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SHOUP'S RUN WATERSHED ASSOCIATION

MINERSVILLE PASSIVE TREATMENT SYSTEM

CARBON TWP., HUNTINGDON CO.

OPERATION, MAINTENANCE AND REPLACEMENT PLAN

Prepared By:
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Shoup's Run Watershed Association
Minersville Passive Treatment System
Carbon Twp., Huntingdon Co.

Introduction

The Minersville Passive Treatment System was designed to treat acid mine drainage flowing from 4 separate deep mine openings. During the construction of the system, a refuse pile and abandoned open pit were also reclaimed.

The discharges were treated using a passive system containing collection pipes, a VFS pond, a wetland, a settling pond, and a dewatering pond. As-built plans for the facility are attached.

The only major problem encountered during construction was a groundwater discharge in the base of the VFS pond. The discharge emanated from the base of the highwall adjacent to the VFS pond. The quality of the discharge was good and therefore, the contractor constructed a rock collection drain along the highwall which conveyed the water beneath the VFS pond and into the wetland pond. The contractor covered the rock drain in geotextile and then placed a clay seal over the drain to seal it from the VFS pond. Unfortunately, some water from the VFS pond is leaking from the VFS pond through the clay seal and into the rock drain. This situation should be monitored to determine the effect on system performance before deciding if any remediation is necessary.

The treatment system is designed for a 25-year life span.

Responsible Parties:

Shoup's Run Watershed Association
- overall facility operation
- treatment system maintenance
- replacement – N/A

Pennsylvania State Game Commission
- overall maintenance of vegetation and access roads

Operation

Shoup's Run Watershed Association is responsible for the overall operation of the Minersville Passive Treatment System.

Water Sampling:
The quality and quantity of the water flowing through the system should be monitored on a quarterly basis. Samples are being analyzed at the Commonwealth of Pennsylvania lab. Quantity of flow into the system is not possible to measure, however, the quantity of discharge exiting the system can be measured at each outflow. The association can use a bucket and stopwatch or install weirs in the outflow channels. Records of all samples must be maintained in order to evaluate system performance.

The following parameters will be analyzed: pH, specific conductance, alkalinity, acidity, calcium, total iron, manganese, aluminum, sulfate, and total suspended solids.

Samples will be collected at the VFS inlet manifold, the VFS outflow riser, the 6" pipe between the VFS pond and the settling pond, the settling pond outflow, the rock underdrain outflow, and the wetland outflow.

Flow measurements will be taken at the rock underdrain outflow, the wetland outflow, and the settling pond outflow.

Sample frequency shall be on a quarterly basis.

<u>Litter Control:</u>
Leaves, litter, and foreign objects should be removed from all inlet pipes.

<u>Vegetation Management:</u>
The Pennsylvania Game Commission is responsible for maintaining vegetation on the site. Vegetation should be managed in such a way that it provides a permanent soil cover over the site. Trees should be removed from pond embankments because roots can create channels for water leakage out of the pond.

<u>Diversions:</u>
The upslope diversion ditch should be kept free of branches or other debris which may prevent or restrict flow through the channel.

Mechanical Maintenance

The VFS underdrain system should be flushed once every 30 days to prevent the accumulation of aluminum oxides in the underdrain piping system. Over time, if the flushes do not produce aluminum-laden water, the flushes may be spaced further apart. To flush out the VFS underdrain, the valve located between the VFS pond and the wetland pond will be opened by pulling up on the handle. The system should be flushed for approximately 10 minutes or until the water is not cloudy. To discontinue flushing, push down on the handle. Before flushing the system, be sure the flush pond has enough capacity to hold the water without overtopping.

Insect and Vector Control/Animal Control

Check all outflow pipes to insure that the animal gates remain in-place and operable. Also, trap out any rodents that attempt to establish burrows on the pond embankments.

Physical Stability and Erosion Control

Review the site for any signs of cracks or slips in all pond embankments. (Any cracks or slips should be immediately reported to the design engineer) Repair any rills or gullies by backfilling with topsoil, seeding and mulching.

Access Road and Pipe Culverts

Pennsylvania Game Commission

- All access roads and pipe culverts around the site are the responsibility of the P.G.C. and are maintained by the P.G.C. during their normal maintenance schedule.

Maintenance

Removal and Disposal of Precipitate or Sediment:
All the ponds are designed to hold many years worth of sediment before cleaning the facility. They will be monitored to see when cleaning is necessary.

Maintenance of Channels; Industrial Cleaning of Pipes; Repairing Damage After Major Storm Events; and Repairing Cracks or Leaks:
All water conveyance channels must be kept free of all debris which could block the channel or be washed from pond to pond.

The VFS system is equipped with cleanouts which may be used to rotary clean or snake-out any pipes which may need cleaned.

Damage to the ponds and ditches should be identified as soon as possible following damage by storm water. If cracks or leaks are identified, the engineer should be contacted to develop a remediation plan.

Adding Limestone, Compost, Sand, or Gravel:
Compost should be added if the compost layer thins to 12+ inches. Compost generally will only need added every 10-15 years. Funding for compost will be provided by additional grants and/or private funds.

Repairing Vandalism Damage:
In order to keep the system operating properly, any vandalism should be repaired promptly. If the vandalism is severe and threatens the integrity and operation of the system, the chairperson of the Watershed Association will contact DEP personnel to assist in making the necessary repairs.

Adjusting Grades or Outlet Structures:
The VFS outflow pipe elevation may be adjusted by raising or lowering the Fernco adaptor. Adjusting this elevation will control the elevation of the water level in the VFS pond. The pipe is currently set at the correct elevation and should not need adjustment. The water level should be maintained a minimum of 2 feet above the compost layer and 2 feet below the crest of the VFS pond embankment.

System Replacement

The Minersville Passive Treatment System was designed for 25 years. During that time the system must be maintained by removing sludge and adding compost as required and following the suggestions in the approved O.M. & R. Plan. Because the design life is 25 years, responsibility for replacement of the system is beyond the scope of this plan.

Signature Page

The signing of this Operations, Maintenance and Replacement (O.M. & R) Plan by an authorized representative of the Sponsors indicates that the Sponsors have reviewed the O.M. & R. plan for the Minersville Passive Treatment System and concur with the assigned responsibilities and obligations.

IN WITNESS WHEREOF, the sponsors hereto have hereunto set their hands and seals the day and year written here.

Signing of this plan was completed on ____________________________.

WITNESS:

Shoup's Run Watershed Association

______________________________ ______________________________
responsible official's name and title

______________________________ ______________________________
responsible official's name and title

Pennsylvania Game Commission

______________________________ ______________________________
landowner's or responsible official's name

Shoup's Run Watershed Association
Minersville Passive Treatment System
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Maintenance Check List

Date:_____

Inspector: _____

Intake #1

_____ Keep debris and leaves away from intake area.

Comments:_____

_____

Collection Manhole

_____ Check if water is entering from Intake #1 pipe.

_____ Check that water is properly flowing through system.

_____ Make sure cover is secure.

_____ Check outlet pipe.

NEVER ENTER COLLECTION MANHOLE!

Comments:_____

_____

Manifold

_____ Check that flow is being evenly distributed out of manifold. Adjust/clean discharge holes as necessary.

Comments:_____

_____

VFS Pond

_____ Flush as needed.

_____ Add compost as necessary.

_____ Check outlet for calcium oxide build-up.

_____ Maintain proper water level over compost.

Comments:_____

_____

Wetland

_____ Maintain wetland plants.

_____ Check inlet and outlet pipes.

Comments:_____

_____

Clarifying Pond/Wetland

_____ Check inner and outer pond banks for leaks or slumping.

_____ Maintain wetland plants in wetland area.

_____ Check outlet pipe. (Look for calcium build-up)

_____ Check flow patterns through wetlands. I.E. is the water going through the wetlands or around them?

Comments:_____

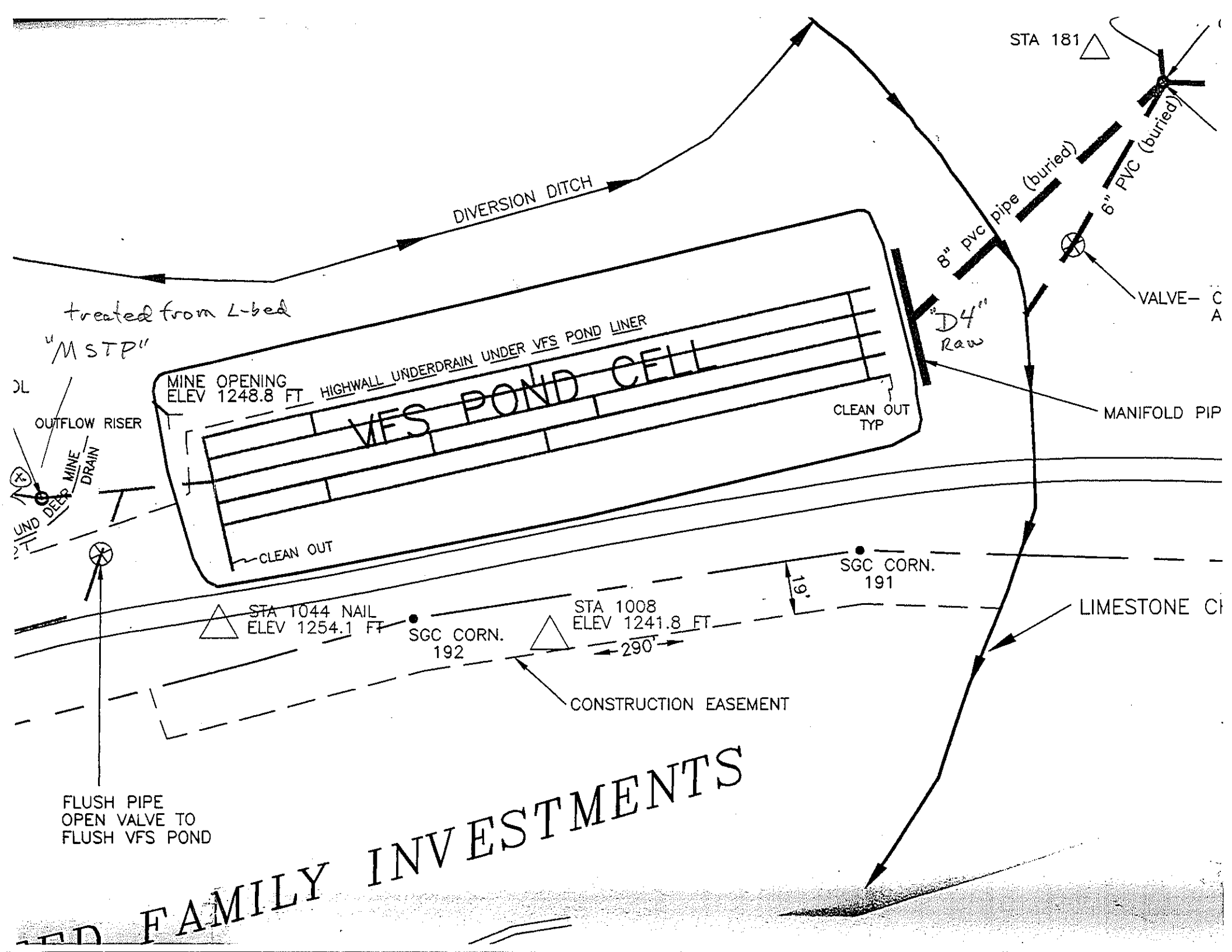
_____

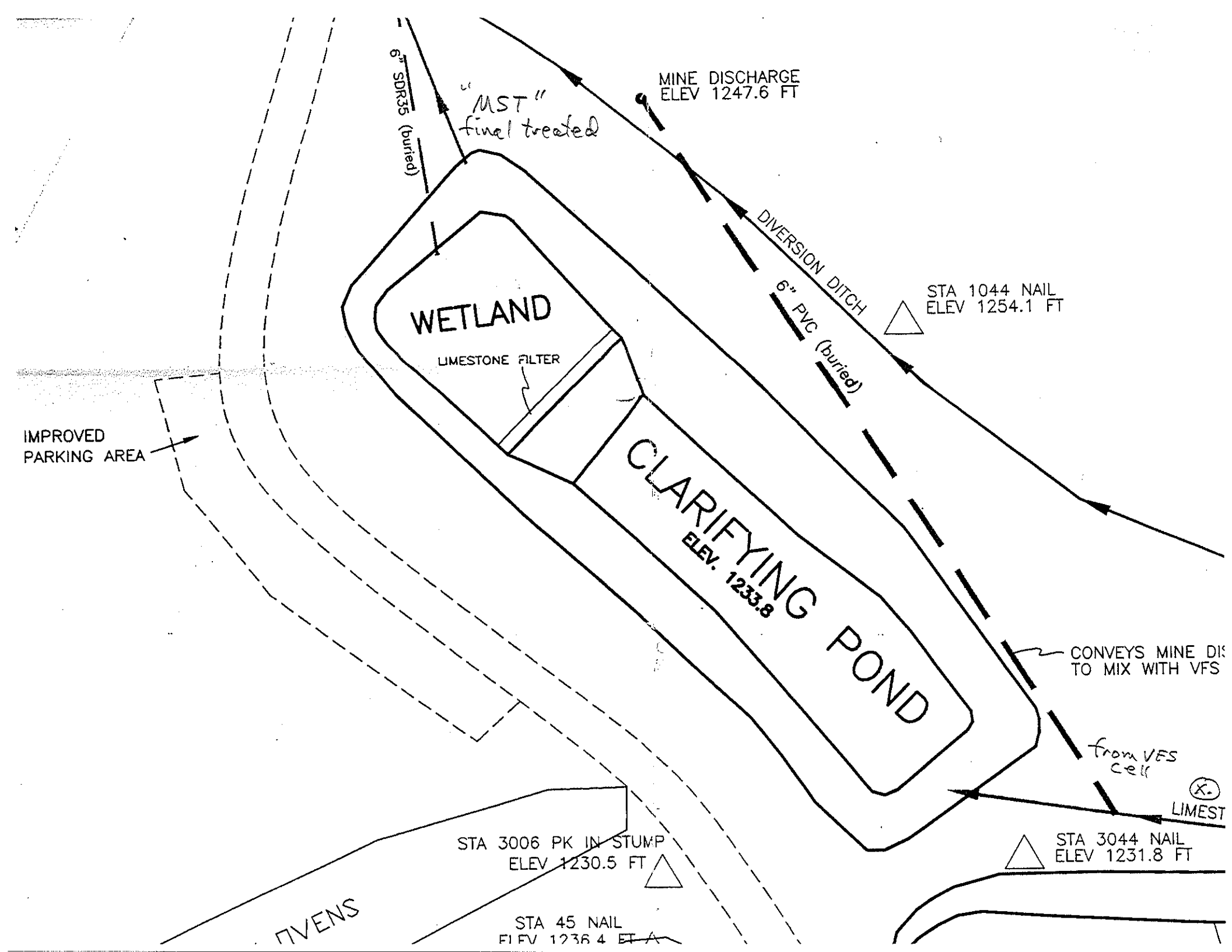
Diversion Ditches

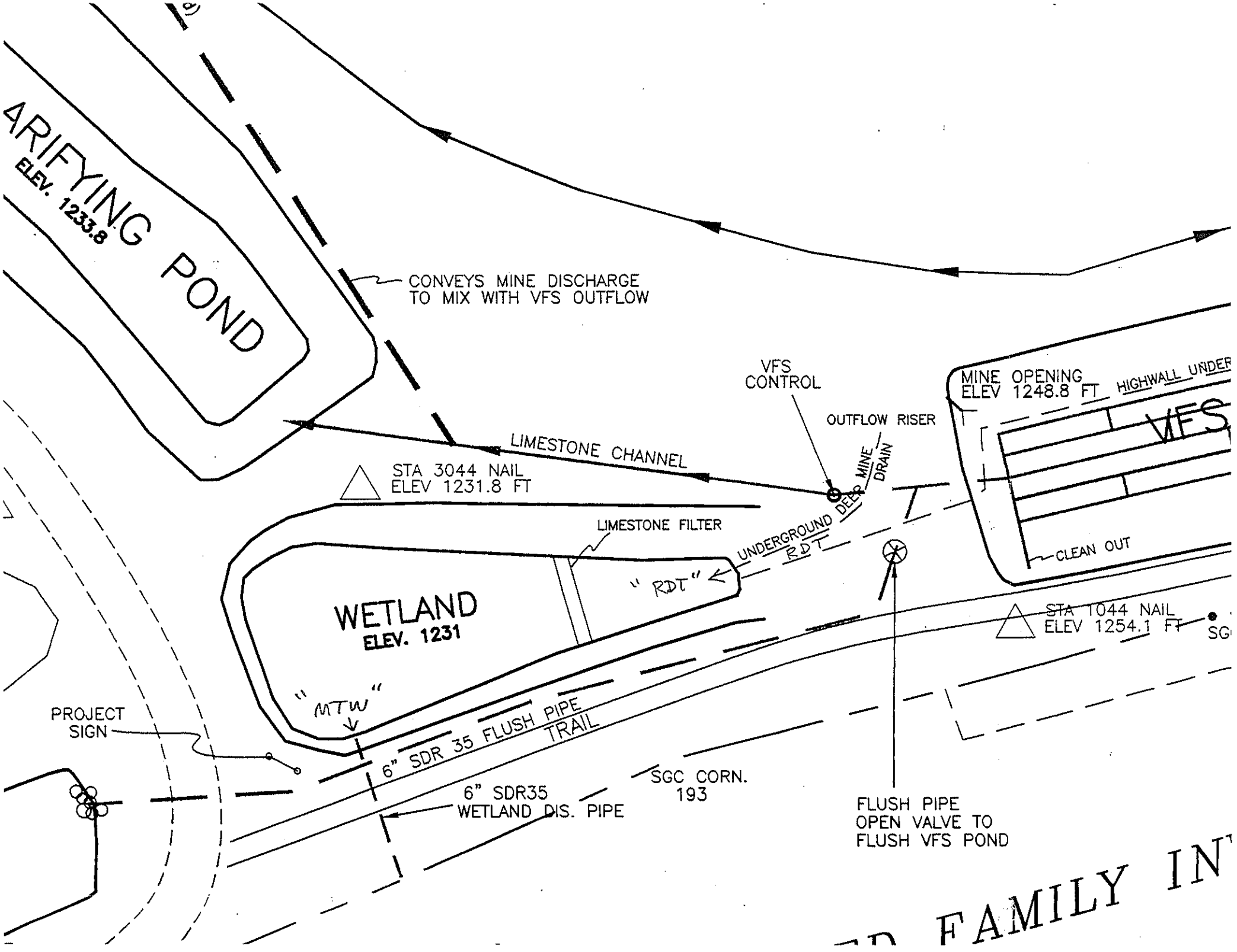
_____ Clean debris from diversion channels.

Comments:_____

_____


STA 181
DIVERSION DITCH
8" pvc pipe (buried)
6" PVC (buried)
VALVE– C
A
treated from L-bed
"MSTP"
"D4"
Raw
MINE OPENING
ELEV 1248.8 FT
HIGHWALL UNDERDRAIN UNDER VFS POND LINER
VFS POND CELL
CLEAN OUT
TYP
MANIFOLD PIP
OUTFLOW RISER
DEEP MINE DRAIN
CLEAN OUT
SGC CORN.
191
19'
STA 1044 NAIL
ELEV 1254.1 FT
SGC CORN.
192
STA 1008
ELEV 1241.8 FT
290'
LIMESTONE CH
CONSTRUCTION EASEMENT
FLUSH PIPE
OPEN VALVE TO
FLUSH VFS POND
FAMILY INVESTMENTS


6" SDR35 (buried)
"MST"
final treated
MINE DISCHARGE
ELEV 1247.6 FT
DIVERSION DITCH
6" PVC (buried)
STA 1044 NAIL
ELEV 1254.1 FT
WETLAND
LIMESTONE FILTER
CLARIFYING POND
ELEV. 1233.8
IMPROVED
PARKING AREA
CONVEYS MINE DI
TO MIX WITH VFS
from VFS
cell
LIMEST
STA 3006 PK IN STUMP
ELEV 1230.5 FT
STA 3044 NAIL
ELEV 1231.8 FT
STA 45 NAIL


ARIFYING POND
ELEV. 1233.8
CONVEYS MINE DISCHARGE
TO MIX WITH VFS OUTFLOW
VFS
CONTROL
OUTFLOW RISER
MINE OPENING
ELEV 1248.8 FT
HIGHWALL UNDER
LIMESTONE CHANNEL
STA 3044 NAIL
ELEV 1231.8 FT
DEEP MINE DRAIN
LIMESTONE FILTER
UNDERGROUND RDT
CLEAN OUT
" RDT"
WETLAND
ELEV. 1231
STA 1044 NAIL
ELEV 1254.1 FT
" MTW"
PROJECT
SIGN
6" SDR 35 FLUSH PIPE
TRAIL
SGC CORN.
193
6" SDR35
WETLAND DIS. PIPE
FLUSH PIPE
OPEN VALVE TO
FLUSH VFS POND