26 C	1.1 C
Nitrosodiethanolamine, N-	1116-54-7	2.7 C	8.2 C	450 C	0.0011 C	0.28 C			0.035 C	0.15 C
Nitrosodiethylamine, N-	55-18-5	0.011 C	0.15 C	8.2 C	0.000012 C	0.0017 C			0.00024 C	0.0029 C
Nitrosodimethylamine, N-	62-75-9	0.028 C	0.34 C	13 N	0.0000054 C	0.0011 C			0.00072 C	0.0088 C
Nitroso-di-N-butylamine, N-	924-16-3	1.4 C	4.6 C	230 C	0.0011 C	0.027 C			0.018 C	0.077 C
Nitroso-di-N-propylamine, N-	621-64-7	1.1 C	3.3 C	180 C	0.0017 C	0.11 C			0.014 C	0.061 C
Nitrosodiphenylamine, N-	86-30-6	1500 C	4700 C	100000 L	13 C	120 C			11 C	47 C
Nitrosomethylethylamine, N-	10595-95-6	0.28 C	0.91 C	53 C	0.000041 C	0.0071 C			0.0045 C	0.019 C

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure					GroundWater		Vapor Exposure					
		Direct Contact					Soil MTG	Tap	GroundWater		Indoor Air			
Name	CASRN	Residential (mg/kg)		Com/Ind (mg/kg)		Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)		Com/Ind (µg/m³)	
Nitrosomorpholine [N-]	59-89-2	1.1	C	3.4	C	180 C	0.00059 C	0.12 C			0.015	C	0.065	C
Nitroso-N-ethylurea, N-	759-73-9	0.063	C	0.85	C	45 C	0.000045 C	0.0092 C			0.0013	C	0.016	C
Nitroso-N-methylurea, N-	684-93-5	0.014	C	0.19	C	10 C	0.0000093 C	0.0021 C			0.0003	C	0.0036	C
Nitrosopiperidine [N-]	100-75-4	0.81	C	2.4	C	130 C	0.00088 C	0.082 C			0.01	C	0.045	C
Nitrosopyrrolidine, N-	930-55-2	3.6	C	11	C	600 C	0.0028 C	0.37 C			0.046	C	0.2	C
Nitrotoluene, m-	99-08-1	8.8	N	82	N	180 N	0.031 N	1.7 N						
Nitrotoluene, o-	88-72-2	45	C	150	C	1500 S	0.058 C	3.1 C						
Nitrotoluene, p-	99-99-0	350	N	1400	C	7000 N	0.8 C	43 C						
Nonane, n-	111-84-2	6.9	S	6.9	S	6.9 S	1.5 N	5.3 N			21	N	88	N
Norflurazon	27314-13-2	130	N	1200	N	2700 N	3.7 N	29 N						
Octabromodiphenyl Ether	32536-52-0	270	N	2500	N	5200 N	240 N	60 N						
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX	2691-41-0	5500	N	57000	N	97000 N	25 N	1000 N						
Octamethylpyrophosphoramide	152-16-9	180	N	1600	N	3400 N	0.19 N	40 N						
Octyl Phthalate, di-N-	117-84-0	880	N	8200	N	18000 N	1100 N	200 N						
Oryzalin	19044-88-3	980	C	2900	C	100000 L	2.9 C	79 C						
Oxadiazon	19666-30-9	450	N	4100	N	8700 N	9.6 N	47 N						
Oxamyl	23135-22-0	2200	N	21000	N	43000 N	0.88 M	200 M						
Oxyfluorfen	42874-03-3	100	C	310	C	17000 C	8.6 C	5.4 C						
Paclobutrazol	76738-62-0	1100	N	11000	N	22000 N	9.4 N	230 N						
Paraquat Dichloride	1910-42-5	390	N	3700	N	7900 N	25 N	90 N						
Parathion	56-38-2	530	N	4900	N	10000 N	8.7 N	86 N						
PCBs: Aroclor 1016	12674-11-2	5.7	N	51	N	120 N	2.7 N	1.4 N			1.4	C	6.1	C
PCBs: Aroclor 1221	11104-28-2	2.8	C	8.3	C	520 C	0.016 C	0.047 C			0.049	C	0.21	C
PCBs: Aroclor 1232	11141-16-5	2.4	C	7.2	C	490 C	0.016 C	0.047 C			0.049	C	0.21	C
PCBs: Aroclor 1242	53469-21-9	3.2	C	9.5	C	560 C	0.24 C	0.078 C			0.049	C	0.21	C
PCBs: Aroclor 1248	12672-29-6	3.2	C	9.4	C	550 C	0.24 C	0.078 C			0.049	C	0.21	C
PCBs: Aroclor 1254	11097-69-1	1.7	N	9.7	C	33 N	0.41 C	0.078 C			0.049	C	0.21	C
PCBs: Aroclor 1260	11096-82-5	3.4	C	9.9	C	570 C	1.1 C	0.078 C			0.049	C	0.21	C
PCBs: Aroclor 5460	11126-42-4	49	N	440	N	1000 N	39 N	12 N						
PCBs: Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	1.8	C	5.2	C	39 N	0.56 C	0.04 C			0.025	C	0.11	C
PCBs: Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	1.7	C	5	C	39 N	0.34 C	0.04 C			0.025	C	0.11	C
PCBs: Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	1.7	C	5	C	39 N	0.34 C	0.04 C			0.025	C	0.11	C
PCBs: Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	1.7	C	5.1	C	39 N	0.34 C	0.04 C			0.025	C	0.11	C
PCBs: Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	0.0017	C	0.0051	C	0.039 N	0.00034 C	0.00004 C			0.000025	C	0.00011	C
PCBs: Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	1.7	C	4.9	C	39 N	0.21 C	0.04 C			0.025	C	0.11	C
PCBs: Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	1.7	C	5	C	39 N	0.21 C	0.04 C			0.025	C	0.11	C
PCBs: Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	1.7	C	4.9	C	39 N	0.2 C	0.04 C			0.025	C	0.11	C
PCBs: Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	1.7	C	4.9	C	39 N	0.21 C	0.04 C			0.025	C	0.11	C
PCBs: Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	0.0005	C	0.0015	C	0.012 N	0.000061 C	0.000012 C			0.0000074	C	0.000032	C
PCBs: Polychlorinated Biphenyls (high risk)	1336-36-3	3.2	C	9.4	C	550 C	1.6 M	0.5 M			0.049	C	0.21	C
PCBs: Polychlorinated Biphenyls (low risk)	1336-36-3						1.6 M	0.5 M			0.28	C	1.2	C
PCBs: Polychlorinated Biphenyls (lowest risk)	1336-36-3						1.6 M	0.5 M			1.4	C	6.1	C
PCBs: Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	0.53	C	1.6	C	12 N	0.19 C	0.06 C			0.0074	C	0.032	C
PCBs: Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	0.17	C	0.48	C	3.9 N	0.013 C	0.004 C			0.0025	C	0.011	C
Pebulate	1114-71-2	5500	N	58000	N	98000 N	8.9 N	560 N						
Pendimethalin	40487-42-1	27000	N	100000	L	100000 L	320 N	1400 N						
Pentabromodiphenyl Ether	32534-81-9	0.31	S	0.31	S	0.31 S	35 N	40 N						
Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	8.8	N	82	N	180 N	1.7 N	2 N						
Pentachlorobenzene	608-93-5	88	N	930	N	1600 N	0.49 N	3.2 N						

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Pentachloroethane	76-01-7	110 C	360 C	460 S	0.062 C	6.5 C				
Pentachloronitrobenzene	82-68-8	38 C	130 C	5500 C	0.29 C	1.2 C				
Pentachlorophenol	87-86-5	14 C	40 C	2600 C	0.028 M	1 M			5.5 C	24 C
Pentaerythritol tetranitrate (PETN)	78-11-5	800 N	5300 C	16000 N	5.1 C	170 C				
Pentamethylphosphoramide (PMPA)	10159-46-3	8.8 N	82 N	180 N	0.0082 N	2 N				
Pentane, n-	109-66-0	390 S	390 S	390 S	200 N	2100 N			1000 N	4400 N
Perchlorate and Perchlorate Salts	14797-73-0	77 N	820 N	1400 N		15 M				
Perfluorobutanesulfonate	45187-15-3	27 N	250 N	520 N		6 N				
Perfluorobutanesulfonic acid (PFBS)	375-73-5	27 N	250 N	520 N		6 N				
Permethrin	52645-53-1	4500 N	41000 N	87000 N	4800 N	1000 N				
Phenacetin	62-44-2	3500 C	10000 C	100000 L	1.9 C	340 C			45 C	190 C
Phenmedipham	13684-63-4	21000 N	100000 L	100000 L	410 N	3800 N				
Phenol	108-95-2	27000 N	100000 L	100000 L	67 N	5800 N			210 N	880 N
Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	350 N	3300 N	7000 N	0.5 N	78 N				
Phenothiazine	92-84-2	45 N	410 N	870 N	0.27 N	4.3 N				
Phenyl Isothiocyanate	103-72-0	22 N	130 S	130 S	0.034 N	2.6 N				
Phenylenediamine, m-	108-45-2	530 N	4900 N	10000 N	0.64 N	120 N				
Phenylenediamine, o-	95-54-5	63 C	190 C	7000 N	0.035 C	6.5 C				
Phenylenediamine, p-	106-50-3	88 N	820 N	1800 N	0.11 N	20 N				
Phenylmercuric Acetate	62-38-4	7.1 N	66 N	140 N	0.01 N	1.6 N				
Phenylphenol, 2-	90-43-7	3900 C	12000 C	100000 L	82 C	300 C				
Phorate	298-02-2	18 N	160 N	340 N	0.067 N	3 N				
Phosgene	75-44-5	0.43 N	1.3 N	7.2 N	0.0033 N	0.63 N			0.31 N	1.3 N
Phosmet	732-11-6	1800 N	16000 N	34000 N	1.6 N	370 N				
Phosphine	7803-51-2	32 N	350 N	590 N		0.57 N			0.31 N	1.3 N
Phosphoric Acid	7664-38-2	100000 L	100000 L	100000 L					10 N	44 N
Phosphorus, White	7723-14-0	2.2 N	23 N	39 N	0.02 N	0.4 N				
Phthalic Acid, p-	100-21-0	45000 N	100000 L	100000 L	67 N	9400 N				
Phthalic Anhydride	85-44-9	100000 L	100000 L	100000 L	170 N	39000 N			21 N	88 N
Picloram	1918-02-1	6200 N	57000 N	100000 L	2.8 M	500 M				
Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	8.8 N	82 N	180 N	0.026 N	2 N				
Picric Acid (2,4,6-Trinitrophenol)	88-89-1	180 N	1600 N	3400 N	3.8 N	40 N				
Pirimiphos, Methyl	29232-93-7	64 N	600 N	1300 N	0.17 N	8.9 N				
Polybrominated Biphenyls	36355-01-8	0.25 C	0.77 C	12 N		0.026 C			0.0033 C	0.014 C
Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	100000 L	100000 L	100000 L					0.63 N	2.6 N
Potassium Cyanide	151-50-8	220 N	2300 N	3900 N		40 N				
Potassium Perchlorate	7778-74-7	77 N	820 N	1400 N		14 N				
Potassium Perfluorobutane Sulfonate	29420-49-3	27 N	250 N	520 N		6 N				
Potassium Silver Cyanide	506-61-6	550 N	5800 N	9800 N		82 N				
Prochloraz	67747-09-5	50 C	150 C	8200 C	0.38 C	3.8 C				
Profluralin	26399-36-0	660 N	7000 N	12000 N	32 N	26 N				
Prometon	1610-18-0	1300 N	12000 N	27000 N	2.4 N	250 N				
Prometryn	7287-19-6	3500 N	33000 N	70000 N	18 N	600 N				
Pronamide	23950-58-5	6600 N	62000 N	100000 L	24 N	1200 N				
Propachlor	1918-16-7	1100 N	11000 N	22000 N	3 N	250 N				
Propanil	709-98-8	450 N	4100 N	8700 N	0.9 N	82 N				
Propargite	2312-35-8	39 C	120 C	6300 C	2.4 C	1.6 C				
Propargyl Alcohol	107-19-7	220 N	2300 N	3900 N	0.16 N	40 N				
Propazine	139-40-2	1800 N	16000 N	34000 N	6 N	340 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Propham	122-42-9	1800 N	16000 N	34000 N	4.5 N	350 N				
Propiconazole	60207-90-1	8800 N	82000 N	100000 L	110 N	1600 N				
Propionaldehyde	123-38-6	110 N	310 N	1700 N	0.069 N	17 N			8.3 N	35 N
Propyl benzene	103-65-1	260 S	260 S	260 S	25 N	660 N			1000 N	4400 N
Propylene	115-07-1	350 S	350 S	350 S	120 N	6300 N			3100 N	13000 N
Propylene Glycol	57-55-6	100000 L	100000 L	100000 L	1600 N	400000 N				
Propylene Glycol Dinitrate	6423-43-4	100000 L	100000 L	100000 L					0.28 N	1.2 N
Propylene Glycol Monomethyl Ether	107-98-2	57000 N	100000 L	100000 L	13 N	3200 N			2100 N	8800 N
Propylene Oxide	75-56-9	29 C	97 C	5200 C	0.011 C	2.7 C			7.6 C	33 C
Pyrene	129-00-0	2500 N	23000 N	51000 N	260 N	120 N				
Pyridine	110-86-1	110 N	1200 N	2000 N	0.14 N	20 N				
Quinalphos	13593-03-8	45 N	410 N	870 N	0.87 N	5.1 N				
Quinoline	91-22-5	2.5 C	7.7 C	410 C	0.016 C	0.24 C				
Quizalofop-ethyl	76578-14-8	800 N	7400 N	16000 N	38 N	120 N				
Refractory Ceramic Fibers (units in fibers)	E715557								31000 N	130000 N
Resmethrin	10453-86-8	2700 N	25000 N	52000 N	830 N	67 N				
Ronnel	299-84-3	5500 N	58000 N	98000 N	75 N	410 N				
Rotenone	83-79-4	350 N	3300 N	7000 N	640 N	61 N				
Safrole	94-59-7	7.7 C	100 C	5600 C	0.012 C	0.96 C			0.16 C	1.9 C
Selenious Acid	7783-00-8	550 N	5800 N	9800 N		100 N				
Selenium	7782-49-2	550 N	5800 N	9800 N	5.3 M	50 M			21 N	88 N
Selenium Sulfide	7446-34-6	550 N	5800 N	9800 N		100 N			21 N	88 N
Sethoxydim	74051-80-2	12000 N	100000 L	100000 L	290 N	1600 N				
Silica (crystalline, respirable)	7631-86-9	100000 L	100000 L	100000 L					3.1 N	13 N
Silver	7440-22-4	550 N	5800 N	9800 N	16 N	94 N				
Silver Cyanide	506-64-9	11000 N	100000 L	100000 L		1800 N				
Simazine	122-34-9	63 C	190 C	8700 N	0.039 M	4 M				
Sodium Acifluorfen	62476-59-9	1100 N	11000 N	22000 N	41 N	260 N				
Sodium Azide	26628-22-8	430 N	4700 N	7900 N		80 N				
Sodium Cyanide	143-33-9	110 N	1200 N	2000 N		200 M				
Sodium Diethyldithiocarbamate	148-18-5	28 C	85 C	4500 C		2.9 C				
Sodium Fluoride	7681-49-4	5500 N	58000 N	98000 N		4000 M			14 N	57 N
Sodium Fluoroacetate	62-74-8	1.8 N	16 N	34 N	0.0016 N	0.4 N				
Sodium Metavanadate	13718-26-8	110 N	1200 N	2000 N		20 N				
Sodium Perchlorate	7601-89-0	77 N	820 N	1400 N		14 N				
Sodium Tungstate	13472-45-2	88 N	930 N	1600 N		16 N				
Sodium Tungstate Dihydrate	10213-10-2	88 N	930 N	1600 N		16 N				
Stirofos (Tetrachlorovinphos)	961-11-5	320 C	960 C	52000 C	1.7 C	28 C				
Strontium, Stable	7440-24-6	66000 N	100000 L	100000 L	8500 N	12000 N				
Strychnine	57-24-9	27 N	250 N	520 N	1.3 N	5.9 N				
Styrene	100-42-5	870 S	870 S	870 S	2.2 M	100 M			1000 N	4400 N
Styrene-Acrylonitrile (SAN) Trimer (THNA isomer)	57964-39-3	270 N	2500 N	5200 N		48 N				
Styrene-Acrylonitrile (SAN) Trimer (THNP isomer)	57964-40-6	270 N	2500 N	5200 N		48 N				
Sulfolane	126-33-0	88 N	820 N	1800 N	0.087 N	20 N			2.1 N	8.8 N
Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	71 N	660 N	1400 N	1.3 N	11 N				
Sulfur Trioxide	7446-11-9	100000 L	100000 L	100000 L		2.1 N			1 N	4.4 N
Sulfuric Acid	7664-93-9	100000 L	100000 L	100000 L					1 N	4.4 N
Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)p	140-57-8	310 C	920 C	49000 C	2.9 C	13 C			4 C	17 C
TCMTB	21564-17-0	2700 N	25000 N	52000 N	67 N	480 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Tebuthiuron	34014-18-1	6200 N	57000 N	100000 L	8 N	1400 N				
Temephos	3383-96-8	1800 N	16000 N	34000 N	1500 N	400 N				
Terbacil	5902-51-2	1100 N	11000 N	22000 N	1.5 N	250 N				
Terbufos	13071-79-9	2.8 N	29 N	31 S	0.011 N	0.24 N				
Terbutryn	886-50-0	88 N	820 N	1800 N	0.37 N	13 N				
Tert-Butyl Acetate	540-88-5	110 C	360 C	44000 C	0.15 C	33 C			22 C	94 C
Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	8.8 N	82 N	180 N	1.1 N	2 N				
Tetrachlorobenzene, 1,2,4,5-	95-94-3	3.2 N	35 N	59 N	0.016 N	0.17 N				
Tetrachloroethane, 1,1,1,2-	630-20-6	28 C	88 C	680 S	0.043 C	5.7 C			3.8 C	17 C
Tetrachloroethane, 1,1,2,2-	79-34-5	8.4 C	27 C	1900 S	0.0059 C	0.76 C	72 C	310 C	0.48 C	2.1 C
Tetrachloroethylene	127-18-4	110 N	170 S	170 S	0.045 M	5 M	110 N	470 N	42 N	180 N
Tetrachlorophenol, 2,3,4,6-	58-90-2	2700 N	25000 N	52000 N	3.6 N	240 N				
Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	0.6 C	2 C	84 C	0.0012 C	0.017 C				
Tetraethyl Dithiopyrophosphate	3689-24-5	45 N	410 N	870 N	0.1 N	7.1 N				
Tetraethyl Lead	78-00-2	0.011 N	0.12 N	0.2 N	0.000091 N	0.0013 N				
Tetrafluoroethane, 1,1,1,2-	811-97-2	2100 S	2100 S	2100 S	1900 N	170000 N			83000 N	350000 N
Tetrahydrofuran	109-99-9	25000 N	95000 N	100000 L	15 N	3400 N			2100 N	8800 N
Tetramethylphosphoramide, -N,N,N',N" (TMPA)	16853-36-4	8.8 N	82 N	180 N		2 N				
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	220 N	2300 N	3900 N	7.3 N	39 N				
Thallic Oxide	1314-32-5	2.2 N	23 N	39 N		0.4 N				
Thallium (I) Nitrate	10102-45-1	1.1 N	12 N	20 N		0.2 N				
Thallium (Soluble Salts)	7440-28-0	1.1 N	12 N	20 N	2.9 M	2 M				
Thallium Acetate	563-68-8	1.1 N	12 N	20 N		0.2 N				
Thallium Carbonate	6533-73-9	2.2 N	23 N	39 N		0.4 N				
Thallium Chloride	7791-12-0	1.1 N	12 N	20 N		0.2 N				
Thallium Selenite	12039-52-0	1.1 N	12 N	20 N		0.2 N				
Thallium Sulfate	7446-18-6	2.2 N	23 N	39 N		0.4 N				
Thifensulfuron-methyl	79277-27-3	3800 N	35000 N	75000 N	5.2 N	860 N				
Thiobencarb	28249-77-6	880 N	8200 N	18000 N	11 N	160 N				
Thiocyanates	E1790664	22 N	230 N	390 N		4 N				
Thiocyanic Acid	463-56-9	22 N	230 N	390 N		4 N				
Thiodiglycol	111-48-8	7600 N	79000 N	100000 L	5.7 N	1400 N				
Thiofanox	39196-18-4	27 N	250 N	520 N	0.037 N	5.3 N				
Thiophanate, Methyl	23564-05-8	660 C	2000 C	100000 L	1.1 C	67 C				
Thiram	137-26-8	1300 N	12000 N	27000 N	8.3 N	290 N				
Tin	7440-31-5	66000 N	100000 L	100000 L	60000 N	12000 N				
Titanium Tetrachloride	7550-45-0	100000 L	100000 L	100000 L		0.21 N			0.1 N	0.44 N
Toluene	108-88-3	820 S	820 S	820 S	14 M	1000 M			5200 N	22000 N
Toluene-2,4-diisocyanate	584-84-9	9 N	27 N	150 N	0.0051 N	0.017 N			0.0083 N	0.035 N
Toluene-2,5-diamine	95-70-5	18 N	130 C	340 N	0.025 N	4 N				
Toluene-2,6-diisocyanate	91-08-7	7.4 N	22 N	120 N	0.0052 N	0.017 N			0.0083 N	0.035 N
Toluenediamine, 2,3-	2687-25-4	8.8 N	82 N	180 N	0.013 N	2 N				
Toluenediamine, 3,4-	496-72-0	8.8 N	82 N	180 N	0.012 N	2 N				
Toluic Acid, p-	99-94-5	450 N	4100 N	8700 N	0.46 N	90 N				
Toluidine, o- (Methylaniline, 2-)	95-53-4	480 C	1400 C	75000 C	0.4 C	47 C			0.55 C	2.4 C
Toluidine, p-	106-49-0	250 C	770 C	7000 N	0.21 C	25 C				
Toxaphene	8001-35-2	6.9 C	21 C	160 N	9.3 M	3 M			0.088 C	0.38 C
Toxaphene, Weathered	E1841606	2.7 N	25 N	52 N	1.9 N	0.6 N				
Tralomethrin	66841-25-6	660 N	6200 N	13000 N	1100 N	150 N				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m³)	Com/Ind (µg/m³)
Triacetin	102-76-1	100000 L	100000 L	100000 L	9000 N	1600000 N				
Triadimefon	43121-43-3	2900 N	28000 N	60000 N	10 N	630 N				
Triallate	2303-17-5	140 C	460 C	19000 C	0.21 C	4.7 C				
Triasulfuron	82097-50-5	880 N	8200 N	18000 N	4.2 N	200 N				
Tribenuron-methyl	101200-48-0	710 N	6600 N	14000 N	1.2 N	160 N				
Tribromobenzene, 1,2,4-	615-54-3	550 N	5800 N	9800 N	1.3 N	45 N				
Tribromophenol, 2,4,6-	118-79-6	800 N	7400 N	16000 N	4.3 N	120 N				
Tribufos	78-48-8	18 N	160 N	340 N	0.056 N	0.57 N				
Tributyl Phosphate	126-73-8	840 C	2600 C	18000 N	5.1 C	52 C				
Tributyltin Compounds	E1790678	27 N	250 N	520 N		6 N				
Tributyltin Oxide	56-35-9	27 N	250 N	520 N	5900 N	5.7 N				
Trichloramine	10025-85-1					4000 M				
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	910 S	910 S	910 S	490 N	10000 N			5200 N	22000 N
Trichloroacetic Acid	76-03-9	110 C	330 C	18000 C	0.25 M	60 M				
Trichloroaniline HCl, 2,4,6-	33663-50-2	270 C	790 C	41000 C	1.5 C	27 C				
Trichloroaniline, 2,4,6-	634-93-5	2.7 N	25 N	52 N	0.073 N	0.4 N				
Trichlorobenzene, 1,2,3-	87-61-6	88 N	930 N	1600 N	0.42 N	7 N				
Trichlorobenzene, 1,2,4-	120-82-1	81 N	260 N	400 S	4.1 M	70 M			2.1 N	8.8 N
Trichloroethane, 1,1,1-	71-55-6	640 S	640 S	640 S	1.4 M	200 M	13000 N	54000 N	5200 N	22000 N
Trichloroethane, 1,1,2-	79-00-5	2.1 N	6.3 N	35 N	0.032 M	5 M	11 N	46 N	0.21 N	0.88 N
Trichloroethylene	79-01-6	5.7 N	19 N	95 N	0.036 M	5 M	9.1 N	38 N	2.1 N	8.8 N
Trichlorofluoromethane	75-69-4	1200 S	1200 S	1200 S	66 N	5200 N				
Trichlorophenol, 2,4,5-	95-95-4	8800 N	82000 N	100000 L	81 N	1200 N				
Trichlorophenol, 2,4,6-	88-06-2	88 N	820 N	1800 N	0.23 N	12 N			9.1 C	40 C
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	880 N	8200 N	18000 N	1.3 N	160 N				
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	710 N	6600 N	14000 N	0.55 M	50 M				
Trichloropropane, 1,1,2-	598-77-6	550 N	1300 S	1300 S	0.69 N	88 N				
Trichloropropane, 1,2,3-	96-18-4	0.071 C	1.1 C	46 C	0.000065 C	0.0075 C			0.31 N	1.3 N
Trichloropropene, 1,2,3-	96-19-5	1 N	3.1 N	17 N	0.0061 N	0.62 N			0.31 N	1.3 N
Tricresyl Phosphate (TCP)	1330-78-5	1800 N	16000 N	34000 N	300 N	160 N				
Tridiphane	58138-08-2	270 N	2500 N	5200 N	2.6 N	18 N				
Triethylamine	121-44-8	170 N	480 N	2700 N	0.091 N	15 N			7.3 N	31 N
Triethylene Glycol	112-27-6	100000 L	100000 L	100000 L	180 N	40000 N				
Trifluoroethane, 1,1,1-	420-46-2	4800 S	4800 S	4800 S	2500 N	42000 N			21000 N	88000 N
Trifluralin	1582-09-8	830 N	4200 C	15000 N	17 C	26 C				
Trimethyl Phosphate	512-56-1	380 C	1100 C	18000 N	0.17 C	39 C				
Trimethylbenzene, 1,2,3-	526-73-8	290 S	290 S	290 S	1.6 N	55 N			63 N	260 N
Trimethylbenzene, 1,2,4-	95-63-6	220 S	220 S	220 S	1.6 N	56 N			63 N	260 N
Trimethylbenzene, 1,3,5-	108-67-8	180 S	180 S	180 S	1.7 N	60 N			63 N	260 N
Trimethylpentene, 2,4,4-	25167-70-8	30 S	30 S	30 S	2.5 N	38 N				
Tri-n-butyltin	688-73-3	32 N	350 N	590 N	1.6 N	3.7 N				
Trinitrobenzene, 1,3,5-	99-35-4	3100 N	32000 N	58000 N	42 N	590 N				
Trinitrotoluene, 2,4,6-	118-96-7	50 N	510 N	940 N	1.1 N	9.8 N				
Triphenylphosphine Oxide	791-28-6	1800 N	16000 N	34000 N	30 N	360 N				
Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	1800 N	16000 N	34000 N	160 N	360 N				
Tris(1-chloro-2-propyl)phosphate	13674-84-5	880 N	8200 N	18000 N	13 N	190 N				
Tris(2,3-dibromopropyl)phosphate	126-72-7	3.9 C	13 C	470 S	0.027 C	0.068 C			0.043 C	0.19 C
Tris(2-chloroethyl)phosphate	115-96-8	380 C	1100 C	12000 N	0.74 C	38 C				
Tris(2-ethylhexyl)phosphate	78-42-2	2400 C	7200 C	100000 L	24000 C	240 C				

Table A-6: 2022 Screening Levels

Chemical		Soil Exposure			GroundWater		Vapor Exposure			
		Direct Contact			Soil MTG	Tap	GroundWater		Indoor Air	
Name	CASRN	Residential (mg/kg)	Com/Ind (mg/kg)	Excavation (mg/kg)	Residential (mg/kg)	Residential (µg/L)	Residential (µg/L)	Com/Industrial (µg/L)	Residential (µg/m^3)	Com/Ind (µg/m^3)
Tungsten	7440-33-7	88 N	930 N	1600 N		16 N				
Uranium	7440-61-1	22 N	230 N	390 N	270 M	30 M			0.042 N	0.18 N
Urethane	51-79-6	1.7 C	23 C	1200 C	0.0011 C	0.25 C			0.035 C	0.42 C
Vanadium and Compounds	7440-62-2	550 N	5800 N	9900 N	1700 N	86 N			0.1 N	0.44 N
Vanadium Pentoxide	1314-62-1	920 N	8400 N	17000 N		150 N			0.0034 C	0.015 C
Vernolate	1929-77-7	110 N	1200 N	2000 N	0.18 N	11 N				
Vinclozolin	50471-44-8	110 N	980 N	2100 N	0.32 N	21 N				
Vinyl Acetate	108-05-4	1300 N	2800 S	2800 S	1.7 N	410 N			210 N	880 N
Vinyl Bromide	593-60-2	3.6 C	11 C	100 N	0.021 C	3.7 C			1.9 C	8.2 C
Vinyl Chloride	75-01-4	0.83 C	17 C	1300 C	0.014 M	2 M	2.1 C	35 C	1.7 C	28 C
Warfarin	81-81-2	27 N	250 N	520 N	0.12 N	5.6 N				
Xylene, m-	108-38-3	390 S	390 S	390 S	3.7 N	190 N			100 N	440 N
Xylene, o-	95-47-6	430 S	430 S	430 S	3.7 N	190 N			100 N	440 N
Xylene, p-	106-42-3	390 S	390 S	390 S	3.7 N	190 N			100 N	440 N
Xylenes	1330-20-7	260 S	260 S	260 S	200 M	10000 M			100 N	440 N
Zinc and Compounds	7440-66-6	32000 N	100000 L	100000 L	7500 N	6000 N				
Zinc Cyanide	557-21-1	5500 N	58000 N	98000 N		1000 N				
Zinc Phosphide	1314-84-7	32 N	350 N	590 N		6 N				
Zineb	12122-67-7	4500 N	41000 N	87000 N	57 N	990 N				
Zirconium	7440-67-7	8.8 N	93 N	160 N	96 N	1.6 N				

C = Carcinogenic endpoint

CASRN = Chemical Abstracts Service Reference Number

L = Capped at 100,000 mg/kg (soil direct contact only)

M = Set to maximum contaminant limit (MCL; ground water only) or based on MCL (migration to ground water)

mg/kg = milligrams per kilogram

MTG = Migration to groundwater

N = Noncarcinogenic endpoint

R = Capped at 1,000,000 mg/kg (migration to groundwater only)

S = Capped at soil saturation limit

µg/L = micrograms per liter

µg/m^3 = micrograms per cubic meter