

# Erosion and Sediment Control Plan (ESCP)

## Underground Injection Control Permit PAS2D025BELK; Well #38268

HIGHLAND TOWNSHIP, ELK COUNTY,  
PENNSYLVANIA


OCTOBER 2014

Seneca Resources Corporation  
ATTN: Doug Kepler  
5800 Corporate Drive, Suite 300  
Pittsburgh, Pennsylvania 15237

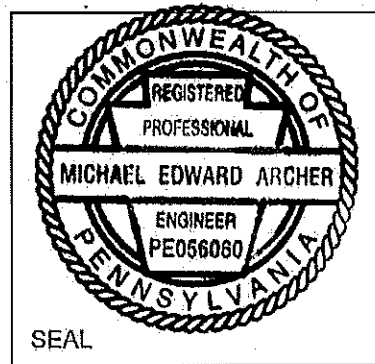


I DO HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE EROSION AND SEDIMENT CONTROL AND SITE RESTORATION PLAN ARE TRUE AND CORRECT, REPRESENT ACTUAL FIELD CONDITIONS AND ARE IN ACCORDANCE WITH 25 PA CODE CHAPTERS 78 AND 102 OF THE DEPARTMENT'S RULES AND REGULATIONS. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE OR IMPRISONMENT.

PRINT NAME: Michael E. Archer, P.E.

SIGNATURE: 

REGISTRATION NO. PE056060



Prepared by:  
Kleinfelder, Inc.  
230 Executive Drive, Suite 122, Cranberry Township, PA 16066  
p | 724.772.7072; f | 724.772.7079

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## 1 PROJECT NARRATIVE

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### 1.1 PROJECT DESCRIPTION

The Underground Injection Control Permit PAS2D025BELK Project, located in Highland Township, Elk County, Pennsylvania, will consist of the conversion of an existing natural gas well (Seneca Resources Corporation's [Seneca] Well #38268, API No. 37-047-23835) to a Class IID Injection Well with an associated permanent facility and access road (Project). The Project center-point is located at 41° 37' 08 " N and 78° 49' 17" W (See Figure 1, Appendix A). The Project will result in a total of 1.9 acres of earth disturbance and does not impact any freshwater resources. There are no sensitive species present in the Project area according to the Pennsylvania Natural Diversity Inventory (PNDI) on-line review tool (Appendix B).

Since this Oil and Gas Project is a standalone project not directly connected to any other oil and gas project and will impact less than five acres, an Erosion and Sedimentation Control Plan (ESCP) rather than an ESCP General Permit-2 (ESCPG-2) has been developed for the Project. A copy of this ESCP will be maintained at the Project site.

### 1.2 SOIL CHARACTERISTICS, CONDITIONS AND GEOLOGIC FORMATIONS

Based upon a review of the Pennsylvania Geological Survey Open-File Report entitled Geologic Units Containing Potentially Significant Acid-Producing Sulfide Minerals (OFMI-05-01.1; PA Geological Survey, 2005), the limit of disturbance (LOD) is located within an area with geologic formations known to contain acid-producing sulfide minerals.

According to the Pennsylvania Department of Environmental Protection's (PADEP's) 2013 Fact Sheet entitled "How to Avoid and Handle Acid-Producing Rock Formations Encountered During Well Site Development", the risk of acid drainage is minimal for excavations shallower than 30 feet below ground surface. A copy of this guidance document and site-specific soils information is included in Appendix C.

Based upon a review of the PAMAP Program Light Detection and Ranging (LiDAR) Topographic Contours (two-foot interval) of Pennsylvania dated June 15, 2007 (Pennsylvania Spatial Data Access (PASDA), 2007), slopes 3:1 or greater along the alignment were not identified and thus, the potential for slope instability is anticipated to be low. The contractor is responsible to properly excavate and backfill the excavation, in accordance with industry standard backfill and compaction criteria. It is the responsibility of the contractor to follow the Best Management Practices (BMPs) included in the ESCP and provide additional site controls and restoration as necessary during the construction period to manage and mitigate for slope stability. This preliminary assessment of the potential for slope instability is based upon a review of PAMAP LiDAR and does not include a site-specific geotechnical investigation, topographic survey, or slope stability analysis.

### 1.3 EARTH DISTURBANCE ACTIVITY

According to aerial imagery provided by the Pennsylvania Geological Survey, the land uses within the Project area remained similar between 1940 and 1969. It was undeveloped and covered by deciduous forest. Currently there is an existing access road and gas well pad. Future land use would involve the construction of a permanent Class IID injection well facility

and access road. Refer to Appendix D for the ESCP and Post-Construction Stormwater Management (PCSM) Drawings and Details.

#### **1.4 THERMAL IMPACTS**

The Project was designed to minimize thermal impacts by reusing a previously-developed site to minimize clearing and by maintaining existing vegetative cover to the greatest extent practicable.

#### **1.5 RIPARIAN BUFFERS**

Riparian buffers do not exist within the Project LOD, therefore a waiver is not required.

#### **1.6 STREAM AND WETLAND DELINEATION**

On behalf of Seneca, Kleinfelder conducted a wetland investigation of the proposed Project area on March 17, 2014 using the wetland delineation methodology outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (United States Army Corps of Engineers, 2012). Kleinfelder identified a total of two wetlands within the area of interest (AOI). No freshwater resources will be impacted by this Project.

## 2 CONTROLS

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### 2.1 EROSION AND SEDIMENT CONTROLS

The contractor will install the specified erosion and sedimentation pollution controls, as designed by Kleinfelder. The Erosion and Sediment Pollution Control Program Manual was referenced in the design of the ESCP and PCSM BMPs (Pennsylvania Department of Environmental Protection (PADEP, 2012)). Since this Project is located within a special protection watershed, anti-degradation best available combination of technologies (ABACT) BMPs are proposed. Refer to Appendix D for the ESCP and PCSM Drawings and details for the BMP installation sequence.

Temporary and permanent controls should be installed, where applicable, to prevent and divert off site runoff from entering the construction site and to prevent on-site sediment and debris from exiting the construction site. Additionally, temporary control measures are needed to protect against soil erosion and sedimentation during construction. These measures protect disturbed areas from accelerated erosion and minimize the deposition of soil material onto downstream properties, roadways, and waterways.

The site-specific controls are further described below.

#### a) ROCK CONSTRUCTION ENTRANCE WITH DOWNSLOPE FILTER SOCK

In order to prevent the tracking of mud, dirt, or rock tracked from the site onto paved roadways, an RCE with downslope filter sock shall be installed as shown on the Permit Drawings. The Contractor will check the road periodically to verify cleanliness at road crossings and take necessary corrective action immediately. Gravel will be used to limit dust and erodibility. Materials will not be swept into the roadside ditch.

#### b) COMPOST FILTER SOCK (CFS)

CFS shall be installed in accordance with the Standard Detail Sheets to filter sediment laden sheet flow runoff from the LOD.

#### c) INSLOPED ROADWAY

Access road design will implement an insloped road. Sheet flow of water off the roadway will allow water to drain into a roadside ditch or to infiltrate into the surrounding vegetation. Stabilization of cut and fill slopes will be immediately completed after roadway grading. Project site details can be found on the Plans and Details in Appendix D.

#### d) VEGETATIVE STABILIZATION

All disturbed areas that have not otherwise been stabilized and have significant potential for erosion should be stabilized with vegetation. This includes graded areas where it is anticipated that future earthmoving will take place within the coming year. Areas that will be subject to earthmoving within 12 months may be stabilized with temporary seed mixtures, predominantly annual grasses. All others should be stabilized with permanent seed mixtures — predominantly perennial grasses. The area will not be considered stabilized until a minimum uniform 70% vegetative cover of erosion resistant perennial species has been achieved. Refer to the Plans and Details in Appendix D.

#### e) EROSION CONTROL BLANKETS

Erosion control blankets should be used on all slopes that are 3:1 or steeper and where potential exists for sediment pollution to receiving surface waters. Placement of blankets is depicted on the plans.

#### f) RIPRAP APRON

A riprap apron will be used to dissipate runoff captured by the retention berm. The placement of the riprap apron is depicted on the plans.

### 2.2 EMERGENCY CONTROLS

Seneca is responsible for ensuring that adequate erosion and sediment control materials are available on the site to control erosion and sediment discharges at the downgrade perimeter and operational inlets in the event of a predicted storm or imminent snow melt event.

### 2.3 POST-CONSTRUCTION BMP INSTALLATION AND ACTIVITIES

#### Final Stabilization

All disturbed areas of the construction site must be stabilized. Conditions of final stabilization include:

- All soil disturbing activities are complete;
- All areas of the construction site not otherwise covered by permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 70 percent or equivalent measures have been employed;
- Potential for construction-related stormwater pollutants to be discharged into site runoff has been eliminated;
- All elements of the ESCP have been completed, including final stabilization;
- Construction materials and wastes have been disposed of properly;
- Compliance with the Post-Construction Standards in the ESCP/PCSM has been demonstrated;
- PCSM measures have been installed and long-term maintenance plan has been established (for the purposes of this requirement a "long term maintenance plan" will be designed and will describe the procedures to ensure that the post-construction stormwater management measures are adequately maintained); and
- All construction-related equipment, materials and any temporary BMPs no longer needed, are removed from the site.

### **Permanent Seeding**

Any areas where permanent seeding has died or failed to achieve the 70 percent ground revegetation requirement shall be replanted and appropriately stabilized.

### **2.4 INSPECTION AND MAINTENANCE OF POST-CONSTRUCTION BMPs**

Infiltration Berm inspection and maintenance shall conform to the notes included in the ESCP and PCSM Drawings located in Appendix D.

### **Seeded Area Maintenance**

Seeded area maintenance will be set up as required. Areas shall also be checked for erosion, and if erosion is encountered, arrangements shall be made to have the area re-seeded and stabilized as needed.

### **3 MATERIALS MANAGEMENT AND MAINTENANCE PLAN**

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Contractors are required to inventory and manage their construction site materials. The goal is to be aware of the materials on-site, ensure they are properly maintained, used, and disposed of, and to make sure the materials are not exposed to stormwater or runoff.

#### **3.1 MATERIALS COVERED**

The following materials or substances are expected to be present on-site during construction (Note: This list is not an all-inclusive list and the Materials Management Plan can be modified to address additional materials used on-site):

- Fertilizers (nitrogen/phosphorus);
- Hydro-seeding mixtures;
- Petroleum based products;
- Sanitary Wastes;
- Soil Stabilization additives;
- Other (List here) \_\_\_\_\_.

These materials must be stored as appropriate and shall not contact storm or non-stormwater discharges. Contractor shall provide a weather proof container to store chemicals or erodible substances that must be kept on the site. Contractor is responsible for reading, maintaining, and making employees and subcontractors aware of Material Safety Data Sheets (MSDSs).

#### **3.2 MATERIAL MANAGEMENT PRACTICES**

The following are material management practices that would be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

##### **1. Good Housekeeping Practices**

The good housekeeping practices that would be followed on site during construction are presented below:

- Store only enough material required to do the job;
- Store materials in a neat, orderly manner;
- Store chemicals in watertight containers or in a storage shed, under a roof, completely enclosed, with appropriate secondary containment to prevent spill or leakage. Drip pans shall be provided under dispensers;
- Products would be kept in original containers with the original manufacturer's label in legible condition;



- Substances would not be mixed with one another unless recommended by the manufacturer;
- Manufacturer's recommendations for proper use and disposal would be followed;
- Inspections will be performed to ensure proper use and disposal of materials;
- Cover and berm loose stockpiled construction materials that are not actively being used (i.e. soil, spoils, aggregate, etc.);
- Minimize exposure of construction materials to precipitation; and
- Minimize the potential for off-site tracking of loose construction and landscape materials.

## 2. Concrete and Other Wash Waters

Prevent disposal of rinse, wash waters, or materials on impervious or pervious surfaces, into streams, wetlands or other water bodies.

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or washout and soil and stormwater having the potential to be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on the site as deemed appropriate by the contractor and geotechnical engineer. The contractor will be responsible for seeing that these procedures are followed.

All concrete washout areas will be located in an area where the likelihood of the area contributing to stormwater discharge is negligible. If required, additional BMPs must be implemented to prevent concrete wastes from contributing to stormwater discharges. The location of the concrete washout area(s) must be identified, by the contractor/job site superintendent, on the job site copy of the plan drawings and details in this ESCP.

## 3. Sanitary Wastes

All sanitary waste units will be located in an area where the likelihood of the unit contributing to stormwater discharges is negligible. Additional BMPs must be implemented, such as containment trays (provided by the rental company) or special containment created with two-inch by four-inch lumber, impervious plastic, and gravel. The location of the sanitary waste units must be identified on the job site copy of the plan drawings and details in this ESCP, by the contractor/job site superintendent.

## 4. Solid and Construction Wastes

All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will comply with all local and state solid waste management regulations. The dumpster/container lids shall be closed at the end of every business day and during rain

events. Appropriate measures shall be taken to prevent discharges from waste disposal containers to the receiving water.

#### 5. Construction Access

Stabilized construction exits will be provided as needed to help reduce vehicle tracking of sediments. The paved roads adjacent to the site entrance will be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site immediately. Dump trucks hauling material from the construction site will be covered with a tarpaulin as necessary. Material will not be swept into the roadside ditch, sewer, culvert or other drainage courses.

#### 6. Fertilizers and Landscape Materials

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Fertilizers may not be used in wetland or stream areas. Once applied, fertilizer will be worked into the soil to minimize the potential for exposure to stormwater. Storage will be under cover. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to minimize the potential for spills. The bin shall be labeled appropriately. Erodible landscape material will be applied at quantities and application rates according to manufacturer recommendations or based on written specifications by knowledgeable and experienced field personnel.

## **4 INSPECTION AND MAINTENANCE PROCEDURES**

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The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures:

- A copy of the ESCP will be available on the site at all times.
- A checklist of all maintenance items will be developed and used for each stormwater treatment component. Each time an inspection is completed or a maintenance procedure is performed, it will be documented on the checklist. The checklist will be kept on the project site.
- The inspector will implement inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used on the site in good working order. The inspector will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms; and
- Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering the stormwater.
- A copy of the Operations and Maintenance Plan and the Construction Plans showing the permanent stormwater facilities shall be kept on the project site.
- Regularly remove trash and natural debris from the site. Clean leaves or trash from catch basins grates when observed.
- Repair and stabilize eroded areas or vegetated areas damaged by sediment removal.
- All accumulated sediment and debris is to be disposed of in accordance with all local, state and federal laws and regulations.
- Remove sediments and repair any areas of erosion with new riprap.
- All erosion and sediment control measures will be inspected weekly and after runoff events;
- All measures will be maintained in good working order; if repairs or additional measures are found to be necessary, they will be initiated within 24 hours of the inspection report;
- Temporary and permanent seeding, and other stabilization measures, will be inspected for bare spots, washouts, and healthy growth;
- Inspect sloped areas and other areas for any signs of erosion. Perform any necessary soil stabilization, embankment replacement, earth repair, reseeding or mulching upon identification.
- On-site equipment should be inspected regularly for leaks and spills. Inspectors should:
  - a. Check for spills and overfills due to operator error and
  - b. Check for failure of any systems.



- Check for leaks or spills during pumping of liquids or gases from a truck to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welds, and improper or poorly fitted gaskets.
- A spill response plan should be implemented giving clear, concise, step-by step instructions for the appropriate response to a spill. The spill response plan should: a. Identify individuals responsible for implementing the plan, b. Describe safety measures to take with each kind of waste, c. Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or publicly-owned treatment works for assistance, d. State procedures for containing, diverting, isolating, and cleaning up spill, e. Describe spill response equipment to be used, including safety and cleanup equipment. An onsite spill response plan will be available at all times under a separate cover.

Once any erosion control measures are installed, the maintenance and inspection procedures above shall begin.

## 5 REFERENCES

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- Bentley Flow Master, Bentley Systems, Inc., Haestad Methods Solution Center.
- Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.
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- Pennsylvania Department of Environmental Protection (PADEP), 2012. *Pennsylvania Integrated Water Quality Monitoring and Assessment Report*. Clean Water Act Section 305(b) and 303(d) list.
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- Pennsylvania Geological Survey, 2014. *Penn Pilot, Historic Aerial Photographs of Pennsylvania*. <http://www.pennpilot.psu.edu/>
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- [http://www.pasda.psu.edu/uci/MetadataDisplay.aspx?entry=PASDA&file=PAMAP\\_Contours.xml&dataset=1245](http://www.pasda.psu.edu/uci/MetadataDisplay.aspx?entry=PASDA&file=PAMAP_Contours.xml&dataset=1245).
- Roland, M.A., and Stuckey, M.H., 2008. *Regression equations for estimating flood flows at selected recurrence intervals for ungauged streams in Pennsylvania*. U.S. Geological Survey Scientific Investigations Report 2008-5102, 57 p.
- U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*, ed. J.F. Berkowitz, J.S. Wakely, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburgh, MS: U.S. Army Engineer Research and Development Center.

## STANDARD E&S WORKSHEET # 20 Riprap Apron Outlet Protection

PROJECT NAME: UNDERGROUND INJECTION CONTROL WELL #38268

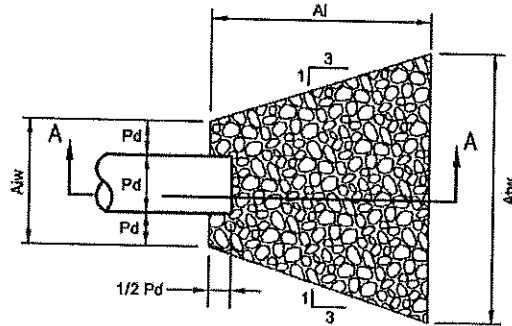
LOCATION: HIGHLAND TWP., ELK COUNTY, PA

PREPARED BY: KLF

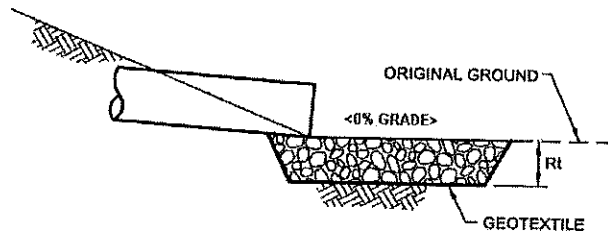
DATE: 1/13/2015

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_



PLAN VIEW



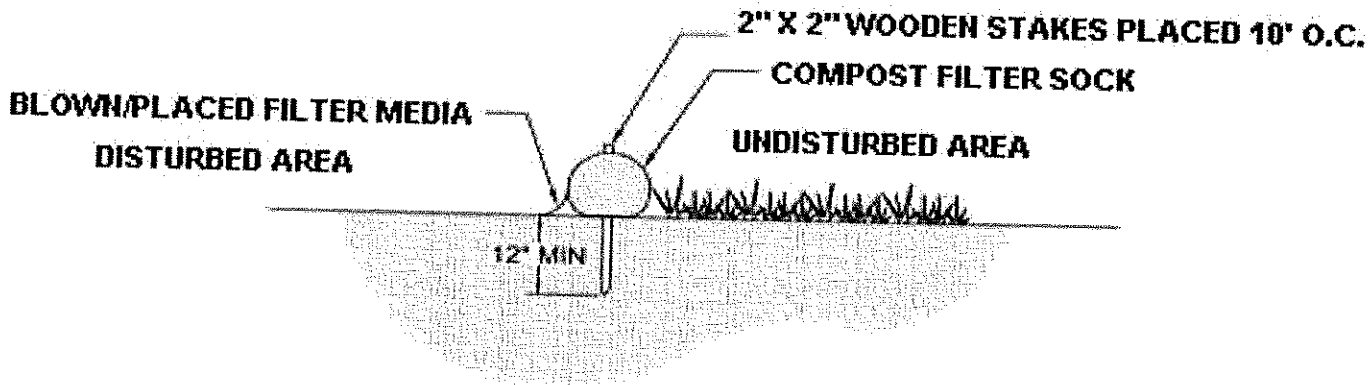
SECTION A - A

NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
1	12	Min	0.013	0.06	5.89	11.93	R-6	36	10	3	10

\*:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes  $\geq 0.05$  ft/ft.

**STANDARD E&S WORKSHEET #1  
Compost Filter Socks**

PROJECT NAME: UNDERGROUND INJECTION CONTROL WELL #38268  
 LOCATION: HIGHLAND TWP., ELK COUNTY, PA  
 PREPARED BY: KLF DATE: 1/13/2015  
 CHECKED BY: BDA DATE: 1/13/2015



SOCK NO.	Dia. In.	LOCATION	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
1	24 in.	South of Proposed Road	5%	500
2	24 in.	Contour 2040 West side of access road	5%	400
3	24 in.	Contour 2040 West side of access road -Short	5%	400
4	24 in.	Contour 2038 West of Access Road	5%	430
5	24 in.	Contour 2036 Near Truck Unloading Pads	5%	460
6	18 in.	South of Berm	5%	300