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Stormwater Pollution Prevention Plan (SWPPP)

Pine Prairie Energy Center Supplemental Expansion Project

Acadia and Evangeline Parishes, Louisiana

Prepared for:
Pine Prairie Energy Center, LLC
Houston, Texas



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Reviewed By



Groundwater Associates, LLC
April 2009

CONTRACTOR CERTIFICATION STATEMENT

PPEC Supplemental Expansion Project

All contractors and subcontractors identified in this Stormwater Pollution Prevention Plan (SWPPP) shall sign a copy of the following certification statement before conducting any professional service at the site.

"I certify under penalty of law that I understand the terms and conditions of the general Louisiana Pollutant Discharge Elimination System (LPDES) permit that authorizes the stormwater discharges associated with industrial activity from the construction site as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the owner(s) and other contractors and subcontractors signing such certifications, to the Louisiana Department of Environmental Quality (LDEQ) LPDES Stormwater General Permit Associated with Construction Activities Greater than 5 Acres at the identified site. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act, to ensure compliance with the terms and conditions of the SWPPP that has been developed under this LPDES permit and the terms of this LPDES permit."

Contractor Name: _____

Contractor Title: _____

Contractor Company Name: _____

Address: _____

Phone: _____

Date: _____

Signature: _____

1.0 STORMWATER POLLUTION PREVENTION PLAN

The following documents and related information are incorporated by reference to comprise the Pine Prairie Energy Center (PPEC), LLC Stormwater Pollution Prevention Plan (SWPPP) for the PPEC Supplemental Expansion Project (Project). This plan and the referenced materials must be retained at the construction site from the date of Project initiation to the date of final stabilization, and provided to the LDEQ upon request to satisfy the requirements of the Stormwater General Permit Associated with Construction Activities Greater than 5 Acres. This SWPPP shall be amended to reflect any changes in design, construction, operation, or maintenance if required. The SWPPP including updates, inspections and maintenance records must be kept at the site during construction.

PPEC has incorporated the following documents and materials to fulfill the content requirements for its SWPPP.

Reference Documents and Materials:

- PPEC's Notice of Intent (NOI) to Discharge Stormwater under the Louisiana Pollution Discharge Elimination System (LPDES) Stormwater General Permit
- Site Description
- Contractor Certification Statement Forms
- The following plans developed by PPEC
 - Attachment 1 - Erosion Control Plan
 - Attachment 2 - Spill Prevention Containment and Countermeasures Plan (SPCC)
 - Attachment 3 - PPEC's Seed-Mix Recommendation from the Parish Extension Office
 - Attachment 4 - Typical Construction Drawings
 - Attachment 5 - Typical Erosion Control Drawings
 - Attachment 6 - FERC Upland Erosion Control, Revegetation and Maintenance Plan and Wetland and Waterbody Construction and Mitigation Procedures
 - Attachment 7 - Facility Expansion and South Corridor Loop Pipeline Soil Maps
 - Attachment 8 - General Permit

Owner Name and Address

Pine Prairie Energy Center, LLC
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Warren D. Fusilier, Director, Environmental and Regulatory Compliance
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2.0 SITE AND PROJECT DESCRIPTION

General Project Description

PPEC proposes herein to construct, modify and operate projects in Louisiana. The Supplemental Expansion Project consists of:

- Capacity expansion of two of the three previously certificated natural gas storage caverns identified as CW 2 and CW 3;
- Two new storage caverns identified as CW 4 and CW 5;
- Leaching header extensions from CW 3 to a new riser that will be installed at the approximate mid-point between CWs 4 and 5. These extensions will consist of a 20-inch-diameter brine water (BW) pipeline, a 20-inch-diameter raw water (RW) pipeline, a 2-inch-diameter instrument air pipeline, and dual fiber-optic lines;
- A new 24-inch-diameter gas header pipeline from the existing Gas Handling Facility (GHF) to the new riser that will be installed approximately at the mid-point between CWs 4 and 5. This pipeline will merge into a common right-of-way (ROW) with the leaching header extensions that will originate from CW 3;
- New cavern well laterals that will connect each of the proposed CW 4 and CW 5 Sites to the new riser consisting of a 16-inch-diameter BW pipeline, a 16-inch-diameter RW pipeline, a 16-inch-diameter gas header pipeline, a 2-inch-diameter instrument air pipeline, and dual fiber-optic lines;
- New Saltwater Disposal Well 7 (SWD 7) and new Raw Water Well 7 (RW 7) to be located on the existing certificated Saltwater Disposal Well 6 (SWD 6) pad;
- Incremental compression expansion consisting of two Caterpillar G34CM16 engines with compressors (to be installed at the existing GHF building) and four Caterpillar G3616 units with compressors (to be installed within an approximate 20-acre site leased by PPEC at the Contractor Fabrication Area that is located east and adjacent to the existing GHF and has been approved by the Commission for PPEC facilities construction). This previously approved site will continue to be employed as a storage facility site as required during the Cavern development process;
- Approximately 5.3 miles of 24-inch-diameter natural gas pipeline loop (South Pipeline Corridor Looping Pipeline [Chalk Line Loop]) and associated appurtenances.

The natural gas storage-related elements of the Project (i.e. the Gas Storage Caverns, incremental compression expansion and RW 7 and SWD 7 Wells) will be located at or near the Gas Storage Site. This Gas Storage site will incorporate the Gas Storage Cavern Area and Gas Handling Facility. Cavern Wells 4 and 5 will be located in Section 35, Township 3 South, Range 1 West, in Evangeline Parish, Louisiana on 40 acres of unimproved land owned by an affiliate of PPEC. The land consists primarily of pine forest, native grasses and shrubs. With the exception of occasional timbering, there are no known current uses for the property.

The Gas Handling Facility, incremental compression, and proposed cavern well locations will be located on 120 acres of land (of which 80 acres is leased by PPEC and 40 acres is owned by an affiliate of PPEC) approximately 15 miles north of Eunice and approximately 1 mile west of

Easton, in Section 36, Township 3 South, Range 1 West in Evangeline Parish, Louisiana. RW 7 and SWD 7 Wells will be located in Section 3, Township 4 South, Range 1 West, in Evangeline Parish, Louisiana on a 3-acre tract of land that is leased by PPEC and currently houses the SWD 6 well.

Pipeline and related metering and regulation facilities associated with the Project will extend from Acadia Parish in Sections 2 and 11, Township 7 South, Range 2 West (located south of the Gas Storage Site) northward to Evangeline Parish in Sections 13, 24, 25, 35, 36, Township 6 South, Range 2 West. These pipeline facilities will parallel the South Pipeline Corridor existing pipeline and will require little in the way of new right-of-way (ROW).

Overall, cavern well, pipeline, and the metering and regulation facilities associated with the looping aspect of the Project will extend from Acadia Parish in Sections 2 and 11, Township 7 South, Range 2 West (located south of the Gas Storage Site) to Evangeline Parish in Sections 13, 24, 25, 35, 36, Township 6 South, Range 2 West, Sections 35, 36, Township 3 South, Range 1 West, and Section 3, Township 4 South, Range 1 West. The proposed pipeline facilities will parallel the existing pipeline that is located in the South Pipeline Corridor.

As part of post-construction maintenance, a corridor approximately 50-feet wide and centered over the pipeline will be maintained in upland areas. Routine maintenance clearing shall not be performed more frequently than every three years; however a corridor approximately 10-feet in width and centered over the pipeline may be maintained annually in an herbaceous state. In wetland areas, a 10-foot wide corridor centered over the pipeline will be maintained in an herbaceous state. In addition, trees within 15-feet of the pipeline which are greater than 15-feet in height will be selectively removed from the right of way in accordance with the Federal Energy Regulatory Commission (FERC) Upland Erosion Control, Revegetation, and Maintenance Plan (*Plan*) and Wetland and Waterbody Construction and Mitigation Procedures (*Procedures*) (**Attachment 6**).

2.1 Description (Purpose and Types of Soil Disturbing Activities)

All facilities described in this plan will be designed, constructed, tested, operated, and maintained in accordance with the DOT regulations in Title 49 Code of Federal Regulations (CFR) Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, and other applicable federal and state regulations. PPEC has adopted the Federal Energy Regulatory Commission's (FERC) *Plan* and *Procedures* (**Attachment 6**) as its own for this Project. PPEC's contractors shall be responsible for the installation, maintenance and repairs of all erosion and sediment control measures according to the reference documents outlined above, and the requirements of the Stormwater General Permit. The actual placement of erosion and sediment controls will be determined in the field by the Project Environmental Inspector(s).

Pipeline construction will use one or more spreads. According to the anticipated schedule for the South Pipeline Corridor Looping Pipeline (Chalk Line Loop), construction should begin concurrently with development of CW 5. Overall pipeline construction activities are expected to last 3 months. Construction of the gas storage caverns and saltwater disposal/raw water wells will commence on or about October 1, 2009 and will terminate in the second quarter of 2012. Overall gas storage cavern construction activities are expected to last approximately 32 months. Areas disturbed during pipeline construction will be cleaned up promptly, weather permitting. In the event final restoration is not completed by the Fall of any given year, temporary erosion control measures will remain in-place until restoration is completed during the following Spring.

Generally, pipeline and appurtenant facility construction activities will take place from Monday through Saturday for 10 hours per day (daylight hours). Tie-ins, testing, and completion of waterbody crossings may require construction activities to extend beyond daylight hours.

Standard Construction Methods for Pipelines

The Project will be constructed in compliance with applicable Federal regulations and guidelines, and the specific requirements of the necessary permits. Pipelines will be installed and tested in stages as follows:

1. Install and test approximately 0.47-mile of 20- and 16-inch-diameter RW and BW pipelines between the existing CW 3 and the proposed Gas Storage Caverns, and approximately 0.70-mile of 20- and 16-inch-diameter gas header pipelines between the existing Gas Handling Facility and the proposed Gas Storage Caverns to allow for leaching of the caverns.
2. Install and test the new, approximately 5.3-mile 24-inch-diameter South Pipeline Corridor Looping Pipeline (Chalk Line Loop) natural gas pipeline.

Construction of the proposed pipeline will involve the use of specialized equipment working as a moving assembly line. Machinery moves along the line and assembles and installs the pipeline in a continuous and systematic manner. A typical pipeline spread consists of several specialized crews that are set up to perform their part of the operation at a rate equal to the rate of progress of the crew that follows them.

At the start of the Project, the Contractor's Fabrication Areas/Temporary Yards will be developed at the Facility Expansion Site and at the southern terminus of the Chalk Line Loop. The sites were selected based on the following criteria:

- Close proximity to the ROW and Facility Expansion Site;
- Ease of access to the sites from paved and established roadways;
- Minimal chance of flooding;
- Minimal environmental impacts to prepare the sites; and
- Previously disturbed and used for this purpose.

The Contractor's Fabrication Areas/Temporary Yards are required to stage construction equipment and materials that will be utilized during execution of the Project. Also, these sites will provide centralized locations for field construction offices and off-road parking for all workers associated with the Project. Multiple sites are required to minimize environmental damage that would occur from having only one site and the associated repeated traffic along the ROW.

Each yard will vary in size and will be returned to its pre-construction use as closely as practical once all Project activities are complete. PPEC owns the locations of these yards and may elect to use these locations for pipe storage and/or fabrication activities upon completion of the Project.

Clearing

Clearing consists of the removal of trees, brush and other obstruction from within the boundaries of the construction ROW. Clearing will be restricted where possible to only the amount of ROW necessary for the ditching and laying of the pipe and development of the facilities. Various clearing methods will be employed, depending on tree size (diameter and height), the contour of the land, and the ability of the ground to support clearing equipment and water conditions. Marketable timber will be cut to specified lengths and windrowed along the ROW in upland areas if practical. Unusable timber may be disposed of in a number of ways, depending on local restrictions and the terms of applicable permits and/or landowner agreements. The timber may be piled on the low side of the

ROW to provide filter strips and wildlife habitat, buried, burned on the ROW where local ordinances allow, or chipped, spread and/or sold. PPEC will select an option in accordance with local conditions and applicable regulations. Burning operations will not occur in wetlands.

Grading

Tree stumps will be removed from the construction ROW by bulldozers equipped with grading blades or pulled from areas containing water. Topographical irregularities will be graded to ensure rapid and safe passage of the work crews and equipment. Tree stumps and rocks, if any, will be disposed of in an approved manner, typically by burying them in upland areas of the ROW unless otherwise prohibited. Grading will not take place in wetlands unless topographic features or slopes make the ROW unsafe for construction equipment. In annually cultivated or rotated agricultural areas including pasture lands, residential areas and where the landowner requests, topsoil will be carefully segregated to a maximum 12-inch depth at a minimum from the trench and spoil areas, and stored for later restoration of the ROW. PPEC will employ full-ROW topsoil segregation techniques along the majority of the Chalk Line Loop.

Erosion and Sediment Control

Erosion and sediment control measures are discussed in the attached Erosion Control Plan (**Attachment 1**).

Trenching

Following grading, the centerline of the trench will be surveyed and staked, where possible. The trench will be excavated to a depth sufficient to provide at least the minimum cover as required by DOT specification. The method of excavation used will depend on soil conditions encountered. It is expected that a combination of rotary wheel type ditching machines, backhoes and clamshells will be required. Blasting is not anticipated in this region of Louisiana. Typically, material excavated from the trench will be piled parallel and adjacent to the trench on the opposite side of the construction work area. Topsoil segregation will not occur in areas of standing water. Trenchline breakers will be installed on slopes, at the edge of wetlands and at streambanks.

Stringing

Stringing involves moving lengths of pipe into position along the trench prior to bending and welding. In upland areas, trucks will transport the pipe from storage yards to the prepared ROW, where the pipe will be placed next to the ditch in a staggered pattern to allow for the preparation of the exposed ends of the pipe. In wetlands, the pipe will be stored at the temporary contractor yards until it is needed along the ROW and fabricated outside the wetland prior to installation in the form of several sections of welded pipe to minimize the time that disturbance occurs at these locations.

Bending

Pipe bending activities will be performed by a hydraulic bending machine as necessary to fit the contour of the ditch bottom and to account for changes in direction of the route. All bending activities will be supervised by qualified pipe bending inspectors. If necessary, factory "hot" bends will be installed if the ROW width does not allow for pipe bending in the field.

Welding

Each welder will be qualified in accordance with federal regulations by completing a test weld using approved welding procedures. The initial aspect of the field welding operation is the "pipe line-up." Each successive length of pipe will be laid on properly padded skid supports. All paint, rust, scale, dirt or other foreign matter that could interfere with the welding of the pipe's beveled ends will be removed by grading or buffering. The abutting ends will be lined up, accurately spaced, clamped internally and the first welding pass will be completed. Welders will complete each weld with

additional passes as required to meet welding procedure specifications. After the welds are complete, nondestructive testing will be conducted to check weld adequacy and integrity in accordance with federal regulations.

Joint Coating

Pipe that has been pre-coated prior to stringing will require an "over the ditch" coating of the field joints. The contractor will employ heat-shrink sleeves or two part liquid epoxy to coat field joints.

Lowering-in

Prior to lowering-in, the ditch will be cleaned of all debris and the bottom smoothed. The pipe section will be lifted from the skid supports and lowered directly into the ditch by using a sufficient number of sideboom tractors or tracked hoes equipped with rubber-tired cradles and/or slings and belts to prevent damage to the pipe and pipe coating. Padding materials may be required in areas where the ditch is irregularly shaped and/or where the excavated spoil materials are unacceptable for backfilling around the pipe. Sand, gravel or screened spoil materials from the ditch excavation, or a combination of each will be used for padding. Padding material will be placed in the bottom of the ditch to a depth of six inches prior to the lowering-in of the pipe. In no case will topsoil be used as padding material.

Backfilling

The lowering-in crew commences the backfilling process by covering the pipe to anchor it in place. Before any further work is done, a final inspection will be made to ensure all debris has been removed from the ditch and the pipe coating is undamaged. Any drainage culverts that cross the working side of the ROW will be cleaned out and inspected to ensure they have not been crushed or otherwise damaged during construction. Damaged conduits will be replaced across the ditch line. A 6-inch layer of padding material will be placed around the pipe in areas where gravel or large rocks are encountered. In areas vulnerable to erosion, breakers consisting of sand, gravel, cement or cement-filled sacks will be installed in the ditch over and around the pipe. The ditch will be backfilled using spoils excavated from the ditch. Finally, previously-segregated topsoil will be returned to permit restoration of normal surface vegetation where possible. Under no circumstances will topsoil be used to pad the pipe.

Hydrostatic Testing

The Project natural gas pipeline will be hydrostatically pressure tested to DOT standards, as listed in Title 49 Code of Federal Regulations (CFR) Part 192, prior to being placed in service. Although not required by codes, the raw water and saltwater disposal pipelines will also be hydrostatically tested. The test medium will be water. The water for the testing of all pipelines at the Facility Expansion Site will be acquired from PPEC's existing RW wells. The water will be tested prior to filling the pipeline and tested again upon discharge to verify that there are no contaminants in the discharge. If required, a Louisiana Statewide Testwater Discharge Permit will be acquired to allow for discharge to the ROW.

Water for the testing of the new Chalk Line Loop will be acquired from permitted municipal sources and/or local bayous or waterways. The water will be tested prior to filling the pipeline and tested again upon discharge to verify that there are no contaminants in the discharge. The water from testing the new pipeline segment will be discharged in accordance with the Louisiana Statewide Hydrostatic Testwater Discharge Permit. If contaminants are present that prevent such disposal, the water will be treated to remove contaminants prior to discharge. An approved method of filtration will be utilized to collect any particulates from construction. Test pressures, durations and other provisions will be conducted as prescribed by Title 49 CFR 192.

Purge and Load

In the purge and load process, compressed air will be utilized to drive a batch filling pipeline pig through each tested pipeline segment. Upon completion of compressed air fill, pipeline quality natural gas will follow another batch filling pipeline pig. Adequate valving and other safety controls will be provided to control the venting of air; however, minor air emissions of natural gas may occur. There are no sour or toxic gases associated with this Project.

Dust Mitigation

The Project will implement dust mitigation measures as necessary and at the discretion of the contractor's supervisor and the on-site Chief Construction Inspector. The primary measure to minimize dust will be the use of water trucks to dampen construction sites under dry dusty conditions. Special consideration will be given to roadway entrance areas where clear visibility is essential

Clean-up and Restoration

Shortly after backfill is complete, excess materials will be removed from the ROW, together with accumulated construction debris. Drainage ditches, terraces, roads and fences that were disturbed by construction will be restored to their former condition or better. Preconstruction contours will be restored, except in upland areas where a slight crown will be formed over the trench to allow for settling of the backfill. Openings will be left in the completed crown to restore lateral surface drainage to pre-construction patterns or better. Pipeline markers and warning signs will be erected at roads, streams and other points where awareness of the line is required. The markers will identify PPEC as the pipeline operator and list telephone numbers for pipeline emergencies or inquiries relating to the pipeline.

PPEC has adopted the FERC's *Plan and Procedures* (**Attachment 6**) as its own in addition to the attached Erosion Control Plan (**Attachment 1**). The *Plan and Procedures* describe in detail the typical construction and restoration techniques and mitigation measures to be utilized for this Project. Despite that the *Plan and Procedures* are primarily directed towards linear pipeline projects, the basic Best Management Practices (BMPs) for construction activities for the Project will be employed in the construction of all facilities (including the Gas Storage Caverns).

Standard Construction Methods for the Gas Storage Caverns

The new gas storage caverns (i.e. CW 3 and CW 4) will be solution-mined at an average flow rate of approximately 5,500 gallons per minute (GPM) employing direct and reverse circulation techniques. A diesel oil blanket fluid will be utilized to prevent uncontrolled leaching of the cavern roof and to protect the production casing seat. The blanket depth will be monitored and repositioned as necessary to protect the casing seat and create a cavern roof having the desired dome shape.

The direct circulation phase of leaching will be completed after approximately 1.0 million barrels of cavern space have been created. At this point, the cavern shape and capacity will be confirmed by performing a sonar survey. The remainder of the cavern development process will be accomplished primarily using a reverse circulation technique (i.e. raw water is injected down the annulus of the outside hanging string and the inside hanging string with the resulting brine being produced through the inner-most (long) hanging string).

Blanket fluid depth will be set as desired to shape the cavern roof. The protected zone from the cavern roof to the casing shoe is known as the cavern neck. This process provides for shaping the roof for structural integrity. This will be confirmed during cavern development with additional sonar surveys. In all cases the blanket material will be maintained at a level to protect the production casing seat.

At completion of the cavern development process, a sonar survey in brine will be performed and submitted to the LDNR. Following the confirmation and approval by the LDNR of the pre-operation requirements, as provided in LAC 43: XVII, § 109(B)(5), the cavern will be converted to natural gas storage service. Gas will be injected by multistage compressors. The expected duration of the gas first-fill operation is approximately 2 months.

Gas injection will continue and the cavern will be pressured to operating pressure. Natural gas will be injected under pressure and withdrawn from the caverns through expansion and pressure reduction. Gas will be withdrawn and injected as needed.

Standard Construction Methods for Gas Storage Cavern Enlargement

PPEC proposes to enlarge the previously-Certificated and existing CW 2 and CW 3 by implementing the Solution Mining Under Gas (SMUG) process. Raw water will be injected into the cavern through the hanging string to flood the cavern. While raw water is being injected into the storage cavern, it may be necessary to simultaneously inject and/or withdraw gas. In order to dewater the brine from the cavern, natural gas will be injected into the cavern. The injection of natural gas will increase the cavern pressure to a sufficient point where it can lift the brine from the bottom of the cavern to the surface.

The PPEC caverns have been designed specifically during the initial solution mining phase for future enlargement. The cavern locations provide ample salt back from the top of salt and the edge of salt. The cavern wellheads have been spaced a minimum of 750 feet apart to provide sufficient spacing between the cavern walls. The caverns are developed over a 1,500 foot interval with a maximum diameter of 300 feet.

Specialized Techniques for Active Croplands

The Erosion Control Plan (**Attachment 1**) includes a discussion of the construction techniques that will be followed in agricultural areas. Agricultural areas primarily consist of pasture and drained rice fields in the Project area. PPEC will segregate topsoil to a maximum of 12 inches in accordance with the FERC *Plan and Procedures* (**Attachment 6**). Full ROW topsoil segregation techniques will be employed in actively cultivated agricultural lands; these techniques will require 25 feet of additional temporary workspace to stockpile the topsoil. Prior to construction, PPEC will contact landowners and the Natural Resources Conservation Service (NRCS) to locate any existing drainage tiles and irrigation systems. Any drainage tile systems that are damaged during construction will be repaired at PPEC's cost. Water flow in crop irrigation systems will be maintained unless shutoff is coordinated with the affected parties. Wetlands and waterbodies in agricultural areas will be crossed as specified in the Erosion Control Plan (**Attachment 1**).

Specialized Techniques for Road, Highway, Railroad and Utility Crossings

Highways, improved roads, and railroad ROWs will be crossed in accordance with applicable federal and state transportation guidelines. PPEC will employ the horizontal boring technique as the primary method of crossing these areas. This method involves the excavation of pits or bell holes on either side of the crossing and using a boring machine to drill a horizontal hole beneath the road or railroad bed. A pipe section is inserted into the hole and welded to the mainline pipeline on either side of the crossing.

Where ground conditions are unsuitable for boring, and where allowed by regulatory agencies, roads may be open-cut. This will involve crossing the road in stages allowing for a minimum of a single lane of traffic. During construction, efforts will be made to minimize delays, public inconvenience, and disruption of traffic flow. At these crossings, appropriate safety precautions will be taken as required by regulatory agencies, such as the use of flag men, night flashers, and

markers. All open-cut roads will be reconstructed properly and inspected to ensure the stability of the roadway.

Other underground utilities will be identified and located to the greatest extent practical prior to construction. Typically, these utilities will be crossed by excavating or boring under the exposed cable or pipeline. Care will be taken to avoid damage to and disruption of other utility services.

Specialized Techniques for Wetlands

Sensitive environmental resources, such as wetlands, will be crossed in accordance with the Commission's *Procedures (Attachment 6)*, the Project Erosion Control Plan (**Attachment 1**) and other applicable guidelines. The primary emphasis will be on minimizing overall impacts by limiting the time and level of disturbance in wetlands, and controlling sedimentation into these resources. During the Project routing and gas storage cavern locating exercise, PPEC took exceptional measures to avoid wetlands and waterbodies to the maximum extent practicable. Special care will be taken during restoration to ensure that wetlands are stabilized and revegetated, and that natural functions and values are retained to the maximum practical extent.

The Chalk Line Loop will be installed using a variety of techniques. One method may consist of the push/pull trench burial technique. Excavation and backfill equipment will work from marsh buggy or similar equipment within the construction ROW. Pipeline burial depth will conform to U.S. Army Corps of Engineers and any local permit requirements, but in any event will provide a minimum of 3 feet of cover. The prefabricated pipe section will be pulled into place after welding, joint coating and inspection are complete.

Where wetland soils are saturated, the pipeline trench will be excavated across the wetland by equipment supported by swamp mats to reduce the disturbance to wetland soils. Unless soils are saturated, the top 12 inches of the wetland soil over the trenchline will be segregated. Trench spoil will be temporarily piled in a ridge along the pipeline trench. Gaps in the spoil pile will be left at appropriate intervals to provide for natural circulation or drainage of water. After the pipeline is lowered into the trench, wide track bulldozers or trackhoes supported on swamp mats will be used for backfilling, grading, and final clean-up activities. If conditions allow, normal, cross-country construction practices will be used in wetlands (i.e., pipe fabrication will occur in the wetland).

Clean-up will include removal of any construction work pads. If used, swamp mats will be removed from the affected Project area. The area will be restored to natural topographic and hydrological conditions as closely as practicable.

PPEC will allow for natural revegetation of wetland areas as required by conditions imposed in the permitting process. Also, periodic maintenance inspections of the pipeline ROW will be used to assess revegetative progress and to determine if the wetlands hydrology in the pipeline ROW has been restored. If areas of water flow alteration or no vegetation are found along the ROW, PPEC will implement the necessary corrective actions (sediment recontouring and/or sprigging of marsh grass species) to revegetate the pipeline ROW.

Specialized Techniques for Waterbody Crossings

The following is a list of conditions generally applicable to all waterbody crossings. Other measures located under the specific waterbody crossing method procedures may be substituted or added to these general conditions.

PPEC anticipates (weather permitting) completing trenching, installing pipe and backfilling of minor waterbody crossings (less than 10 feet wide) within 24 continuous hours and intermediate waterbodies (10 feet to 100 feet in width) within 48 continuous hours, unless a flume pipe is used to allow uninterrupted flows across the trenchline. PPEC will ensure that construction across

waterbodies is completed in the shortest amount of time possible to minimize the duration of potential adverse impacts.

Staging areas for waterbody crossings will be minimized. Additional temporary work space areas will be located at least 50 feet beyond the stream banks (site-specific conditions permitting). If site-specific conditions do not permit a 50-foot setback, these areas must be located at least 10 feet from the water's edge and a site specific variance will be requested from the Commission.

Spill prevention measures will be developed. Hazardous materials, chemicals, fuels or lubricating oils will not be stored nor will concrete coating activities (excluding field joints) be performed within 100 feet of a streambank or wetland. Spoil will be stored at least 10 feet from streambanks at waterbody crossings, where possible. Spoil placed up-gradient of stream banks will be contained with erosion control devices (ECDs) to prevent spoil materials from flowing into waterbodies or off-ROW.

Equipment crossings will be limited, and mats will be laid adjacent to and across streambeds. Where mats are not adequate, flume pipes covered by fill material (clean gravel or crushed stone), flume pipes covered by fill material overlain with timber mats, and/or portable bridges will be utilized.

Flume pipes will conform to waterbody crossing dimensions and alignments. Stream channels will not be permanently straightened or permanently realigned, unless a permit or approval has been acquired to do so. The size and number of the flumes will be sufficient for maximum anticipated flows. Stream channels may be altered temporarily to allow placement of flume pipe(s)/culvert(s) and facilitate the equipment crossing installation.

If fill for an equipment crossing includes log rip-rap or other erodible material, sandbags will be placed in the waterbody, at the upstream and downstream ends of the crossing, to stabilize and seal the flume pipes. To prevent erosion, sandbags will be placed high enough along both sides of the equipment crossing to contain the fill material (hay/straw bales may also be used for this purpose).

Clearing/Grading

The construction of the equipment crossing will use timber mats with or without flume(s), clean rock fill and flume(s), or a Flexi-float or portable bridge. Equipment bridges will be maintained to prevent soil from entering the waterbody. Where necessary, the grade of the streambanks will be reduced to form a gradual slope and soil will be pushed or pulled away from the waterbody. If more than one week will pass between the time when the area is cleared and when the pipe is installed, the clearing crew may leave a 10 foot vegetative strip on either side of the waterbody (excluding the equipment crossing). Trees greater than 4 inches in diameter may be removed from the vegetative strip at the time of initial clearing or PPEC will install sediment barriers at the top of the stream bank, if no vegetative strip remains.

Clean-up/Restoration

During restoration, flume pipes, sand bags and other material will be removed and the Project waterbodies will be restored to preconstruction contours. Streambanks will be stabilized and temporary ECDs will be installed within 24 hours of completing the crossing. Equipment crossings will be left in place if they are determined to be needed for access during seeding. They will be removed if more than one month will pass between final clean-up/grading and the beginning of initial permanent seeding, and appropriate alternative access is available. Jute thatching, fiber logs or other erosion control materials will be used to stabilize streambanks as necessary. For slopes greater than 15% within 100 feet of a waterbody, jute netting will be used over seed and straw

mulch as necessary. Rock rip-rap will be placed on the banks of waterbodies where flow conditions prevent the establishment of vegetation.

2.2 Runoff Coefficient

Runoff coefficients for the construction area will vary depending on vegetation, topography, and soils. The land use is predominantly designated as agricultural with small sections of wooded areas. The runoff coefficient will range from 0.25 in agricultural areas to 0.10 in forested areas. There will be no change in land use due to the Project except at permanent aboveground facilities. The ROW will be restored to preconstruction contour elevations in areas that experience only temporary impacts.

2.3 Site Area

The typical construction areas are shown on the maps and drawings that have been prepared for the Project (see alignment sheets). The area that will be temporarily disturbed for both the Gas Storage Site and South Pipeline Corridor Looping Pipeline facilities in Louisiana is approximately 80 acres.

Sequence of Major Activities

- i. Install stabilized construction entrances.
- ii. Clear the construction limits. Install erosion control devices (ECDs) where possible and as applicable.
- iii. Grade the construction area. Limit grading activities as much as possible to minimize the disturbed area.
- iv. Separate topsoil in accordance with requirements of landowners, permitting agencies, or site-specific conditions (if required).
- v. Construct pipelines, valve assemblies, and aboveground facilities.
- vi. Excavate trenchline and install pipeline and aboveground facilities.
- vii. Backfill the trenchline by returning the spoil pile, followed by topsoil (if required).
- viii. Complete hydrostatic testing of completed facility segments.
- ix. Perform clean up and restoration, including but not limited to final grading; restoration of geomorphic features (banks, terraces, slopes); installation of permanent erosion/sediment controls; and revegetation or gravel groundcover as is appropriate.
- x. The Project area will be seeded in accordance with written recommendations on seeding rates; mixes and dates obtained from local soil conservation authorities or the FERC. Alternative seed mixes specifically requested by the landowner or land-managing agency may be used.
- xi. Remove temporary erosion/sediment controls when construction activity is completed and final stabilization is achieved.

2.4 Name of Receiving Waters

The Project pipeline facility segments will not cross any perennial waterbodies. All waterbodies that will be crossed include intermittent and ephemeral roadside drainage ditches and agricultural drains. The receiving waterbody for the stretch of ROW along the South Pipeline Corridor Looping Pipeline between approximate mileposts (MPs) 0.0 and 2.0 is an Intermittent Tributary to Bayou Barwick, and between approximate MPs 2.0 and 5.3 is an Intermittent Tributary to Tiger Point Gully.

The receiving waterbody for the proposed construction activities at the Gas Storage Site is an Intermittent Tributary to Bayou Nezpique.

No waterbodies crossed by the Project have been identified as sensitive waters. No special waters or Impaired Streams or Lakes were observed within 2000 feet of the Project. There are no public supply wells within the Project Area. According to correspondence from the LDEQ, the Gas Storage Site is located 1.5 miles from the nearest wellhead protection area and the northern 0.3-mile of the South Pipeline Corridor Looping Pipeline is located within 0.25-mile (perhaps as close as 450 feet) of the nearest wellhead protection area. Due to the shallow depth of trench excavation activities along the pipeline corridor, and the distance of the Gas Storage Site to wellhead protection areas, the proposed Project construction activities are not expected to affect these areas.

There are no public drinking water intakes (surface or groundwater) in the vicinity of the Project Sites. The nearest public water supply well to the Gas Storage Site is located approximately 53 miles north of the proposed site. The nearest public water supply well to the South Pipeline Corridor Looping Pipeline is located approximately 52 miles southwest of the proposed pipeline.

2.5 Contractor's Responsibilities

PPEC's contractors shall be responsible for the installation, maintenance and repairs of all erosion and sediment control measures according to the reference documents outlined above, and the requirements of the General Permit.

Inspections and Records: PPEC's Environmental Inspectors (EIs) shall inspect disturbed areas that have not reached final stabilization, structural control measures, and locations where vehicles enter or exit the right-of-way (ROW) at least once per week during construction and within 24 hours of a storm event that releases 0.5-inch of rain or greater. EIs will conduct inspections to ensure that erosion and sediment control measures have been installed and are maintained properly, and to identify ineffective measures needing contractor repairs. The EIs shall prepare reports documenting erosion control inspections. Copies of inspection reports will be forwarded to PPEC and kept on file for a period of three years.

Waste Disposal: All wastes including, trash, litter, and construction debris will be collected and disposed of according to applicable state and local regulations. Spilled materials, contaminated soils and water, sorbents, and miscellaneous spill-related debris require proper handling. It is the Contractor's responsibility to properly dispose of these and any other materials associated with spill containment and clean-up. Refer to the Project SPCC plan (**Attachment 2**) for oil-related waste. All hazardous substances, extremely hazardous substances, petroleum and objectionable substances spilled into waters of the state (if any) shall be subject to the reporting, containment, and response requirements of the General Permit.

Contractor shall supply PPEC with copies of all documentation concerning the disposal of contaminated soil, water, and other materials.

2.6 Notice of Termination

PPEC shall submit a Notice of Termination to the LDEQ within 30 days after one or more of the following conditions have been met:

1. Final stabilization has been achieved on all portions of the site.
2. Another owner/operator has assumed control over all areas of the site that have not been finally stabilized.