

Appendix C

CAMERON INTERSTATE ENVIRONMENTAL PLAN

ENVIRONMENTAL PLAN

Cameron Interstate Pipeline Expansion Project Calcasieu & Beauregard Parish, Louisiana



December 2012

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1. ENVIRONMENTAL PLAN APPLICABILITY

The intent of this Environmental Plan (Plan) is to provide the Contractor with detailed instructions for maintaining compliance with applicable Local, State and Federal Regulatory Officials' (Agency) regulations governing construction activities on the Project. Project specific information is provided in Appendix A.

Significant changes to the implementation or design of this plan must be approved by the applicable Agency and Cameron Interstate Pipeline, LLC (Company). Significant changes shall be considered if the alternate measures:

- a. provide equal or better environmental protection;
- b. are necessary because a portion of this Plan is not feasible or is unworkable based on Project-specific conditions; and/or
- c. are specifically required in writing by another Agency for the portion of the Project on its land or under its jurisdiction.

Environmental permits will be acquired by Company unless otherwise specified in the Appendices or in the contract document. Please note permits issued by the appropriate Agency shall be appended to this document immediately upon receipt by Company.

2. GENERAL CONDITIONS

2.1 Environmental Training

Prior to entering the construction right-of-way, all individuals working on the project shall attend the environmental training session. All individuals working on the project shall sign an acknowledgement of having attended the appropriate level of training and shall display a hard hat sticker acknowledging attendance at environmental training. In order to insure successful compliance, personnel shall attend repeat or supplemental training, if compliance is not satisfactory or as new, significant issues arise.

2.2 Environmental Inspection

Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, State and/or Federal environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

The Company's Environmental Inspector(s) shall be responsible for the following:

- a. ensuring compliance with the requirements of this Environmental Plan, the environmental conditions of applicable permits and authorizations, the mitigation measures proposed by the applicant (as approved and/or modified), other environmental permits and approvals, and environmental requirements in landowner easement agreements;
- b. identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
- c. verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;

- d. verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, water bodies, wetlands, or areas with special requirements along the construction work area;
- e. ensuring that protective measures are in place and well maintained to prevent impacts to sensitive resource areas, such as identified endangered species;
- f. identifying erosion/sediment control and soil stabilization needs in all areas;
- g. ensuring that the location of dewatering structures and slope breakers shall not direct water into known cultural resources sites or locations of sensitive species;
- h. verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition does occur, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent recurrence;
- i. advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
- j. verifying the pre-construction and post-construction elevation surveys of impacted wetlands and the restoration of contours and topsoil as outlined in special conditions of the USACE permit;
- k. verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
- l. determining the need for and ensuring that erosion controls are properly installed, as necessary to prevent sediment flow into wetlands, water bodies, sensitive areas, and onto roads;
- m. perform inspections as required by the applicable regulatory agency. See Appendix A for site specific requirements.
- n. ensuring the repair of all ineffective temporary erosion control measures within twenty-four (24) hours of identification;
- o. keeping records of compliance with the environmental conditions of applicable permits and authorizations, and the mitigation measures proposed by Company in the application submitted to Federal or State environmental agencies during active construction and restoration; and
- p. identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

2.3 Access

All construction vehicles and equipment shall be confined to Company approved access roads and the construction right-of-way. If temporary alternative private roads for access are constructed they shall be designed to provide and allow proper drainage and shall be built to minimize soil erosion. Sufficiently sized gaps shall be left in all spoil and topsoil wind right-of-ways at all temporary private access roads and obvious livestock or wildlife trails unless agreed with the Landowner prior to construction that these access points can be blocked during construction. All construction related private roads and access points to the right-of-way shall be marked with signs. Private roads not approved for construction shall also be marked.

2.4 Appearance of Worksite

The construction right-of-way shall be maintained in a clean neat condition at all times. At no time shall litter be allowed to accumulate at any location on the construction right-of-way. The contractor shall provide a daily garbage detail with each major construction crew to keep the

construction right-of-way clear of trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, defective material and all construction and other debris immediately behind construction operations unless otherwise approved by Company. Paper from wrapping, coating products or lightweight items shall not be permitted to be scattered around by the wind.

2.5 Non-Hazardous Waste Disposal

Non-hazardous construction wastes include but are not limited to human waste, trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, cleared vegetation, stumps, rock and all other construction debris.

All waste which contains (or at any time contained) oil, grease, solvents, or other petroleum products falls within the scope of the oil and hazardous substances control, clean up and disposal procedures. This material shall be segregated for handling and proper disposal by the Contractor in accordance with Section 2.7.

The Contractor shall be responsible for human wastes to be handled and disposed of exclusively by means of portable self-contained toilets during all construction operations. Wastes from these units shall be collected by a licensed Contractor for disposal only at licensed and approved facilities.

The Contractor shall dispose of all drill cuttings and drilling mud at a Company approved location. Disposal options may include spreading over the construction right-of-way in an upland location approved by Company, hauling to an approved licensed landfill, or other site approved by Company.

The Contractor shall remove all extraneous vegetative, rock and other natural debris from the construction right-of-way by the completion of clean-up. The Contractor shall remove all trash and waste from temporary Contractor's yards, pipe yards and staging areas when work is completed at each location. The Contractor shall dispose of all waste materials at licensed waste disposal facilities. Wastes shall not be disposed of in any other fashion such as unpermitted burying or burning.

2.6 Concrete Waste Management

The contractor shall dispose of all concrete waste at a designated concrete disposal station approved by Company. Concrete wash water should not be discharged into waterways, wetlands, storm drains or ground water. The concrete washout area should be located at least 100 feet from storm drains, open ditches, wetlands or waterbodies. The washout area can be constructed below or above grade depending on the location of the structure and must be approved by Company personnel prior to construction. Concrete washout facilities should be constructed with a minimum width and length of ten (10) feet with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The concrete washout structure can be constructed with straw bales, wood stakes and sandbags, earthen pit or other materials approved by the Environmental Inspector.

When the temporary concrete washout facilities are no longer required the hardened concrete shall be removed and disposed of properly. The materials used to construct the washout facility shall be removed from the site and disposed of properly.

Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is seventy-five percent (75%) full.

2.7 Hazardous Materials

If hazardous materials or containers are encountered during construction, the Contractor shall stop work immediately and notify Company. The Contractor shall not restart work until clearance is granted by Company. The Contractor shall ensure that all hazardous and potentially hazardous materials are transported, stored and handled in accordance with all applicable regulations. Workers exposed to or required to handle hazardous materials shall also be trained in accordance with the applicable regulations and the manufacturer's recommendations. The Contractor shall dispose of all hazardous materials at licensed waste disposal facilities. Hazardous materials shall not be disposed of in any other fashion such as un-permitted burying or burning. A unanticipated hazardous materials discovery plan is provided as Appendix 1.

All transporters of oil, hazardous substances, and hazardous waste shall be licensed and certified according to the applicable state vehicle code. Incidents on public highways shall be reported to the appropriate agencies. All hazardous wastes being transported off-site shall be manifested. The manifest shall conform to DOT requirements and the appropriate state agency. The vehicles as well as the drivers must conform to all applicable vehicle codes for transporting hazardous wastes.

2.8 Noise

The Contractor shall minimize noise during non-daylight hours and within one (1) mile of residences or other noise-sensitive areas such as hospitals, motels or campgrounds. Contractor shall abide by municipal bylaws regarding noise near residential and commercial/industrial areas. The Contractor shall provide notice to Company if noise levels are expected to exceed bylaws for a short duration. The Contractor shall minimize noise in the immediate vicinity of herds of livestock or poultry operations, which are particularly sensitive to noise. If any project specific noise requirements are required they will be included attached to this environmental plan or included in the contract document prior to commencement of construction activities.

2.9 Weed Control

There are no project specific weed control requirements at this time however, if determined necessary they will be included in this plan prior to commencement of construction activities.

2.10 Dust Control

The Contractor shall at all times control airborne dust levels during construction activities to levels acceptable by Company. The Contractor shall employ water trucks, sprinklers or calcium chloride as necessary to reduce dust to acceptable levels. Utilization of calcium chloride would be limited to roads. Dust shall be strictly controlled where the work approaches dwellings, farm buildings and other areas occupied by people and when the pipeline parallels an existing road or highway. This shall also apply to access roads where dust raised by construction vehicles may irritate or inconvenience local residents. The speed of the Contractor vehicles shall be controlled while in these areas. The Contractor shall take appropriate precautions to prevent fugitive emissions caused by sand blasting operations from reaching any residence or public building. The Contractor shall place curtains of suitable material, as necessary, to prevent

windblown particles from sand blasting operations from reaching any residence or public building.

2.11 Fire Prevention and Control

The Contractor shall comply with all Federal, State, County and Local fire regulations pertaining to burning permits and prevention of uncontrolled fires. The following mitigative measures shall be implemented to prevent fire hazards and control of fires:

- A list of relevant Authorities and their designated representative to contact shall be maintained on the construction site by construction personnel.
- Adequate firefighting equipment in accordance with the regulatory requirements shall be available on site.
- The level of forest fire hazard shall be posted at the construction office (where visible for all workers) and make them aware of it and related implications.
- The Contractor shall provide equipment to handle any possible fire emergency. This shall include, although not be limited to, water trucks, portable water pumps, chemical fire extinguishers, hand tools such as shovels, axes, chain saws, etc. and heavy equipment adequate for the construction of fire breaks when required.
- Specifically, the Contractor shall supply and maintain in working order an adequate supply of fire extinguishers for each crew that is engaged in work such as welding, cutting, grinding, burning of brush or vegetative debris, etc.
- In the event of a fire, the Contractor shall notify local emergency response personnel.
- All tree clearing activities are to be carried out in accordance with local rules and regulations for the prevention of forest fires.
- Burning shall be done in compliance with state and/or county regulations and in the center of the right-of-way and in small piles to avoid overheating or damage to trees or other structures along the right-of-way.
- Flammable wastes shall be removed from the construction site on a regular basis.
- Flammable materials kept on the construction site must be stored in approved containers away from ignition sources.
- Smoking shall be prohibited around areas with flammable products.
- Smoking shall be prohibited on the construction site when the fire hazard is high.

2.12 Adverse Weather

The Contractor shall restrict certain construction activities and work in cultivated agricultural areas in excessively wet soil conditions to minimize rutting and soil compaction. In determining when or where construction activities should be restricted or suspended during wet conditions, the Contractor shall consider the following factors:

- The extent that rutting may cause mixing of topsoil with subsoil layers or damage to tile drains
- Excessive buildup of mud on tires and cleats
- Excessive ponding of water at the soil surface
- The potential for excessive soil compaction

The Contractor shall implement mitigative measures to minimize rutting and soil compaction in excessively wet soil conditions which may include:

- Restricting work to areas on the spread where conditions are not prohibitive;
- Using low ground weight or wide-track equipment or other low impact construction techniques;
- Limiting work to areas that have adequately drained soils or have a cover of vegetation such as sod, crops or crop residues sufficient to prevent mixing of topsoil with subsoil layers or damage to drain tiles; or
- Installing geotextile material or construction mats in problem areas.

2.13 Wetland and Waterbody Identification

Wetland and waterbody delineation was conducted using the current federal methodology (Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, October 2008). A wetland permit has been applied for and will be attached to the environmental plan or included in the contract document prior to commencement of construction activities. Construction methodology to be used in wetlands and waterbodies is located in Sections 5 through 8.

2.14 Threatened and Endangered Species

A threatened and endangered species survey was conducted within the Project boundary. Any conditions or considerations for federal or state listed species will be attached to this environmental plan or included in the contract document prior to commencement of construction activities.

2.15 Cultural Resource Assessment

A Cultural Resource Assessment was conducted within the Project boundary. Any conditions or considerations from any federal or state agency will be attached to this environmental plan or included in the contract document prior to commencement of construction activities. An Unanticipated Discovery Plan for the project is included in Appendix 3.

3. UPLAND CONSTRUCTION

3.1 Approved Areas of Disturbance

The Contractor shall abide by the Project Specific FERC Upland Erosion Control, Revegetation, and Maintenance Plan as well as any other local, state and federal permit guidelines set forth for the project. The Project Specific FERC Upland Erosion Control, Revegetation and Maintenance Plan is included as Appendix 4. Project-related ground disturbance shall be limited to the construction rights-of-way, extra work space areas, pipe storage yards, right-of-way and disposal areas, access roads and other areas as indicated on the approved alignment sheets. Any Project-related ground disturbing activities outside these approved areas, except those needed to comply with the erosion and sediment control practices specified in this Plan (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require notification and approval of appropriate local, state and federal agencies. All construction or restoration activities outside of the approved areas are subject to all applicable survey and mitigation requirements.

3.1.1. Road Crossings and Access Points

Install and maintain safe and accessible conditions at all road crossings and access points during construction.

The use of crushed stone access pads is required where access points are located along paved roadways to reduce tracking of soils onto paved roads. Placement of the crushed stone onto geotextile fabric shall facilitate maintenance and removal.

Road crossings shall be monitored when in use and after rain events. Roadways shall be swept as needed to ensure paved roadways are clear of accumulated soils.

Construction materials placed on paved roadways shall be removed immediately following use.

Reference Figures 2 - 4 for construction and placement details.

3.1.2. Clearing

The objective of clearing is to provide a clear and unobstructed right-of-way for efficient construction of the pipeline. The following mitigative measures shall be implemented:

- Construction traffic shall be restricted to the construction right-of-way and approved access roads.
- Construction right-of-way boundaries including pre-approved temporary workspace shall be clearly staked to prevent disturbance to unauthorized areas.
- If crops are present, they shall be mowed or disked to ground level unless an agreement is made for the Landowner to remove for personal use.
- Burning is prohibited on cultivated land.
- Construction right-of-way at timber shelterbelts in agricultural areas shall be reduced to the minimum necessary to construct the pipeline.
- Chipping in wetland is prohibited.

3.1.3. Topsoil Segregation Within Uplands

Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in the following areas:

- Areas specified in the contract by Company
- residential areas;
- hayfields;
- other areas at the landowner's or land managing agency's request; and
- actively cultivated or rotated croplands and pastures.

In residential areas importation of topsoil is an acceptable alternative to topsoil segregation.

In deep soils (more than twelve (12) inches of topsoil), segregate at least twelve (12) inches of topsoil.

In soils with less than twelve (12) inches of topsoil make every effort to segregate the entire topsoil layer. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities.

Segregated topsoil may not be used for padding the pipe.

Tree stumps and root wads should be segregated from topsoil and should not be used as backfill. Tree stumps should be considered construction debris and should be removed from the construction right-of-way.

3.1.4. Grading

The objective of grading is to develop a right-of-way that allows the safe passage of equipment and meets the bending limitations of the pipe. The following mitigative measures shall be implemented during grading unless otherwise approved or directed by Company based on site specific conditions or circumstances. However, work shall be conducted in accordance with applicable permits.

- All grading shall be undertaken with the understanding that original contours and drainage patterns shall be re-established during clean up.
- Agricultural areas that have been land formed with terraces shall be surveyed to establish pre-construction contours to be utilized for restoration of the terraces after construction.
- On steep slopes, or wherever erosion potential is high, temporary erosion control measures shall be implemented.
- Bar ditches adjacent to existing roadways that shall be crossed during construction shall be adequately ramped with grade or ditch spoil to prevent damage to the road shoulder and ditch.
- Where the construction surface remains inadequate to support equipment travel, timber mats, timber riprap or other method shall be used to stabilize surface conditions.

The Contractor shall limit the interruption of the surface drain network in the vicinity of the right of way, using the appropriate methods:

- Providing gaps in the right-of-ways of subsoil and topsoil in order to prevent any accumulation of water on the land
- Preventing obstructions in right-of-ways, right-of-way drains and ditches
- Installing flumes and ramps in right-of-ways, and right-of-way drains and ditches to facilitate water flow across the construction right-of-way and allow for construction equipment traffic
- Installing flumes over the trench for any watercourse where flow is continuous during construction

3.1.5. Drain Tiles

In the event that drain tiles are discovered during the course of construction Company and the Environmental Inspector shall be notified immediately and the following procedures shall be taken:

- Mark locations of drain tiles damaged during construction.
- Probe all drainage tile systems within the area of disturbance to check for damage.
- Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid

interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

3.2 Temporary Erosion Control (Uplands)

Temporary erosion controls are crucial in maintaining compliance with the local, state and federal water quality regulations. Temporary erosion controls include, but are not limited to, temporary seed and mulch cover, silt fencing, staked hay or straw bales, straw wattles, erosion eels, temporary sediment traps, and temporary diversion berms. Temporary erosion controls shall be installed immediately prior to initial disturbance of the soil where practical. Where dense existing vegetation is present, install temporary erosion controls immediately following initial disturbance. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

3.2.1. Temporary Slope Breakers (Uplands)

Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

Install temporary slope breakers on all disturbed areas as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing should be used if necessary):

Percent Slope	Spacing Distance (ft)
5% – 15%	300
> 15% – 30%	200
> 30%	100

Direct the outfall of each temporary slope breaker to a stable, well vegetated area. Where space allows, construct a small sediment trap at the base of slope breakers; otherwise construct or install an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.

Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, water bodies, or other sensitive resources.

Slope breakers may extend slightly (about four [4] feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area.

Reference Figure 5 for placement and construction details.

3.2.2. Sediment Barriers (Uplands)

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. They may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., drivable berms across travel ways), sandbags, or other appropriate materials suitable for site conditions.

At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than five percent (5%) where the base of the slope is less than fifty (50) feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Environmental Plan.

Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Proper installation and regular maintenance of barriers is essential to ensure proper performance of devices. Sediment that has accumulated beyond one-half ($\frac{1}{2}$) the capacity of the device should be removed immediately. Undermining and bypassing must be repaired as needed to provide for adequate performance of devices.

Where wetlands or water bodies are adjacent to and down-slope of construction work areas, install sediment barriers along the edge of these areas as necessary to prevent sediment flow into the wetland or waterbody.

Reference Figures 6 and 7 for sediment barrier details.

3.2.3. Silt Fence

Silt fence shall be installed to control sheet and rill erosion along the boundary of the construction right-of-way to contain limited areas of disturbed soils. Silt fence is an effective measure to intercept runoff from upslope to form ponds that temporarily store runoff and allow sediment to settle out of the water and stay on the construction site. Silt fence can also prevent sheet erosion by decreasing the velocity of the runoff.

Silt fences should be installed on the contour so that flow does not concentrate and cause bypassing, overtopping and/or failure.

A silt fence is specifically designed to retain sediment transported by sheet flow from disturbed areas, while allowing water to pass through the fence. Silt fences should be installed to be stable under the flows expected from the site.

Silt fences should not be installed across streams, ditches, waterways, or other concentrated flow areas.

Silt fences are composed of geotextile fabric supported between steel or wooden posts. Silt fences are commercially available with geotextile fabric attached to the post and can be rolled out and installed by driving the post into the ground.

Silt fences must be trenched in a minimum of six (6) inches at the bottom to prevent runoff from undermining the fence and developing rills under the fence.

Silt fences are normally limited to situations in which only sheet or overland flow is expected. Silt fences normally cannot filter the volumes of water generated by channel flow. The following is a table of minimum requirements for silt fence materials:

Cameron Interstate Pipeline Expansion
Environmental Plan

Specifications	Type A
Tensile Strength (Lbs. Min. ¹ ASTM D-4632)	Warp – 260 Fill – 100
Elongation (% Max.) (ASTM D-4632)	40
AOS (Apparent Opening Size) (Max. Sieve Size) (ASTM D-4751)	no.30
Flow Rate (Gal/Min/Sq. Ft.) (GDT-87)	70
Ultraviolet Stability ² (ASTM D-4632 after 300 hours weathering in accordance with ASTM D-4355)	80
Bursting Strength (PSI Min.) (ASTM D-3786 Diaphragm Bursting Strength Tester)	175
Minimum Fabric Width (Inches)	36

¹ Minimum roll average of 5 specimens.

² Percent of required initial minimum tensile strength.

The drainage area up gradient to the silt fence should not exceed one-quarter ($\frac{1}{4}$) acre per one hundred (100) linear feet of silt fence for non-reinforced fence and one-half ($\frac{1}{2}$) acre per one hundred (100) linear feet of reinforced fence. When all runoff from the drainage area is to be stored up gradient to the fence (i.e. there is no stormwater disposal system in place) the maximum slope length up gradient to the fence should not exceed those shown in the following table:

Percent Slope	Maximum Slope Length above Fence (ft)
< 2%	100
2% – 5%	75
5% – 10%	50
10% – 20%	25
> 20%	15

In areas where the slope is greater than ten percent (10%), a flat area length of ten (10) feet between the top of the slope to the fence shall be provided.

Contractor shall install silt fences at the base of disturbed slopes across or adjacent to roadways, streams, wetlands, and anywhere else vegetative cover has been disturbed. When a construction right-of-way parallels a lake, stream, impoundment, or wetland, Contractor shall install a silt fence at the edge of the construction right-of-way to isolate and protect that feature from siltation. Contractor shall also employ these methods for paved roads and roadside trenches to minimize the flow of sediment onto or into these structures.

Contractor shall install silt fences whenever disturbed slopes are of such degree, and features requiring erosion and sediment control protection are in such horizontal proximity to those slopes, as specified in the following table:

Percent Slope	Proximity Distance (ft)
< 5%	25
5% – 15%	50
16% – 30%	75
> 30%	100

Contractor shall install silt fence in all instances when vegetation is sparse within 150 ft. of a body of water that parallels or is adjacent to the construction right-of-way, and the disturbed slope is toward the water.

Reference Figure 6 for construction details and diagrams.

3.2.4. Temporary Trench Breakers (Uplands)

Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.

An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as an upslope of permanent slope breakers.

In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.

At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

Reference Figure 8 for placement details.

3.3. Mulching

The Contractor shall apply mulch on all areas with high erosion potential and on slopes greater than 8 percent (8%) unless otherwise approved by Company based on site specific conditions or circumstances. The Contractor shall spread mulch uniformly over the area to cover at least 75 percent (75%) of the ground surface at an approximate rate of two (2) tons/acre of straw, unless otherwise specified in Appendix A. Mulch application includes straw mulch or hydro mulch and tackifier. The Contractor shall not apply mulch in cultivated areas unless requested by the Landowner. The Contractor shall use mulch that is free of noxious weeds. The Contractor shall apply mulch immediately following seeding. The Contractor shall not apply mulch in wetlands unless otherwise specified in Appendix A. If a mulch blower is used, the majority of strands of the mulching material shall not be shredded to less than eight (8) inches in length to allow anchoring.

The Contractor shall anchor mulch immediately after application to minimize loss by wind and water. When anchoring (straw crimping) by mechanical means, the Contractor shall use a tool specifically designed for mulch anchoring with flat, notched disks to properly crimp the mulch to a depth of approximately two (2) to three (3) inches. A regular farm disk shall not be used to crimp mulch. In soils possessing high erosion potential, the Contractor may be required to make two passes of the mulch-crimping tool; passes must be as perpendicular to the others as possible.

When anchoring with liquid mulch binders (tackifiers), the Contractor shall use a biodegradable tackifier derived from a vegetable-based, organic source. The Contractor shall apply mulch binders

at rates recommended by the manufacturer. The Contractor shall limit the use of liquid mulch binders (tackifiers) for anchoring straw and the use of hydro mulch and tackifier to areas that are too steep or rocky to safely or effectively operate mechanical mulch-anchoring tools.

3.4. Stringing (Uplands)

The objective of stringing is to place the line pipe along the construction right-of-way for bending and welding in an expedient and efficient manner. The Contractor shall utilize one or more of the following mitigation measures as applicable and when necessary to reduce compaction on the working side of the right-of-way or as directed by Company. However, all work shall be conducted in accordance with applicable permits.

- Prohibiting access by certain vehicles
- Using only machinery possessing low ground pressure (tracks or extra-wide tires)
- Control access thus minimizing the frequency of all vehicle traffic
- Hastening drainage through digging drainage ditch to re-establish surface drainage as required
- Using timber riprap, matting, or geotextile fabric overlain with soil
- Stopping construction entirely for a period of time

3.5. Trenching (Uplands)

The objective of trenching is to provide a ditch of sufficient depth and width with a bottom to continuously support the pipeline. During trenching operations, the following mitigative measures shall be implemented unless otherwise approved or directed by Company based on site specific conditions or circumstances. However, all work shall be conducted in accordance with applicable permits.

- Segregate subsoil materials from topsoil in separate, distinct right-of-ways with a separation that shall limit any mixing of topsoil and subsoil during handling of these materials.
- Gaps must be left in the spoil piles that coincide with breaks in the strung pipe to facilitate natural drainage patterns and to allow the passage of livestock or wildlife.
- Trenching operation shall be followed as closely as practicable by lower-in and backfill operations to minimize the length of time the ditch is open.
- Construction debris (e.g., welding debris) and other garbage shall not be deposited in the ditch. Should blasting be necessary for removal of rock, the following mitigation measures shall be implemented:
 - i. Where blasting is required, operations shall be done accordingly to laws and regulations governing explosives.
 - ii. Prior to using explosives the Contractor shall advise residents of the immediate area in order to prevent any risk of accidents or undue disturbances.
 - iii. Blasting mats or subsoil shall be piled over the trench line to prevent any rocks from being blown outside the construction right-of-way.
 - iv. Each blasting location shall be cleared and cleaned up before and after all blasting operations.
 - v. Blasting shall be carried out during regular daylight working hours.

3.6. Trench Dewatering/Well Points

The Contractor shall make all reasonable efforts to discharge trench water in a manner that avoids damage to adjacent agricultural land, crops and pasture. Damage includes, but is not limited to the inundation of crops for more than twenty-four (24) hours, deposition of sediment in ditches, and the

deposition of gravel in fields or pastures. If trench dewatering is necessary in an area where salt damage to adjacent crops is evident, the Company Inspector shall conduct a field conductivity test on the trench water before it is discharged. If the conductivity of the trench water is determined to potentially affect soil quality, it shall not be discharged to areas where salt damage to crops is evident, but shall be directed as feasible so that water flows over a well vegetated, non-cropland area or through an energy dissipater and sediment barrier, then directed to nearby ditches or brackish wetlands or waterbodies. When pumping water from the trench for any reason the Contractor shall ensure that adequate pumping capacity and sufficient hose is available to permit dewatering as follows:

- Water shall be diverted through a well vegetated area, a geotextile filter bag or a permeable berm (straw bale or Company approved equivalent);
- trench water shall not be disposed of in a manner which could damage crops or interfere with the functioning of underground drainage systems; and
- the Contractor shall screen the intake hose and keep the hose either one (1) foot off the bottom of the trench or in a container to minimize entrainment of sediment.

3.7. Welding, Field Joint Coating, and Lower-In

The objectives of welding, field joint coating and lower-in are to provide continuous segments of pipeline, to provide corrosion protection to the weld areas of the pipeline, and to place the pipeline in the center of the trench, without stress, at the required depth of cover. The following mitigative measures shall be followed during pipe welding, field joint coating, and lower-in, unless otherwise specified by Company in response to site specific conditions or circumstances. However, all work shall be conducted in accordance with applicable permits.

- Shavings produced during beveling of the line pipe are to be removed immediately following this operation to ensure that livestock and wildlife do not ingest this material. When welding operations have created a continuous line of pipe that may be left on the right-of-way for an extended period of time due to construction or weather constraints, a gap in the welded pipe shall be provided to allow for access at farm road crossings and also for passage of livestock and/or wildlife.
- Prior to the application of epoxy powder, urethane epoxy or other approved pipe coatings, a tarp shall be placed underneath the pipe to collect any overspray of epoxy powder and/or liquid drippings. Excess powder and/or liquid or other hazardous materials (e.g. brushes, rollers, gloves, etc.) shall be continuously collected and removed from the construction right-of-way.

3.8. Padding and Backfilling

The objective of padding (when required) and backfilling is to cover the pipe with material that is not detrimental to the pipeline and pipeline coating. The following mitigative measures shall be utilized during backfilling, unless otherwise approved or directed by Company based on site specific conditions or circumstances. All work shall be conducted in accordance with applicable permits.

- Excessive water accumulated in the trench shall be eliminated prior to backfilling.
- In the event it becomes necessary to pump water from open trenches, the Contractor shall pump the water and discharge it in accordance with Section 3.6.

- Prior to backfilling, all drain tile shall be permanently repaired, inspected and the repair documented as described in Section 5.5.
- Prior to backfilling, trench breakers shall be installed on slopes where required to minimize the potential for water movement down the ditch and potential subsequent erosion.
- In backfilling the trench, the stockpiled subsoil shall be placed back into the trench before replacing the topsoil.
- Topsoil shall not be utilized for padding the pipe.
- Backfilling shall be done without mixing spoil with topsoil.
- Backfill shall be compacted to a minimum of ninety percent (90%) of pre-existing conditions where the trench line crosses tracks of wheel irrigation systems (pivots).
- To reduce the potential for ditch line subsidence, spoil shall be replaced and compacted by backhoe bucket and/or by the wheels or tracks of equipment traversing down the trench.
- The top four (4) feet or the actual depth of top cover, whichever is less, within the pipeline trench, bore pits, or other excavations shall not be backfilled with soil containing rocks of any greater concentration or size than existed prior to the pipeline's construction.

4. RESTORATION AND CLEAN-UP (UPLANDS)

Commence clean-up, final grading, topsoil replacement, and installation of permanent erosion control structures operations immediately following backfill operations.

Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting. Post-construction contours should match the adjacent properties.

Tree stumps and forestry slash should be considered construction debris and should be removed from the construction right-of-way.

Vegetative mulch created by forestry clearing activities may be utilized as mulch and may not remain stockpiled.

Where adjacent to wetland crossings the Environmental Inspector shall be consulted to ensure upland restoration does not encroach on wetland areas.

A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed, inspected and maintained. When access is no longer required, the travel lane must be removed and the right-of-way restored.

Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the land owner or land managing agency.

Remove excess rock from at least the top twelve (12) inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The landowner may approve other provisions in writing.

Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise.

Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

4.1. Permanent Erosion Control Devices (Uplands)

4.1.1. Permanent Trench Breakers

Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.

An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.

In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.

At a minimum, install a trench breaker at the base of slopes greater than five percent (5%) where the base of the slope is less than fifty (50) feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

Reference Figures 9 and 10 for construction and placement details.

4.1.2. Permanent Slope Breakers

Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as well vegetated earthen berms or functional equivalent.

Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency. In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

Percent Slope	Spacing Distance (ft)
5% – 15%	300
> 15% – 30%	200
> 30%	100

Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.

Slope breakers may extend slightly (about four [4] feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

Where there is an existing right-of-way adjacent to the site, slope breakers should tie into existing breakers on an adjacent right-of-way, wherever practical.

Reference Figure 5 for construction and placement details.

4.2. Soil Compaction Mitigation

Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to determine preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.

Mitigate severely compacted soils in agricultural areas with deep tillage implements or other methods approved by the Company.

Perform appropriate soil compaction mitigation in severely compacted residential areas.

4.3. Revegetation

4.3.1. General

Contractor shall be responsible for ensuring successful revegetation of soils disturbed by Project-related activities. Revegetation is considered successful when permanent vegetation density is at least seventy-five percent (75%) coverage throughout one hundred percent (100%) of the disturbed area (as compared to adjacent undisturbed vegetation), per the local, state and federal requirements. Additional measures may need to be taken to provide successful permanent revegetation.

In residential areas, restore all ornamental shrubs and specialized landscaping in accordance with the construction line list. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

4.3.2. Soil Additives and Seeding Requirements

Contractor shall be required to revegetate all soil disturbed by construction except inundated wetlands. Contractor shall protect all new seeding from vehicular traffic during establishment. Contractor shall install permanent diversion dikes to channel runoff away from the seeded areas on slopes and to prevent erosion while vegetation is being established.

If mulch was applied prior to seeding for temporary erosion control, the Contractor shall remove and dispose of the excess mulch prior to seedbed preparation to ensure that seedbed preparation equipment and seed drills do not become plugged with excess mulch; to ensure that seed can adequately contact the soil surface; and to ensure that seed incorporation or soil packing equipment can operate without becoming plugged with mulch.

Contractor shall use a disk, field cultivator, drag, rake, or similar implement to prepare a smooth, firm, debris-free seedbed to a depth of six (6) inches. The soil shall not be worked when it is too wet. If soil conditions do not permit an adequate seedbed to be prepared, Contractor shall increase seeding rates by fifty percent (50%).

Contractor shall supply and apply agricultural or pelletized lime at a minimum rate of two (2) tons/acre, unless otherwise specified in the contract or by the Company, on all disturbed areas of the construction right-of-way, except wetlands. Lime shall be worked into the soil during application, or immediately thereafter, to prevent the possibility of exposure to storm water runoff. Suitable liming material includes dolomitic or calcitic materials. Liquid application is acceptable.

Contractor shall supply and apply fertilizer as specified in contract or as advised by the Company to meet the nutrient requirements of the site conditions. The fertilizer shall be incorporated into the upper two (2) inches of the soil where conditions permit. Fertilizer shall not be applied to wetlands or waterbodies.

Contractor shall supply and apply a seed mixture on all disturbed areas of the construction right-of-way, except wetlands, based on site specific seeding requirements identified in the contract or as specified by the Company. All seed must be used within twelve months of testing and incorporated by Contractor into the upper soil surface using a roller/packer.

Seed shall be broadcast utilizing a cyclone seeder or with a drill seeder. The Contractor shall operate the cyclone seeder or drill seeder such that the specified seed rate is planted. Seeds shall be incorporated by a cultipacker to ensure good ground contact.

In locations of extreme slope or very rocky ground conditions, Contractor shall hydro seed specific areas of the construction right-of-way as directed by Company. Hydro seeding shall apply seed at the rates specified by manufacturer for site conditions. Fertilizer shall be included with the seed, organic fiber, tackifier and water mixture. Organic fiber content shall be applied at the rate of three thousand (3,000) lbs/acres on an air-dry weight basis. The required tackifier shall consist of biodegradable, vegetable-based material and shall be applied at the rate recommended by the manufacturer. The seed, mulch and tackifier slurry shall be applied so that it forms a uniform, mat-like covering of the ground.

Additional measures may be needed, such as soil testing, re-application of soil additives, re-application of seed and mulch, to ensure permanent vegetation.

4.3.3. Erosion Control Blankets

Erosion control blankets (ECBs) shall be applied where shown on the Construction Drawings or as directed by a Company representative. The Contractor shall anchor the ECBs with staples or approved devices. The Contractor shall use ECBs specified in Appendix A or otherwise directed by EI, however if no ECB is specified in Appendix A the Contractor should use a mat that is made of 100% biodegradable, double net, natural fiber such as straw or coir (coconut fiber). The Contractor shall prepare the soil surface and install the erosion control matting to ensure it is stable and the matting makes uniform contact with the soil of the slope face or stream bank underneath with no bridging of rills, gullies or other low areas.

Reference Figure 11.

5. WATERBODY CROSSINGS

In the event that additional jurisdictional waterbodies are discovered during the course of construction Company and the Environmental Inspector shall be notified immediately and the following procedures

shall be taken. Project specific FERC Wetland & Waterbody Construction & Mitigation Procedures are included in Appendix 5.

5.1 Notification Procedures and Permits

Prior to construction activities, Contractor will provide a schedule detailing the dates of all waterbody and wetland crossing. Contractor will update the schedule at least weekly. Company will notify Agency, if required

5.2 Installation

The following procedures shall be followed for waterbodies within the construction right-of-way.

Reference Figures 12 through 15 for placement, construction and maintenance details of Waterbody and Crossing practices.

5.2.1. Extra Work Areas

Extra Work Areas are identified on the construction alignments.

Limit clearing of vegetation between extra work areas and the edge of the waterbody to the approved construction right-of-way.

Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

5.2.2. General Waterbody Crossing Procedures

Comply with the local, state and federal permit terms and conditions.

Removal of vegetation within wetlands shall be limited to the approved construction right-of-way. Existing contours shall not be altered. Rutting of soils (greater than twelve (12) inches) shall be repaired immediately. Stump removal shall occur only within the trench line.

Mulching shall not occur within wetland or waterbody area. All vegetation cleared from wetland areas shall be moved to an upland area immediately following logging and clearing activities.

Storage of construction related materials, such as river weights, shall not occur within wetlands.

Construct crossings as close to perpendicular to the axis of the wetland or waterbody channel as engineering and routing conditions permit.

If the pipeline parallels a wetland or waterbody, attempt to maintain at least fifteen (15) feet of undisturbed vegetation between the wetland and/or waterbody and the construction right-of-way.

Where wetlands or waterbodies meander or have multiple channels, route the pipeline to minimize the number of wetland or waterbody crossings.

Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.

Wetland or waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

Reference Figures 12 -15 for crossing details.

5.2.3. Equipment Bridges for Waterbodies

Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.

Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:

- a. equipment pads and culvert(s)
- b. equipment pads or railroad car bridges without culverts
- c. clean rock fill and culvert(s)
- d. flexi-float or portable bridges

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Field adjustments must be made to ensure adequate flow of stormwater below bridges.

Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.

Design and maintain equipment bridges to prevent soil from entering the waterbody. Use geo-textile fabric under equipment pads where needed to prevent soil from moving up to surface of equipment pads or to prevent soil from falling into waterbody below.

Construct and remove equipment pads in such a way to reduce disturbance of wetland soils beyond the limits of the equipment bridges. Avoid rutting of soils by the pads or the equipment outside of the bridge area. Rutting of soils (greater than twelve [12] inches) should be repaired immediately.

Remove equipment bridges as soon as possible after permanent seeding unless the USACE, or its delegated agency, authorizes it as a permanent bridge.

If there shall be more than one month between final clean-up and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final clean-up.

Reference Figures 12 through 15 for placement of controls.

5.2.4. Spoil Pile Placement and Control

All spoil from wetland or minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least ten (10) feet from the water's edge or in additional extra work areas as needed.

Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any wetland or waterbody. Should sediment migrate beyond sediment barriers steps shall be taken immediately to repair breaches in the barrier and to retrieve lost sediment. Should heavily silt-laden water seep from the barriers, immediate steps shall be taken to reduce flow and provide for adequate settling or filtration. Flocculants shall be utilized where additional filtration or settling is not practical due to space limitations.

5.2.5. Dewatering Activities

Trench dewatering shall occur as needed to prevent sediment laden water from entering wetlands, waterbodies or drainage channels that are beyond the immediate construction area.

Trench water shall not be allowed to enter wetlands, waterbodies or drainage channels in such as way as to cause or contribute to scouring or sedimentation.

Dewatering structures shall be limited by the following conditions:

- a. constructed within well vegetated uplands areas where engineering and routing conditions permit
- b. placed at the farthest location above wetlands, waterbodies or drainage channels as is practical
- c. located above natural sediment barriers such as existing well vegetated earthen berms or above sediment barriers constructed with appropriate materials
- d. within wetlands shall be removed immediately after use
- e. constructed and maintained to ensure discharge water quality meets the applicable regulatory standards

Contractor shall supply adequate pumping equipment, hoses and supplies to each dewatering location for appropriate placement and maintenance of dewatering activities. Dewatering intake hoses shall be floated near the surface of trench water to reduce uptake of concentrated sediments within the trench water. This shall increase efficiency of pumps and filtration bags and increase discharge water quality.

Discharge water clarity shall be visually monitored during dewatering activities. Should discharge water appears to be more cloudy than the receiving water or the water immediately upstream of dewatering location or fail to meet the water quality requirements for any reason, such as improper materials, placement, construction or maintenance of dewatering structures, dewatering activities shall cease immediately. Structures shall be moved, repaired, or replaced as requested by the Environmental Inspector. Flocculants shall be utilized where additional filtration or settling is not practical due to space limitations.

Reference Figures 16 – 18 for dewatering details.

5.2.6. Filter Bags for Dewatering

Contractor shall supply and utilize filter bags, for purposes of dewatering, of the minimum specification as follows in the following table:

Parameter	Minimum Specification
Grab Strength	> 200 lbs.
Grab Elongation @ Break	100% (max)
Puncture Resistance	> 100 lbs.
Trapezoid Tear Strength	> 75 lbs.
Burst Strength	> 350 psi
Apparent Opening Size (AOS) (U.S. sieve no. equivalent)	70 – 100
Water Flow Rate	> 105 gpm/sq. ft.

Contractor shall have the option to procure pre-fabricated filter bags or to construct them on-site with the above specified geotextile fabric. If on-site construction is utilized, Contractor shall construct the filter bag to provide efficient sediment removal and resist seam failure. Dewatering rates shall be followed as described below for on-site constructed bags:

Minimum Filter Dimensions		Approximate Pumping Rate Gallons per Minute
"X" (ft.)	"Y" (ft.)	
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	600

Contractor shall monitor the condition of the filter bags throughout the dewatering activities and shall ensure appropriate pumping levels shall be used in accordance with manufacturers recommended filter bag capacity. The table above shall be used in the absence of manufacturer's recommendations.

Contractor shall remove used filter bags from the construction right-of-way immediately following dewatering activities.

Reference Figures 16 and 18 for filter bag diagram and details.

5.2.7. Waterbody Crossing Methods

Construction methods pertinent to waterbody crossings are presented below. Selection of the most appropriate method at each crossing shall be depicted on the construction drawings but may be amended or changed based on site-specific conditions (i.e., environmental sensitivity of the waterbody, depth, and rate of flow, subsurface soil conditions, and the expected time and duration of construction) at the time of crossing. In general the dry-ditch crossing technique should be utilized at all waterbody crossings less than 30' wide with a perceivable flow at the time of the crossing. The open-cut (wet-ditch) method should be utilized at ephemeral streams and ditches when there is no perceivable flow at the time of crossing. Equipment to complete dry-ditch crossing will be onsite as a contingency in case that flow should begin during construction. Where required, horizontal directional drilling (HDD) will be used at designated major and or sensitive waterbody crossings.

5.2.8. Open-Cut Crossing Method (wet-ditch)

An open-cut waterbody crossing will use methods similar to conventional upland open-cut trenching. This crossing method is typically used to cross waterbodies that are non state-designated as well as intermediate and major waterbodies with substantial flows that cannot be effectively culverted or pumped around the construction zone using the dry-ditch crossing techniques. Non-state designated waterbodies typically include perennial warmwater streams not considered significant by the state, intermittent drainage ditches and stream and ephemeral stream or ditches. The open-cut construction method will involve excavation of the pipeline trench across the waterbody, installation of a prefabricated segment of pipe, and backfilling of the trench with native material. The construction zone is not isolated from the stream flow and the objective of this method is to complete the waterbody crossing as quickly as practical in order to minimize the duration of impacts to aquatic resources. There are two types of open-cut crossing methods: non-flowing open-cut method and the flowing open-cut method.

The contractor shall utilize the non-flowing open cut crossing method (Figure 12) for all non-state designated waterbody crossings (ephemeral, ditches, gullies, drains, swales, ect.) with no perceptible flow at the time of construction. Should site conditions change and the waterbody is flowing at the time of construction, the contractor shall utilize a dry-ditch crossing method unless otherwise approved by the Company.

The flowing open-cut method is typically utilized on waterbodies 30' or greater where dry-ditch crossing methods cannot be effectively utilized where dry-ditch crossing methods cannot be effectively utilized. Reference to Figure 13 for construction details.

The open-cut crossing method shall be installed as follows:

1. For minor waterbodies:

a. Equipment bridges are not required at non state-designated fisheries (e.g. agricultural or intermittent drainage ditches). However, if an equipment bridge is used, it must be constructed in accordance with Section 5.2.2;

b. Limit use of equipment operating in the waterbody to that needed to construct the crossing;

c. Complete trenching and backfilling in the waterbody (not including blasting and other rock breaking measures) within 24 continuous hours; and

d. If a flume is installed within the waterbody during mainline activities, it can be removed just prior to lowering in the pipeline. The 24-hour timeframe starts as soon as the flume is removed.

2. For intermediate waterbodies:

a. Limit use of equipment operating in the waterbody to that needed to construct the crossing. All other construction equipment must cross on an equipment bridge.

b. Attempt to complete trenching and backfill work within the waterbody (not including blasting and other rock breaking measures) within 48 continuous hours, unless site specific conditions make completion within 48 hours infeasible.

3. For major waterbodies:

a. Company will develop site-specific crossing plans to be submitted for approval by the FERC and the appropriate permitting agency; and

b. Construct the crossing in accordance with the measures contained in this Plan to the maximum extent practical.

5.2.9. Dry-Ditch Open-Cut Crossing Method

The dry-ditch crossing method is divided into a flumed crossing method and a dam and pump crossing method. These methods are designed to maintain downstream flow at all times and to isolate the construction zone from the stream by channeling the water flow through a flume pipe or by damming the flow and pumping the water around the construction area. The overall objective is to minimize siltation of the waterbody and to facilitate trench excavation of saturated spoil. Unless approved otherwise by the appropriate state agency, pipeline construction and installation must occur using one of the two “dry” crossing methods for waterbodies state-designated as either coldwater or significant coolwater or warmwater fisheries. The flumed and dam and pump crossing methods are applicable to waterbodies up to 30 feet wide at the water’s edge at the time of construction.

5.2.10. Dam and Pump Method (dry-ditch)

The dam-and-pump method may be used for crossings of waterbodies where pumps can adequately transfer stream flow volumes around the work area, and there are no concerns about sensitive species passage.

Implementation of the dam-and-pump crossing method must meet the following performance criteria:

- a. use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
- b. construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
- c. screen and float pump intakes;
- d. prevent streambed scour at pump discharge; and
- e. monitor the dam and pumps to ensure proper operation for the duration of the waterbody crossing.

Reference Figure 14 for construction diagram.

5.2.11. Flume Crossing Method (dry-ditch)

The flume crossing method requires implementation of the following steps:

- a. install flume pipe after blasting (if necessary), but before any trenching;
- b. use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (minor

- modifications to the stream bottom may be required in order to achieve an effective seal);
- c. properly align flume pipe(s) to prevent bank erosion and streambed scour;
 - d. do not remove flume pipe during trenching, pipe laying, or backfilling activities, or initial streambed restoration efforts; and
 - e. remove all flume pipes and dams that are not also part of the equipment bridge as soon as final clean-up of the stream bed and bank is complete.

Reference Figure 15 for construction diagram.

5.2.12. Horizontal Directional Drill (HDD)

To the extent they were not provided as part of the planning process, for each waterbody or wetland that would be crossed using the HDD method, the Contractor shall provide a site specific plan to address each crossing.

Unless otherwise specified in the site specific HDD plan, the procedures that the Contractor shall implement in the event of an inadvertent drilling mud release (“frac-out”) into any waters of the United States or Wetland areas within or adjacent to the construction right-of-way include containment of the inadvertent release and subsequent clean up, as necessary. A copy of the HDD contingency plan is located in Appendix 6.

In the event that an inadvertent release is identified during the operation of a HDD, the Contractor shall immediately notify Company. Response options and actions shall be mutually evaluated and implemented, as necessary, to stop the release and prevent further inadvertent releases. Actions by the Contractor may include decreasing the drilling mud pressure and/or increasing the viscosity of the drilling mud. Company shall notify all applicable agencies as to the status of any release and subsequent clean-up.

Company and the Contractor shall evaluate the frac-out to determine the need for clean-up and removal of the drilling mud. In general, typical, minor frac-outs within the construction right-of-way or adjacent wetland areas shall be contained and cleaned-up, unless such activity would cause further detrimental impacts to those areas.

Upon identification of a frac-out, the Contractor shall take immediate measures to contain the release, depending on its location. If a frac-out occurs within the construction right-of-way, the Contractor shall immediately install silt fence to contain the release within an area adequate to facilitate potential clean-up procedures and protect adjacent wetland areas. The Contractor shall make every effort to contain frac-outs and releases within the construction right-of-way.

In the event a frac-out occurs in a water body or watercourse, the Contractor shall, as approved by Company, install turbidity curtains within safely accessible open water areas to contain the release and decrease turbidity levels, thus allowing the drilling mud to settle to the bottom of the waterbody. During containment procedures, care shall be taken to minimize and limit impacts to adjacent areas.

In the event a frac-out occurs in a water body or area outside the construction right-of-way, the Contractor shall notify Company immediately and shall not be permitted access to the spill without Company approval.

Wetlands that are not part of the permitted construction right-of-way but are disturbed as a result of Contractor frac-out and a Contractor response effort to a major drilling mud release (as directed by the permitting agencies) shall be restored to their pre-project elevations and

conditions, including replanting. In the event that replanting is required, Company shall contact the appropriate regulatory agency(s) to determine revegetation requirements. Revegetation shall be conducted by the Contractor in accordance with requirements set forth by the regulatory agency(s).

5.2.13. Crossings of Major Waterbodies, Scenic Rivers or Other

Before construction, the project sponsor shall file with the FERC from the review and written approval by the Director a detailed, site specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing. This plan should be developed in consultation with the appropriate state and federal agencies and should include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The EI may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

5.3. Clearing (Waterbody)

Except where rock is encountered and at non-flowing open cut crossings, all necessary equipment and materials for pipe installation must be on-site and assembled prior to commencing trenching in a waterbody. All staging areas for materials and equipment shall be located at least fifty (50) feet from the waterbody edge unless otherwise approved by Company. The Contractor shall preserve as much vegetation as possible along the waterbody banks while allowing for safe equipment operation. Clearing and grubbing for temporary vehicle access and equipment crossings shall be carefully controlled to minimize sediment entering the waterbody from the construction right-of-way. Clearing and grading shall be performed on both sides of the waterbody prior to initiating any trenching work. All trees shall be felled away from watercourses. Plant debris or soil inadvertently deposited within the high water mark of waterbodies shall be promptly removed in a manner that minimizes disturbance of the waterbody bed and bank. Excess floatable debris shall be removed above the high water mark from areas immediately above crossings. Vegetation adjacent to waterbodies which are to be installed by horizontal directional drill or boring methods shall not be disturbed except by hand clearing as necessary for drilling operations.

5.4. Grading (Waterbody)

The construction right-of-way adjacent to the waterbody shall be graded so that soil is pushed away from the waterbody rather than towards it when possible. In order to minimize disturbance to woody riparian vegetation within extra workspaces adjacent to the construction right-of-way at waterbody crossings, the Contractor shall maintain at a minimum a ten (10) foot vegetative buffer of waterbody banks. Grubbing shall be limited to the ditch line plus an appropriate width to accommodate the safe installation of vehicle access and the crossing to the extent practicable.

5.5. Temporary Erosion and Sediment Control (Waterbody)

Install sediment barriers immediately following the initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and

reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. The following specific measures must be implemented at stream crossings:

- a. Install sediment barriers across the entire construction right-of-way at all waterbody crossings where necessary to prevent the flow of sediments into the waterbody. In the travel lane these may consist of removable sediment barriers or drivable berms. Removable sediment barriers can be removed during the construction day but must be re-installed after construction has stopped for the day and/or when heavy precipitation is anticipated;
- b. where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and
- c. use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

5.6. Trenching (Waterbody)

The following requirements apply to all waterbody crossings except those being installed by the non-flowing open cut crossing method.

- a. All equipment and materials shall be on site before trenching in the active channel of all minor waterbodies containing state designated fisheries, and in intermediate and major waterbodies.
- b. All activities shall proceed in an orderly manner without delays until the trench is backfilled and the stream banks stabilized.
- c. The Contractor shall not begin in-stream activity until the in-stream pipe section is complete and ready to be installed in the waterbody.
- d. The Contractor shall use trench plugs at the end of the excavated trench to prevent the diversion of water into upland portions of the pipeline trench and to keep any accumulated upland trench water out of the waterbody.
- e. Trench plugs must be of sufficient size to withstand upslope water pressure. The Contractor shall conduct as many in-stream activities as possible from the banks of the waterbodies.
- f. The Contractor shall limit the use of equipment operating in waterbodies to that needed to construct each crossing.
- g. The Contractor shall place all spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings in the construction right-of-way at least fifty (50) feet from the water's edge, in additional extra work areas or as otherwise directed by Company.
- h. No trench spoil, including spoil from the portion of the trench across the stream channel, shall be stored within a waterbody unless the crossing cannot be reasonably completed without doing so.
- i. The Contractor shall install and maintain sediment barriers around spoil piles to prevent the flow of spoil into the waterbody. Spoil removed during ditching shall be used to backfill the trench usually with a backhoe, clamshell or a dragline working from the waterbody bank. Sand, gravel, rockshield, or fill padding shall be placed around the pipe where rock is present in the channel bottom.

5.7. Pipe Installation (Waterbody)

The following requirements apply to all waterbody crossings except those being installed by the non-flowing open cut crossing method.

- a. The trench shall be closely inspected to confirm that the specified cover and that adequate bottom support can be achieved, and shall require Company approval prior to the pipe being installed.
- b. Such inspections shall be performed by visual inspection and/or measurement by a Company Representative.
- c. In rock trench, the ditch shall be adequately padded with clean granular material to provide continuous support for the pipe.
- d. The pipe shall be lowered into the trench and shall, where necessary, be held down by weights, as-built recorded and backfilled immediately to prevent the pipe from floating.
- e. The Contractor shall provide sufficient approved lifting equipment to perform the pipe installation in a safe and efficient manner.
- f. As the coated pipe is lowered in, it shall be prevented from swinging or rubbing against the sides of the trench.
- g. Only properly manufactured slings, belts and cradles suitable for handling coated pipe shall be used.
- h. All pipes shall be inspected for coating flaws and/or damage as it is being lowered into the trench.
- i. Any damage to the pipe and/or coating shall be repaired.

5.8. Backfilling (Waterbody)

The following requirements apply to all waterbody crossings except those being installed by the non-flowing open cut crossing method.

- a. Trench spoil excavated from waterbodies shall be used to backfill the trench across waterbodies.
- b. After lowering-in has been completed, but before backfilling, the line shall be reinspected to ensure that no skids, brush, stumps, trees, boulders or other debris is in the trench.
- c. If discovered, such materials or debris shall be removed from the trench prior to backfilling.
- d. For each major waterbody crossed, the Contractor shall install a trench breaker at the base of slopes near the waterbody unless otherwise directed by Company based on site specific conditions.
- e. The base of slopes at intermittent waterbodies shall be assessed on-site and trench breakers installed only where necessary.
- f. Slurred muck or debris shall not be used for backfill.
- g. At locations where the excavated native material is not acceptable for backfill or must be supplemented, the Contractor shall provide granular material approved by Company.
- h. If specified in the Construction Drawings, the top of the backfill in the stream shall be armored with rock riprap or bio-stabilization materials as appropriate.

5.9. Stabilization and Restoration of Stream Banks and Slopes (Waterbody)

The stream bank contour shall be re-established. All debris shall be removed from the streambed and banks. Stream banks shall be stabilized and temporary sediment barriers shall be installed within twenty-four (24) hours of completing the crossing if practicable. Approach slopes shall be graded to an acceptable slope for the particular soil type and surface run off controlled by installation of permanent slope breakers. Where considered necessary, the

integrity of the slope breakers shall be ensured by lining with erosion control blankets. Immediately following reconstruction of the stream banks, the Contractor shall install seed and flexible channel liners on waterbody. If the original stream bank is excessively steep and unstable and/or flow conditions are severe or if specified on the Construction Drawings, the banks shall be stabilized with rock riprap, gabions, stabilizing cribs, or bio-stabilization measures to protect backfill prior to reestablishing vegetation. Stream bank riprap structures shall consist of a layer of stone, underlain with approved filter fabric or a gravel filter blanket. Riprap shall extend from the stabilized streambed to the top of the stream bank, where practicable, native rock shall be utilized. Bio-stabilization techniques may be considered for specific crossings. The Contractor shall remove equipment bridges as soon as possible after final clean up.

6. RESTORATION (WATERBODY)

Use clean gravel or native cobbles for the upper one (1) foot of trench backfill in all waterbodies that contain coldwater fisheries.

For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within twenty-four (24) hours of completing in-stream construction activities.

For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.

Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.

Application of riprap for bank stabilization must comply with USACE or any other Agency permit terms and conditions.

Unless otherwise specified by Agency permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.

Revegetate disturbed waterbody areas with conservation grasses and legumes or native plant species.

Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than five percent (5%) that are less than fifty (50) feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

Above-mentioned restoration requirements also apply to those perennial or intermittent streams not flowing at the time of construction.

7. POST- CONSTRUCTION MAINTENANCE (WATERBODY)

Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least twenty-five (25) feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to ten (10) feet wide may be maintained in an herbaceous state.

In addition, trees that are located within fifteen (15) feet of the pipeline that are greater than fifteen (15) feet in height may be cut and removed from the permanent right-of-way.

Do not use herbicides or pesticides in or within one hundred (100) feet of a waterbody except as allowed by the appropriate land management or state agency.

8. WETLAND CROSSINGS

8.1. General

Where applicable, procedures for waterbody crossings should also be considered for wetland crossings. Project specific FERC Wetland & Waterbody Construction & Mitigation Procedures are located in Appendix 5.

8.1.1. Field Markings

Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete. Wetland boundaries marking shall be maintained as needed to ensure visibility throughout the Project.

8.1.2. Alternative Crossing Plan

Implement the measures of FERC's Wetland and Waterbody Construction And Mitigation Procedures in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of FERC's Wetland and Waterbody Construction and Mitigation Procedures cannot be met, Company must file with the applicable local, state and federal agencies a site-specific crossing plan for review and written approval before construction. This crossing plan shall address at a minimum:

- a. spoil control
- b. equipment bridges
- c. restoration of waterbody banks and wetland hydrology
- d. timing of the waterbody crossing
- e. method of crossing
- f. size and location of all extra work areas

8.2. Installation (Wetlands)

8.2.1. Extra Work Areas and Access Roads (Wetlands)

Limit clearing of vegetation between extra work areas and the edge of the wetland to the approved construction right-of-way.

The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

Company & Agency only approved access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modification and no impact on the wetland.

8.2.2. General Wetland Crossing Procedures

Comply with Project Specific (FERC) Wetland and Waterbody Construction and Mitigation Procedures (Appendix 5) as well as USACE or any other permit terms and conditions.

Construct crossings as close to perpendicular to the axis of the wetland or waterbody channel as engineering and routing conditions permit.

If the pipeline parallels a wetland or waterbody, attempt to maintain at least fifteen (15) feet of undisturbed vegetation between the wetland and/or waterbody and the construction right-of-way.

Where wetlands or waterbodies meander or have multiple channels, route the pipeline to minimize the number of wetland or waterbody crossings.

Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.

Wetland or waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

Removal of vegetation within wetlands shall be limited to the approved construction right-of-way. Existing contours shall not be altered. Rutting of soils (greater than twelve [12] inches) shall be repaired immediately.

Mulching shall not occur within wetland or waterbody area. All vegetation cleared from wetland areas shall be moved to an upland area immediately following logging and clearing activities.

Storage of construction related materials, such as river weights, shall not occur within wetlands.

Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.

Trench operations shall be limited to periods of time when significant precipitation is not anticipated during the crossing procedures.

Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.

Limit the length of time that topsoil is segregated and the trench is open to less than twenty-four (24) hours. If backfill operations cannot be completed within twenty-four (24) hours due to site conditions beyond the control of Contractor, the Environmental Inspector shall be notified in advance.

Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal.

Limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from beneath the working side of the construction right-of-way.

Segregate the top one (1) foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated or frozen. Immediately after backfilling is complete, restore the segregated topsoil to its original location.

Restore disturbed areas to pre-construction contours as recorded in pre-construction wetland survey.

Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.

If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.

Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.

Attempt to use no more than two (2) layers of timber riprap to support equipment on the construction right-of-way.

Remove all Project-related material used to support equipment on the construction right-of-way upon completion of construction.

Reference Figure 19-22 for wetland crossing details.

8.2.3. "Dry" Wetland Crossing Method

Topsoil shall be segregated. Pipe stringing and fabrication may occur within the wetland adjacent to the trench line or adjacent to the wetland in a designated extra workspace. The "dry" wetland crossing procedure depicted in Figure 19 shall be used where this type of wetland is identified on the Construction Drawings. The following are exceptions to "standard" wetland crossing methods:

- The width of the construction right-of-way for upland construction is maintained through the wetland.
- Sediment barriers are not required across or along the edges of the construction right-of-way.
- If the wetland is cultivated, the topsoil shall be stripped using the trench and spoil side method at the same depth as the adjacent upland areas.
- Seeding requirements for agricultural lands shall be applied to farmed wetlands.

8.2.4. "Standard" Wetland Crossing Method

Topsoil stripping is impracticable due to the saturated nature of the soil. Pipe stringing and fabrication may occur within the wetland adjacent to the trench line or adjacent to the wetland in a designated extra workspace. Based upon the length of a standard wetland crossing and presence of sufficient water to float the pipe, the Contractor may elect to install a standard wetland crossing utilizing the "push/pull" method. The standard wetland crossing procedure depicted in Figure 20 shall be used where this type of wetland is identified on the Construction Drawings.

Procedures unique to standard wetlands include:

- Limiting construction right-of-way width to a maximum of seventy-five (75) feet unless site conditions warrant a wider width or as specified in Appendix A.
- Utilizing low ground pressure construction equipment or support equipment on timber rip rap or timber mats
- Installing sediment barriers across the entire right-of-way where the right-of-way enters and exits the wetland

8.2.5. Flooded "Push/Pull" Wetland Crossing Method

In these wetlands, standing surface water or high groundwater levels are present. Difficult trenching conditions may exist, and trench widths of up to thirty-five (35) feet are common. Topsoil stripping is impossible due to the flooded conditions. Pipe stringing and fabrication is required adjacent to the wetland in a designated extra workspace. And the pipe pushed and/or pulled with flotation into place. The "Push/Pull" Wetland crossing procedure as depicted in Figure 21 shall be used where water is sufficient to float the pipeline in the trench and other site conditions allow. Clean metal barrels or Styrofoam floats may be used to assist in the flotation of the pipe. Metal banding shall be used to secure the barrels or floats to the pipe. All barrels, floats and banding shall be recovered and removed upon completion of lower-in. Backfill shall not be allowed before recovery of barrels, floats and banding.

8.2.6. Spoil Pile Placement and Control (Wetlands)

All spoil from wetland or minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least ten (10) feet from the water's edge or in additional extra work areas as needed.

Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any wetland, waterbody or drainage feature. Should sediment migrate beyond sediment barriers steps shall be taken immediately to repair breaches in the barrier and to retrieve lost sediment. Should heavily silt-laden water seep from the barriers, immediate steps shall be taken to reduce flow and provide for adequate settling or filtration.

Reference Figures 19-22 for placement of controls.

8.2.7. Dewatering Activities (Wetlands)

Trench dewatering shall occur as needed to prevent sediment laden water from entering wetlands, waterbodies or drainage channels that are beyond the immediate construction area.

Trench water shall not be allowed to enter wetlands, waterbodies or drainage channels in such as way as to cause or contribute to scouring or sedimentation.

Dewatering structures shall be limited by the following conditions:

- a. constructed within well vegetated uplands areas where engineering and routing conditions permit
- b. placed at the farthest location above wetlands, waterbodies or drainage channels as is practical
- c. located above natural sediment barriers such as existing well vegetated earthen berms or above sediment barriers constructed with appropriate materials
- d. within wetlands shall be removed immediately after use
- e. constructed and maintained to ensure discharge water quality meets the applicable regulatory standards

Contractor shall supply adequate pumping equipment, hoses and supplies to each dewatering location for appropriate placement and maintenance of dewatering activities. Dewatering intake hoses shall be floated near the surface of trench water to reduce uptake of concentrated sediments within the trench water. This shall increase efficiency of pumps and filtration bags and increase discharge water quality.

Discharge water clarity shall be visually monitored during dewatering activities. Should discharge water appear to be cloudier than the receiving water or the water immediately upstream of dewatering location, or fail to meet the water quality requirements for any reason such as improper materials, placement, construction or maintenance of dewatering structures, dewatering activities shall cease immediately. Structures shall be moved, repaired, or replaced as requested by the Environmental Inspector.

Reference Figures 16-18 for dewatering details.

8.2.8. Filter Bags for Dewatering (Wetlands)

Contractor shall supply and utilize filter bags, for purposes of dewatering, of the minimum specification as follows in the following table:

Parameter	Minimum Specification
Grab Elongation @ Break	100% (max)
Puncture Resistance	> 100 lbs.
Trapezoid Tear Strength	> 75 lbs.
Burst Strength	> 350 psi
Apparent Opening Size (AOS) (U.S. sieve no. equivalent)	70 – 100
Water Flow Rate	> 105 gpm/sq. ft.

Contractor shall have the option to procure pre-fabricated filter bags or to construct them on-site with the above specified geotextile fabric. If on-site construction is utilized, Contractor shall construct the filter bag to provide efficient sediment removal and resist seam failure.

Contractor shall monitor the condition of the filter bags throughout the dewatering activities and shall ensure appropriate pumping levels shall be used in accordance with manufacturers recommended filter bag capacity.

Contractor shall remove used filter bags from the construction right-of-way immediately following dewatering activities.

Reference Figures 16 and 18 for filter bag diagram and details.

8.2.9. Temporary Erosion and Sediment Control (Wetlands)

Install sediment barriers prior to initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. The following specific measures must be implemented at stream crossings:

- a. Install sediment barriers across the entire construction right-of-way at all waterbody crossings where necessary to prevent the flow of sediments into the waterbody. In the travel lane these may consist of removable sediment barriers or drivable berms. Removable sediment barriers can be removed during the construction day but must be re-installed after construction has stopped for the day and/or when heavy precipitation is anticipated;
- b. Where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and
- c. Use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

Install temporary erosion controls immediately before initial disturbance of the soil where practical. Where dense existing vegetation is present, install temporary erosion controls immediately following initial disturbance. Maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas are complete.

Install sediment barriers across the entire construction right-of-way at all wetland crossings where necessary to prevent sediment flow into the wetland. In the travel lane, these may consist of removable sediment barriers or drivable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is anticipated.

Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.

Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the wetland construction right-of-way. Remove these sediment barriers during initial right-of-way clean-up immediately following backfill operations.

Reference Figures 6 and 7 for barrier details.

8.3. Restoration (Wetlands)

Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.

Contractor shall ensure the appropriate replacement of subsoil and topsoil within the trench.

Contractor shall ensure pre-construction contours are met following restoration activities. No right-of-way of the trench shall be permitted within wetlands.

For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of a slope greater than five percent (5%) where the base of the slope is less than fifty (50) feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.

Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.

Consult with the appropriate land management or state agency to develop a Project-specific wetland restoration plan. The restoration plan should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts.

Until a Project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual rye grass at a rate of forty (40) pounds/acre (unless standing water is present).

Ensure that all disturbed areas are successfully revegetated with wetland herbaceous and/or woody plant species.

Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are verified by the Environmental Inspector to be successful as specified.

Reference Figure 22 for backfill details.

8.4. Post-Construction Maintenance (Wetland)

Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on

the pipeline and up to ten (10) feet wide may be maintained in an herbaceous state. In addition, trees within fifteen (15) feet of the pipeline, which are greater than fifteen (15) feet in height, may be selectively cut and removed from the permanent right-of-way.

Do not use herbicides or pesticides in or within one hundred (100) feet of a wetland, except as allowed by the appropriate land management agency or state agency.

Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least eighty percent (80%) of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction.

9. HYDROSTATIC TESTING

9.1. Testing Equipment Location

The Contractor shall provide for the safety of all pipeline construction personnel and the general public during hydrostatic test operations by placing warning signs in populated areas. The Contractor shall locate hydrostatic test manifolds one hundred (100) feet outside wetlands and riparian areas to the maximum extent practicable.

9.2. Test Water Source and Discharge Locations

Company is responsible for acquiring all permits required by federal, state and local agencies for procurement of water and for the discharge of water used in the hydrostatic testing operation. Company shall provide the Contractor with a copy of the appropriate withdrawal/discharge permit for hydrostatic test water. The Contractor shall keep the water withdrawal/discharge permit on site at all times during testing operations.

Any water obtained or discharged shall be in compliance with permit notice requirements and with sufficient notice for Company's Testing Inspector to make water sample arrangements prior to obtaining or discharging water. In some instances sufficient quantities of water may not be available from the permitted water sources at the time of testing. Withdrawal rates may be limited as stated by the permit. Under no circumstances shall an alternate water source be used without prior authorization from Company. The Contractor shall be responsible for obtaining any required water analyses from each source to be used in sufficient time to have a lab analysis performed prior to any filling operations. The sample bottle shall be sterilized prior to filling with the water sample. The analysis shall determine as specified in Appendix A. Each bottle shall be marked with:

- Source of water with pipeline station number
- Date taken
- Laboratory order number
- Name of person taking sample

Staging/work areas for filling the pipeline with water shall be located a minimum of fifty (50) feet from the waterbody or a wetland boundary if topographic conditions permit. The Contractor shall install temporary sediment filter devices adjacent to all streams that runoff may enter. The Contractor shall screen the intake hose to prevent the entrainment of fish or debris. The hose shall be kept off the bottom of the waterbody. Refueling of construction equipment shall be conducted a minimum distance of one hundred (100) feet from the stream or a wetland. Pumps used for hydrostatic testing within one hundred (100) feet of any waterbody or wetland shall be operated and refueled in accordance with Section 3. The Contractor shall maintain adequate flow rates in the waterbody to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users. The Contractor shall not use chemicals in the test water. The Contractor shall not discharge any water containing oil or other substances that are in sufficient amounts as to create a visible color film or sheen on the surface of the receiving water. Selected road, railroad, and river crossing pipe sections may be specified to be pre-tested for a minimum of four (4) hours. The water for pre-testing of any road and railroad crossings shall be hauled by a tanker truck from an approved water source. Water for pre-testing of a river crossing may be hauled or taken from the respective river if it is an approved water source. Since the volume of water utilized in these pretests shall be relatively small, the water shall be discharged overland along the construction right-of-way and allowed to soak into the ground utilizing erosion and sediment control mitigative measures. Selection of final test

water sources will be determined based on site conditions at the time of construction and applicable permits.

9.3. Dewatering the Pipeline

The Contractor shall comply with state-issued NPDES permits for discharging test water. The Contractor shall not discharge any water containing oil or other substances that are in sufficient amounts as to create a visible color film on the surface of the receiving water. The Contractor shall not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, State, and local permitting agencies grant written permission.

The Contractor shall calculate, record and provide to Company the day, date, time, location, total volume, maximum rate and methods of all water discharged to the ground or to surface water in association with hydrostatic testing. The Contractor shall regulate the pig velocity discharge rate, use an energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive stream flow. Water must be disposed of using good engineering judgment so that all federal, state, and local environmental standards are met. Dewatering lines shall be sufficient strength and be securely supported and tied down at the discharge end to prevent whipping during this operation.

To reduce the velocity of the discharge, The Contractor shall utilize an energy dissipating device described as follows:

9.3.1. Splash Pup

A splash pup consists of a piece of large diameter pipe (usually over twenty inches (20") O.D.) of variable length with both ends partially blocked that is welded perpendicularly to the discharge pipe. As the discharge hits against the inside wall of the pup, the velocity is rapidly reduced and the water is allowed to flow out either end. A variation of the splash pup concept, commonly called a diffuser, incorporates the same design, but with capped ends and numerous holes punched in the pup to diffuse the energy.

9.3.2. Splash Plate

The splash plate is a quarter section of thirty-six (36) inch pipe welded to a flat plate and attached to the end of a six (6) inch discharge pipe. The velocity is reduced by directing the discharge stream into the air as it exits the pipe. This device is also effective for most overland type discharge.

9.3.3. Plastic Liner

In areas where highly erodible soils exist or in any low flow drainage channel, it is a common practice to use layers of visqueen (or any of the new construction fabrics currently available) to line the receiving channel for a short distance. One anchoring method may consist of a small load of rocks to keep the fabric in place during the discharge.

9.3.4. Straw Bale Dewatering Structure

Straw bale dewatering structures are designed to dissipate and remove sediment from the water being discharged. Straw bale structures are used for on-land discharge of wash water and hydrostatic test water and in combination with other energy dissipating devices for high volume discharges. A straw bale dewatering structure is shown In Figure 23.

10. OFF-ROAD VEHICLE CONTROL

Company shall offer to each owner or manager of forested lands to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- signs
- fences with locking gates
- slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way
- conifers or other appropriate trees or shrubs across the right-of-way

11. SPILL PREVENTION AND CONTAINMENT

Spill prevention and containment applies to the use and management of hazardous materials on the construction right-of-way and all ancillary areas during construction. This includes the refueling or servicing of all equipment with diesel fuel, gasoline, lubricating oils, grease, hydraulic and other fluids during normal upland applications and special applications within one hundred (100) feet of perennial streams or wetlands. **All Vehicles and Equipment Must have a Spill Kit On Board.**

11.1. Spill Prevention

11.1.1. Staging Areas

Staging areas (including Contractor yards and pipe stockpile sites) shall be set up for each construction spread. Hazardous materials at staging areas shall be stored in compliance with federal and state laws. The following spill prevention measures shall be implemented by the Contractor:

- Contractor fuel trucks shall be loaded at existing bulk fuel dealerships or from bulk tanks set up for that purpose at the staging area. In the former case, the bulk dealer is responsible for preventing and controlling spills;
- Fuels and lubricants shall be stored only at designated staging areas. Storage of fuel and lubricants in the staging area shall be at least one hundred (100) feet away from the water's edge.
- Refueling and lubrication of equipment shall be restricted to upland areas at least one hundred (100) feet away from stream channels and wetlands;
- Contractors shall be required to perform all routine equipment maintenance at the staging area and recover and dispose of wastes in an appropriate manner;
- Temporary liners and berms and/or dikes (secondary containment) shall be constructed around the above-ground bulk tanks, so that potential spill materials shall be contained and collected in specified areas isolated from any waterbodies. Tanks shall not be placed in areas subject to periodic flooding or washout;
- Drivers of tank trucks are responsible for safety and spill prevention during tank truck unloading. Procedures for loading and unloading tank trucks shall meet the minimum requirements established by the Department of Transportation;
- Warning signs requiring drivers to set brakes and chock wheels shall be displayed at all tanks. Proper grounding of equipment shall be undertaken during fuel transfer operations. Drivers shall observe and control the fueling operations at all times to prevent over-filling the temporary tank;
- Prior to departure of any tank truck, all vehicle outlets shall be closely examined by the driver for leakage and tightened, adjusted or replaced to prevent liquid leakage while in transit;

- A supply of sorbent and barrier materials sufficient to allow the rapid containment and recovery of any spill shall be maintained at the construction staging areas. Sorbent and barrier materials shall also be utilized to contain runoff from contaminated areas;
- Shovels and drums shall be kept at each of the individual staging areas. In the event that small quantities of soil become contaminated, shovels shall be utilized to collect the soil and the material shall be stored in fifty-five (55) gallon drums. Large quantities of contaminated soil may be bio-remediated on-site, subject to government approval, or collected utilizing heavy equipment, and stored in drums or other suitable containers prior to disposal. Should contamination occur adjacent to staging areas as a result of runoff, shovels and/or heavy equipment shall be utilized to collect the contaminated material. Contaminated soil shall be disposed of in accordance with state and federal regulations;
- Temporary above-ground tanks shall be subject to visual inspection on a monthly basis and when the tank is refilled. Inspection records shall be maintained. Operators shall routinely keep tanks under close surveillance and potential leaks or spills shall be quickly detected;
- Visible fuel leaks shall be reported to the Contractors' designated representative and corrected as soon as conditions warrant. Company's designated representative shall also be informed;
- Drain valves on temporary tanks shall be locked to prevent accidental or unauthorized discharges from the tank. Company may allow modification of the above specifications as necessary to accommodate specific situations or procedures. Any modifications must comply with all applicable regulations and permits.

11.1.2. Construction Right-of-way

Rubber-tired vehicles (pick-up trucks, buses) shall normally refuel at the construction staging areas or commercial gas stations. Tracked machinery (backhoes, bulldozers) shall be refueled and lubricated on the construction right-of-way. Equipment maintenance shall be conducted in staging areas when practical. When impractical, repairs to equipment can be made on the construction right-of-way when approved by Company's representative. The following preventive measures apply to refueling and lubricating activities on the construction right-of-way:

- Construction activities shall be conducted to allow for prompt and effective clean up of spills of fuel and other hazardous materials. Each construction crew, including clean-up crews shall have on hand sufficient tools and material to stop leaks and supplies of absorbent and barrier materials to allow rapid containment and recovery of spilled materials and must know and follow the procedure for reporting spills;
- Refueling and lubrication of construction equipment shall be restricted to upland areas at least one hundred (100) feet away from stream channels and wetlands. Where this is not possible (e.g., trench dewatering pumps), the equipment shall be fueled by designated personnel with special training in refueling and spill containment and clean up. The Environmental Inspector shall ensure that signs are installed identifying restricted areas;
- Spent oils, lubricants, filters, etc. shall be collected and disposed of at an approved location in accordance with state and federal regulations;
- Equipment shall not be washed in streams. Company may allow modification of the above specifications as necessary to accommodate specific situations or procedures. Any modifications must still comply with all applicable regulations and permits

11.2. Contingency Plans

The Contractor shall develop emergency response procedures for all incidents (e.g., spills, leaks, fires) involving hazardous materials which could pose a threat to human health and/or the environment. The procedures shall address activities in all work areas, as well as during transport to and from the construction right-of-way and to any disposal or recycling facility.

11.3. Equipment

The Contractor shall retain emergency response equipment that shall be available at all areas where hazardous materials are handled or stored. This equipment shall be readily available to respond to a hazardous material emergency. Such equipment shall include, but not be limited to, the following:

- first aid kit/supplies
- phone or communications radio
- protective clothing (Tyvek suit, gloves, goggles, boots)
- hand held fire equipment
- absorbent material and storage containers
- non-sparking bung wrench and shovel
- brooms and dust pan

Hazardous material emergency equipment shall be carried in all mechanic and supervisor vehicles. This equipment shall include, at a minimum:

- first aid kit/supplies
- phone or communications radio
- two (2) sets of protective clothing (tyvek suit, gloves, goggles, boots)
- one (1) non-sparking shovel
- six (6) plastic garbage bags (twenty [20] gallon)
- ten (10) absorbent socks and spill pads
- hand held fire extinguisher
- barrier tape
- two (2) orange reflector cones

Fuel and service trucks shall carry a minimum of twenty (20) pounds of suitable commercial sorbent material. The Contractor shall inspect emergency equipment weekly, and service and maintain equipment regularly. Records shall be kept of all inspections and services.

11.4. Emergency Notification

Emergency notification procedures between the Contractor and Company shall be established in the preplanning stages of construction, and the Company representative shall be identified to serve as contact in the event of a spill during construction activities. In the event of a spill which meets government reporting criteria, the Contractor shall notify the Company representative immediately who, in turn, shall notify the appropriate regulatory agencies as documented in Appendix 1.

11.5. Spill Containment and Countermeasures

In the event of a spill of hazardous material, Contractor personnel shall:

- notify the appointed Company representative;
- identify the product hazards related to the spilled material and implement appropriate safety procedures, based on the nature of the hazard;
- control danger to the public and personnel at the site;
- implement spill contingency plans and mobilize appropriate resources and manpower;
- isolate or shutdown the source of the spill;
- block manholes or culverts to limit spill travel;
- initiate containment procedures to limit the spill to as small an area as possible, to prevent damage to property or areas of environment concern (e.g., watercourses); and
- commence recovery of the spill and clean-up operations.

When notified of a spill, the Company representative shall immediately ensure that:

- action is taken to control danger to the public and personnel at the site;
- spill contingency plans are implemented and that necessary equipment and manpower are mobilized;
- measures are taken to isolate or shutdown the source of the spill;
- all resources necessary to contain, recover and clean up the spill are available;
- any resources requested by the Contractor from Company are provided; and
- the appropriate agencies are notified. For spills which occur on public lands, into surface waters or into sensitive areas the appropriate federal or state managing office shall also be notified and involved in the incident. On a land spill, berms shall be constructed with available equipment to physically contain the spill. Personnel entry and travel on contaminated soils shall be minimized. Sorbent materials shall be applied or, if necessary, heavily contaminated soils shall be removed to an approved facility. Contaminated sorbent materials and vegetation shall also be disposed of at an approved facility. On a spill threatening a water body, berms and/or trenches shall be constructed to contain the spill prior to entry into a water body. Deployment of booms, skimmers and sorbent materials shall be necessary if the spill reaches the water. The spilled product shall be recovered and the contaminated area shall be cleaned up with in consultation with spill response specialists and appropriate government agencies.

FIGURES

Gas pipelines are built on what developers call a moving assembly line. After the right of way is cleared, machines dig a long trench. The bottom is then padded with sand or gravel. Trucks then string pipe sections alongside the trench, where they are welded into a single piece. The welds are X-rayed and the joints coated against corrosion. Side-boom tractors - construction vehicles with their own cranes - lower the pipe into the trench, where it is backfilled and water-tested for leaks. The right of way is then cleaned up and revegetated. Depending on terrain, crews can install a mile of pipe per day.

Graphic not to scale

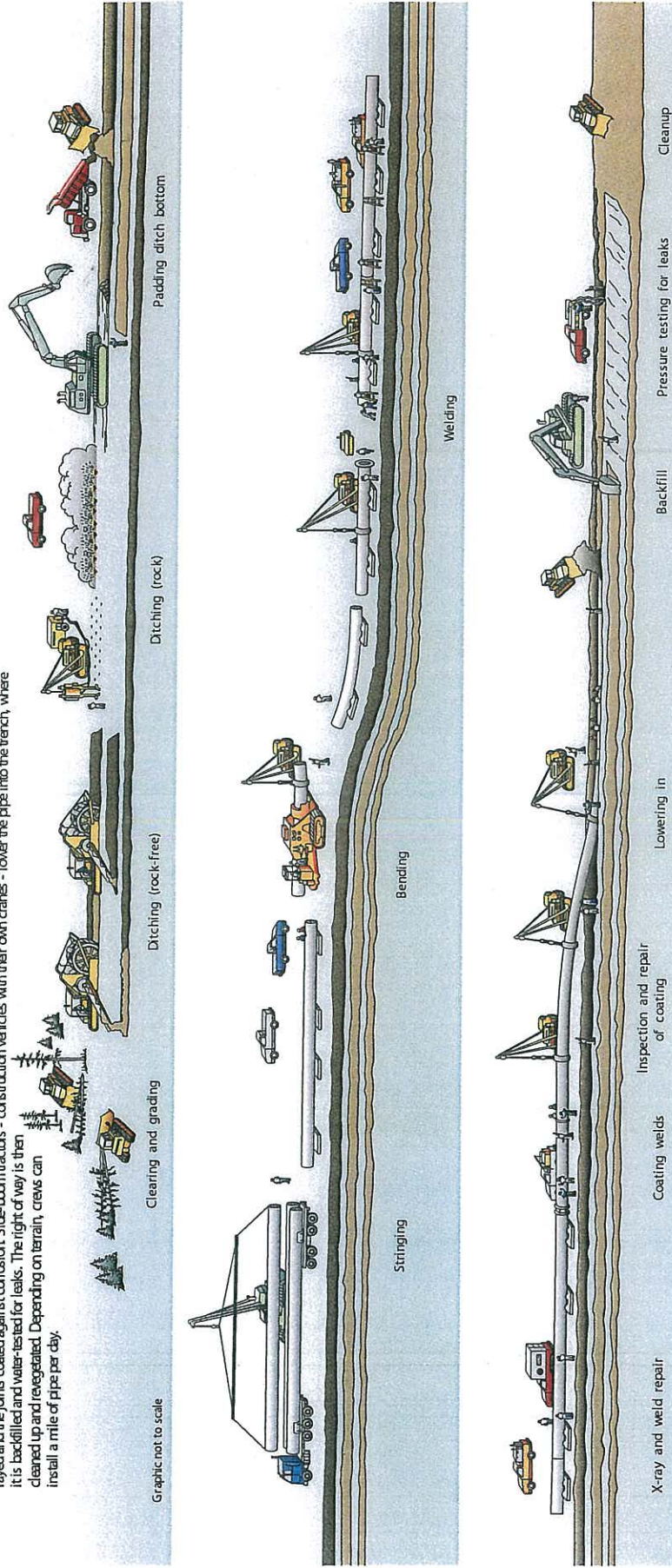
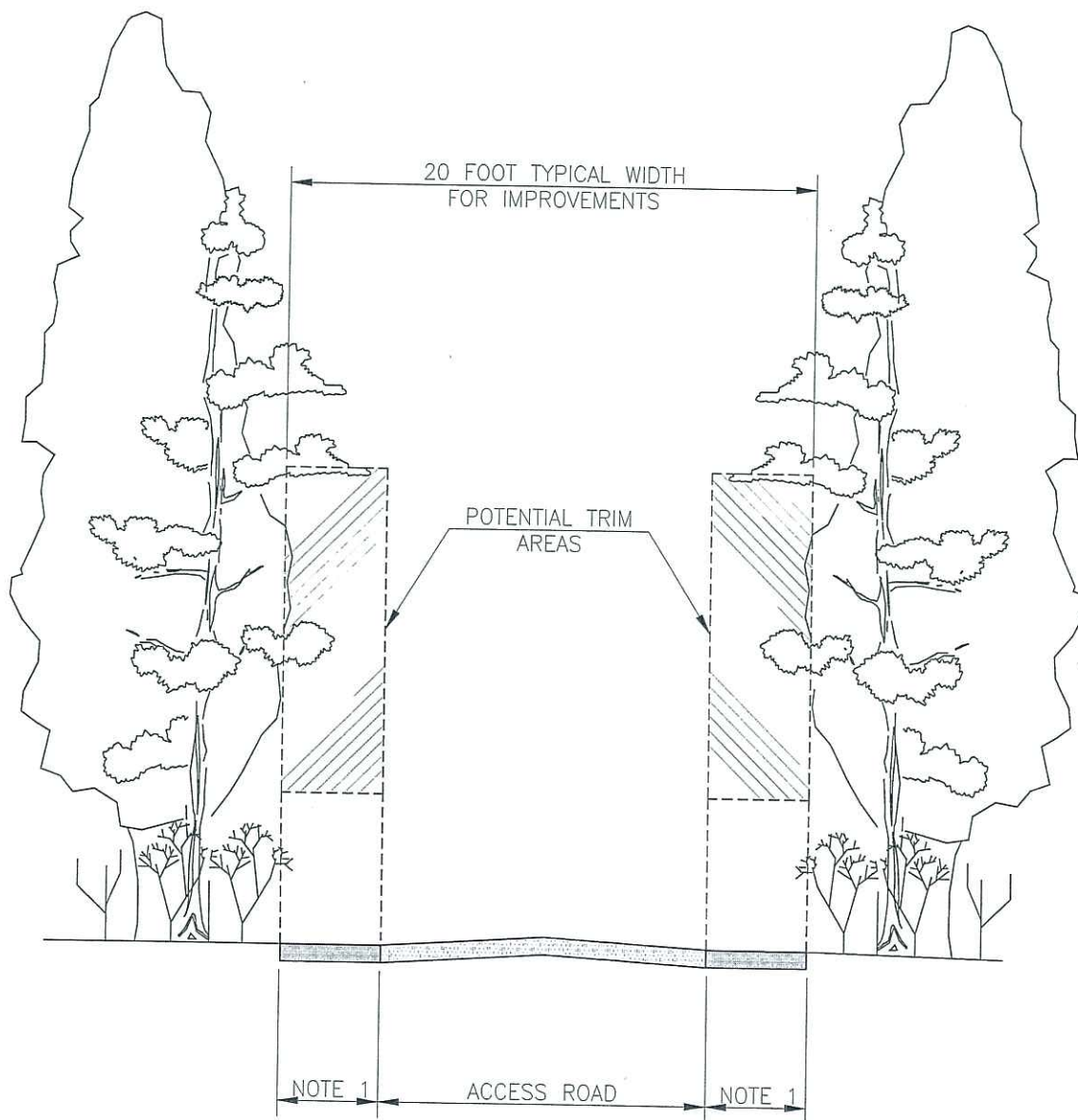


FIGURE: 1
Typical Pipeline Construction Sequence
Cameron Interstate Expansion Project
Docket No. PF12-12-000



NOTES:

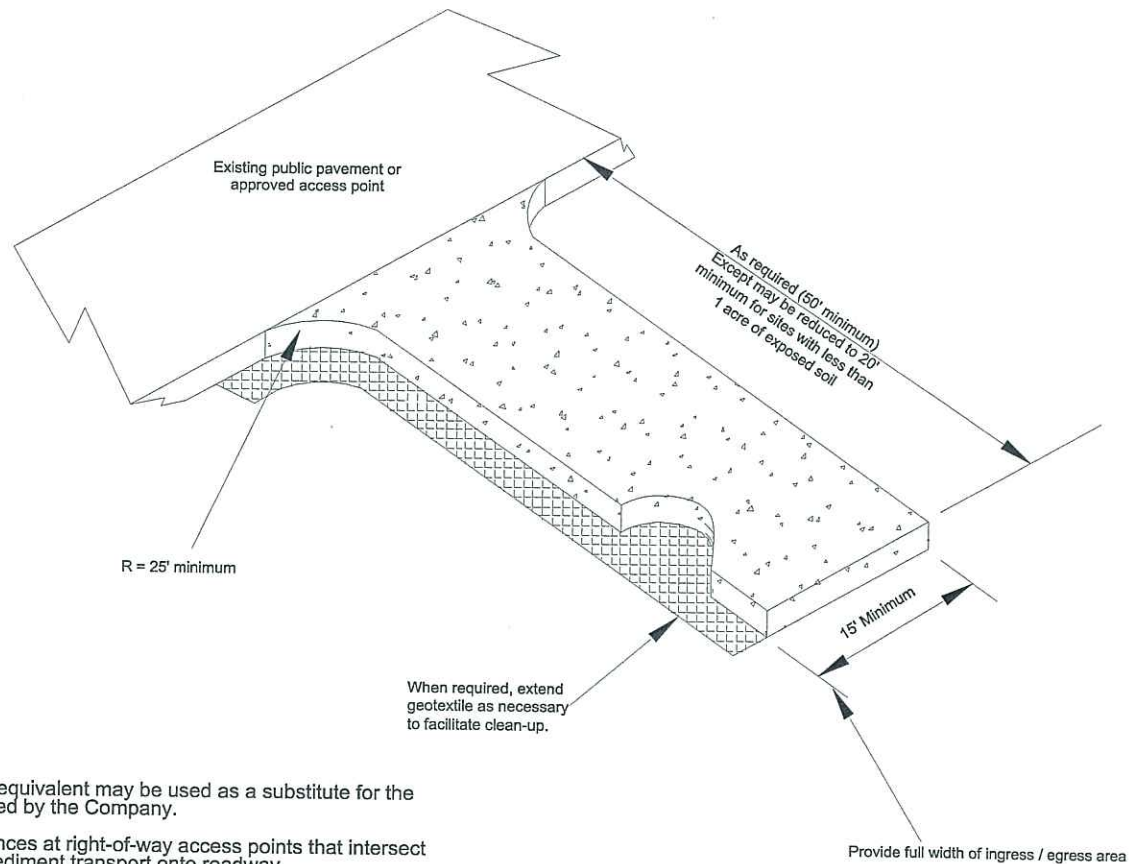
- Access roads will be maintained in passable condition for the duration of the project.
- Diversion berms within roadways will direct flow into well vegetated upland location.

FIGURE: 2

Access Roadways

Cameron Pipeline Expansion Project

Docket No. PF12-12-000



Notes:

Equipment mats or their equivalent may be used as a substitute for the graveled apron if approved by the Company.

Install construction entrances at right-of-way access points that intersect paved roads to reduce sediment transport onto roadway.

Install culverts in road ditches as necessary.

Crushed stone access pads shall be placed on synthetic fabric in residential or active agricultural areas to facilitate stone removal. Use Synthetic Industries style 22TEX, Light Stabilization Fabric, or equivalent (3 oz/yd woven geotextile).

INSTALLATION: The area of the entrance should be cleared of all vegetation, roots and other objectionable material. The gravel shall be placed to the specified dimensions. Any drainage facilities required because of washing should be constructed according to specifications in the plan. If wash racks are used, they should be installed according to manufacturer's specifications.

AGGREGATE: 2" to 6" crushed Ballast Rock.

ENTRANCE DIMENSIONS: The aggregate layer must be at least 6 inches thick. It must extend the full width of the vehicular ingress and egress area. The length of the entrance must be at least 50 feet.

MAINTENANCE: The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with 2-inch stone, as conditions demand, and repair and/or clean out any structures used to trap sediment. All materials spilled, dropped, washed or tracked from vehicles onto roadway or into storm drains must be removed immediately.

RESTORATION: Access pads will be removed as soon as possible following construction activities and the area restored to pre-construction conditions.

FIGURE: 3

Typical Construction Entrance Pad

Cameron Pipeline Expansion Project

Docket No. PF12-12-000

ROAD CROSSING – SPOIL AREAS

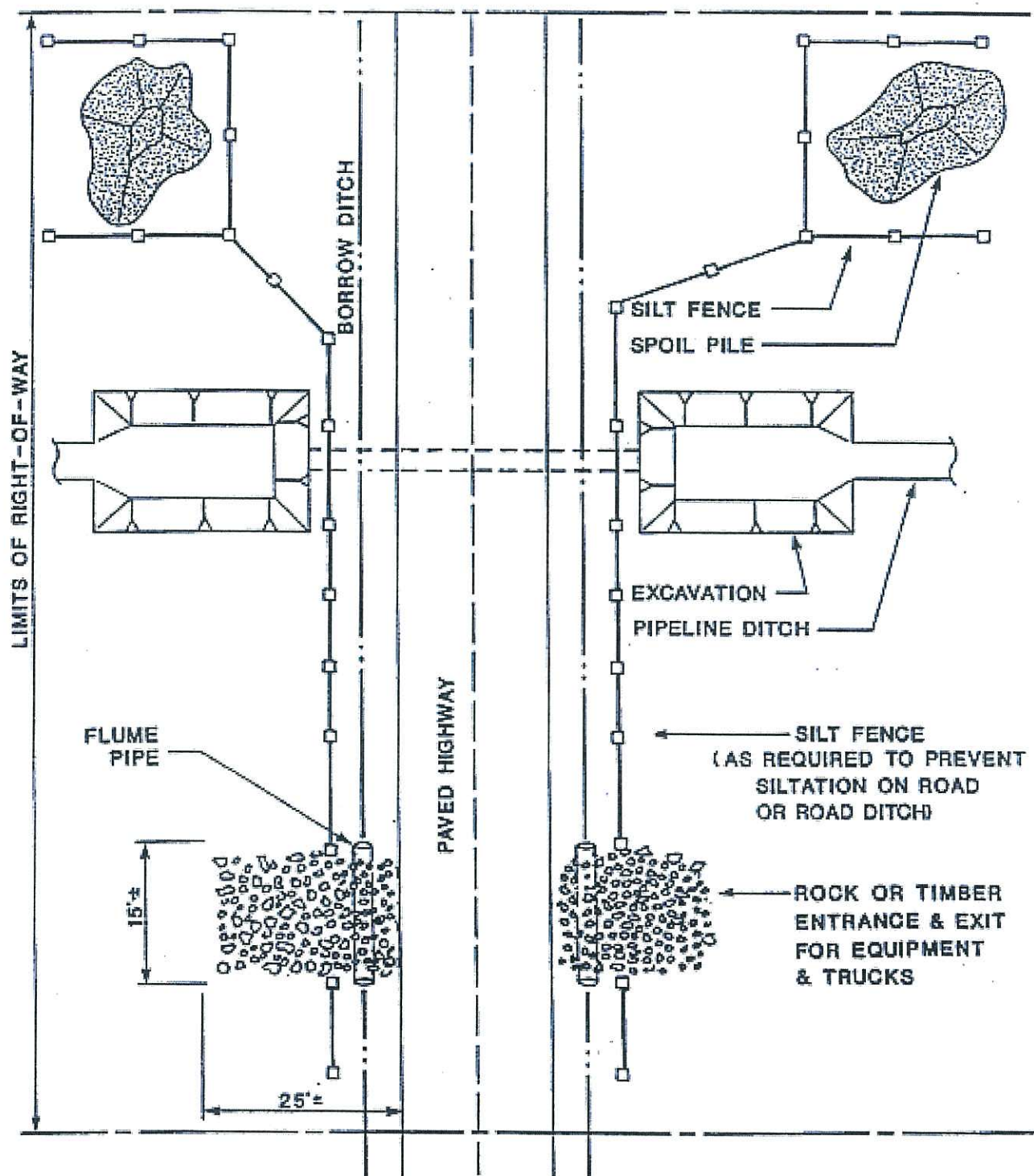
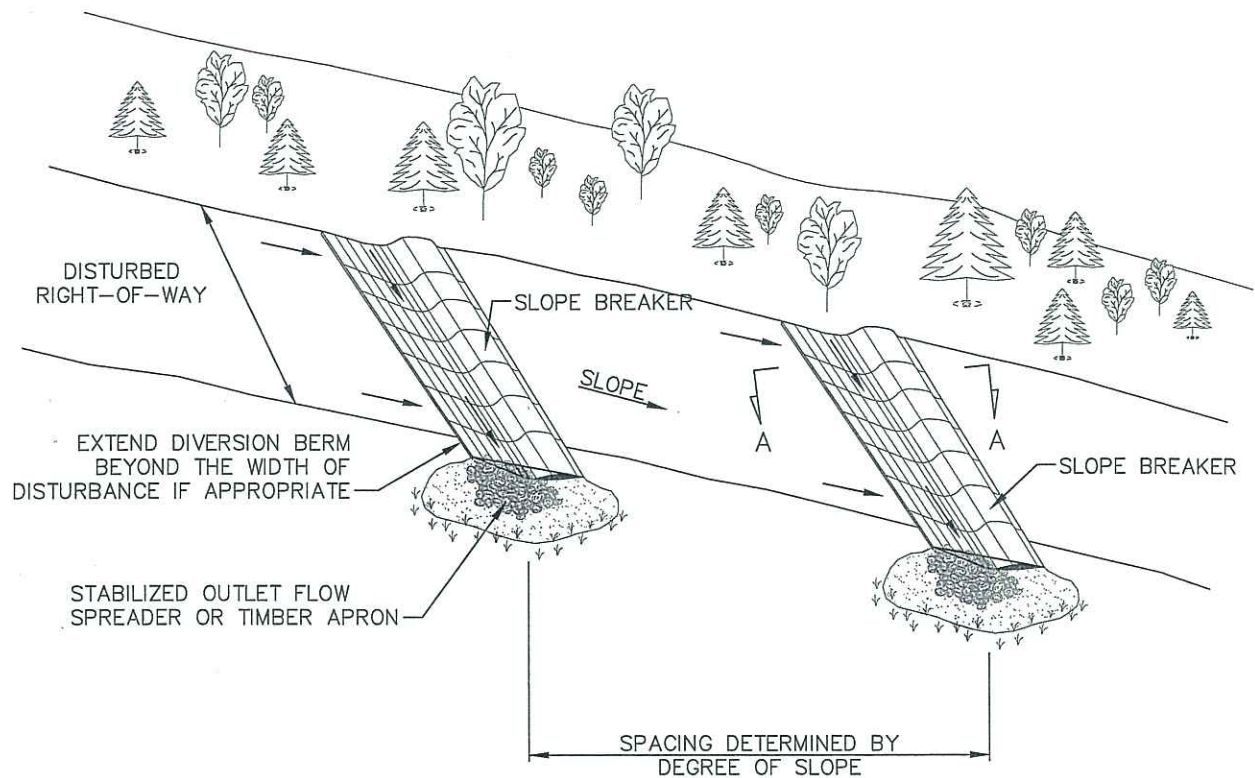


FIGURE: 4

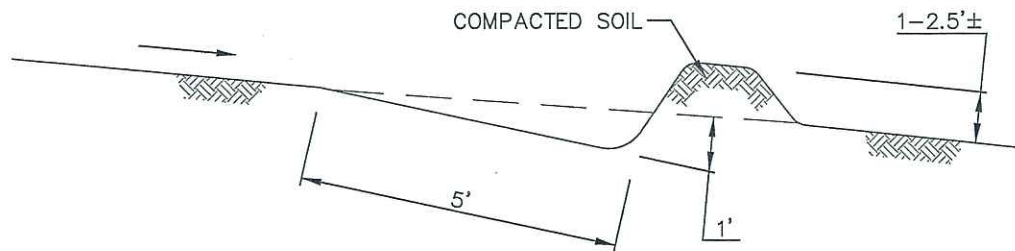
Road Crossing – Spoil Areas

Cameron Pipeline Expansion Project

Docket No. PF12-12-000



PLAN



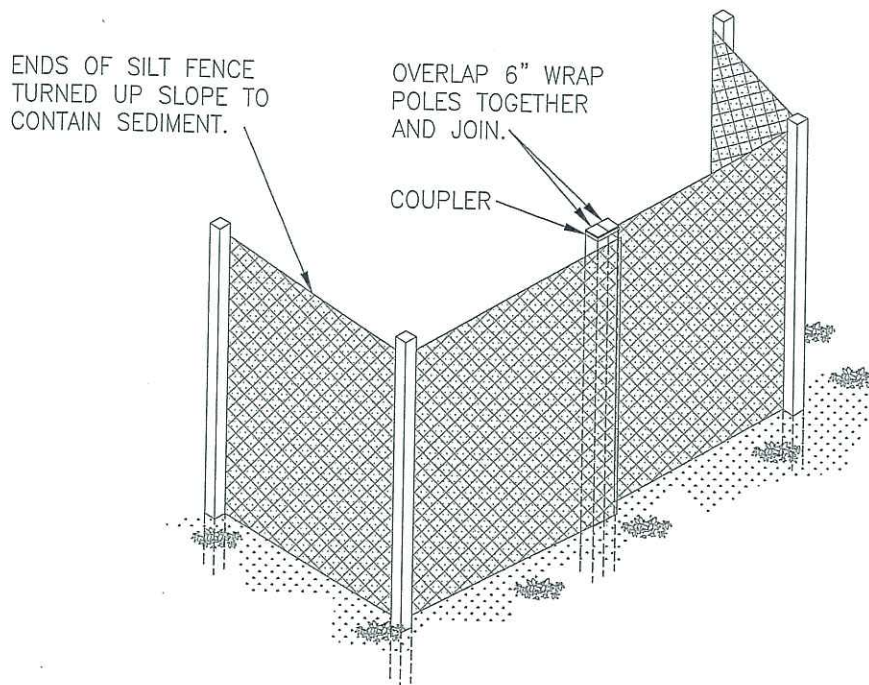
NOTES:

1. PERMANENT SLOPE BREAKERS TO PROVIDE POSITIVE DRAINAGE TO A STABILIZED OUTLET.
2. INSTALLATION SPECIFICATIONS TO BE MODIFIED BY THE PROJECT AS NECESSARY TO SUIT ACTUAL SITE CONDITIONS.
3. THE CONTRACTOR SHALL INSTALL TEMPORARY AND PERMANENT SLOPE BREAKERS ON SLOPES GREATER THAN APPROXIMATELY 5% ON ALL DISTURBED LANDS AT THE FOLLOWING RECOMMENDED SPACING:

SLOPE (%)	SPACING (FEET)
5-15	300
>15-30	200
>30	100

FIGURE: 5

Temporary/Permanent Slope Breaker Detail
Cameron Pipeline Expansion Project
Docket No. PF12-12-000



PERSPECTIVE VIEW

NOT TO SCALE

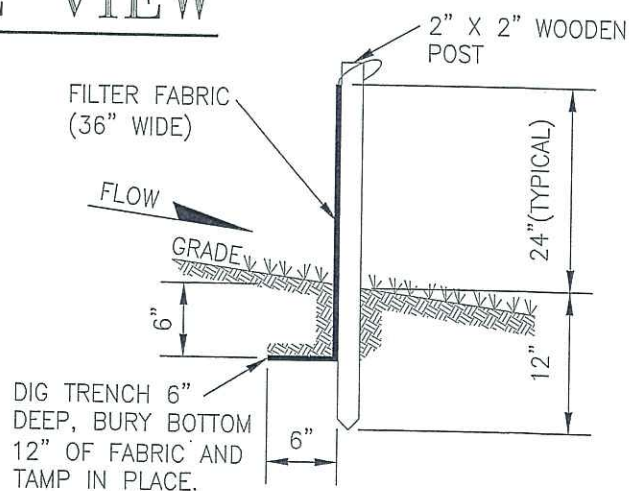
INSTALLATION:

Placement:

- Place along base of disturbed slopes or spoil piles where adjacent to environmental resource areas, wetlands, waterbodies or road crossings.
- Allow 6 feet spacing from toe of slope to for sediment collection.
- DO NOT INSTALL WITHIN AREAS OF HIGHLY CONCENTRATED FLOW.

Anchoring:

- Trench wherever possible.
- Use sandbag or backfill with compacted soils where trenching is not possible due to large roots or rocky soils.



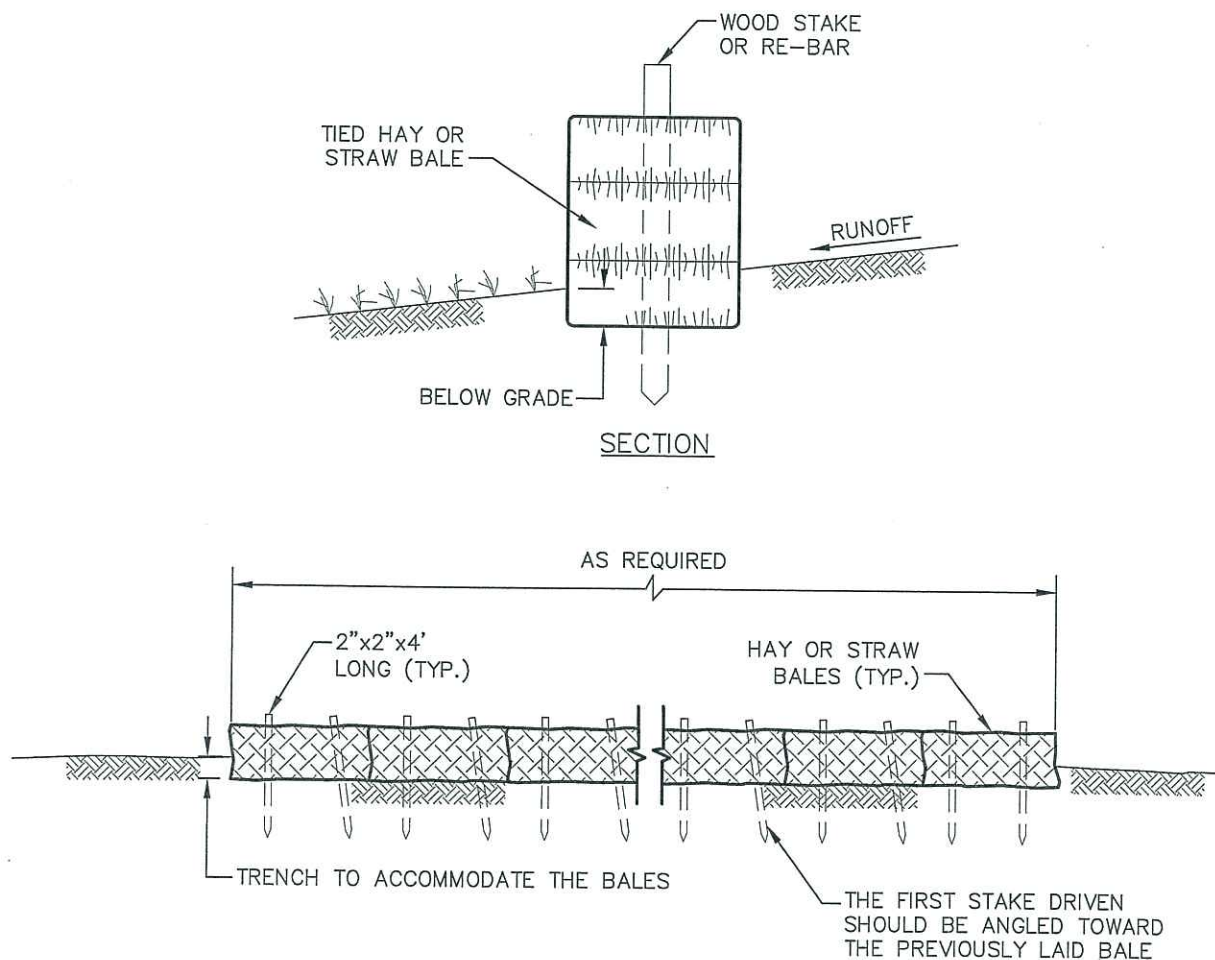
MAINTENANCE:

Inspection:

- Daily in areas of active construction.
- Weekly in areas with no construction.
- Within 24 hours following rainfall event of greater than 0.75 inches.

Repair or replace fence as needed to ensure sediment is not bypassing or undercutting fence.

Remove accumulated sediment, to an upland area, when it reaches greater than $\frac{1}{2}$ the height of the fence.



INSTALLATION:

Placement:

- Bales should be embedded in the soil 4 to 6 inches and ends should be tightly abutted
- Place along base of disturbed slopes or spoil piles where adjacent to environmental resource areas, wetlands, waterbodies or road crossings.
- Allow 6 feet spacing from toe of slope to for sediment collection.
- **DO NOT INSTALL WITHIN AREAS OF HIGHLY CONCENTRATED FLOW.**

Anchoring:

- Use native soils as backfill on up-slope side of bales to key in the bottom of bales.
- Use two stakes per bale to anchor into ground
- When used with silt fence, bales should be placed upslope of fence and do not need to be embedded.

MAINTENANCE:

Inspection:

- Daily in areas of active construction.
- Weekly in areas with no construction.
- Within 24 hours following rainfall event of greater than 0.75 inches.

Replace bales as needed to ensure sediment is not bypassing or undercutting fence.

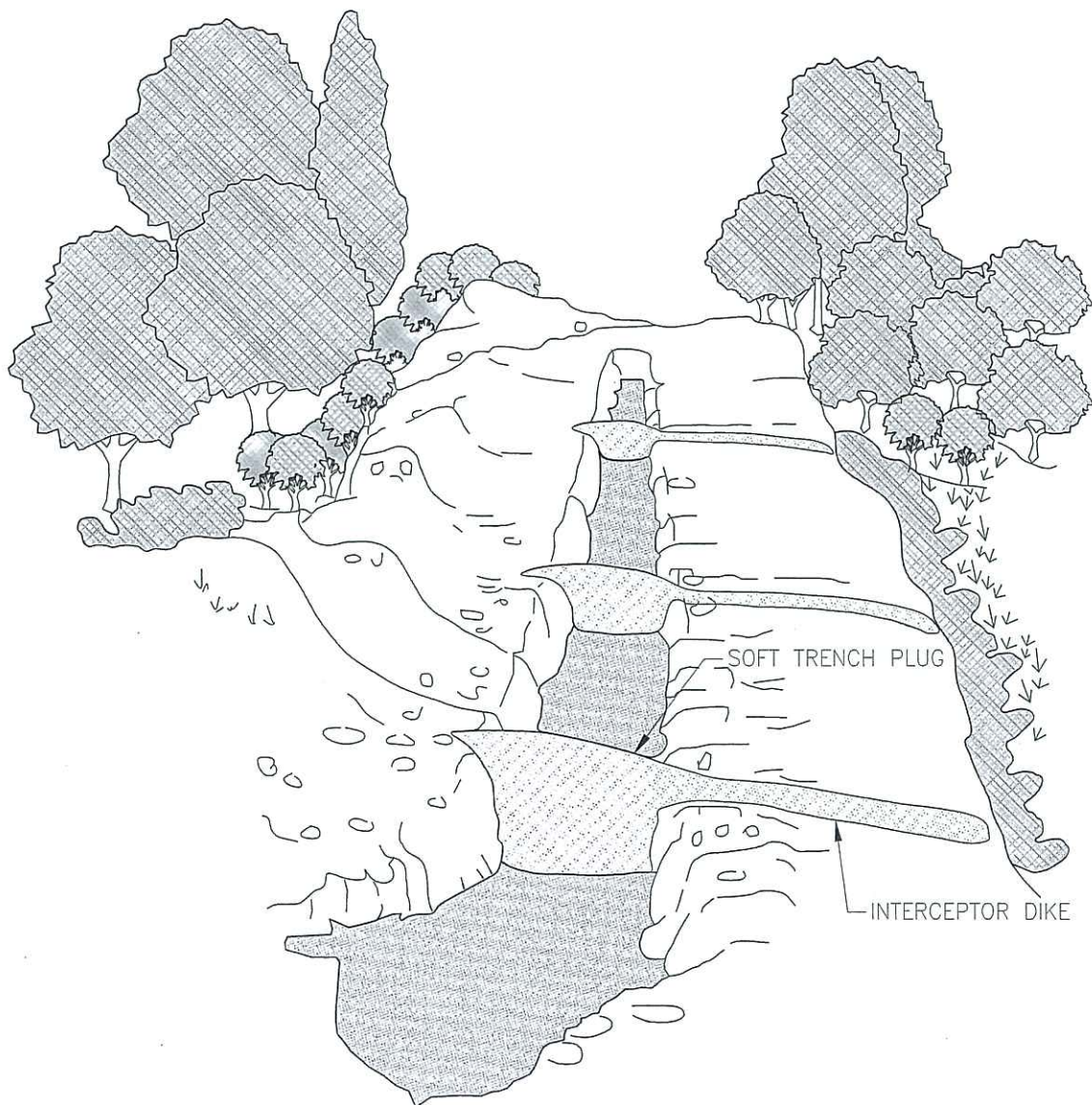
Remove accumulated sediment, to an upland area, when it reaches greater than $\frac{1}{2}$ the height of the bales.

FIGURE: 7

Hay Bale Detail

Cameron Pipeline Expansion Project

Docket No. PF12-12-000

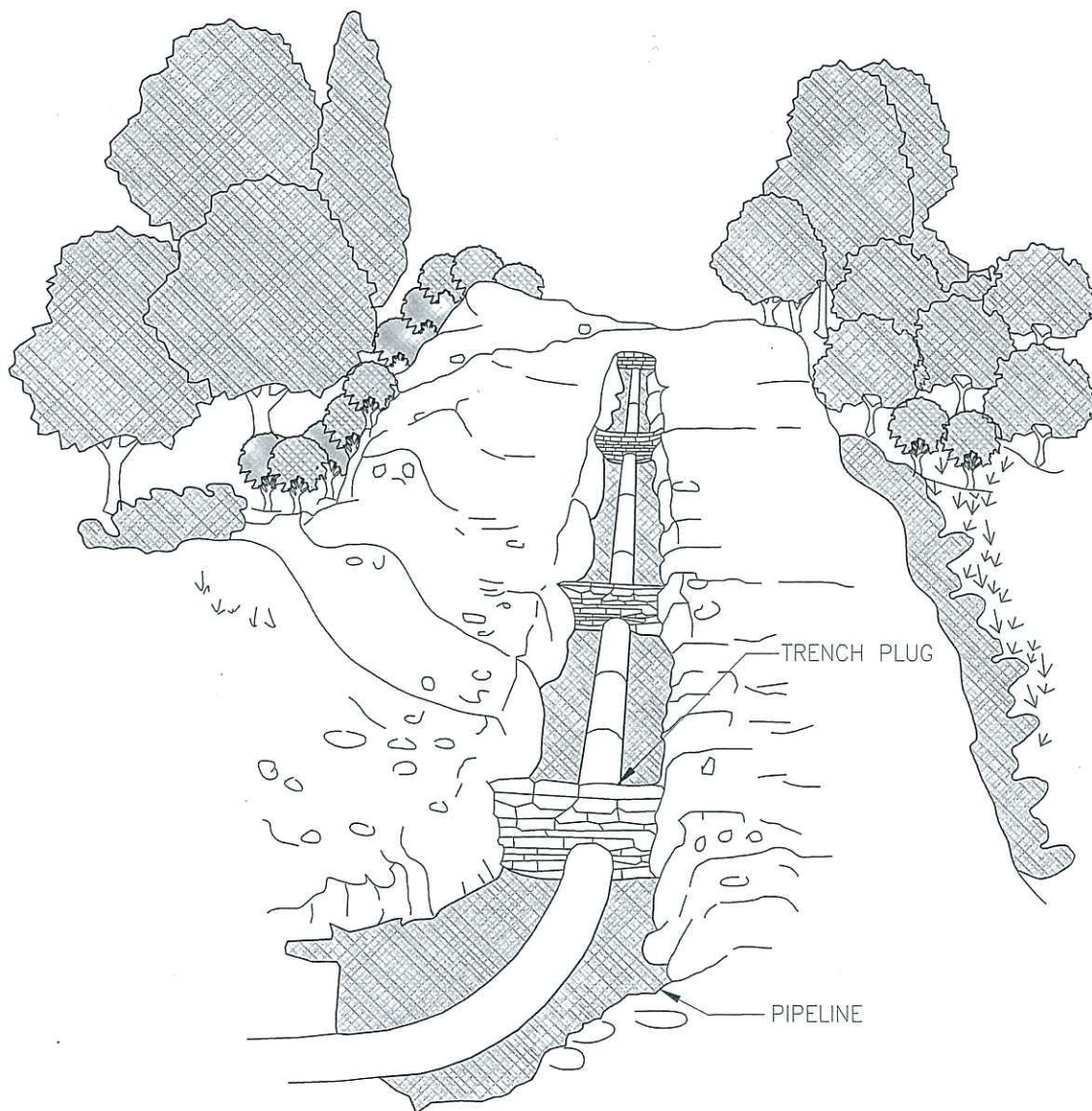


NOTES:

- Temporary trench plugs may be used in conjunction with diversion dikes to prevent water from overflowing into sensitive areas.
- Divert trench overflow to a well vegetated location off the right-of-way or install appropriate energy dissipating device.

FIGURE: 8

Temporary Trench Breaker
Cameron Pipeline Expansion Project
Docket No. PF12-12-000



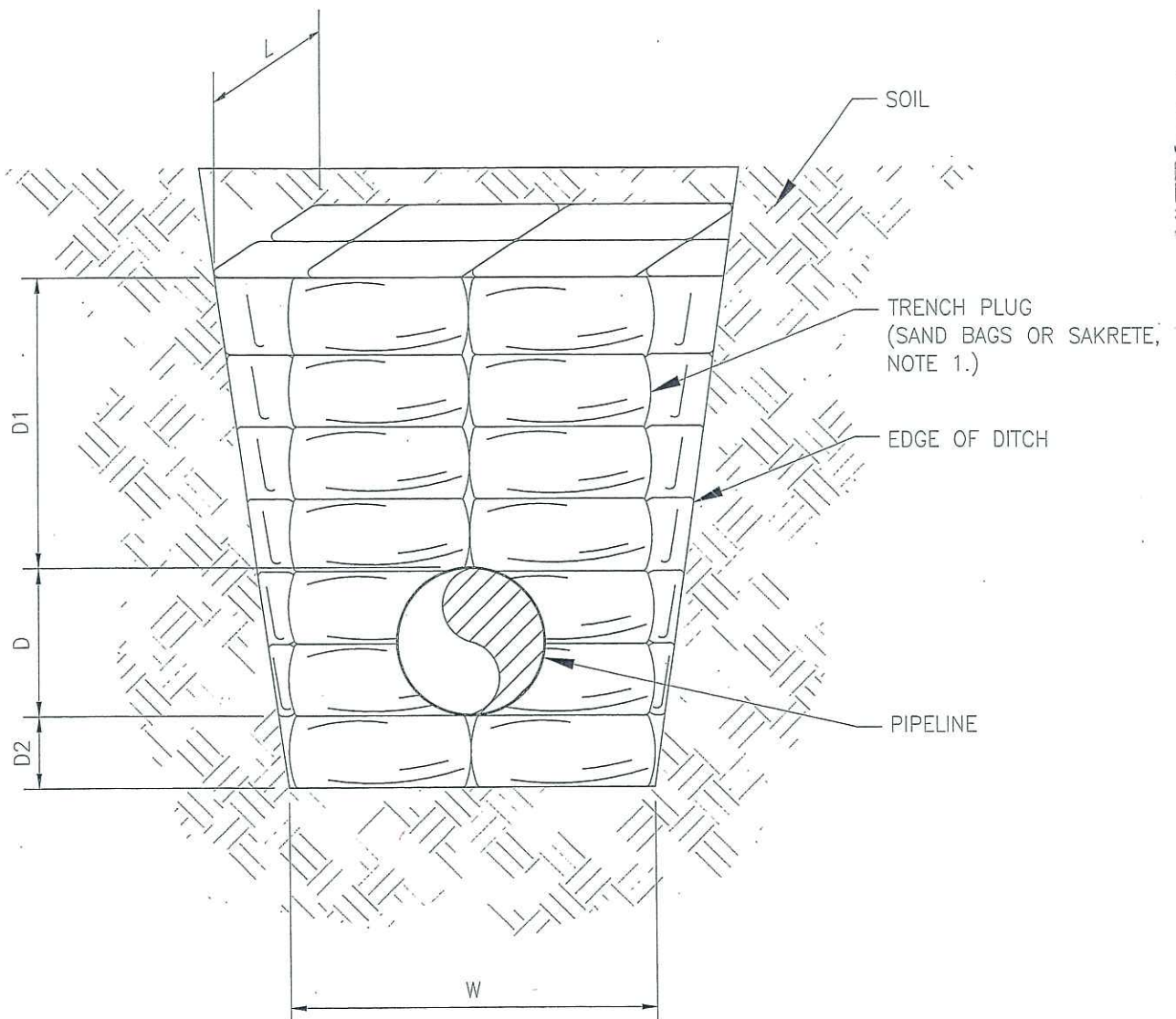
NOTES:

<u>SLOPE (%)</u>
5-15
>15-30
>30

<u>SPACING (FT)</u>
300
200
100

FIGURE: 9

Permanent Trench Breaker
Cameron Pipeline Expansion Project
Docket No. PF12-12-000



LEGEND:

D	=	PIPE DIAMETER
D1	=	APPROXIMATELY 24"
D2	=	APPROXIMATELY 6" (8" MIN. IN ROCK)
D3	=	APPROXIMATELY 12"
W	=	D + 2 TO 4 FEET
L	=	APPROXIMATELY 18" - 24"
D1+D3	=	36" MINIMUM

NOTES:

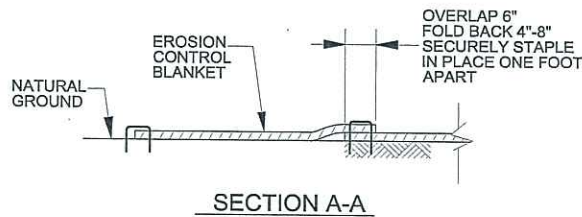
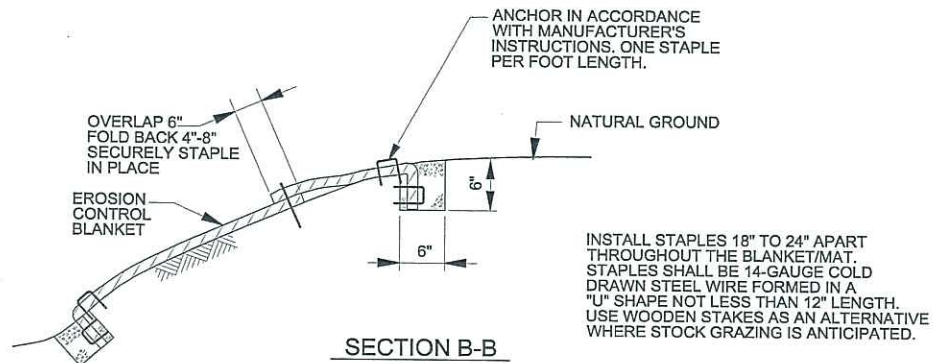
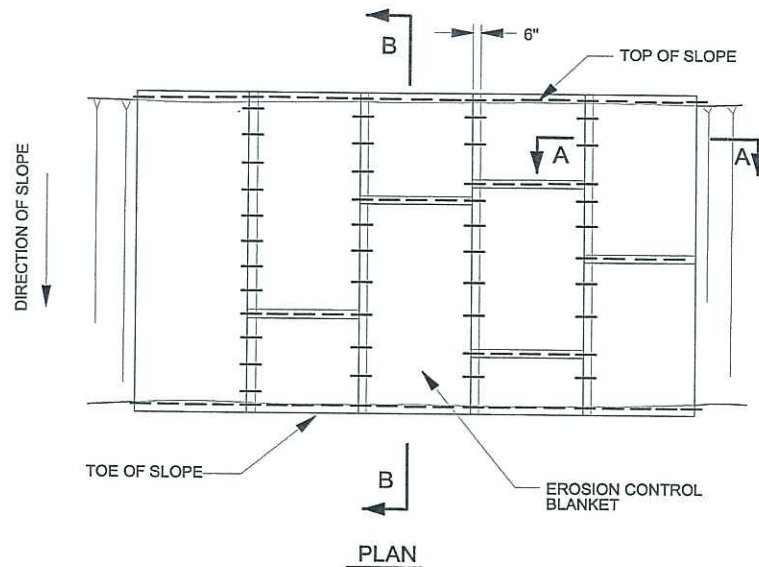
1. USE OF SAKRETE SHALL REQUIRE PRIOR COMPANY APPROVAL.

FIGURE: 10

Trench Plug Detail

Cameron Pipeline Expansion Project

Docket No. PF12-12-000



EMBANKMENT INSTALLATION

EROSION CONTROL MATTING

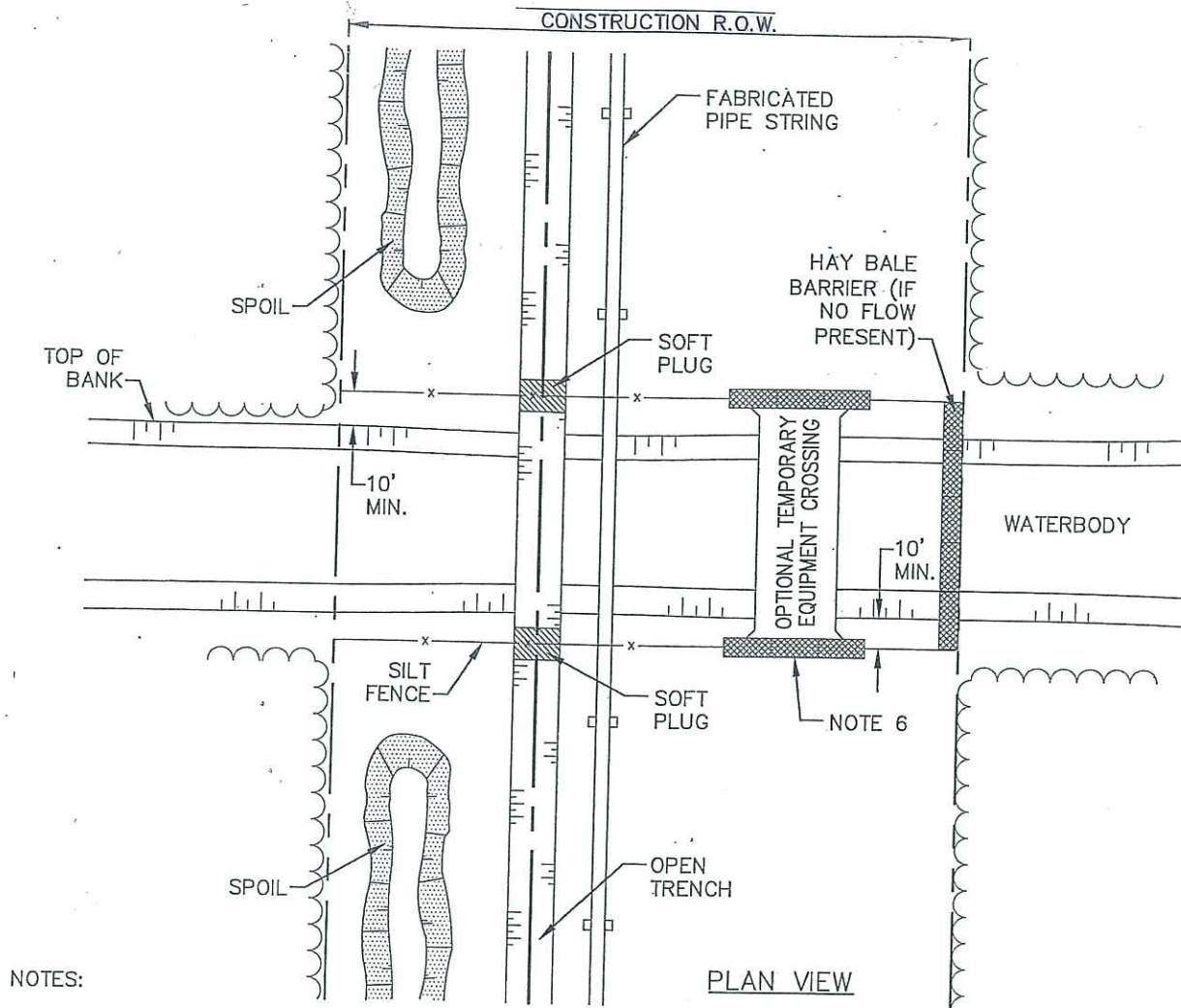
PERMANENT EROSION CONTROL MEASURE

FIGURE: 11

Erosion Control Fabric

Cameron Pipeline Expansion Project

Docket No. PF12-12-000



NOTES:

1. Method applies to crossing where no flowing water is present at the time of crossing or as otherwise shown on the construction drawings.
2. Contractor may "Mainline Through" the crossing or up to both sides of the crossing; string, weld, coat and weight (if necessary), using the mainline crew with the pipe skidded over the crossing.
3. No refueling of mobile equipment within approximately 100 feet of dry channel. Refuel stationary equipment per the spill prevention procedures outlined in section 11.
4. Installation of temporary equipment crossing is optional at the discretion of the Company.
5. In agricultural land, strip topsoil from soil storage area. Stockpile topsoil and spoil separately. Topsoil and spoil will not be stockpiled in the crossing channel and will be placed a minimum of 10 feet from crossing banks within the construction ROW.
6. Construct sediment barriers across the entire construction ROW following clearing and grading and maintain until construction of the crossing. Erosion control measures shall be reinstalled immediately following backfilling of trench and stabilization of banks. Barriers may be temporarily removed to allow construction activities but must be replaced by the end of each work day.
7. In-stream spoil to be stored out of the stream channel a minimum of 10 feet from high bank and within the construction ROW.
8. Backfill with native material
9. Restore crossing channel to approximate pre-construction profile and substrate.
10. Restore crossing banks to approximate original condition and stabilize with erosion control.

FIGURE: 12

Typical Open Cut Wet Crossing Method
Non-Flowing Waterbody
Cameron Pipeline Expansion Project
Docket No. PF12-12-000

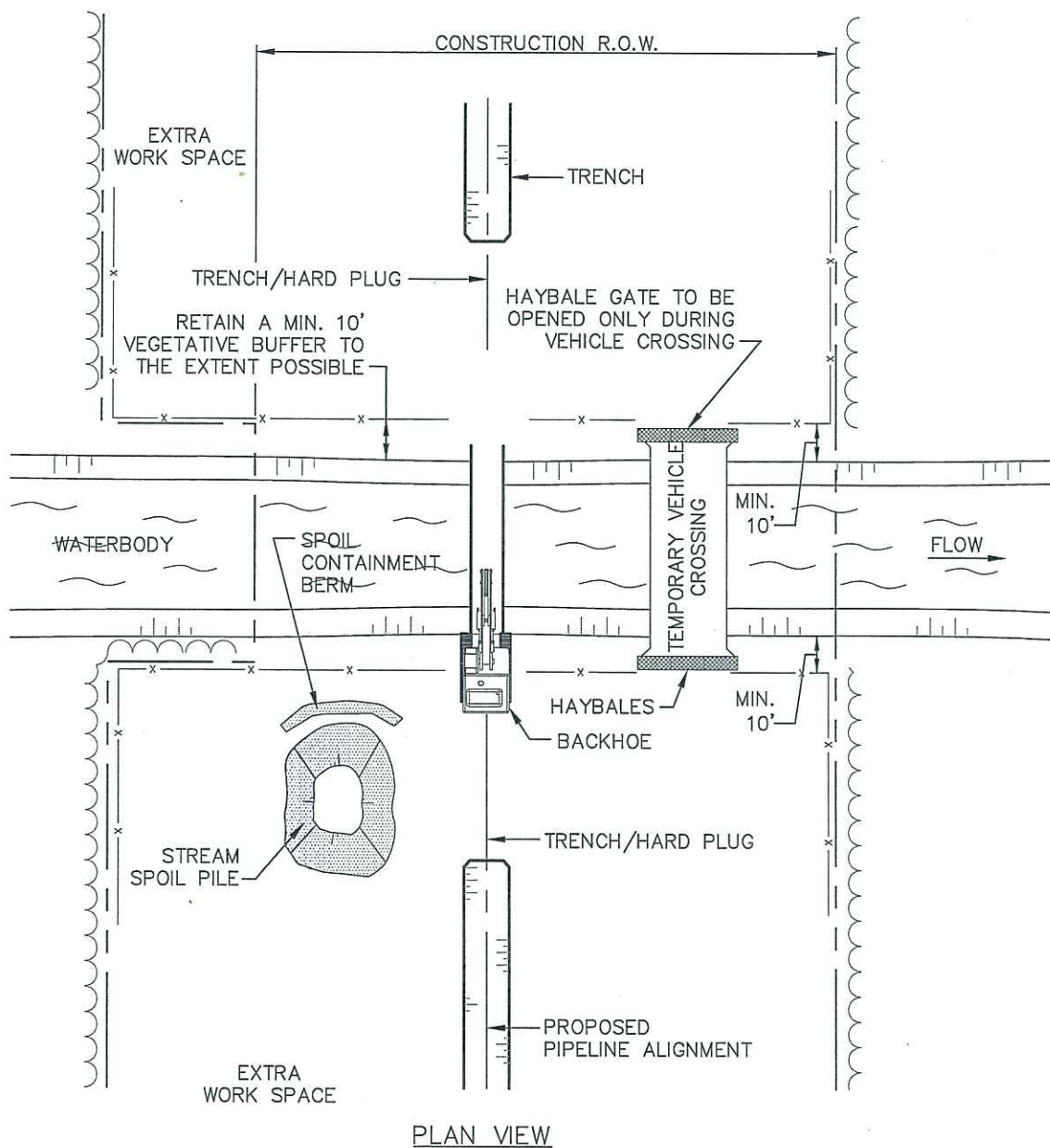
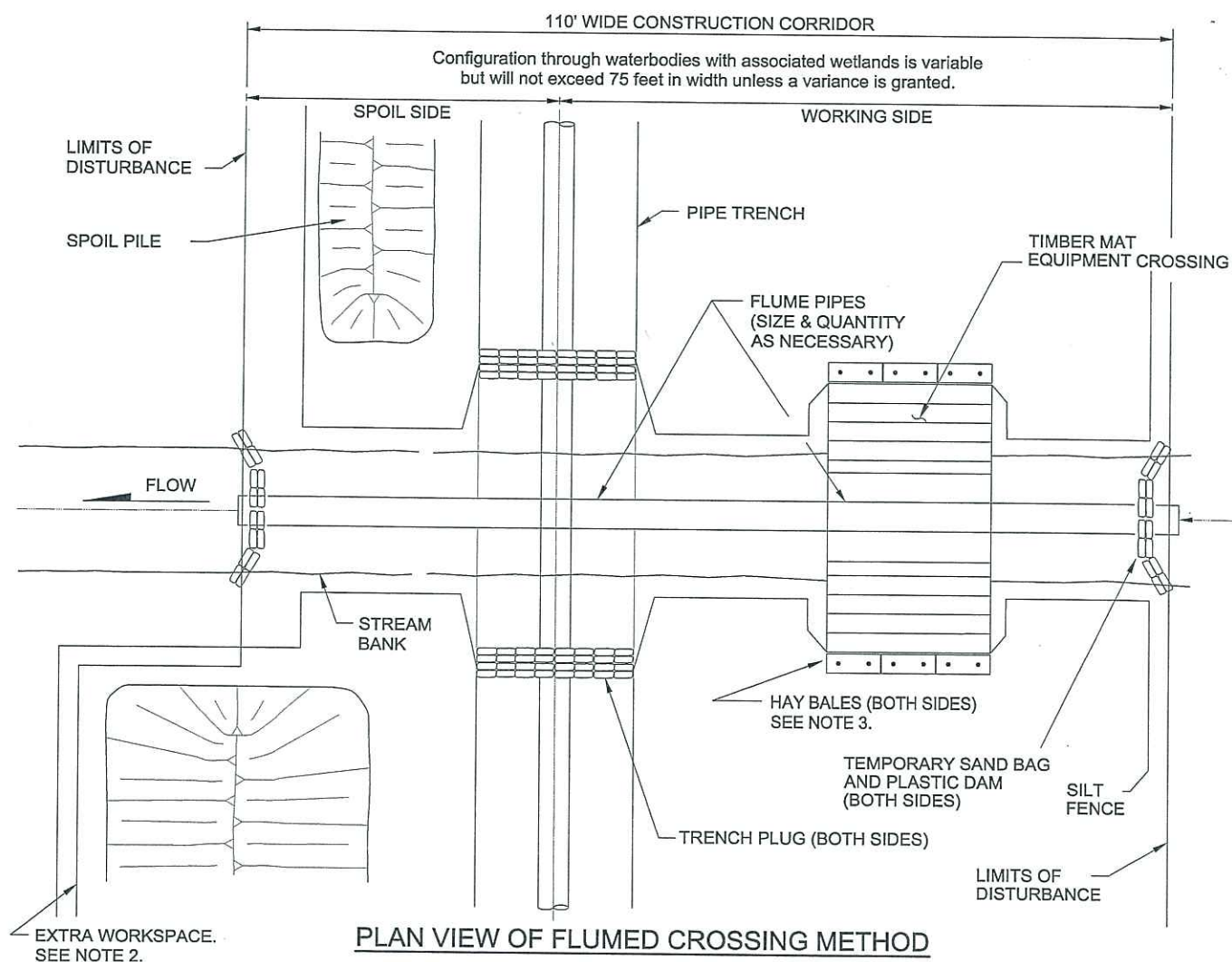


FIGURE: 13

Typical Open Cut Wet Crossing Method
Flowing Waterbody
Cameron Pipeline Expansion Project
Docket No. PF12-12-000



NOTES:

1. Trench width will vary due to soil conditions which are not known until actual construction takes place.
2. Extra workspace will be located 50 feet from edge of waterbody unless a variance is granted or the adjacent vegetation is actively cultivated as a rotated croplands. For extra workspace locations and dimensions see environmental alignment sheets.
3. Temporary erosion control measures must be replaced at the end of each working day.

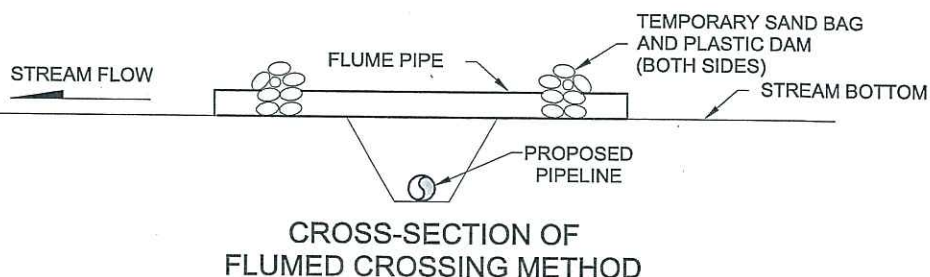
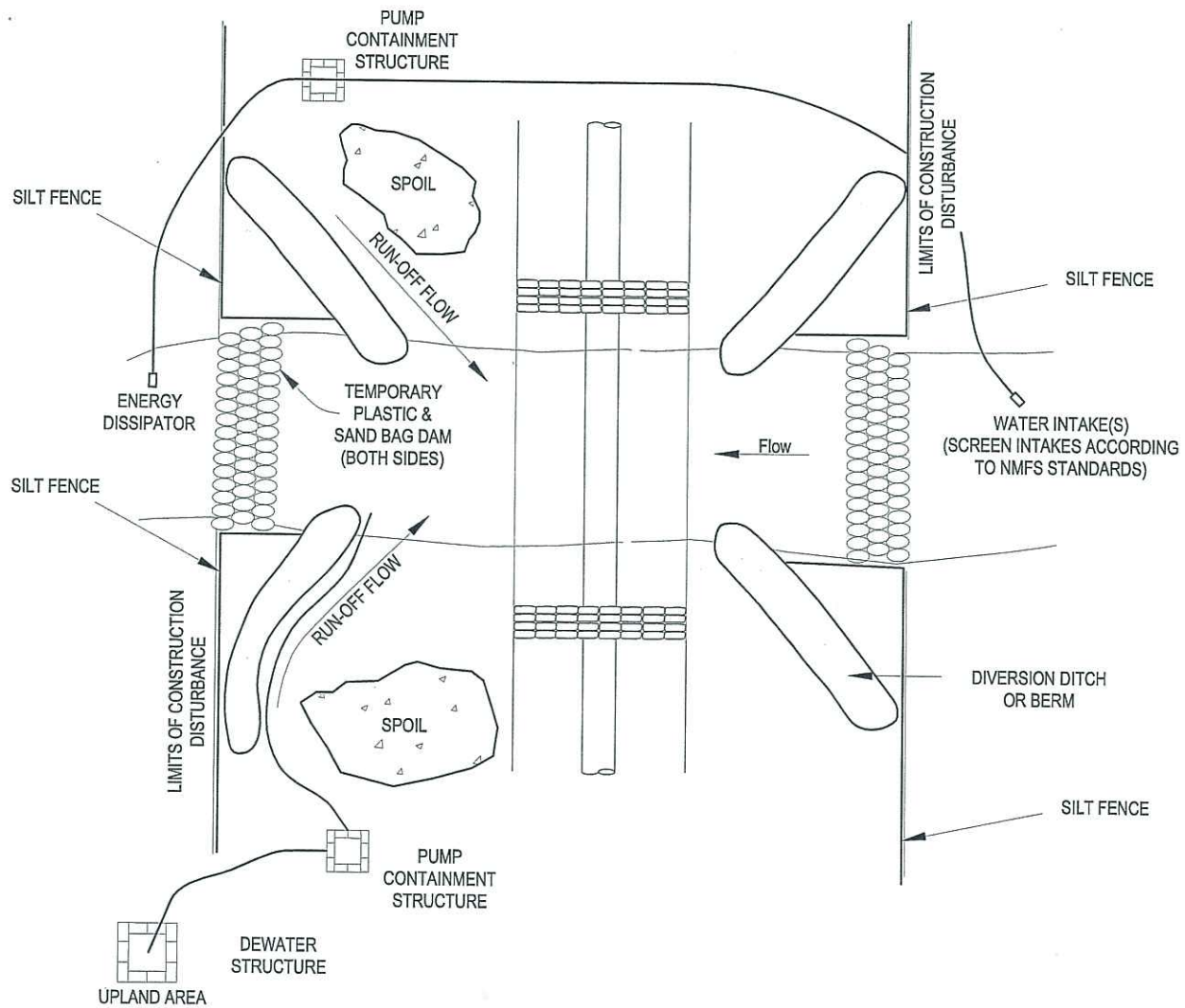


FIGURE: 14

Typical Flume Crossing Method
Cameron Pipeline Expansion Project
Docket No. PF12-12-000

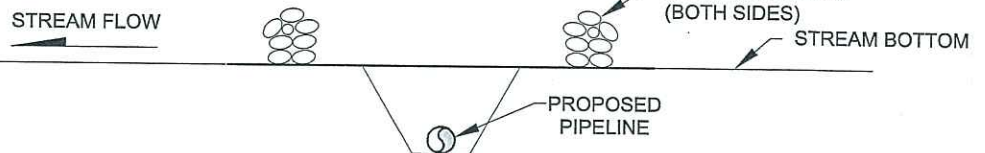
CONFIGURATION THROUGH WATERBODIES WITH ASSOCIATED WETLANDS IS VARIABLE
BUT WILL NOT EXCEED 75 FEET IN WIDTH UNLESS A VARIANCE IS GRANTED



PLAN VIEW OF DAM & PUMP CROSSING METHOD

NOTES:

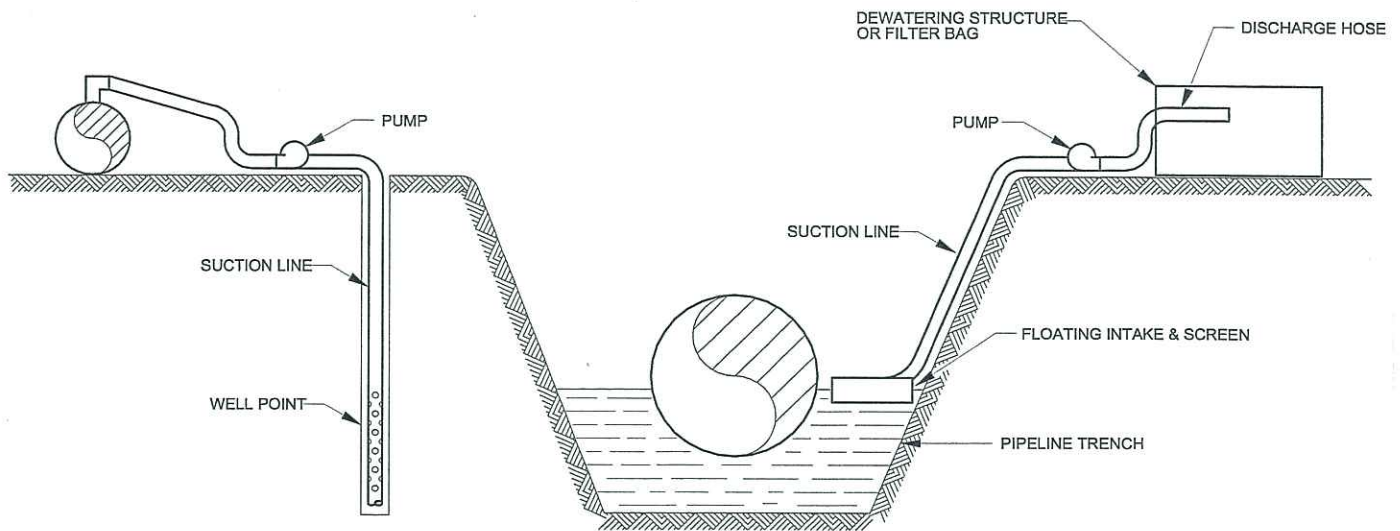
1. Trench width will vary due to soil conditions which are not known until actual construction takes place.
2. Extra workspace will be located 50 feet from edge of waterbody unless a variance is granted, for extraworkspace locations and dimensions see environmental alignment sheets.
3. Temporary erosion control measures must be replaced at the end of each working day.



**CROSS-SECTION OF
DAM & PUMP CROSSING METHOD**

FIGURE: 15

Typical Dam & Pump Crossing Method
Cameron Pipeline Expansion Project
Docket No. PF12-12-000

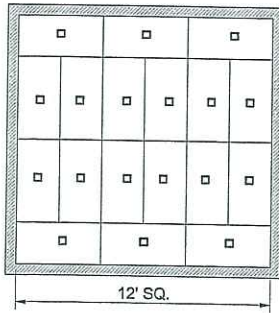


NOTES:

1. Dewatering measure/methods
 - a. Pump water to a filtering structure typically constructed with hay bales or geotextile and discharge as "sheet flow" out of structure. (see sht. 3)
 - b. Pump water into a filter bag. (see sht. 1)
 - c. Pump water to a settling tank and haul to a disposal site.
 - d. Pump water to a settling tank and discharge overland.
 - e. Transfer water to next section of trench.
 - f. Install well points and pump to filtering structure and discharge to drainage, channel or sheet flow.
 - g. Install well points and discharge sheet flow.
 - h. Dispose of water collected in tank or filtration structure by aeration through a sprinkler system.
2. Water pumped out of trench shall not be discharged into waterbodies or wetlands.
3. Pump shall be controlled so that discharge does not overflow dewatering structure.
4. Pump suction hose must not be allowed to settle the trench bottom. provisions must be made to elevate the suction hose to at least one foot above the bottom until bottom dewatering is necessary.

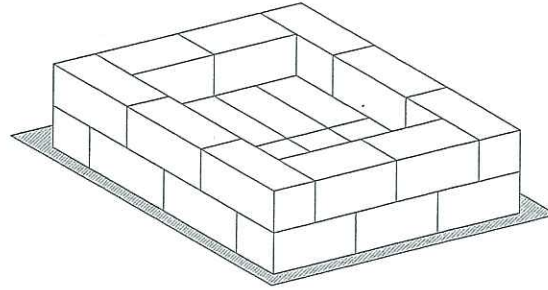
TRENCH DEWATERING

TEMPORARY EROSION CONTROL MEASURE



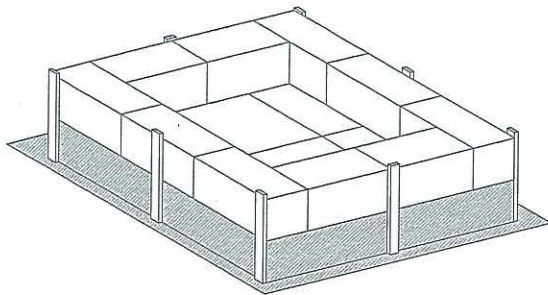
STEP 1

Arrange hay bales over filter fabric on level land tightly packed as shown to cover an area approximately 12' x 12'. Secure each haybale in place by driving rebar or a wooden stake through each of the hay bales.



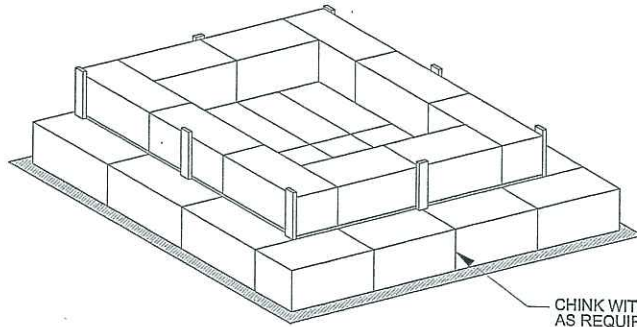
STEP 2

Install another layer of hay bales on the outer edge as shown.



STEP 3

Install filter fabric all around hay bale structure as shown.



STEP 4

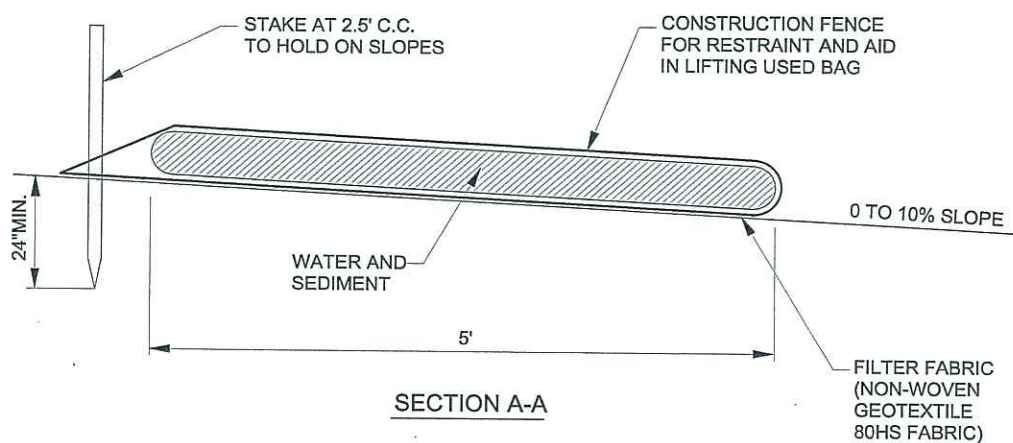
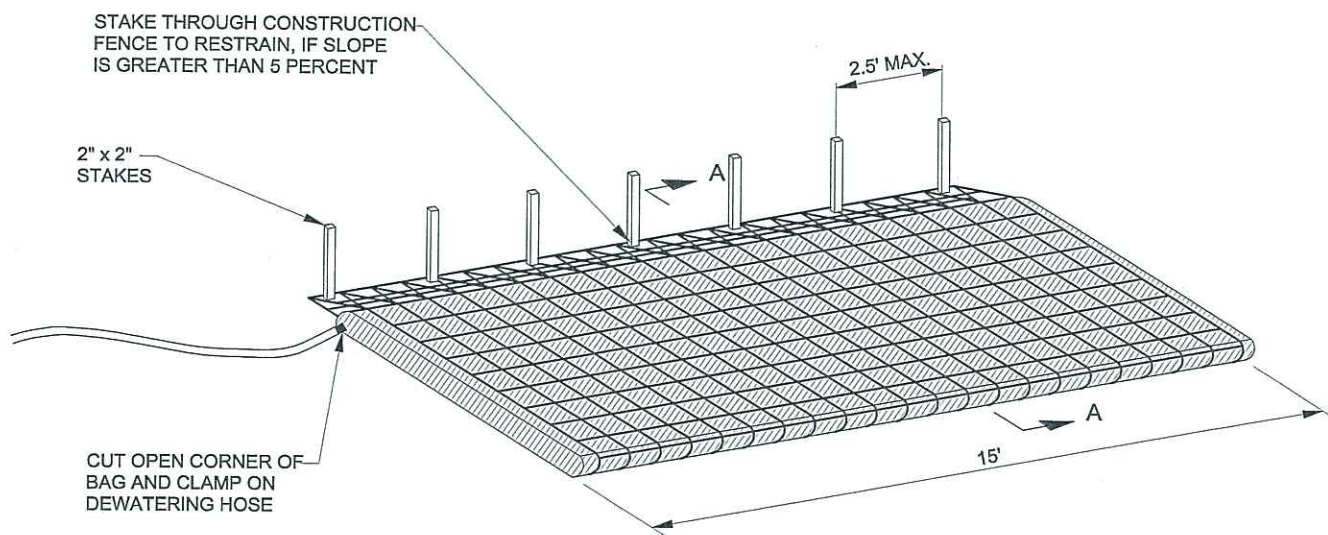
Install another layer of hay bales on the outside of the filter fabric and secure in place by driving rebar or a wooden stake through each of the outer hay bales.

NOTES:

1. Where possible structure shall be placed on a level, well vegetated site such that water will flow away from structure and any work areas, waterbodies or wetlands.
2. This measure shall be removed upon completion of the project. removal is not contingent upon establishment of permanent vegetation. material from bales may be scattered on right-of-way.
3. Contractor shall use certified noxious weed free hay or straw for structure.

TRENCH DEWATERING

TEMPORARY EROSION CONTROL MEASURE



NOTES:

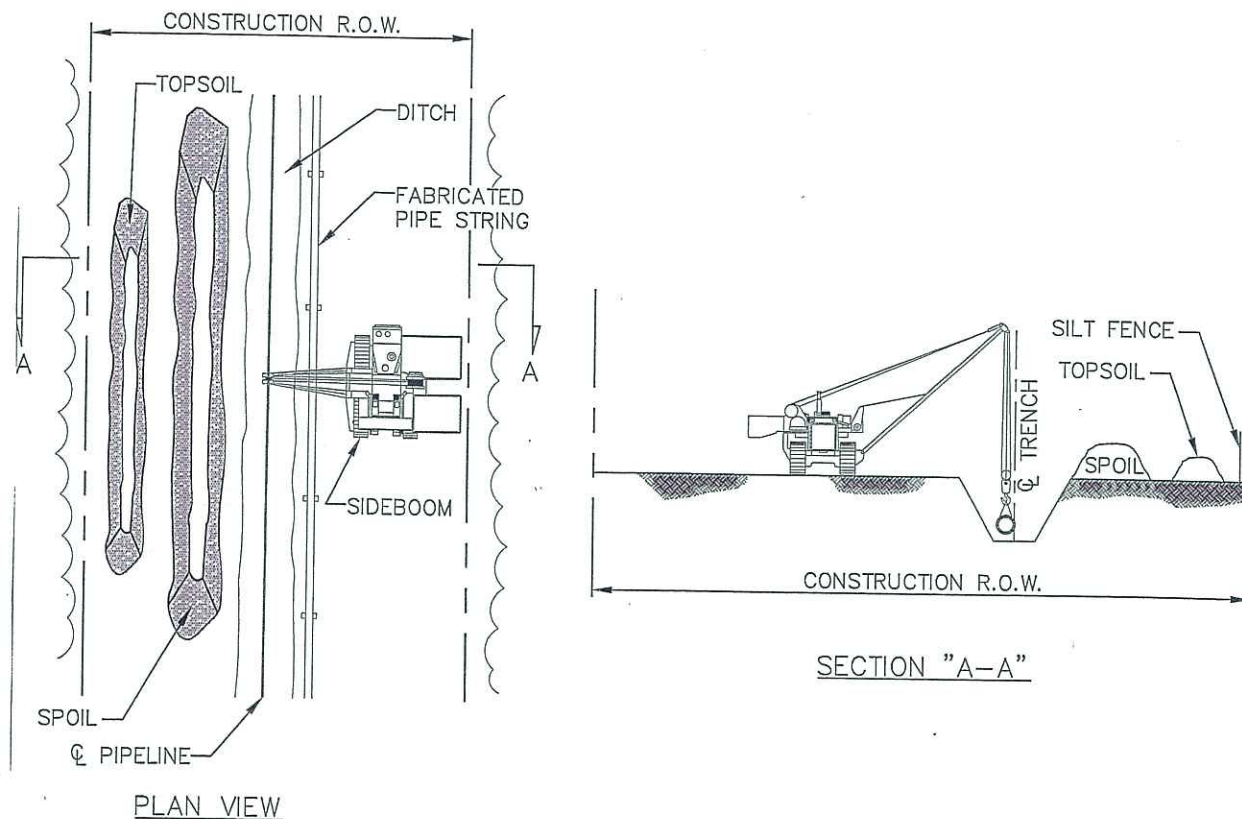
1. Filter bag shall be placed on a gently sloping or level, well graded vegetated site such that water will flow away from device, any work areas, waterbodies or wetlands.
2. The filter bag must be staked in place and secured to the pump discharge line.
3. Filter bag shall not be used for discharge flows greater than 300 gpm.
4. Device shall be removed and disposed of after bag is filled with sediment. sediment from bag shall be spread in an upland area.

TRENCH DEWATERING

TEMPORARY EROSION CONTROL MEASURE

FIGURE: 18

Trench Dewatering – Filter Bag
Cameron Pipeline Expansion Project
Docket No. PF12-12-000

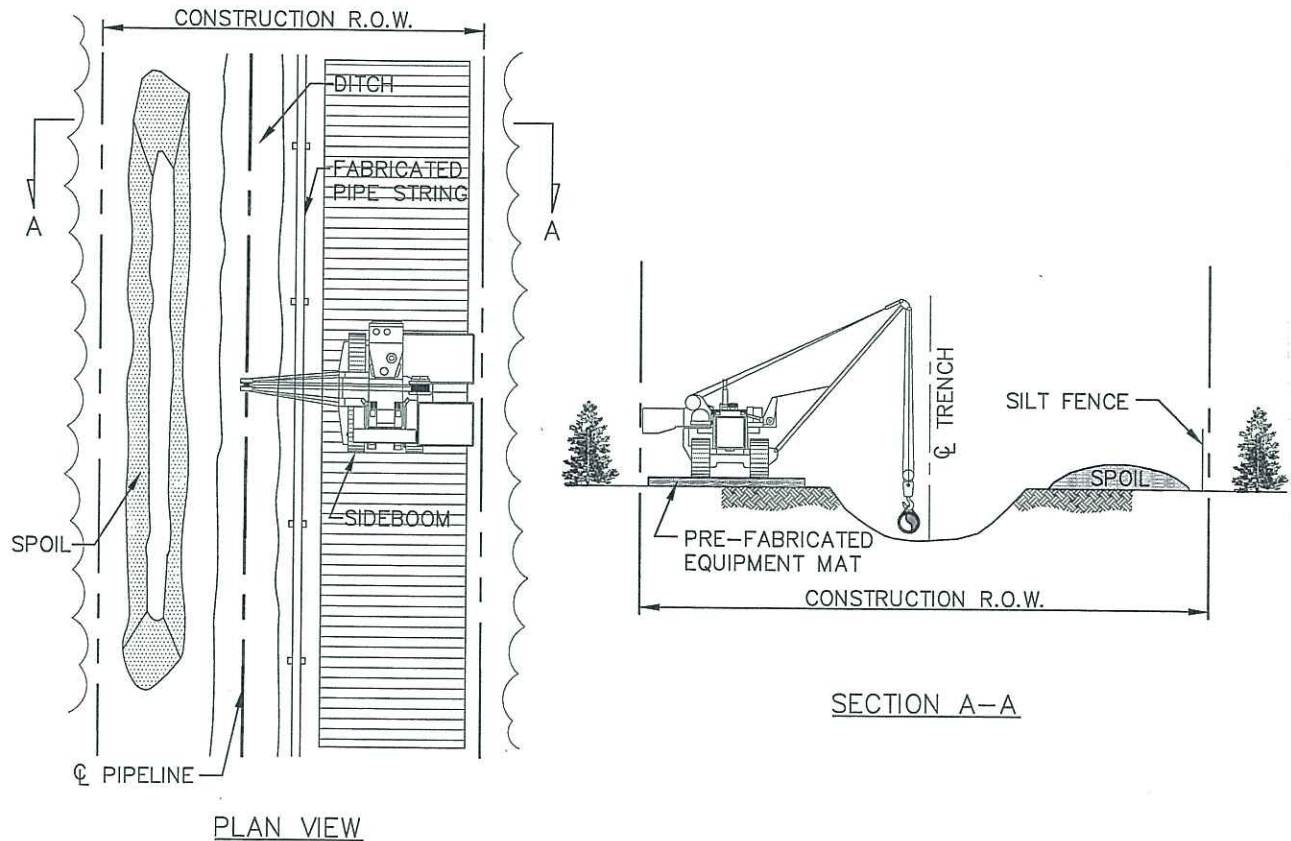


CONSTRUCTION PROCEDURES:

1. IF A WETLAND IS BEING CULTIVATED AND BEING FARMED, NO WETLAND CONSTRUCTION PROCEDURES ARE REQUIRED.
2. FLAG WETLAND BOUNDARIES PRIOR TO CLEARING.
3. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS APPROXIMATELY 100 FEET BACK FROM WETLAND BOUNDARY. REFUEL STATIONARY EQUIPMENT AS PER THE PROJECT'S SPILL PREVENTION PROCEDURES.
4. INSTALL TEMPORARY SLOPE BREAKER UPSLOPE WITHIN 100 FEET OF WETLAND BOUNDARY IF DIRECTED BY THE PROJECT.
5. CONSTRUCT WHEN DRY, IF POSSIBLE. IF SITE BECOMES WET AT TIME OF TRENCHING, AVOID SOIL COMPACTION BY UTILIZING TIMBER RIP-RAP OR PREFABRICATED EQUIPMENT MATS.
6. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS (STRAW BALES AND/OR SILT FENCE) AT DOWN SLOPE EDGE OF RIGHT-OF-WAY ALONG WETLAND EDGE IF EVIDENT, OTHERWISE INSTALL BARRIER ON BOTH EDGES.
7. RESTRICT ROOT GRUBBING TO ONLY THAT AREA OVER THE DITCHLINE AND REMOVE STUMPS FROM WETLAND FOR DISPOSAL.
8. CONDUCT TRENCH LINE TOPSOIL STRIPPING (IF TOPSOIL IS NOT SATURATED). SALVAGE TOPSOIL TO ACTUAL DEPTH OR A MAXIMUM DEPTH OF 12 INCHES.
9. TRENCH THROUGH WETLANDS.
10. PIPE SECTION TO BE FABRICATED WITHIN THE WETLAND AND ADJACENT TO ALIGNMENT, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN.
11. LOWER-IN PIPE. PRIOR TO BACKFILLING TRENCH, IF REQUIRED, TRENCH PLUGS SHALL BE INSTALLED AS REQUIRED. BACKFILL TRENCH.
12. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.
13. IF UTILIZED, REMOVE TIMBER MATS OR PRE-FABRICATED MATS FROM WETLANDS UPON COMPLETION.

FIGURE: 19

Dry Wetland Crossing Method
Cameron Pipeline Expansion Project
Docket No. PF12-12-000



CONSTRUCTION PROCEDURES:

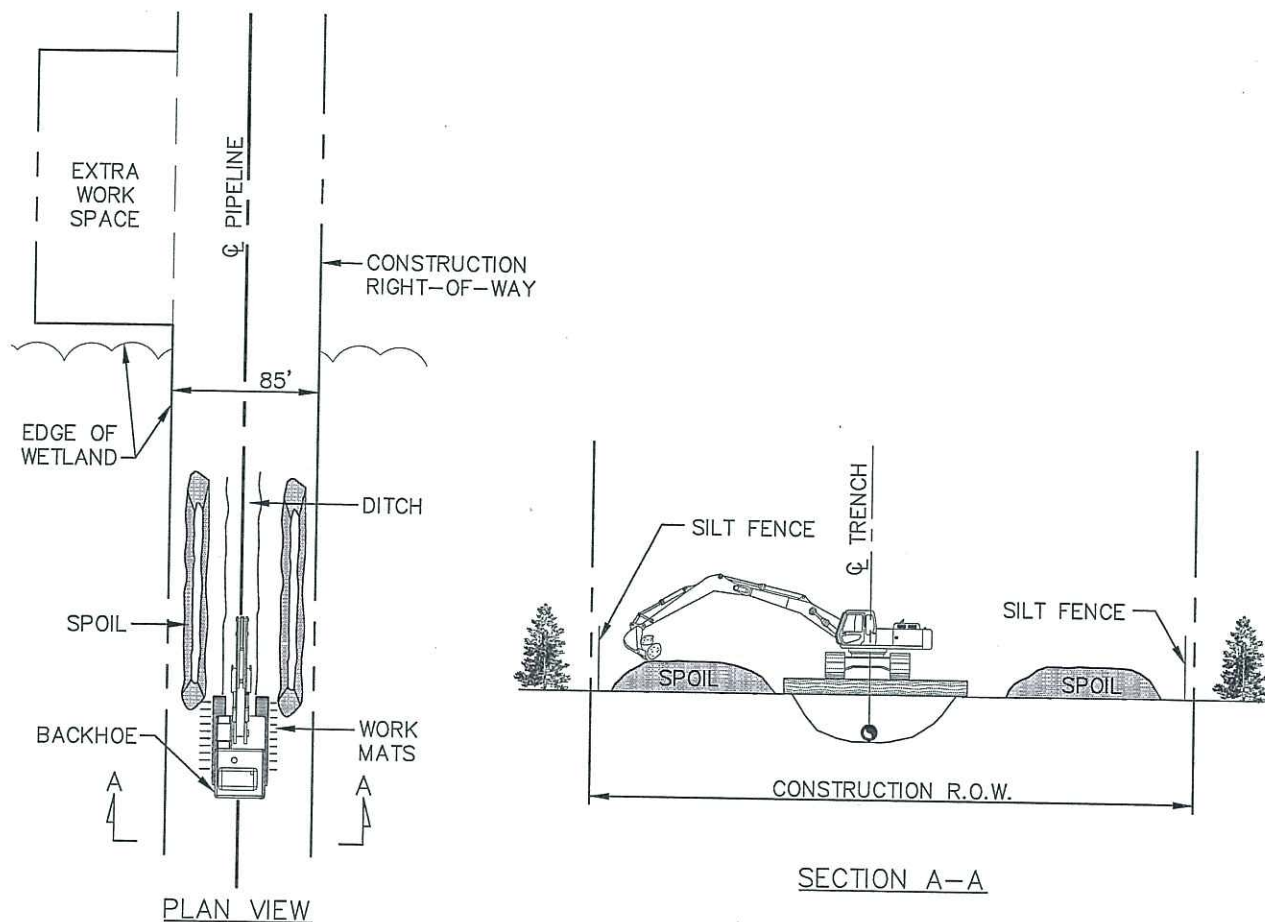
1. FLAG WETLAND BOUNDARIES PRIOR TO CLEARING.
2. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY. REFUEL STATIONARY EQUIPMENT AS PER THE PROJECT'S SPILL PREVENTION PROCEDURES.
3. INSTALL TEMPORARY SLOPE BREAKER UPSLOPE WITHIN 100 FEET OF WETLAND BOUNDARY IF DIRECTED BY THE PROJECT.
4. INSTALL TIMBER MATS/RIPRAP THROUGH ENTIRE WETLAND AREA. EQUIPMENT NECESSARY FOR RIGHT-OF-WAY CLEARING MAY MAKE ONE (1) PASS THROUGH THE WETLAND BEFORE MATS ARE INSTALLED.
5. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS (STRAW BALES AND/OR SILT FENCE) AT DOWNSLOPE EDGE OF RIGHT-OF-WAY AND ALONG WETLAND EDGE AS REQUIRED.
6. RESTRICT ROOT GRUBBING TO ONLY THAT AREA OVER THE DITCHLINE AND DITCH SPOIL AREAS AND REMOVED FROM WETLAND FOR DISPOSAL.
7. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
8. LEAVE HARD PLUGS AT EDGE OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
9. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND AND ADJACENT TO ALIGNMENT, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN.
10. TRENCH THROUGH WETLANDS.
11. LOWER-IN PIPE, INSTALL TRENCH PLUGS AT WETLAND EDGES AS REQUIRED AND BACKFILL IMMEDIATELY.
12. REMOVE TIMBER MATS OR PRE-FABRICATED MATS FROM WETLAND UPON COMPLETION.
13. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.

FIGURE: 20

Typical Wetland Crossing Method

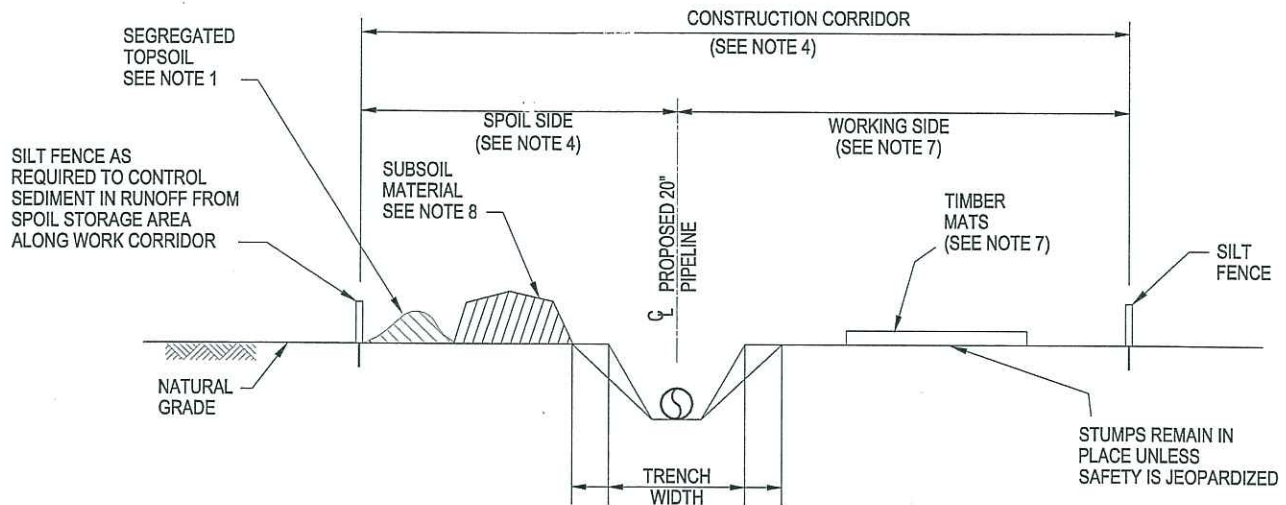
Cameron Pipeline Expansion Project

Docket No. PF12-12-000



CONSTRUCTION PROCEDURES:

1. FLAG WETLAND BOUNDARIES PRIOR TO CLEARING.
2. NO REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN APPROXIMATELY 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY. REFUEL STATIONARY EQUIPMENT AS PER THE PROJECT'S SPILL PREVENTION PROCEDURES.
3. INSTALL TEMPORARY SLOPE BREAKER UPSLOPE WITHIN 100 FEET OF WETLAND BOUNDARY AS DIRECTED BY THE PROJECT.
4. RESTRICT ROOM GRUBBING TO ONLY THE AREA OVER THE DITCHLINE.
5. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
6. UTILIZE AMPHIBIOUS EXCAVATORS (PONTON MOUNTED BACKHOES) OR TRACKED BACKHOES SUPPORTED BY FABRICATED TIMBER MATS OR FLOATS TO EXCAVATE TRENCH. IF FABRICATED TIMBER MATS ARE USED FOR STABILIZATION, THE BACKHOE SHALL GRADUALLY MOVE ACROSS THE WETLAND BY MOVING THE MAT FROM IMMEDIATELY BEHIND TO IMMEDIATELY IN FRONT OF THE BACKHOE'S PATH.
7. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS (STRAW BALES AND/OR SILT FENCE) AT EDGE OF RIGHT-OF-WAY AND ALONG WETLAND EDGE IF PRACTICAL.
8. FABRICATE PIPE IN STAGING AREA OUTSIDE THE WETLAND IN THE EXTRA WORK SPACE AS INDICATED ON THE CONSTRUCTION DRAWINGS.
9. LEAVE HARD PLUGS AT THE EDGE OF THE WETLAND UNTIL JUST PRIOR TO PIPE PLACEMENT.
10. FLOAT PIPE IN PLACE, LOWER-IN, INSTALL TRENCH PLUGS AT WETLAND EDGES WHERE REQUIRED AND BACKFILL IMMEDIATELY.
11. REMOVE TIMBER MATS OR PRE-FABRICATED MATS OF NON-NATIVE MATERIAL FROM WETLANDS UPON COMPLETION.
12. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
13. THE CONSTRUCTION RIGHT-OF-WAY FOR THIS TYPE OF CONSTRUCTION SHALL BE 85 FEET.

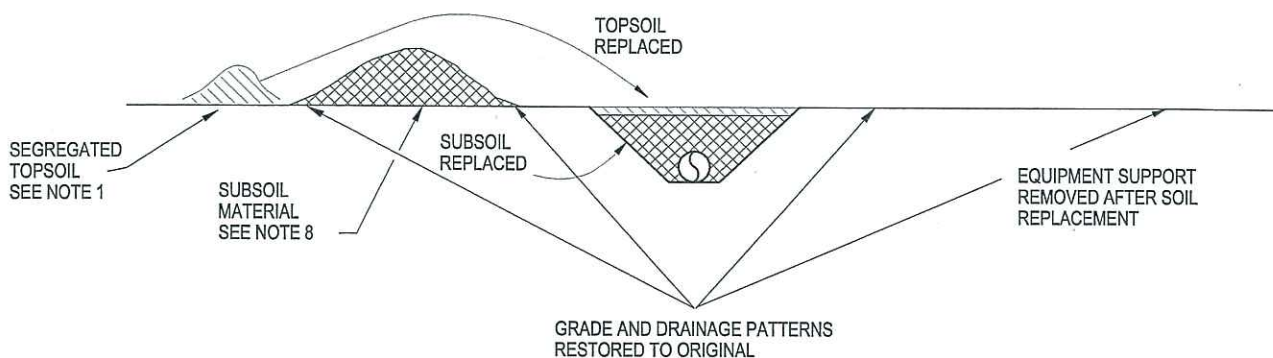


TRENCH WIDTH VARIES DEPENDING ON SOILS
ENCOUNTERED DURING CONSTRUCTION

NOTES Continued:

5. Silt fence or straw bales will be used where appropriate to prevent siltation into water bodies or wetlands.
6. Silt fences or straw bales will also be used to prevent stockpiled soil or spoil from leaving the construction right-of-way or workspaces.
7. Timber mats may be used over spoil storage where standing water or saturated soils are present.
8. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of topsoil and subsoil in wetlands, use low-ground weight equipment, or operate normal equipment on timber riprap, prefabricated equipment mats or terra mats.

CROSS SECTION



WETLAND RESTORATION

FIGURE: 22

Wetland – Trench and Backfill

Cameron Pipeline Expansion Project

Docket No. PF12-12-000

APPENDICES



***Spill Notification & Agency Contacts
Cameron Interstate Pipeline Environmental Plan
Cameron Pipeline Expansion Project
Docket No. CP13-____-000***

APPENDIX 1

SPILL NOTIFICATION & AGENCY CONTACTS

LOUISIANA

Excess Air Emissions

Notify the Department of Public Safety within 1 hour of any discharge that may result in **emergency conditions**: any condition that could reasonably be expected to endanger the health and safety of the public; cause significant adverse impact to the land, water, or air environment; or cause severe damage to property.

Local 911

Louisiana Department of Public Safety

(225) 925-6595 (24-hour)

For **nonemergency conditions**, provide notice within 24 hours to:

Louisiana Department of Environmental Quality

P.O. Box 4312

Baton Rouge, LA 70821-4312

Attn: ERSD - SPOC

(225) 219-3640 (8 to 4:30)

(225) 342-1234 (24-hour)

(888) 763-5424 (Within Louisiana)

1. DEQ is preparing new regulations to implement changes in state law addressing notice of emergency and nonemergency conditions. These changes include reporting to the DPS for unauthorized discharges that exceed a Reportable Quantity and do not cause an emergency condition.
2. Report releases into the air that exceed Reportable Quantities (see **Hazardous Substances** at page Louisiana – 3) within any continuous 3-hour or 24-hour period, or below RQs for a greater-than-7-day period.
3. Nonemergency conditions requiring prompt notification include:
 - a. Any unauthorized emission that exceeds the Reportable Quantities for an air contaminant (Louisiana Administrative Code, Title 33, Part 1, Section 3931), based on total mass emitted within a consecutive 3-hour period from the site or facility, except for leaks already covered under Louisiana requirements.
 - b. Any other unauthorized emissions that exceed Reportable Quantities.
 - c. Any unauthorized emission that causes an adverse off-site impact such as an odor, an impairment of visibility caused by smoke opacity, or visible deposition of emitted material, in violation of Air Quality Division Regulations.
 - d. Emergency occurrences or upsets that will substantially increase emissions.
4. For the verbal notification, provide the following information:
 - a. Name of person making the notification and telephone number where any return calls from response agencies may be placed.
 - b. In the event of an incident involving transport, provide the name and address of the transporter and generator.
 - c. Name and location of the facility or site where the unauthorized discharge is imminent or has occurred, using common landmarks.
 - d. Date and time the incident began and ended, or estimated time the discharge may continue.
 - e. Extent of any injuries and identification of any personnel hazards that response agencies may face.
 - f. Common or scientific name, U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all discharged pollutants.
 - g. Brief description of the incident sufficient to allow response agencies to decide on the level and extent of response activity.

- h. For unauthorized emissions of toxic air pollutants or radioactive material, the following supplemental information:
 - (1) Location of the source facility or stack.
 - (2) Time at onset of the emission.
 - (3) Prevailing local wind direction and estimated velocity at time of onset.
 - (4) Duration of emission if stopped at time of notification.
- 5. A written report must be submitted within 7 days, unless the Department indicates otherwise in a permit or regulation. If sent by U.S. mail or other courier service (e.g., Federal Express, UPS, etc.), the submittal date will be the date of the postmark on the envelope accompanying the written notification report. If delivered by other means (hand or fax), the submittal date of the written notification will be the date of receipt by the Department. The written report should include the following:
 - a. Name, address, telephone number, Agency Interest (AI) number (as assigned by the Department) if applicable, and any other applicable identification numbers of the person, company, or other party who is filing the written report.
 - b. Specific indication that the document is a written follow-up report.
 - c. Time and date of verbal notification, the state official contacted, name of person making the notification, and identification of the site or facility, vessel, transport vehicle, or storage area from which the unauthorized discharge occurred.
 - d. Dates, times, and duration of the unauthorized discharge, and if not corrected, the anticipated time it is expected to continue.
 - e. Details of the circumstances (unauthorized discharge description and root cause) and events leading to any unauthorized discharge, including incidents of loss of sources of radiation and if the release point is permitted:
 - (1) The current permitted limit for the pollutant(s) released.
 - (2) The permitted release point/outfall ID.
 - (3) Which limits were exceeded (SO₂ limit, mass emission limit, opacity limit, etc.) for air releases.
 - f. Common or scientific chemical name of each specific pollutant that was released as the result of an unauthorized discharge, including the CAS number and U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all released pollutants (total amount of each compound expressed in pounds, including calculations).
 - g. Statement of actual or probable fate or disposition of the pollutant and what off-site impact resulted.
 - h. Remedial actions taken, or to be taken, to stop unauthorized discharges or to recover pollutants.
 - i. Procedures or measures that have been or will be adopted to prevent a recurrence of the incident.
 - j. If an unpermitted or unlicensed site or facility is involved in the unauthorized discharge, a schedule for submitting a permit or license application to the office, or the rationale for not requiring a permit or license.
 - k. The reporting party's status (former or present owner, operator, disposer, etc.).
 - l. For discharges to the ground or groundwater, the following information shall also be included: all information of which the reporting party is aware that indicates pollutants are migrating, including, but not limited to, monitoring well data; possible routes of migrations; and all information of which the reporting party is aware regarding any public or private wells in the area of the migration used for drinking, stock watering, or irrigation.
 - m. What other agencies were notified.
 - n. Names of all other responsible parties of which the reporting party is aware.
 - o. A determination by the discharger of whether or not the discharge was preventable; if not, an explanation of why the discharge was not preventable.
 - p. The extent of injuries, if any.

q. The estimated quantity, identification, and disposition of recovered materials, if any.

Citation: Louisiana Administrative Code, Title 33, Part I, Sections 3915, 3917, 3923, 3925; Part III, Section 927

For sources subject to federal Part 70 emissions permits, refer to the permit for additional conditions regarding testing, monitoring, reporting, and recordkeeping. Sources subject to continuous emissions monitoring will also need to supply information on excess emissions and emergency conditions in their quarterly reports.

Citation: Louisiana Administrative Code, Title 33, Part III, Section 507

Hazardous Materials

Same as **Hazardous Substances** (see below). Report spills to:

Louisiana State Police

(225) 925-6595 (24-hour)

(877) 925-6595

Note: Louisiana has adopted the federal regulations for hazardous materials transportation (see **Federal — Hazardous Materials** at page Federal – 3), using the State Police as the contact point in-state. If reporting a hazardous materials incident, ask the State Police contact about requirements for submitting a written report and to provide you with a copy of any state reporting forms that may be necessary for your particular incident.

Citation: Louisiana Administrative Code, Title 33, Part V, Section 10903

Hazardous Substances

Same as **Oil** (see page Louisiana – 7) when releases are to the air, land, or water environment and exceed Reportable Quantities within any continuous 24-hour period.

Note: Reportable Quantities of hazardous substances can be found in Louisiana Administrative Code, Title 33, Part I, Section 3931. Contact DEQ if you have questions about a substance or would like a complete listing.

Report releases onto land that exceed reportable quantities within any continuous 24-hour period to:

Local Emergency Planning Committee

Local 911 for Emergencies

Louisiana State Police

(225) 925-6595 (24-hour)

Note: Contents and time frames of verbal and written reports are the same as Notes 3 and 4, respectively, under **Oil** (see page Louisiana – 7). The Louisiana Department of Environmental Quality is also encouraging on-line reporting of incidents at: www.deq.louisiana.gov/apps/forms/irf/forms/. See **Louisiana Incident Report Form** (at page Louisiana – 16) for a listing of information collected by state officials. Submit the written report to:

Louisiana Department of Environmental Quality

P.O. Box 4312

Baton Rouge, LA 70821-4312

Attn: ERS - SPOC

Report releases into the air that exceed Reportable Quantities within any continuous 3-hour or 24-hour period, or below RQs for a greater-than-7-day period, to:

Louisiana Department of Environmental Quality

Office of Environmental Compliance

(225) 219-3640 (8 to 4:30)
(225) 342-1234 (24-hour)
(888) 763-5424 (Within Louisiana)

Note: Contents of verbal and written reports are the same as Notes 4 and 5, respectively, under **Oil** (see page Louisiana – 8). For hazardous air pollutant releases include (see also reporting requirements under **Excess Air Emissions** at page Louisiana – 1):

1. Location and identity of the source facility or stack.
2. Date and time at onset of emission.
3. Prevailing local wind direction and estimated velocity at time of onset.
4. Duration of emission if stopped at time of report.
5. The approximate total loss during the emission.

Submit the written report to:

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Attention: Administrator
P.O. Box 4312
Baton Rouge, LA 70821-4312

Also report releases that exceed Reportable Quantities within any continuous 24-hour period to:

Louisiana Department of Public Safety
(225) 925-6595 (24-hour)

Louisiana has issued a new rule establishing procedures for the reporting of information regarding hazardous materials that are in transit and/or temporarily stored at a facility and that could present a threat to human health and the environment if compromised during a Category 3 or higher hurricane. Within 12 hours of a mandatory evacuation order issued by the proper local parish authorities, persons engaged in the transport or temporary storage of hazardous materials shall report by e-mail to DPS (emergency@la.gov) the following:

1. The exact nature of, and the type, location, and relative fullness of the container (i.e., full, half-full, or empty) of all hazardous materials that are located within a parish subject to the evacuation order.
2. The primary and secondary contact persons' phone number, e-mail, and fax number.
3. Whether the facility will be sufficiently manned such that post-event assessments will be performed by company personnel (as soon as safely practicable) and that any releases and/or hazardous situations will be reported in accordance with DEQ and DPS reporting requirements.

Hazardous Wastes

If a release could threaten human health or the environment outside the facility, or when the generator has knowledge that a spill has reached surface water, the emergency coordinator must notify:

National Response Center
(800) 424-8802

Louisiana Department of Environmental Quality
Office of Environmental Assessment
(225) 219-3640 (8 to 4:30)
(225) 342-1234 (24-hour)
(888) 763-5424 (Within Louisiana)

The report, to be made immediately, should indicate:

1. Name of person making the notification and telephone number where any return calls from response agencies may be placed.

2. Name, address, and U.S. EPA identification number of the generator.
3. In the event of an incident involving transport, provide the name and address of the transporter and generator.
4. Name and location of the facility or site where the unauthorized discharge is imminent or has occurred, using common landmarks.
5. Date and time the incident began and ended, or estimated time the discharge may continue.
6. Type of incident involved (e.g., spill or fire).
7. Extent of any injuries and identification of any personnel hazards that response agencies may face.
8. Common or scientific name, U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all discharged pollutants.
9. Brief description of the incident sufficient to allow response agencies to decide on the level and extent of response activity.
10. For unauthorized emissions of toxic air pollutants or radioactive material, the following supplemental information:
 - a. Location of the source facility or stack.
 - b. Time at onset of the emission.
 - c. Prevailing local wind direction and estimated velocity at time of onset.
 - d. Duration of emission if stopped at time of notification.

A written report must be submitted to the Department within 15 days with the above information and describing estimated quantity and disposition of any recovered material. In addition, the owner/operator must note in the operating record for the facility the time, date, and details of any incident that requires implementation of the facility's spill contingency plan.

Note: while Louisiana has adopted general requirements similar to those specified in **Federal — Hazardous Wastes** (see page Federal – 7), state reporting mandates as identified above incorporate and supplement the general reporting standards.

Citation: Louisiana Administrative Code, Title 33, Part V, Section 1109(E)(7)(d)(iv)(c) and 33:V.1513(F)

Under the general Louisiana Discharge Notification Rules, additional requirements are imposed:

Provide notice within 1 hour of any discharge that may result in **emergency conditions**. An emergency condition is any condition that could reasonably be expected to endanger the health and safety of the public; cause significant adverse impact to the land, water, or air environment; or cause severe damage to property. Notify:

Local 911

Louisiana Department of Public Safety
(225) 925-6595 (24-hour)

For **nonemergency conditions**, notify the Department of Environmental Quality within 24 hours.

Louisiana Department of Environmental Quality
P.O. Box 4312
Baton Rouge, LA 70821-4312
Attn: ERSD - SPOC
(225) 219-3640 (8 to 4:30)
(225) 342-1234 (24-hour)
(888) 763-5424 (Within Louisiana)

1. DEQ is preparing new regulations to implement changes in state law addressing notice of emergency and nonemergency conditions. These changes include reporting to the DPS for unauthorized discharges that exceed a reportable quantity and do not cause an emergency condition.

2. Nonemergency conditions requiring prompt notification include:
 - a. Any unauthorized discharge of hazardous waste or reusable material from a facility that exceeds any conditions specified in an interim or final RCRA (Resource Conservation and Recovery Act) permit.
 - b. Any unauthorized discharge of hazardous waste or reusable material from a site or facility that exceeds any Reportable Quantity (Louisiana Administrative Code, Title 33, Part 1, Section 3931).
 - c. Any unauthorized discharge of any hazardous waste or reusable material that may endanger human health or the environment including, but not limited to, events with chemical or biological toxicity, or that have flammable or explosive potential.
3. For the verbal notification, provide the following information:
 - a. Name of person making the notification and telephone number where any return calls from response agencies may be placed.
 - b. In the event of an incident involving transport, provide the name and address of the transporter and generator.
 - c. Name and location of the facility or site where the unauthorized discharge is imminent or has occurred, using common landmarks.
 - d. Date and time the incident began and ended, or estimated time the discharge may continue.
 - e. Extent of any injuries and identification of any personnel hazards that response agencies may face.
 - f. Common or scientific name, U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all discharged pollutants.
 - g. Brief description of the incident sufficient to allow response agencies to decide on the level and extent of response activity.
 - h. For unauthorized emissions of toxic air pollutants or radioactive material, the following supplemental information:
 - (1) Location of the source facility or stack.
 - (2) Time at onset of the emission.
 - (3) Prevailing local wind direction and estimated velocity at time of onset.
 - (4) Duration of emission if stopped at time of notification.
4. A written report must be submitted within 7 days, unless the Department indicates otherwise in a permit or regulation. If sent by U.S. mail or other courier service (e.g., Federal Express, UPS, etc.), the submittal date will be the date of the postmark on the envelope accompanying the written notification report. If delivered by other means (hand or fax), the submittal date of the written notification will be the date of receipt by the Department. The written report should include the following:
 - a. Name, address, telephone number, Agency Interest (AI) number (as assigned by the Department) if applicable, and any other applicable identification numbers of the person, company, or other party who is filing the written report.
 - b. Specific identification that the document is a written follow-up report.
 - c. Time and date of verbal notification, the state official contacted, name of person making the notification, and identification of the site or facility, vessel, transport vehicle, or storage area from which the unauthorized discharge occurred.
 - d. Dates, times, and duration of the unauthorized discharge, and if not corrected, the anticipated time it is expected to continue.
 - e. Details of the circumstances (unauthorized discharge description and root cause) and events leading to any unauthorized discharge, including incidents of loss of sources of radiation and if the release point is permitted:
 - (1) The current permitted limit for the pollutant(s) released.
 - (2) The permitted release point/outfall ID.

- (3) Which limits were exceeded (SO₂ limit, mass emission limit, opacity limit, etc.) for air releases.
- f. Common or scientific chemical name of each specific pollutant that was released as the result of an unauthorized discharge, including the CAS number and U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all released pollutants (total amount of each compound expressed in pounds, including calculations).
 - g. Statement of actual or probable fate or disposition of the pollutant and what off-site impact resulted.
 - h. Remedial actions taken, or to be taken, to stop unauthorized discharges or to recover pollutants.
 - i. Procedures or measures that have been or will be adopted to prevent a recurrence of the incident.
 - j. If an unpermitted or unlicensed site or facility is involved in the unauthorized discharge, a schedule for submitting a permit or license application to the office, or the rationale for not requiring a permit or license.
 - k. The reporting party's status (former or present owner, operator, disposer, etc.).
 - l. For discharges to the ground or groundwater, the following information shall also be included: all information of which the reporting party is aware that indicates pollutants are migrating, including, but not limited to, monitoring well data; possible routes of migrations; and all information of which the reporting party is aware regarding any public or private wells in the area of the migration used for drinking, stock watering, or irrigation.
 - m. What other agencies were notified.
 - n. Names of all other responsible parties of which the reporting party is aware.
 - o. A determination by the discharger of whether or not the discharge was preventable; if not, an explanation of why the discharge was not preventable.
 - p. The extent of injuries, if any.
 - q. The estimated quantity, identification, and disposition of recovered materials, if any.

Citation: Louisiana Administrative Code, Title 33, Part I, Sections 3915, 3917, 3923, 3925

Oil

Report spills that create **emergency conditions** immediately, and spills creating **nonemergency conditions** within 24 hours to:

For Emergency Conditions:

Local 911

Louisiana Department of Public Safety

(225) 925-6595 (24-hour)

For Nonemergency Conditions:

Louisiana Department of Environmental Quality

P.O. Box 4312

Baton Rouge, LA 70821-4312

Attn: ERSD - SPOC

(225) 219-3640 (8 to 4:30)

(225) 342-1234 (24-hour)

(888) 763-5424 (Within Louisiana)

Louisiana Oil Spill Coordinator's Office

150 Third Street, Suite 405

Baton Rouge, LA 70801

(225) 219-5800 (8 to 5)

1. The Office of the State Police is the lead agency for emergency response in Louisiana. Louisiana Administrative Code Title 33, Part 1, Chapter 39, and Part V, Section 10111, establishes release reporting requirements for all releases of hazardous materials in the state. The requirements of both sections are summarized as follows:

DEQ is preparing new regulations to implement changes in state law addressing notice of emergency and nonemergency conditions. These changes include reporting to the DPS for unauthorized discharges that exceed a reportable quantity and do not cause an emergency condition.

A release of any of the following substances must be reported immediately if it causes **emergency conditions**, no matter what the quantity of discharged material is. An **emergency condition** is any condition that could reasonably be expected to endanger the health and safety of the public; cause significant adverse impact to the land, water, or air environment; or cause severe damage to property.

Reporting can be done within 24 hours for unauthorized discharges that exceed Reportable Quantities, but create **nonemergency conditions**. Report nonemergency conditions to the appropriate division of the DEQ. However, releases that meet or exceed the Reportable Quantity and escape beyond the site of a facility must be reported immediately.

- a. Extremely hazardous substances.
 - b. CERCLA hazardous substances.
 - c. Hazardous substances established by the Department of Transportation. (Oil is contained in this listing; the RQ is 1 barrel.)
 - d. Any material on which maintenance of a material safety data sheet is required by OSHA if it is not on lists a. through c. above and if the material exceeds RQs at 5,000 lbs. (Exceptions: Compressed or refrigerated flammable gases and flammable liquids as defined by 49 CFR will have RQs of 100 lbs., and all other liquids requiring an MSDS will have a 1,000 lb. RQ.)
2. Waters of the state include surface and underground.
 3. An unauthorized discharge that results in contamination of the groundwaters of the state or otherwise moves in, into, within, or on any saturated subsurface strata must be reported in writing within 7 days. Follow the written report requirements below.
 4. Verbal spill reports shall include:
 - a. Name of person making the notification and telephone number where any return calls from response agencies may be placed.
 - b. In the event of an incident involving transport, provide the name and address of the transporter and generator.
 - c. Name and location of the facility or site where the unauthorized discharge is imminent or has occurred, using common landmarks.
 - d. Date and time the incident began and ended, or estimated time the discharge may continue.
 - e. Extent of any injuries and identification of any personnel hazards that response agencies may face.
 - f. Common or scientific name, U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all discharged pollutants.
 - g. Brief description of the incident sufficient to allow response agencies to decide on the level and extent of response activity.
 - h. For unauthorized emissions of toxic air pollutants or radioactive material, the following supplemental information:
 - (1) Location of the source facility or stack.
 - (2) Time at onset of the emission.
 - (3) Prevailing local wind direction and estimated velocity at time of onset.
 - (4) Duration of emission if stopped at time of notification.

5. A written report must be submitted within 7 days to the Local Emergency Planning Committee, State Police, and DEQ (unless each of the agencies says otherwise). If sent by U.S. mail or other courier service (e.g., Federal Express, UPS, etc.), the submittal date will be the date of the postmark on the envelope accompanying the written notification report. If delivered by other means (hand or fax), the submittal date of the written notification will be the date of receipt by the Department. The written report should include the following:
- a. Name, address, telephone number, Agency Interest (AI) number (as assigned by the Department) if applicable, and any other applicable identification numbers of the person, company, or other party who is filing the written report.
 - b. Specific indication that the document is a written follow-up report.
 - c. Time and date of verbal notification, the state official contacted, name of person making the notification, and identification of the site or facility, vessel, transport vehicle, or storage area from which the unauthorized discharge occurred.
 - d. Dates, times, and duration of the unauthorized discharge, and if not corrected, the anticipated time it is expected to continue.
 - e. Details of the circumstances (unauthorized discharge description and root cause) and events leading to any unauthorized discharge, including incidents of loss of sources of radiation and if the release point is permitted:
 - (1) The current permitted limit for the pollutant(s) released.
 - (2) The permitted release point/outfall ID.
 - (3) Which limits were exceeded (SO₂ limit, mass emission limit, opacity limit, etc.) for air releases.
 - f. Common or scientific chemical name of each specific pollutant that was released as the result of an unauthorized discharge, including the CAS number and U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all released pollutants (total amount of each compound expressed in pounds, including calculations).
 - g. Statement of actual or probable fate or disposition of the pollutant and what off-site impact resulted.
 - h. Remedial actions taken, or to be taken, to stop unauthorized discharges or to recover pollutants.
 - i. Procedures or measures that have been or will be adopted to prevent a recurrence of the incident.
 - j. If an unpermitted or unlicensed site or facility is involved in the unauthorized discharge, a schedule for submitting a permit or license application to the office, or the rationale for not requiring a permit or license.
 - k. The reporting party's status (former or present owner, operator, disposer, etc.).
 - l. For discharges to the ground or groundwater, the following information shall also be included: all information of which the reporting party is aware that indicates pollutants are migrating, including, but not limited to, monitoring well data; possible routes of migrations; and all information of which the reporting party is aware regarding any public or private wells in the area of the migration used for drinking, stock watering, or irrigation.
 - m. What other agencies were notified.
 - n. Names of all other responsible parties of which the reporting party is aware.
 - o. A determination by the discharger of whether or not the discharge was preventable; if not, an explanation of why the discharge was not preventable.
 - p. The extent of injuries, if any.
 - q. The estimated quantity, identification, and disposition of recovered materials, if any.

Citation: Louisiana Administrative Code, Title 33, Part I, Sections 3915, 3917, 3923, 3925; Part V, Section 10111

In addition, operators of pipeline systems must report a release of a hazardous liquid (petroleum, petroleum products, or anhydrous ammonia) or carbon dioxide resulting in any of the following:

1. Explosion or fire not intentionally set by the operator.
2. Release of 5 gallons or more of hazardous liquid or carbon dioxide, except that no report is required for a release of less than 5 barrels resulting from a pipeline maintenance activity if the release does not trigger other reporting requirements in this section, is confined to company property or the pipeline right-of-way, and is cleaned up promptly.
3. Escape to the atmosphere of more than 5 barrels a day of highly volatile liquids.
4. Death of any person.
5. Bodily harm to any person resulting in 1 or more of the following:
 - a. Loss of consciousness.
 - b. Necessity to carry the person from the scene.
 - c. Necessity for medical treatment.
 - d. Disability that prevents the discharge of normal duties or the pursuit of normal activities beyond the day of the accident.
6. Estimated property damage, including cost of cleanup and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.
7. At the earliest practicable moment (within 2 hours) following discovery of a release of the hazardous liquid or carbon dioxide, the operator of the system shall give immediate notice to:

Louisiana Department of Natural Resources

Office of Conservation

P.O. Box 94275

Baton Rouge, LA 70804-9275

(225) 342-5585 (8 to 4:30)

(225) 342-5505 (After-hours)

8. Telephone notice must be provided for pipeline failures that:
 - a. Caused a death or a personal injury requiring hospitalization.
 - b. Resulted in either a fire or explosion not intentionally set by the operator.
 - c. Caused estimated property damage, including cost of cleanup and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.
 - d. Resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shorelines.
 - e. In the judgment of the operator was significant even though it did not meet the above criteria.
9. The following information should be provided:
 - a. Name and address of the operator.
 - b. Name and telephone number of the reporter.
 - c. The location of the failure.
 - d. The time of the failure.
 - e. The fatalities and personal injuries, if any.
 - f. All other significant facts known by the operator that are relevant to the cause of the failure or extent of the damages.
10. Each operator experiencing an accident that is required to be reported shall as soon as practicable but not later than 30 days after discovery of the accident prepare and file an accident report on Louisiana's Accident Report Form. Contact DNR at the number above for information about the current form.

In the event that an unauthorized discharge into the Mississippi River or any other water of the state used for potable water supply could reasonably be expected to interfere with or significantly impact downstream potable or industrial water usage, the discharger shall notify immediately, but in no case later than 1 hour after learning of the discharge, by telephone or other rapid communication means:

Louisiana Department of Environmental Quality

Office of Environmental Compliance

ERSD - SPOC

(225) 219-3640 (8 to 4:30)

(225) 342-1234 (24-hour)

(888) 763-5424 (Within Louisiana)

Report unauthorized discharges or spills that could reasonably be expected to interfere with or significantly impact downstream potable or industrial water usage to the Mississippi River or Bayou Lafourche to:

Louisiana Department of Environmental Quality

Office of Environmental Compliance

Surveillance Division

Early Warning Organic Compound Detection System

(225) 219-3600 (8 to 4:30)

(225) 219-3700 (8 to 4:30)

(225) 342-1234 (24-hour)

(888) 763-5424 (Within Louisiana)

SARA Title III

Report releases and submit written follow-up emergency notice(s) to:

Louisiana Department of Public Safety

Office of State Police

Transportation and Environmental Safety Section

Right-to-Know Unit

Mail Slip 21

P.O. Box 66614

Baton Rouge, LA 70896-6614

(225) 925-6595 (24-hour)

(225) 925-6113 x227 (9 to 5)

Tank Leaks

Report any release or reasonable suspicion of a release of a regulated substance from an underground storage tank to:

Louisiana Department of Environmental Quality

Office of Environmental Compliance

P.O. Box 4312

Baton Rouge, LA 70821-4312

Attn: ERSD - SPOC

(225) 219-3640 (8 to 4:30)

(225) 342-1234 (24-hour)

(888) 763-5424 (Within Louisiana)

1. Releases can be identified from:
 - a. The discovery by owners and/or operators or others of released regulated substances at the tank site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface water).

- b. Unusual operating conditions at the tank system observed by owners and/or operators (such as the erratic behavior of product dispensing equipment, the sudden loss of a product from the tank system, or an unexplained presence of water in a tank), unless system equipment is found to be defective but not leaking, and is immediately repaired or replaced.
 - c. Monitoring results from a Statistical Inventory Reconciliation method, included in a tank system analysis report, are "fail" or "inconclusive".
 - d. Monitoring system results, unless:
 - (1) The monitoring device is found to be defective, and is immediately repaired, recalibrated, or replaced, and additional monitoring conducted within 24 hours does not confirm the initial result.
 - (2) Where monitoring is used to control inventory, the second month of data does not confirm the initial result.
2. If the tank holds petroleum, the owner or operator must report within 24 hours spills or overfills that exceed 42 gallons, or that cause a sheen on nearby surface waters. If the spill or overfill results in an emergency (see **Wastewater Excursions** at page Louisiana – 13), regardless of the amount, the Department must be notified immediately.
 3. If the tank holds hazardous substances, the owner or operator must report within 1 hour any spills or overfills that equal or exceed the **Reportable Quantity** (see Reportable Quantities section) for that substance under the federal CERCLA law. Also report immediately to the National Response Center: (800) 424-8802.
 4. A written report will be required within 7 calendar days. (See **Wastewater Excursions** at page Louisiana – 13.)
 5. Owners and/or operators of tank systems must contain and immediately clean up a spill or overfill of petroleum that is less than 1 barrel and a spill or overfill of a hazardous substance that is less than the Reportable Quantity. If cleanup cannot be accomplished within 24 hours, report to DEQ.

Citation: Louisiana Administrative Code, Title 33, Part XI, Sections 707, 713

Report contamination of groundwater shown by routine monitoring to:

Louisiana Department of Environmental Quality
Office of Environmental Compliance
P.O. Box 4312
Baton Rouge, LA 70821-4312
Attn: ERSD - SPOC

The written report requirements are the same as Note 5, under **Oil** (see page Louisiana – 9), and will also include the following information:

1. The reporting party's status (former or present owner, operator, disposer, etc.).
2. All information of which the reporting party is aware that indicates hazardous waste is migrating, including, but not limited to, monitoring well data.
3. Possible routes of migration.
4. All information of which the reporting party is aware regarding any public or private wells in the area of the migration used for drinking, stock watering, or irrigation.
5. Names of all other responsible parties of which the reporting party is aware.

Wastewater Excursions

Provide notice within 1 hour of any discharge that may result in **emergency conditions**. An emergency condition is any condition that could reasonably be expected to endanger the health and safety of the public, cause significant adverse impact to the land, water, or air environment, or cause severe damage to property. Notify:

Local 911

Louisiana Department of Public Safety
(225) 925-6595 (24-hour)

For **nonemergency conditions**, notify the Department of Environmental Quality within 24 hours:

Louisiana Department of Environmental Quality
P.O. Box 4312
Baton Rouge, LA 70821-4312
Attn: ERSD - SPOC
(225) 219-3640 (8 to 4:30)
(225) 342-1234 (24-hour)
(888) 763-5424 (Within Louisiana)

1. DEQ is preparing new regulations to implement changes in state law addressing notice of emergency and nonemergency conditions. These changes include reporting to the DPS for unauthorized discharges that exceed a Reportable Quantity and do not cause an emergency condition.
2. Nonemergency conditions requiring prompt notification include:
 - a. Any unauthorized discharge containing a pollutant or pollutants that exceed Reportable Quantities (Louisiana Administrative Code, Title 33, Part 1, Section 3931), and come from sources other than those with federal or state pollutant discharge permits.
 - b. An unauthorized discharge containing a pollutant or pollutants that exceed Reportable Quantities, from a source that has a federal or state discharge permit. No reporting is required if such a discharge resulted from circumstances identified, reviewed, and made part of the public record for the discharge permit.
3. For the verbal notification, provide the following information:
 - a. Name of person making the notification and telephone number where any return calls from response agencies may be placed.
 - b. In the event of an incident involving transport, provide the name and address of the transporter and generator.
 - c. Name and location of the facility or site where the unauthorized discharge is imminent or has occurred, using common landmarks.
 - d. Date and time the incident began and ended, or estimated time the discharge may continue.
 - e. Extent of any injuries and identification of any personnel hazards that response agencies may face.
 - f. Common or scientific name, U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all discharged pollutants.
 - g. Brief description of the incident sufficient to allow response agencies to decide on the level and extent of response activity.
 - h. For unauthorized emissions of toxic air pollutants or radioactive material, the following supplemental information:
 - (1) Location of the source facility or stack.
 - (2) Time at onset of the emission.
 - (3) Prevailing local wind direction and estimated velocity at time of onset.

- (4) Duration of emission if stopped at time of notification.
4. A written report must be submitted within 7 days, unless the Department indicates otherwise in a permit or regulation. If sent by U.S. mail or other courier service (e.g., Federal Express, UPS, etc.), the submittal date will be the date of the postmark on the envelope accompanying the written notification report. If delivered by other means (hand or fax), the submittal date of the written notification will be the date of receipt by the Department. The written report should include the following:
- a. Name, address, telephone number, Agency Interest (AI) number (as assigned by the Department) if applicable, and any other applicable identification numbers of the person, company, or other party who is filing the written report.
 - b. Specific identification that the document is a written follow-up report.
 - c. Time and date of verbal notification, the state official contacted, name of person making the notification, and identification of the site or facility, vessel, transport vehicle, or storage area from which the unauthorized discharge occurred.
 - d. Dates, times, and duration of the unauthorized discharge, and if not corrected, the anticipated time it is expected to continue.
 - e. Details of the circumstances (unauthorized discharge description and root cause) and events leading to any unauthorized discharge, including incidents of loss of sources of radiation and if the release point is permitted:
 - (1) The current permitted limit for the pollutant(s) released.
 - (2) The permitted release point/outfall ID.
 - (3) Which limits were exceeded (SO₂ limit, mass emission limit, opacity limit, etc.) for air releases.
 - f. Common or scientific chemical name of each specific pollutant that was released as the result of an unauthorized discharge, including the CAS number and U.S. Department of Transportation hazard classification, and best estimate of amounts of any or all released pollutants (total amount of each compound expressed in pounds, including calculations).
 - g. Statement of actual or probable fate or disposition of the pollutant and what off-site impact resulted.
 - h. Remedial actions taken, or to be taken, to stop unauthorized discharges or to recover pollutants.
 - i. Procedures or measures that have been or will be adopted to prevent a recurrence of the incident.
 - j. If an unpermitted or unlicensed site or facility is involved in the unauthorized discharge, a schedule for submitting a permit or license application to the office, or the rationale for not requiring a permit or license.
 - k. The reporting party's status (former or present owner, operator, disposer, etc.).
 - l. For discharges to the ground or groundwater, the following information shall also be included: all information of which the reporting party is aware that indicates pollutants are migrating, including, but not limited to, monitoring well data; possible routes of migrations; and all information of which the reporting party is aware regarding any public or private wells in the area of the migration used for drinking, stock watering, or irrigation.
 - m. What other agencies were notified.
 - n. Names of all other responsible parties of which the reporting party is aware.
 - o. A determination by the discharger of whether or not the discharge was preventable; if not, an explanation of why the discharge was not preventable.
 - p. The extent of injuries, if any.
 - q. The estimated quantity, identification, and disposition of recovered materials, if any.

Citation: Louisiana Administrative Code, Title 33, Part I, Sections 3915, 3917, 3923, 3925

Holders of a state pollutant discharge permit also have a duty to report any noncompliance that may endanger health or the environment within 24 hours. Report to the above telephone numbers and address.

Within 5 days, a written report will be submitted describing:

1. The noncompliance and its cause.
2. The period of the discharge, including dates and times.
3. If uncorrected, how long the discharge will continue.
4. Steps taken to reduce, eliminate, and prevent recurrence of the problem.

The following incidents must also be reported within 24 hours:

1. Any unanticipated bypass or system upset that exceeds permit limitations.
2. Violation of a maximum daily discharge limitation for which the state requires 24-hour reporting in the permit.

Report all other instances of noncompliance at the time the regular monitoring reports are submitted.

Citation: Louisiana Administrative Code, Title 33, Section 2701(L)(6)

Existing manufacturing, commercial, mining, and silvicultural dischargers shall immediately report any activity that has occurred or will occur that would result in the discharge on a routine or frequent basis of any toxic pollutant, not covered in a permit, that exceeds the highest of the following levels:

1. One hundred micrograms per liter (100 µg/l).
2. Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 µg/l) for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (1 mg/l) for antimony.
3. Five times the maximum concentration value reported for that pollutant in the discharge permit application.
4. Any notification level established by state regulators on a case-by-case basis.

In addition, immediately report any activity that has occurred or will occur that would result in the discharge on a nonroutine or infrequent basis of any toxic pollutant, not covered in a permit, that exceeds the highest of the following levels:

1. Five hundred micrograms per liter (500 µg/l).
2. One milligram per liter (1 mg/l) for antimony.
3. Ten times the maximum concentration value reported for that pollutant in the discharge permit application.
4. Any notification level established by state regulators on a case-by-case basis.

Citation: Louisiana Administrative Code, Title 33, Section 2703(A)

Internet Resources

Agency	Internet Address
Department of Environmental Quality	www.deq.louisiana.gov
DEQ On-line Incident Reporting	www.deq.louisiana.gov/apps/forms/irf/forms/
Department of Public Safety	www.dps.louisiana.gov/dpsweb.nsf
Early Warning Organic Compound Detection System	www.deq.louisiana.gov/portal/tabid/285/default.aspx
Oil Spill Coordinator's Office	www.losco.state.la.us
Department of Natural Resources, Office of Conservation	http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=46&ngid=4

Spill Reporting Procedures Guide 2012

Revised 11/1/00 - EA

INCIDENT REPORT FORM

Received by: _____ Dispatch # _____ Incident # _____

Date Reported: _____ Time Reported: _____

Spill Incident/Release ☐ Citizen Complaint ☐ Emergency? ☐ Yes ☐ No Drill? ☐ Yes ☐ No

CALLER INFORMATION:		Citizen <input type="checkbox"/>	Industry <input type="checkbox"/>	Anonymous Complaint <input type="checkbox"/>
Other (i.e. Coast Guard): _____				
Name/Company: _____			Title: _____	
Address: _____				
Is caller requesting a follow-up call? Yes <input type="checkbox"/> No <input type="checkbox"/>		Date of Caller Contact: _____		
Telephone No. _____		Parish (of occurrence): _____		

SITE INFORMATION:	
Company Name/Alleged Violator: _____	Agency Interest # _____ Other: _____
Location Address: _____	
Date of discharge if different from date report: _____	Time discharge noticed: Began _____ Ended _____
Media Affected: Air <input type="checkbox"/> Land <input type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Other _____	
If water affected, name of nearest water body (Basin/Subsegment): _____	
If air affected, note wind direction and weather conditions (if provided): _____	

DESCRIPTION OF RELEASE/SPILL/COMPLAINT:
Product/material release and quantity (reported): _____
Product/material released and quantity (actual): _____
Description of release/complaint: _____
How was spill contained? Offsite Impact? _____
How was spilled cleaned/remediated? _____

DIRECTIONS FOR REACHING THE SITE: _____

Investigator's Comments: _____

Region Assigned: _____ Summary Report: Yes ☐ No ☐

Investigator Assigned: _____ Date: _____ Time: _____

Investigator's Signature: _____ Reviewer's Initials & Date: _____

Date Closed: _____ Closed by: Site Visit ☐ Telephone ☐ Other: _____

Referred to: _____ Date: _____ Time: _____

APPENDIX 2

Unanticipated Hazardous Waste Discovery Plan

Unanticipated Hazardous Waste Discovery Plan

1. INTRODUCTION

Cameron Interstate has established the following procedures to be used in the event that previously unreported or unanticipated hazardous wastes or contaminated sites are discovered during construction of the Pipeline Expansion Project.

2. UNANTICIPATED DISCOVERY OF HAZARDOUS WASTE OF CONTAMINATED SITES RESPONSE

- a. Contractor will stop work in the vicinity of the suspected contamination.
- b. Contractor will cordon off or otherwise restrict access to the suspected area.
- c. Contractor will immediately notify Cameron Interstate's on-site Environmental Inspector.
- d. Cameron Interstate's on-site Environmental Inspector will immediately notify the Environmental, Health and Safety Division Supervisor of Cameron Interstate.

3. IMPLEMENTATION PLAN (as deemed necessary by the Environmental, Health and Safety Division)

- a. Contact a qualified consultant and/or testing laboratory to assist with the determination of the extent and nature of the contamination.
- b. Devise a plan for additional site-specific investigations as necessary.
- c. Conduct the necessary level of site-specific testing and/or laboratory analysis to determine extent and nature of contamination.
- d. Notify all applicable environmental authorities as required by law.
- e. Devise a site-specific plan depending on the nature and extent of the contamination encountered for continuation of construction. This step may involve evaluation avoidance options, exposure minimization options, or cleanup options as necessary to support the construction of the proposed facilities.
- f. Devise a strategy or plan for handling wastes in an appropriate manner including waste characterization, hauling, manifesting, disposal, and site stabilization/restoration.
- g. Complete any necessary agency follow-ups and reporting.

APPENDIX 3

UNANTICIPATED DISCOVERY PLAN

PLAN AND PROCEDURES ADDRESSING UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES AND HUMAN REMAINS

I. INTRODUCTION

This document outlines the procedures Cameron Interstate Pipeline (Cameron Interstate) will follow to prepare for and address any unanticipated discovery. It provides direction to Cameron Interstate personnel and their consultants as to the proper procedure to follow in the event that unanticipated discovery of historic properties or human remains are made during construction. Communications, transmittals, reports, etc. may be provided via e-mail to the addresses provided in the contact lists in this document.

II. TRAINING AND ORIENTATION

The Environmental Inspector (EI) will be responsible for advising construction contractor personnel on the procedures to follow in the event that an unanticipated discovery is made. Training will occur as part of the pre-construction on-site training program for foremen, company inspectors, and construction supervisors. The EI will advise all operators of equipment involved in grading, stripping, or trenching activities to:

- A. Stop work immediately if they observe any indication of the presence of cultural materials (artifacts or other man-made features), animal bone, or possibly human bone.**
- B. Contact the EI (or the Chief Inspector if the EI is not available) as soon as possible.**
- C. Comply with unanticipated discovery procedures.**
- D. Treat human remains with dignity and respect.**

III. PROCEDURE WHEN CULTURAL MATERIALS ARE OBSERVED

Cultural materials include man-made objects (prehistoric, historic, and greater than 50 years of age) and features (e.g., walls constructed of natural materials such as cobbles; surfaces paved by cobbles, brick or other material; or other remnants of cultural activity).

A. Stop work in the immediate vicinity of the observed cultural materials

- 1. Notify the EI of the discovery.
- 2. If EI believes that an unanticipated discovery has been made:
 - a) EI directs all ground-disturbing activities within 25 feet of the area of the discovery to stop.
 - b) EI will protect and secure the evidence in place by delineating the find with flagging or orange safety fencing around the perimeter of the area within which construction activity will be prohibited.

B. Minimize movement of vehicles (limit the passage of equipment to only those essential to continue working at the construction site) and equipment in area immediately surrounding the discovery.

- C. EI will immediately notify the Cameron Interstate Construction Superintendent, as appropriate.
- D. Cameron Interstate Construction Superintendent will immediately notify the designated Cameron Interstate and TRC Environmental Corporation (TRC) contacts by telephone with written confirmation (via fax or overnight mail). (If primary contact cannot be reached, notify the indicated alternate.)

***Cameron Interstate
Contact***

J.D. Morris, P.E.
Manager, Permitting and Compliance
Cameron LNG, LLC
2500 Citywest Blvd.
Suite 1800
Houston, TX 77042
(713) 298-5479
JMorris@sempraglobal.com

***Alternate Cameron Interstate
Contact***

Michael Taylor
Environmental Compliance Specialist
Semptra U.S. Gas & Power
787 Industrial Road
McIntosh, AL 36553
281-630-2187
Mitaylor@SemptraUSGP.com

TRC Contact

Dr. Brian Thomas
TRC
4155 Shackleford Road
Suite 225
Norcross, Georgia 30093
Phone: (770) 270-1192 x112
Fax: (770) 270-1392
BThomas@TRCSolutions.com

Alternate TRC Contact

Dr. Larissa Thomas
TRC
4155 Shackleford Road
Suite 225
Norcross, Georgia 30093
Phone: (770) 270-1192 x118
Fax: (770) 270-1392
LThomas@TRCSolutions.com

- E. Within 24 hours, if possible, a professional archeologist will examine the location of the discovery, accompanied by the EI.
1. If the archeologist determines that the discovery is not a cultural resource, the archeologist will immediately advise the EI, the Cameron Interstate contact, the Chief Inspector and/or the Cameron Interstate Construction Superintendent, any of whom will have the authority to remove the stop-work order. The archeologist will submit a letter report including photographs of the discovery site to the Cameron Interstate and TRC contacts within 15 business days. No further action regarding this procedure is required.
 2. If the archeologist determines that the discovery is a cultural resource, the archeologist will immediately advise the EI who will notify the Cameron Interstate and TRC contacts. The Cameron Interstate contact will notify the Federal Energy Regulatory Commission (FERC) and the Louisiana State Historic Preservation Officer (Louisiana SHPO) by telephone, with written confirmation by fax or overnight mail. If these conditions are met then proceed to the next step in the Plan, Item F below.

FERC Contact

Laurie Boros
FERC
888 First Street, NE
Washington, D.C. 20426
Phone: (202) 502-8046
Fax: (202) 208-0353
Laurie.Boros@ferc.gov

Alternate FERC Contact

Gertrude Fernandez Johnson
FERC
888 First Street, NE
Washington, D.C. 20426
Phone: (202) 502-6692
Fax: (202) 208-0353
Gertrude.Fernandez.Johnson@ferc.gov

Louisiana SHPO Contact

Dr. Charles "Chip" McGimsey
LA State Archaeologist and Director
Division of Archaeology
Dept. of Culture Recreation & Tourism
1051 N. Third Street, Rm. 405
P.O. Box 44247
Baton Rouge, Louisiana 70804
Phone: (225) 219-4598
Fax: (225) 342-4480
cmcgimsey@crt.la.gov

Alternate Louisiana SHPO Contact

Rachel Watson
Section 106 Review and Compliance
Division of Archaeology
Dept. of Culture Recreation & Tourism
1051 N. Third Street, Rm. 405
P.O. Box 44247
Baton Rouge, Louisiana 70804
Phone: (225) 342-8165
Fax: (225) 342-4480
rwatson@crt.la.gov

3. If the discovery is aboriginal, Cameron Interstate will also notify appropriate Native American tribal groups (Jena Band of Choctaw Indians [Louisiana], the Caddo Nation, the Chitimacha Tribe of Louisiana, the Coushatta Tribe of Louisiana, Alabama Coushatta Tribe of Texas, and Tunica-Biloxi Indian Tribe of Louisiana). Notification will be by telephone, with written confirmation by fax and/or overnight mail. Notification will be the responsibility of the Cameron Interstate contact.

Tribal Contacts

Alabama Coushatta Tribe of Texas
Mikko Oscola Clayton M. Sylestine
C/O Bryant Celestine, Historic Preservation Officer
571 State Park Rd. 56
Livingston, TX 77351
Phone: (936)563-1100
Celestine.bryant@actribe.org

Caddo Nation
Brenda Shemayne Edwards, Chairperson
P.O. Box 487
Binger, OK 73009
Phone: (580) 924-8280
bgedwards@caddonation.org

Chitimacha Tribe of Louisiana
John Paul Darden, Chairman
P.O. Box 661
Charenton, LA 70523
Phone: (337) 923-4973
Fax: (337) 923-6848
info@chitimacha.gov

Coushatta Tribe of Louisiana
Kevin Sickey, Chairman
P.O. Box 818
Elton, LA 70532
Phone: (337) 584-2902
jzachary@coushatta.org

Jena Band of Choctaw Indians
Christine Norris, Tribal Chief
P.O. Box 14
Jena, LA 71342
Phone: (318) 992-2717
info@jenachoctaw.org

Tunica-Biloxi Indians of Louisiana
Earl J. Barbry, Sr., Chairman
P.O. Box 1589
Marksville, LA 71351
Phone: (318) 253-9767
Fax: (318) 253-9791
ebarbary@tunica.org

F. Notifications to FERC about observations of cultural material will:

1. Describe a scope-of-work for evaluating the significance of the resource and evaluating potential project effects on the resource. A request for authorization to immediately implement the work scope will also be made to FERC and Louisiana SHPO.
2. Invite FERC and SHPO and identified tribal representatives, when appropriate, to observe the implementation of any proposed work.
3. Include all work to evaluate significance and project effects will be confined to the project's potential area of impact.

G. When the evaluation of the cultural resources is complete:

1. Cameron Interstate will notify FERC and the Louisiana SHPO by telephone and discuss the project archeologist's opinion concerning the potential significance of the resource.
2. If the archaeologist believes the resource is not significant, the archaeologist will provide a rationale for the opinion, and request permission from FERC for construction to recommence.
3. As soon as possible following the field investigation, the archeologist will provide TRC and Cameron Interstate with a written report describing the results of the fieldwork.
4. If the resource is believed to be significant, the archeologist will prepare a proposal for data recovery.

H. Cameron Interstate may choose to prepare an analysis of alternatives to data recovery to determine what form of mitigation is preferable.

1. If an alternatives analysis is conducted, Cameron Interstate will submit, by fax or overnight mail, the archeologist's report and the alternatives analysis to the Louisiana SHPO and FERC.
2. If proposed mitigation measures may be carried out without being impeded or affected by construction, the submittal to FERC will be accompanied by a request that construction in the area of the discovery be permitted to resume.

I. Upon receipt of authorization from FERC, implementation of mitigation measures will begin immediately.

1. Cameron Interstate will advise FERC and the Louisiana SHPO when all mitigation measures have been completed.
2. If construction has been halted, Cameron Interstate will also request authorization from FERC to recommence construction.
3. Cameron Interstate will submit a summary report describing the results of mitigation to FERC and the Louisiana SHPO within 30 days of notification that mitigation fieldwork has been completed.
4. If archeological data recovery is a component of the mitigation plan, a full report will be submitted to FERC and the Louisiana SHPO in accordance with a schedule to be established in consultation with FERC.

IV. PROCEDURE WHEN HUMAN REMAINS AND/OR POTENTIALLY HUMAN SKELETAL MATERIALS ARE OBSERVED

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, ashes, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth.

A. Workers will treat all human remains with dignity and respect.

B. Immediately stop work in the vicinity of an unanticipated discovery involving potentially human remains.

C. Immediately notify the EI about the find.

D. If the EI believes that potentially human skeletal remains have been found, EI will stop all ground-disturbing activities within 100 feet of the potential discovery.

1. Protect and secure the evidence of the discovery.
2. Delineate the area with flagging or safety fencing.
3. Minimize movement by vehicles and equipment in the immediate vicinity of the discovery.
4. Limit movement of vehicles in the vicinity of the find to the construction right-of-way authorized by Cameron Interstate's FERC certificate.

EI will immediately notify the Cameron Interstate Construction Superintendent who will, in turn, immediately notify the designated TRC, FERC and Louisiana SHPO contacts:

***Cameron Interstate
Contact***

J.D. Morris, P.E.
Manager, Permitting and Compliance
Cameron LNG, LLC
2500 Citywest Blvd.
Suite 1800
Houston, TX 77042
(713) 298-5479
JMorris@sempraglobal.com

***Alternate Cameron Interstate
Contact***

Michael Taylor
Environmental Compliance Specialist
Sempra U.S. Gas & Power
787 Industrial Road
McIntosh, AL 36553
281-630-2187
Mitaylor@SempraUSGP.com

TRC Contact

Dr. Brian Thomas
TRC
4155 Shackleford Road
Suite 225
Norcross, Georgia 30093
Phone: (770) 270-1192 x112
Fax: (770) 270-1392
BThomas@TRCSolutions.com

Alternate TRC Contact

Dr. Larissa Thomas
TRC
4155 Shackleford Road
Suite 225
Norcross, Georgia 30093
Phone: (770) 270-1192 x118
Fax: (770) 270-1392
LThomas@TRCSolutions.com

FERC Contact

Laurie Boros
FERC
888 First Street, NE
Washington, D.C. 20426
Phone: (202) 502-8046
Fax: (202) 208-0353
Laurie.Boros@ferc.gov

Alternate FERC Contact

Gertrude Fernandez Johnson
FERC
888 First Street, NE
Washington, D.C. 20426
Phone: (202) 502-6692
Fax: (202) 208-0353
Gertrude.Fernandez.Johnson@ferc.gov

Louisiana SHPO Contact

Dr. Charles "Chip" McGimsey
LA State Archaeologist and Director
Division of Archaeology
Dept. of Culture Recreation & Tourism
1051 N. Third Street, Rm. 405
P.O. Box 44247
Baton Rouge, Louisiana 70804
Phone: (225) 219-4598
Fax: (225) 342-4480
cmcgimsey@crt.la.gov

Alternate Louisiana SHPO Contact

Rachel Watson
Section 106 Review and Compliance
Division of Archaeology
Dept. of Culture Recreation & Tourism
1051 N. Third Street, Rm. 405
P.O. Box 44247
Baton Rouge, Louisiana 70804
Phone: (225) 342-8165
Fax: (225) 342-4480
rwatson@crt.la.gov

- E. Within 24-hours of the discovery, if possible, a professional archeologist will examine the discovery to determine if the remains are human and have an archeological association and, if so, if that association is aboriginal or non-aboriginal.**
1. The services of a physical anthropologist or other qualified professional will be retained if the archeologist is unable to determine if the remains are human.
- F. If skeletal remains are determined to be non-human and there is no archeological association, the archeologist making the determination will immediately advise the EI and/or the Cameron Interstate Construction Superintendent, and construction may resume.**
1. The archeologist will submit a letter report including photographs of the discovery site to the Cameron Interstate and the TRC contacts within 15 business days of the determination.
- G. If the skeletal remains are non-human but are associated with an archeological site, follow the steps described in Section III A through J.**
- H. If the skeletal remains are human and not associated with an archeological context, the Cameron Interstate Construction Superintendent will notify Cameron Interstate Contact, Louisiana SHPO, FERC, the landowner, and the appropriate sheriff's office.**

In Louisiana, compliance with Title 8, Section 680 of the Louisiana Revised Statutes (Chapter 10-A, Unmarked Human Burial Sites Preservation Act) is required. If human skeletal remains are found, the respective Parish sheriff's office shall notify the

Unmarked Burial Sites Board (UBSB) through the Louisiana SHPO. If burial context indicates less than 50 years since burial, then a criminal investigation may ensue. Otherwise, the UBSB may issue a permit to excavate the remains.

Cameron Parish, LA, Sheriff

Ron Johnson, Sheriff
119 Smith Circle
Cameron, LA 70631
Phone: (337) 775-5111
info@cameronso.org

Alternate Cameron Parish, LA, Sheriff

Calcasieu Parish, LA, Sheriff

Sheriff: Tony Mancuso
5400 East Broad Street
Lake Charles, LA 70615
Phone: (337) 491-3715
Fax: (337) 494-4522
sheriffmancuso@cpsso.com

Alternate Calcasieu Parish, LA Sheriff

Beauregard Parish, LA, Sheriff

Sheriff: Ricky Moses
412 Bolivar Bishop Dr.
Deridder, LA 70634
Phone: (337) 463-3281
Fax: (337) 463-6347
rmoses@bpsheriff.org

Alternate Beauregard Parish, LA Sheriff

- I. Human remains found in a prehistoric archeological context will be assumed to be aboriginal. If aboriginal human remains are identified (whether or not in an archeological context), Cameron Interstate will immediately notify the TRC Contact. TRC will then notify Louisiana SHPO, as appropriate, and FERC archeologists.**

FERC Archaeologist

Laurie Boros
FERC
888 First Street, NE
Washington, D.C. 20426
Phone: (202) 502-8046
Fax: (202) 208-0353
Laurie.Boros@ferc.gov

Alternate FERC Archaeologist

J. If human remains are present in an aboriginal archeological context, Cameron Interstate will follow the procedures described in Section III E through J, except as follows:

1. Notifications to FERC and Louisiana SHPO will make special note that human remains have been found.
2. Cameron Interstate will notify appropriate Native American tribal groups, and request that identified Native American representatives advise Cameron Interstate, FERC, and Louisiana SHPO of any special desires they have regarding the disposition of the human remains.
3. Proposals for site evaluation will give special consideration to the fact that human remains are present.
 - a) No conduct of intrusive examination of the immediate area of the remains prior to receipt of a permit from the UBSB.
 - b) Evaluate the potential for the presence of multiple graves and describe procedures for determining if other unidentified graves may be present.
 - c) Describe efforts made to contact Native American tribes, the results of contacts, and efforts (as feasible) to accommodate the desires of the Native American tribes regarding the treatment of human remains.
 - d) If the discovery was made after pipeline trenching in the vicinity of the discovery has been completed, construction will be permitted to recommence, except within 100 feet of any human remains.
 - e) Construction within the 100-foot area of the find will be permitted to proceed when the remains have been removed (or when it has been determined that the remains should be left in place).
4. If FERC or the Louisiana SHPO advises Cameron Interstate that specific Native American tribal representatives wish to take custody of any human remains and rebury them on non-tribal lands, Cameron Interstate will, if requested, assist in any negotiations between the tribe and the landowner that may be necessary.
5. Cameron Interstate will make a good faith effort to accommodate any requests from identified Native American tribal groups that they be present during the implementation of mitigation measures related to human remains. Subject to agreements with identified Native American tribal groups, Cameron Interstate will offer to compensate a single tribal representative for time spent observing or participating in the removal of Native American human remains. Compensation will include the individual's time (at an hourly rate equivalent to that paid the professional archeologist) and associated travel and living expenses.

K. If human remains are present in a non-aboriginal archeological context, the procedures described in Section IV E through J, will be followed except that:

1. Proposals for site evaluation will give special consideration to the fact that human remains are present (i.e., no intrusive examination of the immediate area of the remains; proposals will include an evaluation of the potential for the presence of multiple graves, and describe procedures for determining if other unidentified graves may be present).
2. If it is determined by FERC, in consultation with Louisiana SHPO, that the associated archeological site is not eligible for the National Register of Historic Places and that no mitigation measures are necessary, the respective sheriff's office will be requested to coordinate with the local coroner and either direct the archeologist to implement an approved plan for removal of the remains or arrange for alternative, appropriate removal of the human remains.
3. Unless directed to do otherwise by FERC, Cameron Interstate will assume that it is authorized to resume construction when the remains have been removed.
4. Within 15 business days of the resumption of construction, Cameron Interstate will provide FERC with a written report describing the removal activities.
5. Proposals for mitigation will include discussion of what steps will be taken to attempt to identify lineal descendants of the deceased.
6. If the discovery was made after trenching in the vicinity of the discovery has been completed, construction will be permitted to recommence, except within 100 feet of any human remains.
7. Construction within the remaining 100-foot area of the find will be permitted to proceed when the remains have been removed (or when it has been determined that the remains should be left in place).



PROJECT-SPECIFIC PLAN
Cameron Interstate Pipeline Environmental Plan
Cameron Pipeline Expansion Project
Docket No. CP13-____-000

APPENDIX 4

PROJECT-SPECIFIC UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN (PLAN)

Note: Cameron Interstate has accepted The Commissions Plan without any requested deviations

**UPLAND EROSION CONTROL, REVEGETATION, AND
MAINTENANCE PLAN**

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**UPLAND EROSION CONTROL, REVEGETATION,
AND MAINTENANCE PLAN (PLAN)**

Note: Cameron Interstate Pipeline will adopt the FERC Plan as written for the Pipeline Project.

I. APPLICABILITY

- A. The intent of this Plan is to assist applicants by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in this Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in this Plan (or the applicant's approved plan) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in this Plan to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on wetland and waterbody systems are addressed in the staff's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

II. SUPERVISION AND INSPECTION

A. ENVIRONMENTAL INSPECTION

1. At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
2. Environmental Inspectors shall have peer status with all other activity inspectors.
3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, state and Federal environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

B. RESPONSIBILITIES OF ENVIRONMENTAL INSPECTORS

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements.
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands,

or areas with special requirements along the construction work area;

5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the location of dewatering structures and slope breakers will not direct water into known cultural resources sites or locations of sensitive species;
7. Verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent reoccurrence;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
9. Advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
10. Ensuring restoration of contours and topsoil;
11. Verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
12. Determining the need for and ensuring that erosion controls are properly installed, as necessary to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:
 - a. on a daily basis in areas of active construction or equipment operation;

- b. on a weekly basis in areas with no construction or equipment operation; and
 - c. within 24 hours of each 0.5 inch of rainfall;
- 14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;
- 15. Keeping records of compliance with the environmental conditions of the FERC certificate, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other Federal or state environmental permits during active construction and restoration; and
- 16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

III. PRECONSTRUCTION PLANNING

The project sponsor shall do the following before construction:

A. CONSTRUCTION WORK AREAS

- 1. Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys have been conducted.
- 2. Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of certificated work areas.

B. DRAIN TILE AND IRRIGATION SYSTEMS

- 1. Attempt to locate existing drain tiles and irrigation systems.

2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.
3. Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.
4. Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.

C. GRAZING DEFERMENT

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

D. ROAD CROSSINGS AND ACCESS POINTS

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

E. DISPOSAL PLANNING

Determine methods and locations for the disposal of construction debris (e.g., timber, slash, mats, garbage, drilling fluids, excess rock, etc). Off-site disposal in other than commercially operated disposal locations is subject to compliance with all applicable survey, landowner permission, and mitigation requirements.

F. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in this Plan and in the Certificate.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.

2. Develop specific procedures in coordination with the appropriate agency to prevent the introduction or spread of noxious weeds and soil pests resulting from construction and restoration activities.

G. STORMWATER POLLUTION PREVENTION PLAN

Make available on each construction spread the Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's National Stormwater Program General Permit requirements.

IV. INSTALLATION

A. APPROVED AREAS OF DISTURBANCE

1. Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the Certificate. Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with the Plan and Procedures (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval. All construction or restoration activities outside of the Certificated areas are subject to all applicable survey and mitigation requirements.
2. The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a Certificate condition. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (such as side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists.

Project use of these additional limited areas is subject to landowner approval and compliance with all applicable survey and mitigation

requirements. When such additional areas are used, each one should be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material should be included in the reports:

- a. the location of each additional area by station number and reference to a previously filed alignment sheet, or updated alignment sheets showing the additional areas;
- b. identification of where the Commission's records contain evidence that the additional areas were previously surveyed; and
- c. a statement that landowner approval has been obtained and is available in project files.

Prior written approval of the Director is required when the Certificated construction right-of-way width would be expanded by more than 25 feet.

B. TOPSOIL SEGREGATION

1. Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in:
 - a. actively cultivated or rotated croplands and pastures ;
 - b. residential areas;
 - c. hayfields; and
 - d. other areas at the landowner's or land managing agency's request.
2. In residential areas importation of topsoil is an acceptable alternative to topsoil segregation.

3. In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil. In soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.
4. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. Segregated topsoil may not be used for padding the pipe.

C. DRAIN TILES

1. Mark locations of drain tiles damaged during construction.
2. Probe all drainage tile systems within the area of disturbance to check for damage.
3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.
4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

D. IRRIGATION

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

E. ROAD CROSSINGS AND ACCESS POINTS

1. Maintain safe and accessible conditions at all road crossings and access points during construction.
2. If crushed stone access pads are used in residential or active agricultural areas, place the stone on synthetic fabric to facilitate removal.

F. TEMPORARY EROSION CONTROL

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

1. Temporary Slope Breakers

- a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.
- b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing should be used if necessary):

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.
- d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

2. Sediment Barriers

- a. Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. They may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials.
- b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.
- c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.

3. Mulch

- a. Apply mulch on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing.
- b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent.
- c. Mulch before seeding if:

- (1) final grading and installation of permanent erosion control measures, will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or
 - (2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.
- d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.
 - e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).
 - f. Ensure that mulch is adequately anchored to minimize loss due to wind and water.
 - g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies.
 - h. Install erosion control fabric on waterbody banks at the time of final bank recontouring. Anchor the erosion control fabric with staples or other appropriate devices.

V. RESTORATION

A. CLEANUP

- 1. Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (temporary slope

breakers and sediment barriers) until conditions allow completion of cleanup.

The project sponsor should file with the Secretary for the review and written approval of the Director, a winterization plan if construction will continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section IV.F and inspected and maintained as specified in sections II.B.12 through 14. When access is no longer required the travel lane must be removed and the right-of-way restored.
3. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.
4. Remove excess rock from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The landowner may approve other provisions in writing.
5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.
6. Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise.
7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

B. PERMANENT EROSION CONTROL DEVICES

1. Trench Breakers

- a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.
- b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.
- c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.
- d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

2. Permanent Slope Breakers

- a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent.
- b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency.

In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.
- d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

C. SOIL COMPACTION MITIGATION

1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.
2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.

Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. REVEGETATION

1. General

- a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.
- b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as possible after application.

3. Seeding Requirements

- a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.
- b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. Seeding is not required in actively cultivated croplands unless requested by the landowner.

- c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F. and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Lawns may be seeded on a schedule established with the landowner.
- d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a-c.
- e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.
- f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro).
- g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application.

Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

VI. OFF-ROAD VEHICLE CONTROL

To each owner or manager of forested lands offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- A. Signs;
- B. Fences with locking gates;
- C. Slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and
- D. Conifers or other appropriate trees or shrubs across the right-of-way.

VII. POST-CONSTRUCTION ACTIVITIES

A. MONITORING AND MAINTENANCE

- 1. Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.
- 2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.

Continue revegetation efforts until revegetation is successful.
- 3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas until restoration is successful.
- 4. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored.
- 5. Routine vegetation maintenance clearing shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in

width centered on the pipeline may be maintained annually in a herbaceous state. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

6. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

B. REPORTING

1. The project sponsor shall maintain records that identify by milepost:
 - a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
 - b. acreage treated;
 - c. dates of backfilling and seeding;
 - d. names of landowners requesting special seeding treatment and a description of the follow-up actions; and
 - e. any problem areas and how they were addressed.
2. The project sponsor shall file with the Secretary quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.



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Cameron Interstate Pipeline Environmental Plan
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APPENDIX 5

PROJECT-SPECIFIC WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

**WETLAND AND WATERBODY CONSTRUCTION AND
MITIGATION PROCEDURES**

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WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES (PROCEDURES)

Note: Text boxes have been inserted into this document to identify specific areas where Cameron Interstate has proposed construction methods, mitigation measures, and/or deviations from the FERC Procedures

I. APPLICABILITY

- A. The intent of these Procedures is to assist applicants by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in these Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in these Procedures (or the applicant's approved procedures) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in these Procedures to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
 - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction;
 - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction; and
 - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current Federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

1. The following information shall be filed with the Secretary prior to the beginning of construction:
 1. the hydrostatic testing information specified in section VII.B.3. and a wetland delineation report as described in section VI.A.1., if applicable; and
 2. a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery. The project sponsor shall revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice.

- B. The following site-specific construction plans required by these Procedures must be filed with the Secretary for the review and written approval by the Director:
1. plans for extra work areas that would be closer than 50 feet from a waterbody or wetland;
 2. plans for major waterbody crossings;
 3. plans for the use of a construction right-of-way greater than 75 feet wide in wetlands; and
 4. plans for horizontal directional drill (HDD) "crossings" of wetlands or waterbodies.

III. ENVIRONMENTAL INSPECTORS

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. PRECONSTRUCTION PLANNING

- A. A copy of the Stormwater Pollution Prevention Plan (SWPPP) prepared for compliance with the U.S. Environmental Protection Agency's (EPA) National Stormwater Program General Permit requirements must be available in the field on each construction spread. The SWPPP shall contain Spill Prevention and Response Procedures that meet the requirements of state and Federal agencies.
1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous

materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:

- a. all employees handling fuels and other hazardous materials are properly trained;
 - b. all equipment is in good operating order and inspected on a regular basis;
 - c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;
 - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector finds, in advance, no reasonable alternative and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
 - e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; and
 - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and

barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills;

- b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;
- c. know the contact names and telephone numbers for all local, state, and Federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and
- d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in these Procedures and in the Certificate.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

- 1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
- 2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
- 3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.

4. Notify appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

<p>A deviation is being requested from Requirement V.B.2.a to allow additional temporary work spaces to be located less than 50 feet away from the edge of specific waterbodies. These locations and the reason for the deviation request are provided in Table 1.3-1.</p>
--

- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from the water's edge, (except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.

- c. Limit clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way.
- d. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.
- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
- c. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way.
- d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
- e. Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
- f. Waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

4. Spoil Pile Placement and Control

- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.

- b. Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any waterbody.

5. Equipment Bridges

- a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.
- b. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:
 - (1) equipment pads and culvert(s);
 - (2) equipment pads or railroad car bridges without culverts;
 - (3) clean rock fill and culvert(s); and
 - (4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

- c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
- d. Design and maintain equipment bridges to prevent soil from entering the waterbody.
- e. Remove equipment bridges as soon as possible after permanent seeding unless the COE, or its delegated agency, authorizes it as a permanent bridge.

- f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final cleanup.

6. Dry-Ditch Crossing Methods

- a. Unless approved otherwise by the appropriate state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries.

- b. Dam and Pump

- (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:
 - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
 - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
 - (iii) screen pump intakes;
 - (iv) prevent streambed scour at pump discharge; and
 - (v) monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

- c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required in to achieve an effective seal);
- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and
- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill (HDD)

To the extent they were not provided as part of the pre-certification process, for each waterbody or wetland that would be crossed using the HDD method, provide a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (3) a contingency plan for crossing the waterbody or wetland in the event the directional drill is

unsuccessful and how the abandoned drill hole would be sealed, if necessary.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and

- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan should be developed in consultation with the appropriate state and Federal agencies and should include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;

- b. where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and
- c. use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

- 1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
- 2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
- 3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.
- 4. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
- 5. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.

6. Revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species.
7. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan.

In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

8. Sections V.C.3. through V.C.6. above also apply to those perennial or intermittent streams not flowing at the time of construction.

D. POST-CONSTRUCTION MAINTENANCE

1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the permanent right-of-way.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.

VI. WETLAND CROSSINGS

A. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current Federal methodology and file a wetland delineation report with the Secretary before construction. This report shall identify:

- a. by milepost all wetlands that would be affected;
- b. the National Wetlands Inventory (NWI) classification for each wetland;
- c. the crossing length of each wetland in feet; and
- d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where existing soils lack adequate unconfined compressive strength that would result in excessively wide ditches and/or difficult to contain spoil piles.

<p>A deviation is being requested from Requirement IV.A.3 to allow a construction right-of-way width greater than 75 feet in specific wetland areas. These locations and the reason for the deviation request are provided in Table 1.3-1.</p>
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4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
5. Implement the measures of sections V. and VI. in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V. and VI. cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
 - a. spoil control;
 - b. equipment bridges;
 - c. restoration of waterbody banks and wetland hydrology;
 - d. timing of the waterbody crossing;
 - e. method of crossing; and
 - f. size and location of all extra work areas.
6. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. INSTALLATION

1. Extra Work Areas and Access Roads
 - a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

<p>A deviation is being requested from Requirement IV.B.1.a. to locate additional temporary workspaces within 50 feet of specific wetland boundaries. These locations and the reason for the deviation request are provided in Table 1.3-1.</p>

- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from wetland boundaries (except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.
- c. Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.
- d. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

- e. The only access roads, other than the construction right-of-way, that can be used in wetlands without Director approval, are those existing roads that can be used with no modification and no impact on the wetland.

2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions

- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use "push-pull" or "float" techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open.
- e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.
- f. Cut vegetation just aboveground level, leaving existing root systems in place, and remove it from the wetland for disposal.
- g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.
- h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated or frozen. Immediately after backfilling is complete, restore the segregated topsoil to its original location.
- i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.
- j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction

equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.

- k. Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.
- l. Attempt to use no more than two layers of timber riprap to support equipment on the construction right-of-way.
- m. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c., maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any wetland. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of a slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
3. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.
4. Consult with the appropriate land management or state agency to develop a project-specific wetland restoration plan. The restoration plan should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.
5. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way

with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).

6. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.
7. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.5. of the Plan.

D. POST-CONSTRUCTION MAINTENANCE

1. Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.
2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate land management agency or state agency.
3. Monitor and record the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts. Include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). Continue to file a report annually until wetland revegetation is successful.
4. Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, develop and implement (in consultation with a professional wetland ecologist) a remedial

revegetation plan to actively revegetate the wetland. Continue revegetation efforts until wetland revegetation is successful.

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address the operation and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.
2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.

3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.
4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.



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ATTACHMENTS

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Table 1.3-1
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Station	Mile Post	Deviation Request	Justification
1+84 to 3+50	0.0 to 0.6	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
7+82 to 8+05	0.14 to 0.15	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
32+00 to 37+67	0.6 to 0.71	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
37+67 to 40+15	0.71 to 0.76	ATWS in wetland at a water body crossing	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
42+66 to 43+00	0.80 to 0.81	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
44+26 to 45+81	0.83 to 0.87	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
51+55 to 53+23	0.97 to 1.0	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)

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Station	Mile Post	Deviation Request	Justification
60+79 to 61+88	1.15 to 1.17	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
73+79 to 78+37	1.39 to 1.48	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)
78+37 to 80+27	1.48 to 1.52	Road bore pit on south side of Koonce Road in wetland	OSHA Type C Soil conditions require larger area to maintain stability of road bore pit sides and to keep spoil from bore pit within the temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
81+27 to 83+65	1.54 to 1.58	Road bore pit on north side of Koonce Road in wetland	OSHA Type C Soil conditions require larger area to maintain stability of road bore pit sides and to keep spoil from bore pit within the temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
85+14 to 88+93	1.61 to 1.68	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
118+65 to 120+91	2.25 to 2.29	125-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Additional width required to string, weld, test, pull back section of pipe for HDD which is used to avoid more valuable wetlands.
124+00 to 132+00	2.35 to 2.5	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Silviculture area.

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Station	Mile Post	Deviation Request	Justification
133+25 to 146+54	2.52 to 2.78	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Silviculture area.
149+55 to 244+00	2.83 to 4.62	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Silviculture area.
244+06 to 246+72	4.62 to 4.67	Road bore pit on west side of Hwy 27 in wetland	OSHA Type C Soil conditions require larger area to maintain stability of road bore pit sides and to keep spoil from bore pit within the temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
248+16 to 250+78	2.80 to 4.75	Road bore pit on east side of Hwy 27 in wetland	OSHA Type C Soil conditions require larger area to maintain stability of road bore pit sides and to keep spoil from bore pit within the temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
250+79 to 253+43	4.74 to 4.8	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Silviculture area.
258+10 to 260+87	4.88 to 4.94	Road bore pit and access road on east side of Banks Rd. & RR in wetland	OSHA Type C Soil conditions require larger area to maintain stability of road bore pit sides and to keep spoil from bore pit within the temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
260+87 to 284+02	5.0 to 5.38	125-foot-wide temporary construction right-of-way in wetland	Additional width required to string, weld, test, pull back section of pipe for HDD which is used to avoid more valuable wetlands.
284+02 to 286+52	5.38 to 5.43	ATWS for HDD of Little River in wetland	Area required for equipment and materials used in the HDD crossing of the Little River due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. HDD will allow avoidance of more valuable wetlands.

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Station	Mile Post	Deviation Request	Justification
308+08 to 309+45	5.83 to 5.86	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
313+97 to 320+56	5.94 to 6.07	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
321+99 to 328+50	6.09 to 6.22	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
351+88 to 357+83	6.66 to 6.77	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
359+79 to 360+79	6.8 to 6.83	ATWS for ditch crossing less than 50 feet from wetland	OSHA Type C Soil conditions require larger area for spoil storage at crossing of waterbody, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands, minimize adverse effects to waterbody.
361+57 to 362+57	6.84 to 6.86	ATWS for ditch crossing less than 50 feet from wetland	OSHA Type C Soil conditions require larger area for spoil storage at crossing of waterbody, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands, minimize adverse effects to waterbody.
362+57 to 367+46	6.86 to 6.95	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
367+46 to 368+46	6.95 to 6.97	ATWS for ditch crossing less than 50 feet from wetland	OSHA Type C Soil conditions require larger area for spoil storage at crossing of waterbody, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands, minimize adverse effects to waterbody.

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Station	Mile Post	Deviation Request	Justification
369+08 to 370+08	6.99 to 7.0	ATWS for ditch crossing less than 50 feet from wetland	OSHA Type C Soil conditions require larger area for spoil storage at crossing of waterbody, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands, minimize adverse effects to waterbody.
412+06 to 414+06	7.80 to 7.84	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
421+00 to 426+50	7.97 to 8.07	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
454+12 to 461+46	8.64 to 8.74	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
461+46 to 464+46	8.74 to 8.79	ATWS for HDD of Beckwith Creek in wetland	Area required for equipment and materials used in the HDD crossing of Beckwith Creek which is used to avoid adverse effects to more valuable wetlands.
585+00 to 585 +98	11.07 to 11.16	ATWS for ditch crossing less than 50 feet from wetland	OSHA Type C Soil conditions require larger area for spoil storage at crossing of waterbody, due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands, minimize adverse effects to waterbody.
632+21 to 648+60	11.97 to 12.28	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Silviculture area.
659+42 to 665+18	12.49 to 12.59	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
739+33 to 741+28	14.0 to 14.04	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Palustrine emergent wetland (PEM)

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Station	Mile Post	Deviation Request	Justification
753+22 to 770+68	14.26 to 14.59	125-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way. Additional 25-foot-wide width required for stringing, welding, testing of pipe for pull back section for HDD crossing of Indian Bayou which will avoid adverse effects to more valuable wetlands. Silviculture area.
770+68 to 773+18	14.59 to 14.64	ATWS for HDD of Indian Bayou in wetland	Area required for equipment and materials used in the HDD crossing of Indian Bayou which will avoid adverse effects to more valuable wetlands. Silviculture area.
836+02 to 838+16	15.83 to 15.83	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
843+11 to 845+38	15.96 to 16.01	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
864+82 to 867+89	16.38 to 16.44	ATWS for crossing of pipeline in wetland	OSHA Type C Soil conditions require larger area to maintain stability of sides of deep excavation required to cross pipelines due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.
926+00 to 930+33	17.54 to 17.62	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands. Spoil storage for stream crossing.
986+29 to 994+76	18.67 to 18.84	100-foot-wide temporary construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way.
1075+89 to 1079+07	20.37 to 20.43	100-foot-wide construction right-of-way in a wetland	OSHA Type C Soil conditions make it difficult to maintain slope stability of pipeline trench, contain trench spoil within temporary construction right-of-way due to experience from two prior construction projects, will ensure that excavated material does not flow into adjacent wetlands.

APPENDIX 6

HDD Contingency Plan

HORIZONTAL DIRECTIONAL DRILL PLAN

1.0 INTRODUCTION

This horizontal directional drill (HDD) plan identifies specific procedures and steps to contain inadvertent releases of drilling mud for water bodies that are crossed using HDD techniques. Cameron Interstate Pipeline, LLC (Cameron Interstate) proposes to utilize six directionally drills on the Cameron Pipeline Expansion Project (Pipeline Project).

2.0 HORIZONTAL DIRECTIONAL DRILLING PROCESS

Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small diameter pilot hole along a predetermined path. The second stage enlarges this pilot hole to a diameter that will accommodate the pipeline. Numerous "reaming" passes will be necessary with each pass enlarging the diameter of the pilot hole incrementally. The third stage involves pulling the pipeline through the enlarged hole.

During the drilling of the pilot hole, directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, which allows the operator to control the direction of the drill bit. The actual path of the pilot hole is monitored during drilling to take periodic readings of the inclination and azimuth. These readings are used to calculate the horizontal and vertical coordinates along the pilot holes relative to the initial entry point on the surface.

Once the pilot hole is complete, it is enlarged using reaming tools that are often custom made for a particular diameter pipe or type of soil. The reamers are typically attached to the drill string at the exit point and are rotated and drawn to the drilling rig, thus enlarging the pilot hole with each pass. Pipe installation is accomplished by attaching a prefabricated pull section behind a reaming assembly at the exit point and pulling the entire assembly back to the drilling rig. When the pipe is in place beneath the water body or other feature, tie-in welds on each end complete the crossing.

Ideally, HDD involves no disturbance to the bed or banks of the river. However, it is possible that geologic irregularities could be encountered during drilling and result in drill mud release. This plan describes the potential for failure of horizontal directional drilling and the contingency methods that would be implemented in the event drilling was to fail.

Failure of a HDD can be defined two ways: either as the release of drilling mud during the drilling process, or due to the inability to complete the crossing using the HDD

techniques. The feasibility of the HDD method is primarily dependent on the local geologic setting. Typically, HDD is not feasible in areas of glacial till or outwash interspersed with boulders and cobbles, fractured bedrock, or non-cohesive coarse sands and gravels. These formations increase the likelihood drilling would fail due to refusal of the drill bit, loss of drilling fluid through fractures or weak areas in the ground, or collapse of the bore hole in non-cohesive unstable substrate.

3.0 MONITORING PROCEDURES

The Environmental Inspector and/or Construction Inspector will continuously monitor operations during HDD activities. Monitoring activities will include:

- Visual inspection along the drill path, including monitoring the water body for evidence of a release.
- Continuous examination of drilling fluid pressures and return flows.

The drilling operator will provide information regarding drilling conditions to the Environmental inspector and/or Construction Inspector throughout the course of drilling activities. The Environmental Inspector and/or Construction Inspector will document relevant monitoring observations.

4.0 NOTIFICATION PROCEDURES

If in the course of an inspection an inadvertent release is discovered, steps will be taken by construction personnel to contain the release as described below in Section V, Corrective Action and Cleanup. Notification procedures of Cameron Interstate's construction management personnel and regulatory agencies are detailed in this section.

If monitoring indicates an in-stream release, the Environmental Inspector and/or Construction Inspector will immediately notify Cameron Interstate's construction management. Cameron Interstate will notify appropriate federal and state agencies as soon as practical by telephone and/or facsimile of an in-stream release event, detailing the nature of the release and corrective actions being taken, and will discuss with the notified agencies whether additional measures need to be implemented.

5.0 CORRECTIVE ACTION AND CLEANUP

By monitoring HDD operations continuously, Cameron Interstate intends to avoid problems before they occur. In addition, containment equipment including earth-moving equipment, portable pumps, hand tools, sand, hay bales, silt fence, lumber will be readily available at the drill site.

- The drilling contractor will decide what modifications to make to the drilling technique or composition of drilling fluid (i.e., thickening of fluid by increasing bentonite content) to reduce or stop minor losses of drilling fluid.
- If a minor bore path void is encountered during drilling; making a slight change in the direction of the bore path may avoid loss of circulation.
- If the bore head becomes lodged resulting in loss of drilling pressure, the borehole may be sized by moving the bore head back and forth to dislodge the stuck materials.

However, if a release does occur, the following measures will be implemented to stop or minimize the release and to clean it up.

Release in the Waterbody and or Wetlands:

If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement other possible corrective actions. Notifications should be carried out as indicated in Section 4. The hydrostatic pressure of the waterbody is likely to negate the pressure of the drilling fluid at the release site and will naturally limit the duration of the release. However, if an inadvertent release is observed in a waterbody, the following measures will be implemented.

- Immediately notify the environmental inspector, the Cameron Interstate inspector and the HDD contractor. The environmental inspector will monitor the extent of the drilling fluid plume.
- If bentonite material flows overland prior to entering the stream installation of silt fencing or sandbags dams at the point of entry will 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 will be used.
- Using a vacuum truck or pump(s), with sufficient house, personnel will 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 the maximum extent practical.
- If necessary, water may be diverted using a coffer dam to isolate the impact area. Only a portion of the stream will be diverted to minimize dewatering impacts. Water will be able to pass through the site in its natural condition.
- Any disturbed soils will be stabilized immediately.
- Disturbance of vegetation will be kept to a minimum and all disturbed vegetation will be restored and or replanted with native species, to eventually recreate the functional values of the lost vegetation.
- Damaged riffle and pool sediment strata will be re-contoured to the extent practical.

- The environmental inspector will evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, the environmental inspector will also consider if placement of containment structures will cause additional adverse environmental impact.
- Upon completion of the drilling operations, Cameron Interstate will consult with applicable regulatory agencies to determine any final clean-up requirements for the inadvertent release.

Release on Land:

- If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to avoid migration off-site.
- The contractor will construct pits and berms around the borehole entry and exit point to contain inadvertent releases onto the ground.
- Any drilling mud released into the pits will be pumped by contractor personnel into a mud-processing unit for recycling of drilling fluid and separation of cuttings.
- Additional berms may be constructed around the bore pit as directed by the Environmental Inspector and/or Construction Inspector to avoid release materials from flowing into the water body.
- If the amount of an on-land release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence, and/or hay bale installation) to avoid heavy silt laden water from flowing into the water body.
- If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the release material into the mud-processing system.

6.0 ABANDONMENT

If corrective actions do not prevent or control releases from occurring into the water body, Cameron Interstate may opt to re-drill the hole along a different alignment. The following steps will be implemented to abandon the drill hole:

- The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.
- Closer to the surface (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.
- The borehole entry location will be graded by the contractor to its original grade and condition after the drill hole has been abandoned.