

**Sterrett Passive Treatment System  
Irwin Township Venango County  
Project Narrative**

**Project Overview**

Project site is located in Irwin Township Venango County. Access to the site will be off of Burns Rd 1 mile north of Georgetown Road. From Interstate 80 at Exit 29 travel on Route 8 north 1 mile and turn left onto Old Route 8 north for a distance of 1.4 miles turning right onto Georgetown Road. Turn left onto Burns Road just past the underpass for Route 8. Project access road is 1 mile north off of Burns Road on the right.

Scrubgrass Creek is polluted by acid mine drainage (AMD) flowing from abandoned surface coal mines. A major source of pollution flows from an area known as the Sterrett site which is an abandoned reclaimed mine site mined by Pengrove Coal Co. This project will treat AMD flowing from two major source areas on opposite ends of the site which will be directed to one central point and treated with a passive treatment system. Treatment cells will be constructed by converting existing treatment ponds that were left behind after Pengrove Mining abandoned chemical treatment. These discharges will be piped to this central area where the AMD will be treated with a passive system consisting of two drainable limestone beds containing 3,200 tons limestone followed by polishing in an existing settling pond. The system will discharge to Scrubgrass Creek via existing drainage paths.

Project Management

The property affected by the project is owned by Daryl and Kim Pitzer of 212 Hickernell Rd, Fombell, PA 16123.

The project OWNER is Scrubgrass Creek Watershed Association (SCWA) who funded the project with a grant from the PADEP. The project is managed by the PADEP Bureau of Conservation and Restoration (BCR). Scott Poborsky, BCR Geologic Specialist, is overseeing the project. The Contractor will contract with SCWA. Hedin Environmental (HE) is SCWA's consultant for the project and is responsible for managing construction activities and project coordination. Ted Weaver, HE Geologist, will be the primary contact for the construction contractor throughout the project.

Project Website

The construction documents and information regarding the project and bidding process are available at <http://www.hedinenv.com/biddocs.html> or go to the Hedin Environmental website and click on Bidders Documents.

### Road Bonds

The Contractor is responsible for securing all road bonds necessary to complete the project.

### Prevailing Wage

This project is funded by a grant from the PA DEP and is subject to prevailing wage regulations. The project is registered with the Department of Labor and Industry. A link to the approved wage rates is available at the project web site. The contractor will submit monthly wage reports that document the payment of prevailing wages to qualified project personnel.

### Payment Procedures

The Contractor will prepare monthly invoices that show charges against project tasks shown in the bid document. The invoice will show for each bid item: 1) the total value contained in the bid; 2) the amount previously invoiced to this task; 3) the current charge to this task; 4) the remaining funds for the task, and 5) percent completion of the task. Any approved modifications to the project will be added to the budget document as a new payment item. A copy of each invoice will be submitted to HE for review and approval. Upon HE's approval, the invoice will be forwarded to SCWA for submittal to PADEP.

The project is funded by a PADEP Growing Greener grant. PADEP has provided working capital that is replaced through a reimbursement process. The reimbursement process generally takes 6-10 weeks. The Contractor should consider this delay in invoice payment when developing his bid.

### Project Closure

PADEP withholds the final 10% of project funds until an authorized DEP employee has inspected the project and approved its completion. SCWA will withhold the Contractor's last 10% of payment until this approval is received from PADEP. It is anticipated that when the Contractor, HE and SCWA are all satisfied with the project's completion, a meeting will occur with the PADEP to request closure of the construction portion of the project. This meeting will not occur until the system has operated for at least one month. It is likely that 10% holdback will not be paid for 3-4 months after completion of construction activities. The Contractor should consider this delay when developing his bid.

### Project Schedule

The Project may be started as soon as contracts are signed. The Project must be completed by October 31, 2015.

### Construction Plans and E&S Control Plan

The construction plans and E&S Control Plans are shown on sheets 1, 2, and 3. The plans can be downloaded from the project website. The plans were developed using AutoCAD and a DWG file can be provided to the contractor upon request.

Construction Narrative

The construction Narrative is attached. The construction narrative is broken down into work items that mirror the bidding document and the materials list.

## Construction Narrative

### **Task A: Mobilization and Demobilization**

The contractor will be paid 80% of Item A upon substantial mobilization into the project and 20% upon complete demobilization.

### **Task B: Erosion and Sediment Controls**

The Erosion and Sediment Control plan is shown on sheets titled “E&S Control Plan, Overview” and “E&S Control Plan, Details.” The Plan must be implemented as shown before earth disturbance activities begin. The E&S controls should be inspected weekly and after each rainfall event to insure that they are functioning as intended. Repairs and/or replacements will be made as necessary. The contractor will be paid 80% for installation of E&S control measures and 20% for their satisfactory removal.

### **Task C: Access Road Construction**

Access to the project will require enhancement of a temporary road to the project off of Burns Rd. A minimum of 255 tons of AASHTO #3 limestone are to be spread by tailgating the stone from intersection with Burns Road down to the treatment system construction site for a distance of 4,100 ft. The 255 tons of stone was calculated at average depth of 3 inches by 8 ft in width. Large portions of the access road have already been spread and may not require as much aggregate and calculations assume that 60% of the road will not need aggregate. The road must be maintained in a condition during and at end of project to allow safe travel by passenger vehicle.

### Road Bonding

The delivery of materials to the project site will take place over state and local roads. Any road bonding that is required and is the responsibility of the Contractor.

### **Task D. Pond 1 Sediment Cleanout and Disposal**

Pond 1 was formerly a treatment basin that contained several feet of mine drainage sludge. The pond was pumped clean of sludge in fall 2014. What remains is a mixture of sludge, vegetation and mass of roots from wetland plants. All material shall be removed to provide for clean pond bottom free of sludge and organic material. It is estimated there is approximately 1,000 cubic yards of material to be removed. This material will be relocated to the sludge disposal pond above the site. Relocation must occur using existing roads as designated on the Plans. Once the sludge has dried inside the sludge disposal basin this material will be leveled and spread on bottom of the basin. After Pond 1 has been cleaned of sludge and organic matter the pond bottom must be brought into specified elevations according to plans by either bringing in more material or removal of soil to establish grade.

### **Task E. AMD Collection and Pipeline Flow Splitter Box**

There are two major sources of AMD, one from the north and the other from the south.

### Southern AMD Collection

The southern source has been collected by combination of 6 inch and 8 inch SDR 35 pipes. The southern source of water for this collection plumbing starts at base of hill along access road. The 8 inch line terminates at the flow splitter box.

A singular 6 inch SDR 35 pipe enters sump area from southern direction and will also be plumbed into flow splitter box or possibly by tying into the 8" southern discharge pipe before flow splitter box. Additional pipe fittings may be required to combine the 6" and 8" pipes together.

An extension of collection plumbing will be made along access road into the site. In spring 2015 additional AMD was discovered on the opposite side of the access road near the termination of the installed collection system. The Contractor will excavate trench across the access road and intercept this flow of water using combination of non calcareous aggregate and 6 inch SDR 35 PVC pipe. In areas of collection perforated pipe and #57 non calcareous aggregate will be used for collection. Once water has been collected solid pipe will be used to transfer water to and connect with the existing collection system. This activity will be performed under the direction of Hedin Environmental and is expected that no more than one working day will be required.

### Northern AMD Collection and Transfer

The northern seep zones are spread out from lime tower north and are notated Sheet 1 as seeps 1 thru 5. Seeps 1 thru 3 have been collected and discharge to collection channel via 6 inch SDR 35 pipe. Seeps 4 and 5 will need to be collected using various amounts of 6 inch SDR 35 perforated/solid pipe and non-calcareous gravel. In areas of collection perforated pipe and #57 non calcareous aggregate will be used for collection. Once water has been collected solid pipe will be used to transfer water to trunkline. This activity will be performed under the direction of Hedin Environmental and is expected that no more than one working day will be required for each of the Seeps 4 & 5.

An 8" SDR 35 PVC trunkline will be installed from Flow Splitter Box north along the inside of existing open channel. At each of the 5 collected discharge points a combination of pipe fittings will be required to attach each of these lateral pipes into trunkline. The connections from the laterals to the trunkline must be secure and watertight. The trunkline should be placed on inside bottom of existing collection ditch and covered with 2 ft of soil. Details are provided on Sheet 2.

Both AMD collection systems will discharge into a single flow splitter box that will transfer flow to each of the DLBs and produce a bypass during high flow. The flow distribution structure is shown on Sheet 2. The structure should be constructed of HDPE DR 32.5 or alternative materials that have been previously approved by HE.

### **Task F: Clearing and Grubbing and Lime Tower Removal**

Site clearing will consist of small tree removal around Pond 1 area and at Seep 4 and 5 collection area. The trees in need of removal around Pond 1 can either be burned or piled in windrow along southeastern edge of Pond 2. Trees in area of Seeps 4 and 5 collection can be piled below the collection ditch.

The Pitzer family requests that the lime tower be removed from its foundation for the purpose of scrapping out the structure. The lime tower shall be removed from the foundation and laid on access road so that it is accessible for scrap removal. All concrete foundation footings are to be removed and buried on site. A sodium hydroxide tank is located at top of Pond 1 and this is to be lifted out of its current location onto access road for purpose of scrapping. Scrapping will be conducted by the Pitzer family and is not a responsibility of the project Contractor.

**Task G: Drainable Limestone Beds Construction (including piping)**

Pond 1 will be converted into twin DLB's. Each DLB shall contain 1,600 tons of AASHTO #3 limestone with a minimum of 85% CaCO<sub>3</sub> content. Access to the DLBs will be from the access road near lime tower. The Contractor should plan to have trucks dump aggregate directly into the DLBs and this berm will need to be upgraded to allow truck traffic. Any aggregate used for the berm enhancement is in addition to the 3,200 tons of limestone to be installed in the DLBs.

A 12" SDR 35 90 degree elbow shall be inserted onto the existing principal spillway of Pond 1.

Soil from top of berm on southeastern corner of Pond 1 will be used to create an earthen divider splitting Pond 1 into two separate DLB cells (Sheet 1). All earthwork will be compacted in 10 inch compacted lifts with a pad foot roller. Grading of pond bottom will be required to establish compacted graded bottom prior to installation of limestone. At end of each work day all placed soils for that day will be rolled for maximum compaction. The internal earthen berm shall be keyed into inside bottom and each inside slope by excavating trench 3 ft deep 4 ft wide entire length of new berm. This key shall have clay soil compacted in 10 inch compacted lifts back up to existing grade. The earthen berm can then be constructed as shown on plans with appropriate compaction methods employed.

The Borrow area must be regraded to match existing surrounding contour.

Water will be distributed into the DLBs by perforated 8" pipe as shown on Sheet 1. A small bench is required to support the flow distribution pipes. The pipes will be custom perforated by the Contractor as instructed by HE.

Each DLB will contain a 12" perforated drainage pipe at the bottom that will collect and discharge treated water. The pipes will be custom perforated by the Contractor as instructed by HE. The collected water will flow through the Pond 1 berm in pipes installed in 2014. The elevation of these pipes cannot be changed, so the construction of the DLB bottom and the placement of the perforated drainage pipes must be completed in reference to these established elevations.

The effluent of each DLB will be through a 12" AgriDrain water level control structure equipped with the Smart Drainage System (SDS). The SDS is a typical water level

control structure with a knife gate valve replacing the bottom most boards. The valve is opened and closed by a linear actuator which is controlled by a small processing unit. Power is supplied by a battery whose charge is maintained by a solar panel. The structure must be installed according to manufacture instructions to assure its proper operation. In addition, the following installation procedures shall be followed. Limestone 2A aggregate shall be used for compacted base and for structural fill surrounding the structures to the surface. A vibratory foot tamper shall be used to compact the 2A aggregate and soil surrounding this structure. This compacted 2A sub base shall extend 16 inches all the way around the SDS structure to the surface to ensure stability.

The self-flushing limestone beds each discharge via 12" pipe to Pond 2. R-3 aggregate will be placed beneath the pipes for energy dissipation.

Each of the DLBs should be filled with 1,600 tons of AASHTO #3 limestone. Double handling of the aggregate will not be allowed. The aggregate should be dumped directly into the prepared DLB cells. The aggregate should be leveled so that the surface of the bed does not vary by more than 3". This task includes placement of the aggregate. This task does not include purchase and delivery of the aggregate which is considered in Task J.

#### **Task H: Pond 2 Settling Pond**

Pond 2 will receive flow from the DLBs and produce the final discharge. A new principal spillway will be constructed using combination "V" notch weir as shown on Sheet 2. The plan for this combination V notch weir is to use 3/8 inch mild steel sheet 5 feet by 12 feet. Alternative materials must be approved by HE. The reconstructed principal spillway will also serve as the Pond 2 emergency spillway.

#### **Task I: Seeding and Mulching**

All disturbed areas should be graded to a condition suitable for public use, seeded and mulched per the following rates.

Straw/Hay Mulch	2.5 tons/acre or 100 bales/acre. Must use chain flail mulching machine or mulched by hand if using square bales. Mulching machines with knives are not to be used.
Fertilizer (10-20-20)	400 lbs/acre
Perennial Rye Grass	10 lbs/acre
Red Fescue Grass	10 lbs/acre
White Dutch Clover	5 lbs/acre
Crimson Clover	5 lbs/acre
Birdsfoot Trefoil	3 lbs/acre
Rye or Wheat Grain	2 bushel/acre
Lime	6 tons/acre

An inventory accounting by supplying packing slips for seed, fertilizer and lime that is being applied to the site shall be provided during planting operations. There shall be no

substitution for soil amendments. Payment will be 70% at application and 30% at satisfactory growth.

**Task J: Purchase of AASHTO #3 Limestone delivered to the site**

This task is for the purchase of limestone aggregate for the DLBs. A total of 3,200 tons of AASHTO #3 limestone is required. The limestone must have a calcium carbonate content greater than 85%. The limestone must be clean. The Contractor will provide HE with the name and contact information of its limestone source. The Contractor will not proceed with the project until the limestone source has been approved by HE.

**Task K: Bid, Performance and Payment Bond**

The Contractor will post a 5% bid bond when submitting the bid. A materials and performance bond will be posted after the bid is awarded to assure that the work is completed as indicated in the project documents and to assure that all sub-contractors are paid.