



Inadvertent Return Response Plan

Wetlands and Perennial Streams

In the event of an Inadvertent Return (IR), or unintentional release of drilling mud under pressure into perennial streams or wetlands, the following response plan would be implemented.

1. Pre-drilling.

Pipeline construction personnel and inspection staff would be adequately trained prior to construction to identify and use appropriate response materials. The following materials would be on-site during drilling and available for transport to the vent location within 30 minutes:

- Vacuum Truck with sufficient capacity for an immediate response; arrangements for additional trucks as needed prior to commencing bores
- Certified Weed Free Straw or hay bales
- Stakes to secure bales
- Silt fence
- Sand bags
- Leak-free hose(s) and pump(s)
- Straw logs (wattles, or fiber rolls)
- Heavy-duty push brooms
- Light tower(s) (if necessary, deliver to site as soon as practicable)
- Boat with appropriate personal safety equipment, of sufficient capacity to safely conduct clean up from (if necessary, deliver to site as soon as practicable)

A sufficient pumping system would be in place to accommodate all drilling fluids at the bore entry and exit location to contain all drilling fluids within the bore entry and exit pits.

2. Event response.

In addition to previously stated measures to avoid and minimize IR related impacts, the following response measures would be implemented upon discovery of the loss of drilling fluid into streams or wetlands:

- Directional drilling will stop immediately.

- The drill fluids will be contained immediately. Types of containment may be straw bales, sediment fence, 55 gallon barrel, culvert, or sandbags. It is up to the Environmental Inspector to determine the appropriate containment method in order to best protect the site-specific resource.
- The following entities would be contacted by phone immediately, but no later than 24 hours; USACE, DSL, DEQ or Ecology, ODFW or WDFW, and FERC. NMFS and USFWS would also be contacted in the event of impacts to federally listed species.
- In flowing streams, qualified fisheries biologists would be on alert to conduct fish salvage operations (under the appropriate permits to be acquired prior to construction) in the reach prior to any bentonite removal activities, and block nets would be employed to ensure no fish or other aquatic species reenter the affected area until after the sediments are removed.
- In delineated wetlands, qualified wetland scientists would be on-site to identify resources and monitor effects.
- Commercially available non-toxic polymers may be used in an attempt to seal the fracture.
- If a fracture cannot be sealed, where practical, the drill pipe would be removed from the existing drill hole to a point where a new drill path can be attempted by drilling out of the existing hole and creating a new hole. The old hole would be abandoned.
- If the original drill path cannot be utilized, the drill rig would be moved to a new, adjacent location, staff would verify that the new, adjacent location meets the requirements of all applicable project permits and approvals.
- If a frac-out occurs during “pull-back”, adjustments to the pull-back operations will be made to minimize inadvertent returns.

In flowing streams the following approach would generally be followed after the vent (IR) is stopped. Due to the unpredictable nature of the location and environment in which vents may appear, this description cannot encompass all possible approaches to clean up under all conditions. Agency staff and other experts would be consulted with to the extent practicable to develop ad hoc clean up techniques as needed. The following are standard response techniques that would be applied:

- If the bentonite material flows overland prior to entering the stream, installation of silt fencing or sandbag dams at the point of entry would be used to reduce or stop the flow; if the vent is directly into the stream, other means to isolate the vent site from the flowing stream would be used.
- Using a vacuum truck, with a sufficient hose, personnel would remove the bentonite, working from downstream to upstream, to allow maximum visibility. Hand tools may be used to scarify the sediments and ensure removal to maximum extent practicable.

- If necessary water may be diverted using a coffer dam to isolate the impact area. Only a portion of the stream would be diverted to minimize dewatering impacts. Water would be able to pass through the site in its natural condition.
- If it is impracticable to remove the drill fluid from the stream, a clear, written explanation would be submitted to the Corps. The Corps would coordinate with USFWS and/or NOAA Fisheries. Any fluids left in the stream channel would receive a written approval from the Corps.
- Any disturbed soils would be stabilized immediately.
- Exposed mineral soils would be seeded with native vegetation immediately.
- Disturbance of vegetation would be kept to a minimum and all disturbed vegetation would be restored and/or replanted with native species, to eventually recreate the functional values of the lost vegetation
- Damaged riffle and pool sediment strata would be re-contoured to the extent practicable under the direction of Agency personnel.
- NWN would compensate for the loss of aquatic habitat by mitigating at a ratio of 2:1. A mitigation plan would be submitted to the Corps within 7 days of a frac-out occurring. The mitigation plan would include detailed information about the frac-out, how the drill fluid was contained and removed, the amount, if any, of drill fluid left in the stream, the impact area drawn on a map, the location of the mitigation site, type of mitigation to be performed, and types of plantings.

Ephemeral Streams

In the event of an Inadvertent Return (IR) into dry ephemeral streams, a response plan similar to the above described would be implemented, with the following exceptions:

- Fisheries personnel would not be required to respond unless the IR produced sufficient flow to introduce bentonite into downstream perennial streams.
- Qualified wetlands scientists would be on-site to evaluate conditions, and to assist with minimization of further impacts resulting from clean up activities (e.g. equipment entering sensitive wetland areas).
- Mitigation would only be required for material that must be left as permanent fill in a delineated wetland.