



## SMC DIRECTIONAL DRILLING TECHNICAL STANDARD

(Revised February 20, 2025)

This document represents the technical standard for projects using horizontal directional drilling (HDD) and reflects procedures and practices to protect water quality by reducing sediment discharge from work areas, reducing potential for runoff to carry construction materials into wetlands and waters of Lake County and clarifying expectations for spill prevention and response procedures relevant to HDD construction methods. This includes practices to reduce the risk of runoff carrying drilling fluid from inadvertent returns (IRs), also known as “frac-outs,” to wetlands and other water resources through prevention and response planning.

HDD is often the method of choice for installing utilities where open cuts are not practical or would result in excessive environmental impacts. This technique typically has an entry pit and an exit pit, with no disturbance in between. HDD is often used for drilling under roads, wetlands, creeks, etc. However, every directional drilling project has the potential for IRs of drilling mud into the environment.

While IRs are most likely to occur near the bore entry and exit points, where the drill head is shallow, they can occur in any location along a directional bore. IRs have occurred in upland locations and in wetland locations and from drilling depths of five feet to over 20 feet. IRs have adversely impacted upland and wetland ecosystems, affected environmental aesthetics and have frequently resulted in backlash from property owners and the public in general. Further, clean-up of the drilling mud is more time consuming and expensive than preventing or at least immediately containing and remediating the IR.

Drilling mud typically consists of a mixture of water, bentonite clay, and an emulsifier such as guar gum. The primary problem is the bentonite. Bentonite is a very effective waterproofing agent and is used for sealing wells, creating impermeable slurry walls, etc. Bentonite in wetlands has a similar sealing action and can destroy a wetland’s ability to interact with the ground water. Furthermore, bentonite can smother benthic communities (things that live in the bottom sediments) and create water that is so murky that little light reaches submerged plant life. Getting bentonite out of a wetland without significantly impacting the wetland in the process can be nearly impossible. Therefore, a contingency plan is needed to direct an immediate and effective response for inadvertent drilling mud returns into the environment.

There are three primary ways to keep drilling mud out of the environment:

1. Minimize drilling pressures to keep the mud from fracturing out of the soil, and if an IR is identified, **immediately slow or stop drilling**.
2. **Immediately contain and remove IR material** with a vacuum truck, other mechanical means, or by hand if necessary.

The most practical method for containment of drilling mud in upland areas is construction of a barrier placed around the IR to contain the mud to a small area. The barrier can be made of lightweight materials such as aluminum or plastic and should have handles so it can be easily taken to the IR area. The barrier may be sandbags, rolled erosion control products, silt fence or other measure as long as it is effective and can be installed immediately.

Containment in wetlands and flowing streams is more difficult because once it is suspended in water, bentonite is so fine it will pass through most containment structures like silt fence or turbidity barriers. The most practical approach in open water is to immediately stop drilling and isolate the area using a turbidity barrier or containment box, as appropriate. The contained water

must then be removed using a vacuum truck or treated with appropriate anionic polymers and removed by vacuum or manual methods.

### 3. Use anionic polymers to remove suspended drilling mud from water.

Polymers are branched organic molecules that grab onto small, suspended particles, and form one large particle that is heavy enough to settle out of the water. There are essentially two kinds of polymers, cationic and anionic. ***Cationic polymers can be toxic to freshwater aquatic life (they stick onto gills) and shall not be used.***

**At the discretion of the Enforcement Officer, anionic polymers are required to be available onsite when drilling will be under or wetlands or water bodies.** There are a wide variety of types and forms of anionic polymers available, but they do not all work equally as well in removing suspended clay from water. A knowledgeable polymer vendor must evaluate the project-specific conditions and recommend appropriate polymers and how to use them. This evaluation and recommendation should occur during the design phase of the project so appropriate polymers are available on-site during all phases of the work.

At a minimum, a directional drilling contingency plan is a written plan with two components: an HDD summary and a contingency strategy for IRs. This plan may be part of the project SWPPP. The level of detail required for permitting will be based on size, presence, and proximity of sensitive areas such as wetlands, water bodies, buffers, stormwater inlet locations, utility lines, etc.

#### **HDD Summary**

For each drill path, the HDD summary needs to include a site-specific project description, disclose sensitive areas and risk factors, and document risk management measures. Risk factors can include features such as high sand or gravel content, peat soils, shallow groundwater, steep slopes, signs of scour, cobbles, artesian aquifers, presence of wetlands, water bodies, nearby storm sewer inlets, etc.

The project as described in the narrative and site-specific sensitive areas described in the summary should be clearly shown and labeled on the project site plans, along with appropriate soil erosion/sediment control details and notes.

#### **Inadvertent Return Contingency Plan Contents**

The IR Contingency Plan is a short-term plan to identify, respond to, and contain IRs at the project site. The plan should outline the appropriate responses by the drill rig operator, inspector, crew, and foreman to an IR event.

##### *General Information Requirements*

1. Name, address, phone number and e-mail address of onsite drilling company representative;
2. Plans depicting location of drill paths, bore pits, temporary stockpiles, staging areas, access paths, associated soil erosion and sediment control measures, location and designations for wetlands and waters (typically based off a site assessment or wetland determination report prepared by or under the supervision of a Lake County Certified Wetland Specialist), and minimum depth of cover under wetland/water resources (e.g., shown in a cross-section).
3. Material Safety Data Sheets (MSDS) for drilling mud constituents;
4. Name, address, phone number, and e-mail address of the anionic polymer vendor (as required at the discretion of Enforcement Officer);

5. The specific type(s) of anionic polymer appropriate to site conditions as determined by the anionic polymer vendor, along with catalog cut sheets for each recommended polymer, directions for use and any limitations; and
6. A brief narrative discussing the directional drilling operation for the specific project, including identification of sensitive areas (e.g., specific wetlands and water bodies, nearby utility lines, stormwater intakes, etc.) and proposed methods of minimizing the potential for IRs and ensuring they are properly contained.

*Minimum HDD Operational Requirements*

1. During active drilling operations, at least one vacuum truck shall be staged onsite or where it can reach any place along a drill corridor within 10 minutes, or as directed by the Enforcement Officer. At least one additional vacuum truck shall be readily available or on stand-by at a nearby location (within 1-hour travel time). ***When work occurs proximal to or beneath wetlands or water bodies, a vacuum truck shall be staged in the immediate vicinity to enable immediate response in the event of an IR.***
2. During active drilling operations, at least one designated person shall walk the drilling route and visually inspect for IRs. This may be accomplished by a designated field crew member or a Designated Erosion Control Inspector (DECI) – see the Lake County Stormwater Management Commission (SMC) website for current DECI list.
3. At the discretion of the Enforcement Officer, adequate polymer shall be onsite and readily available to treat at least one (1) IR into wetlands or water bodies, with the understanding that any polymer that is used will be promptly replaced.
4. When drilling under wetlands or water bodies, the installation shall have a minimum depth of three (3) feet (preferably >5 feet) below the bottom of the wetland/water body or the thalweg (deepest part) of the stream channel.
5. IRs in uplands or near sensitive areas but not affecting the sensitive area are to be summarized in a weekly report to Enforcement Officer detailing the amount of drilling mud released, the method of containment, remediation method used and any additional relevant information.
6. Enforcement Officer must be contacted immediately if an IR occurs in a sensitive area. Telephone numbers and e-mail addresses of designated staff shall be included in the contingency plan. Each IR must be summarized in daily reports to the Enforcement Officer detailing the amount of drilling mud released, the method of containment, remediation method used and any additional relevant information.
7. In addition to a pre-construction deposit, SMC typically will require an inspection deposit for project reviews involving directional drilling under or near sensitive areas.

**Enforcement Officer or the local community may have additional requirements to the above list depending on the location, length and depth of the proposed directional drilling project.**

The attached contingency plan template can be used to satisfy the minimum contingency plan requirement, provided the applicant modifies it to be site-specific and uses it to minimize environmental impacts from IRs.

The project-specific plan must be reviewed and approved prior to issuance of a Watershed Development Permit (WDP) and referenced as a specific condition of the WDP or wetland approval (including a Letter of No Wetland Impact—LONI—approval), as applicable. It is recommended to incorporate a reference to

the contingency plan (or a summary of the key plan elements) on the erosion control sheet and/or within stormwater pollution prevention (SWPP) sheet in the drawing set so contractors can ensure their bids include provisions to implement the contingency plan measures.

### **Pre-Construction Meeting**

The directional drilling contingency plan shall be discussed at the pre-construction meeting. The meeting ideally is on-site but may be virtual if an on-site meeting is not possible. Attendees should include the owner, the general contractor, the drill contractor, and regulatory authority.

The drill operator and the individual designated to walk the drill section to look for IRs should physically walk the project alignment and discuss the potential signs of IRs. If the project crosses aquatic resources, the environmental representative and regulatory authority (if available) should attend the walk-through.

*Instructions: Provide the project name and project location. Indicate the date of the plan and the company/contact information for the party who prepared this document as well as the party for whom this document was prepared. Remove this box from the final document.*

**DIRECTIONAL DRILLING  
CONTINGENCY PLAN  
for the  
[PROJECT NAME]**

Project Location, Lake County, Illinois

**(Date)**

Prepared by:

Prepared for:

# **DIRECTIONAL DRILLING CONTINGENCY PLAN for the [PROJECT NAME]**

*Instructions: Provide the project name in the header and in Section 1.0, along with a general description/address for the project work location. Remove this box from the final document.*

## **1.0 Introduction and Purpose**

Project Name: [insert]

Work Location: [insert general description of project area] in the [insert municipality name(s)] in Lake County, Illinois.

This document represents the contingency plan for the above-referenced directional drilling project and work site. It establishes operational procedures and responsibilities for preventing, containing, and cleaning up Inadvertent Returns (IRs) associated with the project. A current copy of this plan will be maintained at the project site and made readily available to all who work on the project. The following are the plan's specific objectives:

1. Minimize the potential for an IR associated with directional drilling activities;
2. Provide for the timely detection of IRs;
3. Protect sensitive areas, including but not limited to wetlands, water bodies, buffer, stormwater inlets, utility lines, etc.
4. Ensure an organized, timely, and "minimum-impact" response in the event of an IR and release of drilling mud; and
5. Ensure all notifications are made appropriately and that required documentation is completed.

## **2.0 Contact Information**

*Instructions: Insert the name of the indicated contacts. Remove this box from the final document.*

### **2.1 [Company Name] Contacts**

The following contact is responsible for ensuring that permit requirements associated with this development are met. If that individual is not immediately available, the secondary contact has authority to act in the permittees name:

#### Primary Contact (Permittee)

Name:

Title:

Work Cell Phone:

E-Mail Address:

#### Secondary Contact

Name:

Title:

Work Cell Phone:

E-Mail Address:

If the project is being constructed by a Contractor, the onsite responsibility for implementing this plan falls to the Foreman/Operating Manager. The Foreman/Operating Manager overseeing the work will be responsible for implementing this plan and making proper notifications in the event of an IR, as well as coordinating personnel, response, cleanup, and disposal of recovered material, and timely reporting.

#### Contractor

Name:

Work Cell Phone:

E-Mail Address:

#### Foreman/Operating Manager

Name:

Work Cell Phone:

E-Mail Address:

The Foreman/Operating Manager will be familiar with all aspects of the drilling activity, the contents of this contingency plan and the conditions or approval under which the activity is permitted to take place. The Foreman/Operating Manager shall have the authority to Stop Work and commit the resources (personnel and equipment) necessary to implement this plan. The Foreman/Operating Manager shall ensure that a copy of this plan is available (onsite) and accessible to all construction personnel. The Foreman/Operating Manager shall ensure that all workers are properly trained and familiar with the necessary procedures for response to an IR prior to the start of drilling operations.

## 2.2 Other Important Contacts

### Onsite Drilling Company Representative

Name:  
Address:  
Work Cell Phone:  
E-Mail Address:

### Anionic Polymer Vendor

Name:  
Address:  
Work Cell Phone:  
E-Mail Address:

### SMC/Community Regulatory Contact

Name:  
Address:  
Work Cell Phone:  
E-Mail Address:

### Illinois Environmental Protection Agency (EPA) Contact

Name:  
Address:  
Work Phone:  
E-Mail Address:

### U.S. Army Corps of Engineers (USACE) Contact

Name:  
Address:  
Work Phone:  
E-Mail Address:

### Designated Erosion Control Inspector

Name:  
Address:  
Work Cell Phone:  
E-Mail Address:

## 3.0 Site-Specific Description of the Work

*Instructions: Remove this box from the final document. Amend the narrative in this section to reflect specifics for the proposed project consistent with the plans. The plans need to depict areas of open trenching/grading, areas of HDD, proposed bore pit locations, temporary stockpiles, utility pot-holing, staging areas, access path routes, associated soil erosion/sediment control measures, location and designations for wetlands/waters (e.g., Wetland 1, Stream 3, Ditch 2, etc. preferably consistent with wetland determination report), and include a typical cross-section showing the HDD depth below aquatic resources. To facilitate agency review, SMC recommends the submitted plans highlight sections of HDD work with a different color than sections of open trenching work and clearly show impacts to aquatic resources and associated amount, per location.*

The project will begin with the exit and entry pits being enclosed along the downgradient edge and sides by silt fences, coconut rolls, straw wattles, or other protective measure(s) approved by the Enforcement Officer. After installation of appropriate soil erosion and sediment control measures at the bore pit and receiving pit locations and in any other sensitive areas, the horizontal directional drilling (HDD) process itself will initiate. The typical HDD process consists of three main steps: Drilling the pilot hole with a small diameter drill head, widening the bore hole by adding a reamer to the drill head and pulling it back

through the bore hole, and finally attaching the pipe to the drill head and pulling it back through the bore hole.

HDD work for this proposed project involves boring approximately [x feet], of which [x feet] is for [x-inch] pipe and [x feet] is for [x-inch] pipe. HDD [will/will not] be done under any wetlands or streams/rivers [or indicate the number of features they will go under]. HDD [will/will not] occur beneath wetland or water body buffers. [Drill depth will be a minimum [x feet] below the stream or wetland as indicated on the plans.] To minimize the risk of IRs in the wetlands/streams, “relief holes” may be installed at strategically-placed locations along the drill path (min. 25-feet from wetland/stream boundaries).

In addition to HDD drilling, the proposed project involves [x feet] of open trench work and associated erosion protection measures as indicated on the project plans (attached). The project route and anticipated bore hole, receiving pit, and relief hole locations are indicated on the attached project plans. However, the drilling contractor will determine the final locations in the field.

Sensitive areas specific to this project include [list wetlands, water bodies, buffers, stormwater inlet locations, utility lines, etc. and their location relative to the project stationing].

Disturbed areas associated with the project will be restored to their original contours, including a minimum of six (6) inches of topsoil, after the project has been completed and stabilized with [type of seed and method of temporary soil stabilization] (attached as **Appendix 1**).

## **4.0 Inadvertent Return Prevention and Response Preparedness**

### **4.1 Equipment & Materials**

Equipment required to contain and clean up an IR shall be available at the work site. This equipment includes items such as the following:

- Heavy weight plastic sheeting
- Several hard plastic buckets (e.g., 5-gallon buckets)
- Pumps and sufficient hose
- Silt fence
- Coconut rolls/eel logs/silt sock/sandbags (or comparable)
- Turbidity barrier/silt curtain (if crossing a pond or stream, or a wetland with deep or moving water)
- Shovels, push brooms, squeegees
- Vacuum truck
- Containment boxes (see example photo at right)
- Anionic polymer (for IRs in wetland/waters)
- Leak-stopping compound



Containment Box Example (view of interior)

Containment materials will be staged onsite at a location where they are readily accessible for immediate use in the event of an IR.

### **4.2 Daily Actions**

Each day prior to the start of work, the Foreman/Operation Manager will ensure the following:



1. Spill and IR containment materials are available on-site, equipment required to contain and clean up an IR is in good working order, and crew are familiar with how to properly use containment measures.
2. Adequate anionic polymer is stored onsite to treat at least one IR into wetlands or water bodies, with the understanding that additional polymer will be procured if the first is used.

Material Data Safety Sheets (MSDS) for the drilling fluid materials are attached as **Appendix 2** of this plan. LC50 Reports and catalog cut sheets for project-specific anionic polymers recommended by the anionic polymer vendor are attached as **Appendix 3**.

3. A “tailgate” safety and operations meeting is held at the start of each day of drilling to review areas of concern for the day’s drilling and the appropriate emergency response contact and procedures to be followed in case of an IR. Questions will be answered and clarification given on any point over which concerns exist. The conditions of approval will be specifically reviewed before the start of each work-day.
4. Protective measures as required by permit or otherwise necessary (e.g., silt fences, coconut rolls, etc.) are functional and maintained around the work site and by sensitive areas.

### 4.3 Active Drilling Procedures

During active drilling operations, at least one vacuum truck will be staged onsite or at a nearby location where it can be mobilized to reach any place along the drill corridor within ten (10) minutes of an IR, or as otherwise directed by the Enforcement Officer. At least one additional vacuum truck will be readily available or on stand-by at a location no more than one (1) hour travel time from the project site. ***Except, when work occurs proximal to or beneath a creek or river, a vacuum truck shall be staged in the immediate vicinity to enable immediate response in the event of an IR.***

Rubbish and construction debris will be placed in an appropriate disposal receptacle and not disposed of in a wetland, water body, buffer, riparian area, or a stream channel. Bentonite used in the drilling process will be either disposed of or recycled in an approved manner.

When drilling under wetlands or streams, the installation will meet or exceed the minimum depth below the wetland or thalweg (deepest part) stream channel per the plan. The thickness of the bentonite mixture will be adjusted to match the substrate conditions. Drilling pressures will be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels will be set at a minimum level to prevent IR. During the pilot bore, the drill annulus will be maintained. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added, to remove blockage.

***During active drilling, at least one designated member of the field crew will walk the drilling route and perform a visual inspection for IRs.*** Also, the HDD operator will closely monitor drilling returns and downhole pressure to assess any problems with HDD progress.

## 5.0 Response to an Inadvertent Return Occurrence

The response of the field crew to an IR will be immediate and in accordance with procedures identified in this plan. All IRs of drilling fluid (whether in upland or aquatic resources) will be addressed and the affected area restored to pre-construction conditions. All appropriate emergency actions that do not pose additional threats to aquatic resources will be taken as outlined in this section, or as otherwise directed by appropriate regulatory authorities.

## 5.1 Field Response Procedures

1. Upon discovery of an IR or spill:
  - a. The Observer will immediately coordinate with the drilling operator to halt forward progress of the drilling (where possible) or decrease in pressure of the drilling operation and notify the Foreman/Operation Manager.
  - b. The permittee shall immediately initiate actions to contain and remediate the IR or spill in as small an area as possible and in accordance with procedures outlined in this contingency plan.
  - c. The Foreman/Operation Manager will make the proper notifications (see **Section 6.0**).
2. The drill operator will closely monitor drilling pressures and shall halt forward progress of drilling operations immediately upon detection of a drop in drilling pressure, when there is a complete and sudden loss of returns in the entrance pit, or other evidence of an IR. The drill operator will immediately notify the Foreman/Operations Manager, who will investigate the likely location of the IR.
3. The following is the general IR response process: Immediately initiate containment of the IR slurry material at that location. Employ silt fence, sandbags, or other appropriate methods; if such methods are not practical or effective (e.g., in an inundated wetland or water body), place a containment box over the IR or install a turbidity curtain. As soon as possible after containment, remove the discharged or spilled drilling slurry in its entirety (as much as practicable) by hand, vacuum truck, or other mechanical methods, and dispose of material off-site in an approved location.

***The use of heavy equipment for IR response is not permitted in any wetland (regardless of whether it contains standing water) or water body without prior approval from the applicable regulatory authorities.***

4. After an IR is contained, except when indicated below drilling activities may resume to prevent a hydrolock condition:
  - a. IR does not threaten a sensitive area. If the IR is minor, easily contained, and does not threaten a sensitive area, a leak-stopping compound may be used to block the IR. If the leak-stopping compound is not fully successful, the bore stem will be redirected to a new location along the desired drill path where an IR has not occurred. *Drilling operations will resume after containment is achieved and leak is successfully stopped (either by successful use of a leak-stopping compound or redirection of the bore).* The discharged material will be removed and properly disposed of per procedures in **Section 5.2**. When boring continues, the site will be closely monitored.
  - b. IR near a sensitive area. If an IR has occurred in an aquatic resource with no standing water or in an upland near a sensitive location such as a storm sewer inlet, silt fence, a rolled product (e.g., coconut rolls, eel logs, silt sock, or comparable), a containment box (preferably) will be used for control, or sandbags. Once the containment box is placed, sandbags, coconut rolls, or comparable will be installed around its exterior base to prevent material from seeping out. The captured material will then be removed and properly disposed of per procedures in **Section 5.2**. *Drilling operations will resume only upon written approval from the proper authorities (e.g., regulatory agencies, etc.).* When boring continues, the site will be closely monitored.

- c. IR in a dry aquatic resource. If an IR has occurred in an aquatic resource with no standing water, silt fence, a rolled product (e.g., coconut rolls, eel logs, silt sock, or comparable), a containment box (preferably) will be used for control, or sandbags. Once the containment box is placed, sandbags, coconut rolls, or comparable will be installed around its exterior base to prevent material from seeping out. The captured material will then be removed and properly disposed of per procedures in **Section 5.2**. *Drilling operations will resume only upon written approval from the proper authorities (e.g., regulatory agencies, etc.).* When boring continues, the site will be closely monitored.
  - d. IR in an aquatic resource with shallow standing water. If the IR has occurred in a wetland or water body with shallow standing water, a containment box will be used (preferably), or sandbags. Once the containment box is placed, sandbags, a rolled product, or other measure (e.g., silt curtain or turbidity barrier, as appropriate, will be installed around its exterior base to prevent material from seeping out. The captured material will then be removed and properly disposed of per procedures in **Section 5.2**. *Drilling operations will resume only upon written approval from the proper authorities (e.g., regulatory agencies, etc.).* When boring continues, the site will be closely monitored.
  - e. IR in an aquatic resource with deeper standing water or with moving water. If the IR has occurred in a water body or wetland with moving water (e.g., stream, lake, pond, river and adjacent wetlands) or with deeper standing water, conditions will be assessed to determine whether hand-placed containment, recovery, or other measures (e.g., silt curtains and turbidity barriers) would be most effective and beneficial at the specific IR location. If not, the Foreman/Operational Manager and drill operator will evaluate if the current drill profile (e.g., drill pressure, pump volume rates, drilling mud consistency, etc.) can be modified to prevent further IR events, or halted overnight to allow the area of the fracture to self-seal. Captured material will be removed and properly disposed of per procedures in **Section 5.2**. *Drilling operations shall resume only upon written approval from the proper authorities (e.g., regulatory agencies, etc.).* When boring continues, the site will be closely monitored.
5. The area disturbed by the IR and its containment will be restored to the original contours and temporarily stabilized against erosion, followed by permanent seeding in the first appropriate timeframe.

## 5.2 Response Close-out Procedures

[Company name] will be responsible for ensuring that the drilling fluid is either properly disposed of or properly recycled. Response close-out activities will include the following:

- a. The recovered drilling fluid will either be recycled or properly disposed of offsite.
- b. All IR excavation and clean-up sites will be returned to pre-project contours using clean fill, including a minimum of six (6) inches of topsoil, and seeded with an appropriate seed mix, as approved by the regulatory authority. If seeding must be delayed due to seasonal conditions, a temporary cover crop and erosion blanket will be installed, followed by permanent seed installation at the first appropriate window.
- c. All containment measures will be promptly removed, unless otherwise specified by the Foreman/Operations Manager or regulatory authority.

Clean-up of IRs will be done in a manner that minimizes impacts. Typically, drilling mud will be cleaned up as much as possible by using vacuum trucks (larger quantities) or hand shovels, buckets and soft-bristled brooms (smaller quantities) without causing damage to existing

vegetation. Fresh water washes will be employed if deemed beneficial and feasible. Because predicting the effect of an IR and efforts to recover the slurry is difficult, IRs within an aquatic resource will be evaluated on a case-by-case basis, and an appropriate level of response will be implemented only after coordination with appropriate regulatory authorities.

If the volume of discharged material is too small for practical physical collection as confirmed via coordination with appropriate regulatory authorities it will be diluted with fresh water and/or the fluid will be allowed to dry and dissipate naturally.

### 5.3 Construction Restart

For IRs that do not threaten a sensitive area, drilling operations may resume if a) 100 percent containment is achieved and b) the IR is arrested through successful use of a leak-stopping compound or redirection of the bore.

For IRs near a sensitive area or affecting an aquatic resource, drilling operations will restart only upon written approval from the applicable regulatory authorities (e.g., SMC, IEPA, USACE, etc.).

### 5.4 Bore Abandonment

A bore will be abandoned when all efforts to control the IR within the existing directional bore have failed. The following steps will be taken in the unlikely event that an incomplete bore must be completely abandoned:

- a. The as-built bore-hole alignment will be determined to the extent practicable and mapped.
- b. A casing will be inserted, if needed, to allow removal of the pilot string.
- c. A thick, grout plug will be pumped in the casing or the borehole, as applicable, to securely seal the borehole.

## 6.0 Notification and Documentation

### 6.1 Notification

The Foreman/Operations Manager will notify the Enforcement Officer and other appropriate regulatory agencies when IRs occur and follow up with appropriate documentation. All notification will include a description of the response actions taken to contain the IR. Notifications shall occur:

- When the IR affects aquatic resources (even if there is no water present):
  - Enforcement Officer will be contacted **immediately** (see contact information in **Section 2.2**) and documentation summarized in daily reports to Enforcement Officer.
  - Notification to the U.S. Army Corps of Engineers and the Illinois Environmental Protection Agency (as applicable) will be **immediately**.
- When the IR affects uplands or is near a sensitive area but did not affect the sensitive area : Enforcement Officer will be notified **immediately**, but documentation shall be summarized in a weekly report to Enforcement Officer.

## 6.2 Documentation

If possible, photographs will be taken during and after the event to document the clean-up procedures.

The following information will be recorded in the project's construction Log Book:

- IR start and stop times
- IR location
- The volume/size of the IR
- The materials used in the drilling mud
- The contents and quantity of materials used in the drilling mud (e.g., 1,000 gal. water and 50 lb. of bentonite)
- Any photographs taken during and after the event to document the clean-up procedures

Proper documentation will be provided in a timely and complete manner as noted under **Section 6.1**. The form in **Appendix 4** (or comparable) will be used to document each IR occurrence. The following information will be provided during agency notification:

1. Name and telephone number of person reporting
2. Date and start/stop times of IR
3. Location and description of the IR (e.g., upland, wetland, water body, storm sewer, etc.)
4. Volume, area and type of material discharged (e.g., content of drilling fluid, including additives)
5. Description of sensitive areas and their location relative to the IR
6. Description of the method(s) of containment and clean-up/remediation measures used
7. Photographs taken during and after clean-up to document remediation efforts
8. Agencies contacted and reporting details
9. Listing of the current permits obtained for the project

## 7.0 References/Sources

Integrys Gas Group. 2011. *Model Integrys Frac-Out Response Plan, Field Manual, Section 920 – Figure 920.11.4*. No author indicated, dated December 31, 2011, 2 pp.

Intren. no date. *FRAC OUT*. No author indicated, received by SMC Jan 9, 2013, 5 pp.

Lake County Stormwater Management Commission (SMC). 2013. *SMC Sample Directional Drilling Contingency Plan*, revised April 9, 2013, 4 pp.

Nicor Gas. 2013. *Nicor Gas Contingency Plan for Directional Drilling, Illinois Route 176 and Fairfield Road*, no author indicated, dated January 2013, 3 pp.

-----, 2024. *Horizontal Directional Drilling: Monitoring and Response Plan for inadvertent Returns During Activities on 22283 W. Lee Drive – NBA10012769 Project (WO #1613309)*. No author indicated. Issued Feb. 27, 2024, 6 pp., plus Appendix A: Inadvertent Return Report.

RJ Underground, Inc. no date. *Frac-Out Contingency Plan (FCP)*. No author indicated, 5 pp.

Wisconsin Department of Natural Resources. 2022. *Technical Standard Horizontal Directional Drilling 1072-TS-3*, WDNR, dated October 2022, 22 pp.

## Appendix 1

### Stabilization Seed Mix(es)

Appendix 2  
Material Safety Data Sheets (MSDS) for Drilling Mud Constituents

Appendix 3  
LC50 Reports and Catalog Cut Sheets for Anionic Polymers



## Appendix 4

### Inadvertent Return Documentation