



**Appendix 10-B
Inadvertent Return Plan for Horizontal Directional Drilling (HDD)**



INADVERTENT RETURN PLAN

FOR

HORIZONTAL DIRECTIONAL DRILLING (HDD)

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Introduction

Trenchless excavation techniques, such as horizontal directional drilling (HDD), are an efficient method for installing buried electrical collection lines in locations under roads, railroads, streams, wetlands and other environmentally sensitive locations resulting in no surface disturbance and avoiding impacts to resources.

The HDD process involves the use of water and bentonite (a naturally occurring clay) slurry as a coolant and lubricant for the advancing drill head. The slurry also helps to stabilize the bore and aids in the removal of cuttings during the drilling process. HDD operations have the potential to release drilling slurry into the environment through fractured bedrock. Most commonly, releases occur near bore entry and exit points where drilling activities are shallow, however, inadvertent releases can occur anywhere along the directional drill route. While the drilling slurry is nontoxic; if released into waterbodies, has the potential to adversely impact fisheries and benthic invertebrates in stream or aquatic environments. Therefore, to protect sensitive environments and aquatic resources, Hecate Energy has prepared this Inadvertent Return Plan which establishes operational procedures and responsibilities for the prevention, containment, and cleanup of inadvertent releases associated with the HDD process. The objectives of this Plan are to:

- Minimize the potential for an inadvertent release of drilling slurry associated with HDD activities;
- Quickly identify inadvertent drilling slurry releases;
- Protect aquatic resources while responding to an inadvertent release;
- Minimize the impact of an event of an inadvertent return and release of drilling slurry; and,
- Ensure that all appropriate notifications are made as soon as practicable.

Site Personnel Roles and Responsibilities

The HDD Contractor will be responsible for execution of HDD operations, including actions for detecting and controlling inadvertent releases of drilling slurry. The Contractor is also responsible for understanding the requirements of this Plan and ensuring that contractor personnel are familiar with the procedures identified in it for cleanup of an inadvertent release.

The Construction Supervisor will have overall responsibility for implementing the Plan and will be familiar with all aspects of the drilling activity, the requirements of this Plan, and the conditions under

which the activity is permitted to take place. The Construction Supervisor will ensure that a copy of this Plan is available on-site and accessible to all construction personnel during HDD drilling operations. The Construction Supervisor will provide the anticipated schedule and location of HDD operations to the Environmental Monitor responsible for environmental compliance monitoring prior to the commencement of HDD activities.

The Environmental Monitor (EM) will closely supervise the progress and actions of the HDD Contractor. The EM will be on-site and available during HDD operations to consult with HDD personnel and conduct inspections. The Construction Supervisor will promptly notify the EM when an inadvertent release is suspected or detected. The EM will have the authority to stop work, evaluate the situation, and determine the appropriate measures necessary to address an inadvertent release. The EM will be responsible for notifying the appropriate regulatory agencies, as provided in Table 1.

Training

Prior to the start of construction, the Construction Supervisor and EM will ensure that the crew members receive environmental training, and understand the requirements of this plan, including:

- Drilling procedures and equipment maintenance requirements;
- Site-specific permit and monitoring requirements;
- Locations of sensitive environmental resources at the HDD site;
- Measures to prevent inadvertent release;
- Proper use of containment equipment and materials;
- Contractor staff obligation to immediately suspend drilling operations upon inadvertent release;
- Requirement to immediately report any inadvertent releases to the Construction Supervisor and EM;
- Contractor/crew member responsibilities in the event of an inadvertent release;
- Protocols for reporting observed releases and communication with appropriate regulatory agencies; and
- Response close-out and restart of construction procedures.

Measures to Prevent Inadvertent Release

Although HDD has proven to be a safe and reliable method of crossing surface features with minimal impact, the potential still exists for inadvertent releases of drilling slurry to the surface, which can have an adverse effect on aquatic environments. These releases typically occur as a result of seeps and/or fractures which can form when pressure in the drill hole exceeds the capability of the overburden to contain it, or when fluids find a preexisting fault in the overburden. The likelihood of these situations occurring can be minimized by taking into consideration the soil type and bedrock composition. Bore depth should be determined based on these site-specific factors; however, a minimum depth of 25 feet is typically sufficient to prevent an inadvertent release.

The Construction Supervisor will be on-site before, and during, any HDD activities. The Construction Supervisor will have a tailgate briefing at the beginning of each day of drilling to review appropriate procedures in the case of an inadvertent return. During the briefing, drilling crew or other Project staff questions and concerns will be addressed.

Increased pressures in the drill hole can also be the result of excessively tight turns. The potential for increased pressures can be reduced simply by increasing the radius of bends in the path profile.

A loss of drilling pressure or lack of return in the entrance pit is the most obvious indication of a seep, therefore, drilling pressure shall be monitored continuously for any loss of pressure which might indicate the presence of a seep of fluids.

Exit and entry bore pits will be enclosed by erosion and sediment control measures such as silt fences and straw bales. Barriers between the bore site and the edge of sensitive environmental resources will be constructed prior to drilling to prevent released drilling slurry from reaching them.

The Construction Supervisor will ensure a corridor centered on the drill path will be monitored for any signs of inadvertent release. In addition, when crossing a stream, the downstream area will be continuously monitored for signs of an inadvertent release.

Water containing mud, silt, bentonite, or pollutants from equipment washing or other activities, will not be allowed to enter a wetland or waterbody. The bentonite used in the drilling process will either be recycled or disposed of at an approved facility.

Equipment and Containment Materials

The Construction Supervisor will ensure that:

- All equipment and vehicles are checked and maintained daily to prevent leaks of hazardous materials;
- Spill kits and spill containment materials are available on-site at all times and that the equipment is in good working order;
- Equipment required to contain and clean up an inadvertent release will either be available at the work site or readily available at an off-site location within 10 minutes of the drill site; and,
- If equipment is required to be operated near a streambed, absorbent pads, and plastic sheeting for placement beneath motorized equipment will be used to protect the streambed from engine fluids.

At a minimum, the following containment, response, and clean-up equipment will be available at each HDD crossing location at the time such crossings occur and will be readily available for use in the event of an accidental release of drilling fluids:

- Spill kit;
- Straw bales;
- Silt fence;
- Plastic sheeting;
- Turbidity barriers;
- Sand bags;
- Shovels;
- Buckets;
- Push brooms;
- Pumps and suction hose;
- Discharge hose;
- Storage tanks; and,
- Vacuum truck on 24-hour call.

Response to an Inadvertent Release

Once the drill rig is in place and HDD begins, the drill operator will immediately stop work whenever the pressure in the drill rig drops, there is a lack of returns in the entrance pit, or other evidence of an inadvertent release occurs. Upon evidence of an inadvertent release, the drill operator will immediately pull back the drill head to relieve pressure on the system.

If an inadvertent release is suspected, the Construction Supervisor and EM will be notified immediately to ensure appropriate response actions are taken and notifications are made. The Construction Supervisor and EM will conduct an evaluation of the situation. If no inadvertent release is detected, the drill operator will attempt to re-establish returns through standard HDD practice and continue HDD activity.

If an inadvertent release is detected, the Construction Supervisor and EM will:

- Cease all drilling activities.
- Make appropriate initial notifications – see “Notifications” and Contacts in Table 1 within this Plan.
- Implement containment measures to minimize the affected area.
 - In upland or relatively dry wetland areas, containment techniques may include installation of earthen dams/ditches, or placement of sand bags or silt fence barriers to stem flow.
 - In a flowing stream, several techniques may be implemented including turbidity curtains, sand bags placed on the bottom of the stream to slow flow, pumping water from above the inadvertent release to below the inadvertent release, or others which minimize or stop materials from flowing further downstream. This condition is not expected to be encountered at the Project unless the wetland feature being crossed is exhibiting directional surface water flow; e.g. resultant from occurring or antecedent rainfall.
 - In wetlands, the EM and Construction Supervisor will direct containment of material consistent with the methods described above. In some cases, however, equipment and personnel activities associated with containment and recovery of the bentonite slurry may be deemed likely to cause more damage to the ecosystem. Under such circumstances, mitigation efforts may be suspended at the EM’s discretion.
- If the volume of a release is too small to be practically collected, it may be allowed to dry and

dissipate naturally.

- If the volume of a release is small and it is practical to do so, it can be collected by hand with shovels and soft bristled brooms. The area should be scraped down to bare soil without unnecessarily disturbing existing vegetation.
- If the volume of a release is large, a vacuum truck or diaphragm mud pump shall be utilized.
- Drilling slurry, shall be directed into buckets, tanks, a vacuum truck, or other containment device and stored outside of sensitive environmental areas and recycled or disposed of in an approved manner.

Notifications

The EM will be responsible for notifying appropriate regulatory staff, as soon as possible and within two hours of an inadvertent release to a state regulated wetland or protected stream. See Contact Information in Table 1 attached to this Plan. Information to be documented in such notification shall include:

- Time of loss of return;
- Time of discovery of any drilling material to the surface of the ground;
- Person who made the first discovery;
- Physical location of release;
- If release is in an upland area, stream, or wetland;
- Estimated volume of material released;
- Containment activity;
- Cleanup activity.

The EM is responsible for a log of all information pertaining to the event including names, times, contacts, and start and completion of remediation activities.

Clean Up and Restoration

Site-specific clean up and restoration measures will be developed by the Construction Supervisor and the EM in consultation with appropriate regulatory staff, as practicable. However, the following measures are considered appropriate:

- The Construction Supervisor will be responsible for ensuring that the recovered drilling slurry

is either recycled or disposed of at an approved facility. No recovered drilling slurry will be discharged into wetlands, streams, storm drains, or any other water source.

- All emergency excavation and clean-up sites will be returned to natural contours as necessary using clean fill.
- All containment measures will be removed, unless otherwise specified by the Construction Supervisor or the EM.
- The EM will notify and coordinate any necessary follow-up response with agency representatives.

Construction Restart

The Construction Supervisor and EM will agree on plans moving forward with HDD activities. Options may include the industry standard practice of lower pressure/flow, changing viscosity of the slurry, using additives consistent with the geology, pushing through if the volume of inadvertent release is manageable and not impacting a stream or wetland, abandonment and relocation of the entry, or changing the drill path.

Documentation

Inadvertent releases will be recorded in a daily log maintained by the EM. The log will include the following:

- An estimate of the amount of drilling fluid released;
- Location and time of the release;
- Size of the area impacted;
- Notifications made;
- Summary of the response; and,
- Success of the clean-up action.



Project: Hecate Energy Cider Solar Farm

Location: Towns of Elba and Oakfield, New York

Table 1. Contacts

Agency	Representative	Contact Information
New York State Department of Environmental Conservation, Region 8	Region 8 Permits	6274 East Avon-Lima Road Avon, NY 14414 (585) 226-5400
New York State Department of Environmental Conservation	NYS Spills Hotline	625 Broadway, 11 th Floor Albany, New York 12233 1 (800) 457-7362
Office of Renewable Energy Siting	Houtan Moaveni, Deputy Executive Director	Empire State Plaza 240 South Street, P-1 South, J Dock Albany, NY 12242 (518) 473-4590