

# Marjol Site Remediation Update

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## ONGOING CONSTRUCTION ACTIVITIES

Construction of the Final Remedy at the Marjol Battery Site is continuing with solidification of the first layer of the cap beginning this month. It is expected that the solidified layer will be put on the Containment (cap) Area (CA) in thirds. As solidification is completed for each third, the cap installer, Chesapeake, from Maryland, will be coming to the Site to install the geosynthetic layers of the cap. With this process, it is hoped that capping of the entire CA will be completed this construction season.

Due to the heavy rains we have received over the past few weeks, we have had some occasions where stormwater has overflowed the CA berm. In order to provide you with information on these incidents, this newsletter discusses the overflows as well as the Stormwater Management System that is in use at the Site. The Solidification process is also discussed in this newsletter on Page 3.

## STORMWATER MANAGEMENT SYSTEM

**Stormwater Structures:** In order to control stormwater at the Site both during and after construction activities and to keep sediment (small soil particles that are carried along in water) on the Site and out of the Lackawanna River, a basin and other drainage features such as check dams and swales were constructed as outlined in the USEPA/PADEP-approved 100% Design Plan for the Site. The stormwater management system consists of several items:

- 1) Swales – to direct the flow of water on the Site to the sedimentation basin.
- 2) Check Dams (elevated rows of rocks in the swales) – constructed to slow the water down as it flows through the swales.
- 3) Sedimentation basin – designed to hold water from a 100-year storm; rainwater that falls on the Site is directed to the basin where sediment will settle out prior to the water being discharged since water from areas without grass yet that drain to the basin may carry sediment. Once the remediation at the Site is complete and grass is growing, the basin is converted to a stormwater management basin.
- 4) Baffle – a fence with fabric on it to slow down the water in the basin after it comes down from the swales and allow additional sediment settling.
- 5) Skimmer – when water is released from the basin, it is released through a skimmer which is a 4-inch plastic tube that skims the water off the top of the basin and into a discharge pipe. The water then flows out through the discharge channel and into Sulphur Creek.
- 6) Outlet structure – water from the basin flows through the skimmer and into the outlet structure which discharges the water into the discharge channel via a pipe to the opposite side of the basin berm.



**Stormwater Sampling and Discharge:** The 100% Design Plan calls for stormwater from the clean areas of the Site to be collected in the new temporary sediment basin. Sediment that is carried along with the stormwater settles out in the basin, and stormwater collected in the basin is released to Sulphur Creek under a permit issued by the State of Pennsylvania. During construction of the Final Remedy at the Site, the drainage system is designed so stormwater falling on contaminated areas of the Site does not flow into the basin, but is retained within the contaminated areas by berms.

If there is not enough space for all of the water to be held within the contaminated areas, however, the design provides for the potentially contaminated water to also drain to the sediment basin. Since lead sticks to the sediment, as long as the sediment is kept on the site by allowing it to settle out of the water in the basin, the water can be safely discharged to the river. This sediment can then be easily excavated and placed into the Containment Area before the final cap is installed. In this way, the water is managed so that the lead remains on the site by controlling where the sediment goes.

Sampling of the basin discharge is included in the 100% Design Plan and became part of the state permit. The design requires stormwater from the basin to be sampled as it is being discharged into Sulphur Creek until the areas draining to the basin have grass growing on them. The basin stormwater sampling plan consists of the following:

**Collect real-time information that can be used for timely action –**

The water discharge from the basin is sampled using a turbidity meter. (Turbidity is the amount of soil particles in the water. Since lead sticks to the soil particles, if there is low turbidity in the water, then there will be, at most, a minimal amount of lead in the water.) The water is sampled every day that water is discharging from the basin. The turbidity meter provides instant information on the amount of sediment that is being released. The turbidity information is used to determine when to take immediate action.

If the skimmer has been raised so that it does not discharge water (for example, if there is a concern that contaminants may have entered the basin), then the basin water is checked to see if the turbidity is above the performance standard of 250 NTUs. If it is above 250 NTUs, then a flocculant (i.e. Pond Clear) is added to the water to get the soil particles to drop to the bottom leaving clear water at the surface. Once the turbidity is below 250 NTUs, the skimmer is lowered and the basin water discharges through the skimmer.

**Collect lab data on stormwater –** Samples of the discharge water are taken at least monthly and analyzed for total and dissolved lead to confirm that contaminated material is not discharging from the basin.



Discharge Point at Perimeter Fence

**Containment (Cap) Area Overflows:** As a result of heavy rains in July and August, 2009, water overflowed the Containment (cap) Area (CA) (which has contaminated material in it) into a drainage feature (the South Swale) outside of the CA and into the basin on July 31, August 10, and on August 12, 2009. While every effort has been made to keep this type of overflow from occurring, the possibility of it happening was considered in the design, and so the overflow water flowed into the sediment basin as it is supposed to do where the lead contaminated sediment could settle out before the water is discharged. Tests conducted after the overflows show that the discharges were well below the limits that were set by the State to protect the Lackawanna River.

When each of the overflow incidents has occurred, the skimmer in the basin has been raised (if it wasn't already) to prevent the flow of water from the basin through the discharge channel. Water in the basin was tested for turbidity and when it was below the performance standard, the skimmer was lowered to allow water to discharge. After the overflow in July, the basin water was also tested for total and dissolved lead. Any sediment and battery casings that have floated onto the CA berm and into the swale were removed and placed back into the CA. XRF analysis (an XRF is a portable instrument used for testing lead concentration in substances such as soil) for lead has been performed on the berm and in the swale to see if the overflow contaminated any previously clean areas.

If the soil lead levels were above the cleanup level, then soils on the berm and swale were excavated and placed into the CA. The excavated areas were rechecked with the XRF to be sure lead levels were below the cleanup standard.

After the first overflow, a meeting was held to discuss how to better control an overflow if it happened again. In order to get more room to hold the contaminated water so that it would not go off-site, it was decided to pump the contaminated water from the CA to a strip pit that was previously excavated – Area B – instead of back into the CA as the practice had been. Area B will be tested near the end of the project and will be re-excavated if necessary with any contaminated material being placed in the CA and solidified. Subsequent efforts after the overflows focused on making sure that the pumps were ready when rain occurred during the night and that the pumps could handle all of the water. While the overflows are not what we would like to see, the important point is that the lead is being contained within the site as it is supposed to be while we are managing the water as best we can with the unfavorable weather we have been having.

After each incident, we are submitting a report with the details to the EPA and DEP. The first report has been submitted and is on the website and the other reports will be posted as soon as we have all of the data compiled and the report submitted.

## SOLIDIFICATION

The bottom layer of the cap is a solidified layer that is placed over the contaminated material. The solidified layer provides protection of the underlying loose, contaminated soils in the very unlikely event of soil erosion exposing the geosynthetic (plastic membrane and drainage) layers and those layers becoming damaged. The solidified layer will resist erosion giving more time for repairs to be made. The solidified layer will be made by mixing contaminated soils from the last area being excavated with a cement-like material called lime kiln dust. The mixture is placed in the Containment Area in layers and compacted where it becomes "solidified" by gaining strength through the soil particles sticking together. The lime kiln dust is a white powder-like material; it is not contaminated with lead or any other hazardous material. Every effort will be made to adhere to the zero dust policy at the Site even with the lime kiln dust, but during the solidification process, it is possible that you might see small localized areas of white dust. Air monitoring will continue during the solidification process.

Solidification will take place in three parts. After the solidified layer for each part of the cap is complete, placement of the geotextile layers will begin for that part of the cap.



Solidification Equipment—Dust Free Soil Stabilizer

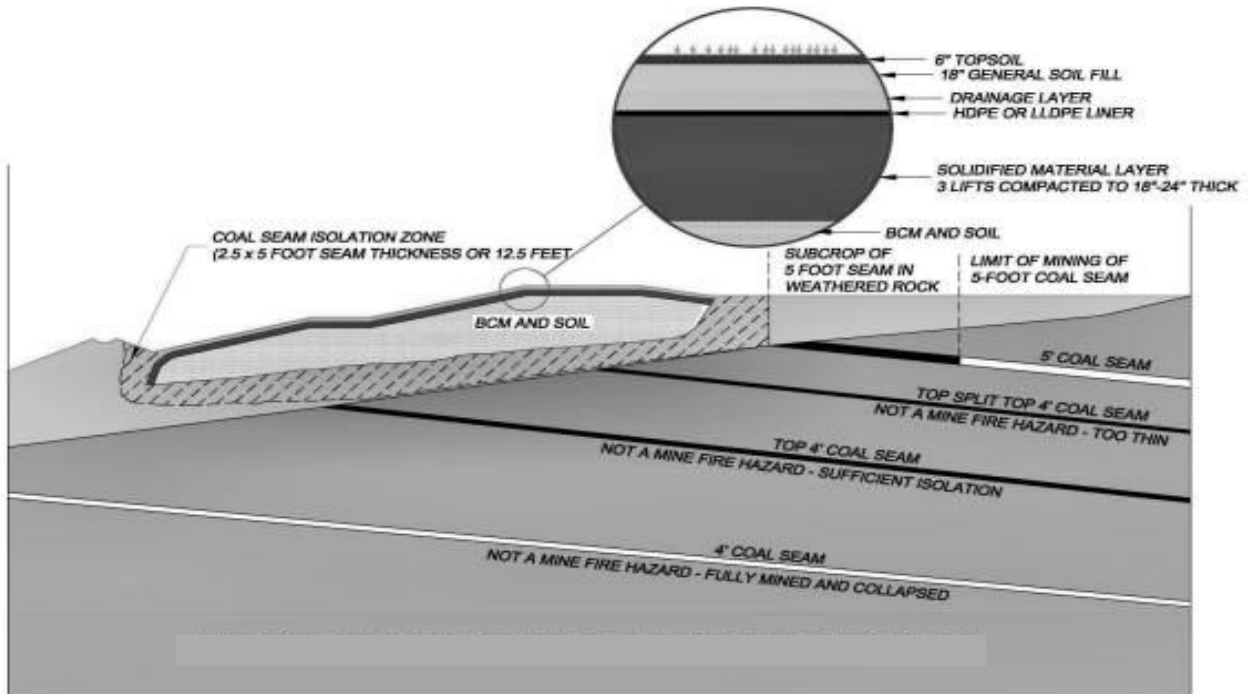
We encourage everyone to log onto our web site at

[www.marjolcleanup.com](http://www.marjolcleanup.com)

for the most recent information regarding the Marjol site. *Provide us with your e-mail address and we will notify you whenever the web site is updated.* A weekly schedule as well as a list of completed activities is posted on the Marjol web site, [www.marjolcleanup.com](http://www.marjolcleanup.com), on Friday afternoons. A photo gallery is also available on the web site. Perimeter, real-time, and co-located air data is provided and updated on the Marjol web site

## ANNUAL BLOOD LEAD SCREENING PROGRAM

Over 50 individuals participated in this year's annual blood lead screening. A summary of this year's program will be provided in the next newsletter.



**GENERALIZED CROSS-SECTION WITH CONCEPTUAL REMEDY**

Note: BCM = Battery Casing Material HDPE = high density polyethylene LLDPE= linear low density polyethylene

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## Repository Location

### Marjol Battery Site Repository

The repository is located at the Throop Borough Municipal Building, 436 Sanderson Street, Throop, PA and is open Monday through Friday 9 am to 4 pm.

## Do you want to be added to our lists?

If you would like to be added to the Marjol Battery site newsletter mailing list or the website changes list, please contact Lisa Ayers via e-mail, telephone, or fax or you can submit your address information on our web site at <http://www.marjolcleanup.com>.

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