



Multimedia Consent Decree

2009 Annual Report

Prepared for
U S Environmental Protection Agency
Maryland Department of the Environment

Prepared by
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1.0 Introduction

The Multimedia Consent Decree (Decree), originally entered into by Bethlehem Steel Corporation (BSC), the U.S. Environmental Protection Agency Region III (EPA) and Maryland Department of the Environment (MDE), defines specific actions required at the Sparrows Point facility "Facility" located in Baltimore County, Maryland. The Decree became effective on October 8, 1997 (Civil Action JFM-97-558).

Specific actions outlined in the Decree include requirements for annual reporting of information and activity progress. This report provides information and activity progress for 2009 that was accomplished by Severstal Sparrows Point, LLC (Severstal).

There are three sections in the Decree that require annual reporting of information;

Section VI	Paragraph 4	Waste Minimization Plan,
Section XII	Paragraph 5	Notification and Certification of Documents,
Section XVIII	Paragraph 2	Civil Penalties and Pollution Prevention Credits.

Section VI, Paragraph 4, (Waste Minimization Plan), requires a report on the previous year's status of implementing each Work Plan required under Section VI including sampling data related to hazardous waste regulatory determinations.

Section XII, Paragraph 5, Notification and Certification of Documents, requires a progress report on actions completed as required in Sections V (Corrective Measures Work) and VII (Compliance Requirements) of the Decree.

Annual reports of actual pollution prevention expenditures during the previous calendar year for pollution prevention projects described in Section VI are also required by Section XVIII, Paragraph 2, Civil Penalties and Pollution Prevention Credits.

This Annual Report provides information on actions undertaken in 2009 that comply with the requirements of these three paragraphs. Information is presented in following sections of this report that complies with the reporting requirements of the Decree. Section 2.0 provides the status on the Waste Minimization Plan required in Section VI of the Decree and includes project cost information for the plan as required in Section XVIII. Sections 3.0 and 4.0 provide progress reports as required in Sections V (Corrective Measures) and Section VII (Compliance Requirements) respectively. Section 5.0 presents other supporting information required in Section XII including community relations, spill release reporting and changes to the overall management structure utilized by Severstal to implement the Decree.

2.0 Waste Minimization Plan

A summary of waste minimization activities completed during 2009 is presented in the following sections. To satisfy Decree Section XVIII on pollution prevention expenditures, each section also lists the costs incurred in 2009.

Sump/Tank Work Plan

Description of 2009 Activity:

Repairs and/or replacements of sumps and storage tanks as specified in the Consent Decree and the approved "Sump/Tank Work Plan and Schedule" were completed in 2003.

Repairs completed for sumps and tanks included the following actions:

- Corrosion repair
- Repainting
- Replacement of structural tank supports and brick foundations
- Concrete joint repair within sumps
- Rubber liner repair for sumps and associated piping
- Installation of epoxy liners for trenches containing pickling acid solutions

As part of the operating maintenance activities completed in 2009 for the facility, coating upgrades to a secondary containment structure were installed for above ground storage tanks identified in the Work Plan.

2009 Expenditures: \$25,000

Recycle of Blast Furnace Gas Cleaning Slurry Solids

Description of 2009 Activity:

Full-scale pilot testing and evaluation of technologies have been completed for recycle of blast furnace gas cleaning slurry solids/filter cake. A full-scale pilot hydrocyclone facility was constructed and run successfully during the 2nd to 4th quarter of 2002. The patented hydrocyclone process was shown to effectively remove zinc producing a suitable iron and carbon rich revert (hydrocyclone underflow) for recycling to the Sinter Plant.

The current status and implementation schedule for this project is as follows:

- Phase 1 Engineering – Evaluate current status of water treatment system. This engineering was completed by end of October 2006;

- Phase 2 Engineering – Develop modifications for the water treatment system including solids management and recycling systems. Completed by end of 4th Qtr 2007.
- Capital Project Appropriation Submittal – Develop and provide cost-benefit basis for corporate approval – re-evaluating the system based on new plant operating plans
- Implementation/Construction of Project – Anticipated to start 2011

2009 Expenditures: \$0

Recycling of BOF Fume Sludge

Description of 2009 Activity:

Recycling of BOF fume sludge was suspended during 2008 because of air emission compliance concerns. Options to amend the fine-grained nature of the material to a substrate more suitable for recycling at the BOF are currently being evaluated. In-plant feasibility test work was completed June 2009.

A BOF Fume Sludge treatability study was also completed in 2009. The purpose of the treatability study was to better define the characteristics of the BOF sludge and to find an additive blend that can produce a material that could potentially be used as road base at Greys Landfill or to be used as structural fill on the plant property. The completed treatability study is included in Appendix A.

2009 Expenditures: \$25,000

Recycling of Humphreys Creek Wastewater Treatment Plant Sludge

Description of 2009 Activity:

Technology review is ongoing to provide an evaluation of various processes to recycle the wastewater treatment plant sludge. Humphreys Creek Waste Water Treatment Plant (HCWWTP) sludge has presented a challenge for recycling because of its oil content and its relatively low concentration of iron. A number of projects have been evaluated over the past few years that were developed to find ways of de-oiling or reusing this sludge and similar materials. These projects were not deemed successful as viewed from the perspective of technology, feasibility or cost. The projects have included biological de-oiling, solvent extraction de-oiling and calcination. Additionally, reuse of this material in the sinter plant has been further restricted due to air emission limits on volatile organic compounds.

Current levels of oil and grease in the sludge have been lowered as a result of recent waste minimization efforts to eliminate oil and grease discharges to Tin Mill Canal. It is anticipated that Humphreys Creek sludge materials will be evaluated further to determine if they can be cost-effectively de-oiled and pelletized to provide a feedstock to the sinter plant. This study effort will be continued in 2010 in an effort to realize the cost benefits of the iron value in the sludge as well as to reduce the landfill needs of the facility.

2009 Expenditures: \$5000

Maintenance Dredging of the Tin Mill Canal

Description of 2009 Activity:

Maintenance dredging operations were conducted in late 2008 that included the removal of approximately 500 cubic yards of material from a location in Tin Mill Canal near the sewer outlet of the Hot Strip Mill. The Sludge Drainage Pad was used for temporary storage and dewatering of the material. Testing procedures for this material were completed in 2008 prior to disposal to provide waste characterization of the materials. Sampling procedures included the recovery of discrete random and composite samples of the waste materials. The dredged materials were disposed of at Greys Landfill in 2009.

No additional maintenance dredging activities were conducted in 2009.

2009 Expenditures: \$10,000

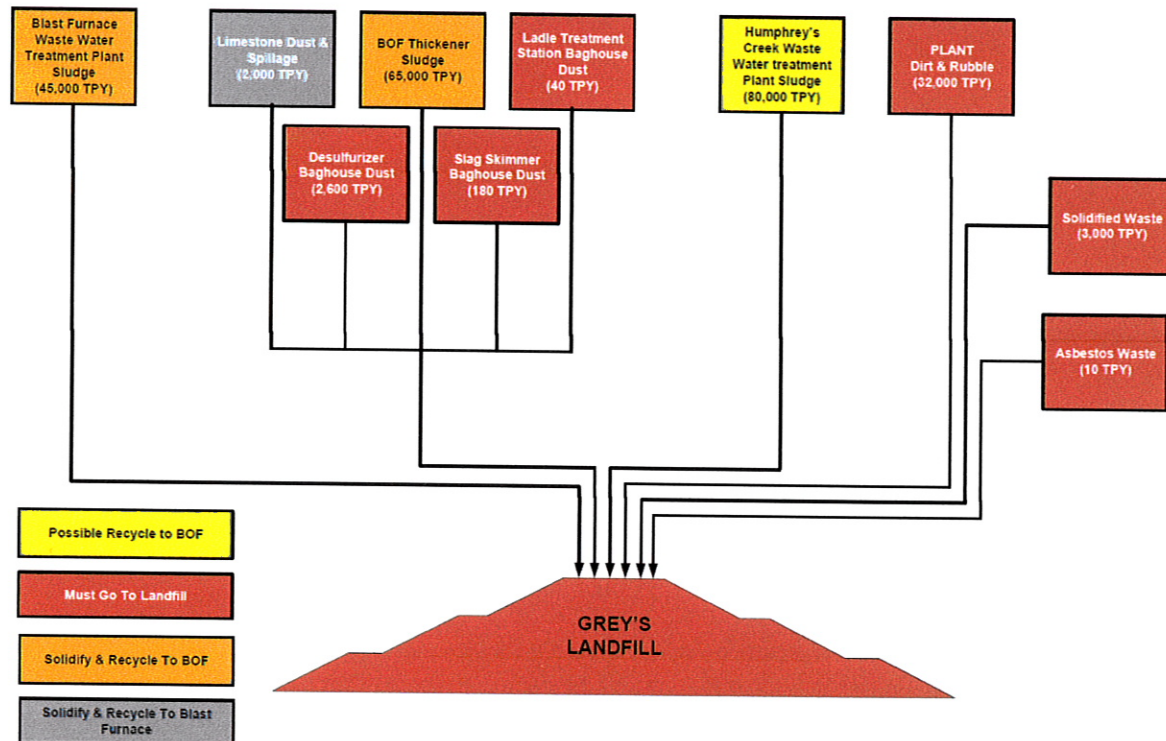
Facility Wide Waste Minimization Plan

A Facility-wide Waste Minimization Plan (October 2006 Plan Update) was submitted in November 2006 in accordance with requirements of the Decree outlined in Section VI, Paragraph 3.c .

Goals and effectiveness of the Waste Minimization Program at Sparrows Point will continue to be evaluated as part of the requirements of the Consent Decree as well as with the environmental management system implemented at the facility in conjunction with the ISO 14001 certification received by the facility.

Revert and Emission Control Sludge Recycling and Reuse Program

The following schematic shows efforts that are ongoing to recycle and minimize revert and emission control sludges that are currently generated at the facility. Pilot and field testing of possible recycle options are either underway or scheduled with capital projects for the facility.



Revert Block Facility

A revert block facility is being considered to support the recycling of facility generated revert materials into the ironmaking and steelmaking processes. Reverts include mill scales and other materials that have sufficient iron content to be useful as raw materials for the processes. The facility would bind the reverts with additives (typically cement) to produce blocks (or pucks) suitable for transport with the existing raw material feed systems.

Hot Strip Blowdown Polymer Treatment

Polymer treatment to the Hot Strip blowdown water has been designed to break oil and grease from the effluent stream. A Chemtreat Cationic Emulsion Polymer P-835E has been injected into the discharge of the Hot Strip Settling basin as it enters the sewer line leading to the Tin Mill Canal. The turbulence of the flow in the sewer line provides adequate mixing to provide significant oil separation. Visible indication of the oil on the surface of the canal is immediately evident. This effort has resulted in substantial increase in the oil captured at the skimmers.

Sampling of the influent water to the treatment facility has indicated oil levels have decreased significantly. Without polymer random samples of the inlet have tested at 50 to 200 ppm O&G. With the Polymer treatment, O&G has ranged from 1 to 50 ppm. Subsequent testing for oil and grease levels in the sludge has also been impacted dramatically. Prior to the treatment, O&G

levels have historically ranged from 4 to 7 % (40,000 to 70,000 ppm). During polymer treatment, sludge O&G has decreased to less than .1% (600 to 1000 ppm).

Additional benefits to the treatment have also been evident in the centrifuging process. Dewatered sludge solids have improved. The treatment facility centrifuge operation has been able to achieve higher solids concentrations (up to 45 %). However, limitations of the screw conveying system has limited the effort to concentrate solids further due to mechanical issues associated with the dryer discharge.

Continued testing of the Hot Strip Discharge is planned. Enhancement of the oil collection equipment at the Tin Mill Canal is a consideration with the additional O&G accumulation. Installation of oil skimming equipment at the Old Tin Mill Boiler House location is being investigated.

3.0 Corrective Measures

Paragraph 5 of Section XII of the Decree requires a description of the work undertaken in Sections V (Corrective Measures) and VII (Compliance Requirements) of the Decree. This section provides a status report for corrective measures projects included in Section V of the Decree as follows:

- Rod & Wire Mill Sludge Bin Remediation Area
- Site Wide Investigation
- Coke Oven Area Interim Measure

Rod & Wire Mill Sludge Bin Remediation Area

During 2009, Severstal Sparrows Point, LLC operated the groundwater pump and treat Interim Measure at the former Rod & Wire Mill Sludge Bin Storage Area at Sparrows Point in accordance with the scope and schedule submitted in the July 2000 *Work Plan for Re-Establishment of Interim Measures, Former Sludge Bin Storage Area, Rod & Wire Mill* that was approved by U. S. EPA on November 3, 2000. The interim measure tasks included:

- Maintaining institutional controls at the former *in situ* leaching area,
- Groundwater treatment system monitoring, operation and maintenance,
- Semi-annual groundwater elevation monitoring, and
- Semi-annual sampling and analysis of groundwater.

Specifics of the interim measures tasks completed in 2009 are as follows:

- Institutional controls were maintained at the former sludge bin storage area to minimize and manage activities that could disturb soils at the site. These controls consist of notice sign boundary markers and continuation of an authorization program to conduct work in the area.
- Operation and maintenance of the groundwater recovery wells, transfer pipeline and treatment process equipment located at the existing wastewater treatment facility.
- Evaluation of the groundwater pump and treat system, including documentation of treatment flow, review of semi-annual groundwater elevation data, and review of effectiveness.
- Semi-annual sampling, analysis and evaluation of the groundwater impacted by former operations at the sludge bin storage area.

A total of 6,801,611 gallons of water was extracted from the two Former Sludge Bin Storage Area groundwater pumping wells (RW15-PZM020 and RW10-PZM020) during 2009. This compares to 6,585,185 gallons extracted in 2008. The average total pumping rate for 2009 was 18,635 gallons per day (gpd), or 12.9 gallons per minute (gpm). A total of 281 pounds (lbs) of cadmium and 14,055 lbs of zinc were removed and treated during 2009. This compares to 301 pounds (lbs) of

cadmium and 15,222 lbs of zinc removed in 2008. The reduction in removed masses from 2008 to 2009 is due to reduced cadmium and zinc concentrations in groundwater at the pumping wells.

Groundwater elevation data indicate groundwater drawdown with a radius of influence that captures the contamination plume in the intermediate groundwater zone (approximately 20 to 30 feet below the ground surface) at the average annual 2009 pumping rate of 7.6 gallons per minute (gpm) for recovery well RW15-PZM020 and 5.4 gpm for recovery well RW10-PZM020. The groundwater elevation data for the shallow zone (groundwater table surface to 15 feet below this surface), combined with the chemistry data, document a water table situation where contamination migration is effectively controlled in this groundwater zone. Groundwater elevation data for the deeper groundwater zone (greater than 50 feet in depth) suggest that heads in this zone may not be influenced by the pump and treat system; however, the chemistry data (further discussed below) indicate that this zone is minimally impacted. Groundwater monitoring data collected during 2009 suggests some improvement in groundwater quality as compared to 2008.

Cadmium—Cadmium concentrations in the two pumping wells (RW10-PZM020 and RW15-PZM020) are generally similar to concentrations observed in recent prior years. At most of the non-pumping wells the 2009 cadmium concentrations are similar to prior years, with the following exceptions where the cadmium concentrations are lower compared to recent prior years:

- At RW03-PZM003 (shallow zone) the 2009 4th quarter cadmium concentration (0.05 mg/l) was lower than historically has been observed.

Zinc—Zinc concentrations in the two pumping wells (RW10-PZM020 and RW15-PZM020) are generally similar to concentrations observed in recent prior years. At most of the non-pumping wells the 2009 zinc concentrations are similar to prior years, with the following exceptions:

- At RW07-PZ004 (shallow zone) the 2nd and 4th quarter 2009 zinc concentrations (19.0 and 33.0 mg/l, respectively) are higher than historically has been observed.
- At RW12-PZM004 (shallow zone) the 2009 2nd and 4th quarter zinc concentrations (2.3 and 1.7 mg/l, respectively) are lower than historically has been observed.
- At RW07-PZM017 (intermediate zone) the 2009 2nd and 4th quarter zinc concentrations (310 and 300 mg/l, respectively) are lower than historically has been observed.
- At RW14-PZM020 (intermediate zone) the 2009 2nd and 4th quarter zinc concentrations (150 and 260 mg/l, respectively) are lower than historically has been observed.
- At TS04-PZM023 (intermediate zone) the 2nd quarter 2009 zinc concentration (4.0 mg/l) is lower than historically has been observed.

The Proposed Operating Plan for 2010 is to: maintain institutional controls at the former storage area, continue operation, maintenance, and monitoring of the groundwater pump and treat system and complete semi-annual monitoring of groundwater consistent with procedures outlined in the approved July 2000 Work Plan.

Site Wide Investigation

Work completed for the Site Wide Investigation during 2009 included the following activities:

Ecological Risk Assessment Program

An ecological risk assessment program for the facility was developed and presented to the agencies on November 21, 2005. A path forward for ecological assessment tasks was agreed to on November 21, 2005. The proposed steps were as follows:

- Gain approval of strategy for evaluating ecological risks at the site from the USEPA and the Maryland Department of the Environment (MDE);
- Participate in a coordinated site visit with the USEPA to facilitate their understanding of the potential ecological issues at the Site;
- Conduct qualitative ecological surveys of on-site and off-site areas. The on-site and off-site surveys may be conducted at different times;
- Develop ERA Work Plan. Components to be factored into the Work Plan include:
 - Tiered approach consisting of completion of the SLERA, followed by the BERA, if necessary. It is assumed that the SLERA will include, in addition to a quantification of on-site screening-level risks, a comparison of groundwater concentrations to ecological surface water benchmarks. The results and conclusions of the SLERA will determine the need for a BERA.
 - Development of on-site Work Plan. Plan will identify areas of overlap between suitable ecological habitat and areas potentially impacted by SWMUs and AOCs, and identification of potential receptors in these areas of overlap;

The strategy document for the ecological risk assessment tasks at Sparrows Point was submitted for approval in February 2006. Comments were received from the US EPA in March 2006 and, where applicable, were incorporated into the development of the On-Site Ecological Work Plan.

The *Ecological Risk Assessment Work Plan for On Site Areas* was developed and submitted for agency review in June 2006. Based on the agreed upon approach for the facility, the *Ecological Risk Assessment Work Plan for On Site Areas* was finalized and submitted to the agencies in January 2007.

Milestones achieved for the Ecological risk Assessment Program in 2009 include:

- Submitted **Screening Level Ecological Risk Assessment for On-Site Areas (SLERA) Final** (April, 2009, URS). The SLERA focused on potential ecological risks associated with the on-site areas of concern identified in the *Ecological Risk Assessment Work Plan for On-Site Areas* approved by USEPA (URS 2007). The final report provided revisions to the draft SLERA report submitted in April 2008 (URS) in accordance with the referenced US EPA request dated January 26, 2009.
- Submitted **Supplemental Report County Land Parcel 1B Ponds Final** (May 2009, URS). This report provides supplemental screening level ecological risk assessment findings in conjunction with areas identified in the *Ecological Risk Assessment Work Plan for On-Site Areas* approved by USEPA (URS 2007). The final report provides revisions to the draft report submitted in January 2009 (URS, 2009) in accordance with the referenced US EPA request dated February 25, 2009.

With submission of these two reports, it is planned to complete the next phase of the ecological risk assessment program (Baseline Ecological Risk Assessment) in 2010.

Groundwater Discharge Assessment Work Plan

On October 13, 2009 Severstal submitted to MDE and EPA a work plan to investigate potential Coke Oven Area/Coke Point Area (CO/CP) offshore current groundwater discharge impacts (*Sediment, Surface Water, and Groundwater Sampling Plan to Assess Current Groundwater Discharge Impacts to the Offshore Environment*, October 2009, URS). The two primary sampling plan objectives are:

- **Objective 1**— Assess Potential Groundwater Impacts to Surface Water Surrounding the Entire CO/CP Area Peninsula
- **Objective 2**— Assess Groundwater to Surface Water Migration Pathways and Evaluate Offshore Sediment Pore Water

Objective 1 activities focus on: 1) conducting a bathymetric survey around the entire perimeter of the CO/CP and, 2) conducting surface water sampling along sixteen offshore transects. The bathymetric survey will assist with validation of the physical parameters of the CSM. The surface water sampling will provide chemistry data to compare to existing and planned new CO/CP groundwater chemistry data to evaluate if groundwater chemicals are influencing surface water chemistry. Objective 2 activities focus on the investigation of offshore groundwater discharge patterns including the analysis of sediment pore water surrounding the northwestern portion of the CO/CP Area for benzene.

This plan is currently being reviewed by the agencies.

Coke Oven Area Interim Measure

Summary

In its letter dated February 19, 2009, EPA required that Severstal submit an Interim Measures (IM) work plan to recover hydrocarbons from groundwater at the Coke Oven Area (COA), under the applicable Consent Decree for this facility. Accordingly, Severstal submitted to EPA in April 2009 a work plan to conduct pilot testing of soil vapor extraction (SVE), air sparging (AS), and groundwater pumping. The work plan was revised based on comments received by the agencies and resubmitted in July, 2009. EPA approved this work plan in their letter dated August 24, 2009.

IM pilot testing was conducted at the COA during October/November, 2009. Proposed IMs designs were developed including:

- Prototype AS/SVE Systems
- Enhanced in-situ Anaerobic Biological Remediation (AB) systems
- Light (i.e., floating on water) non-aqueous phase liquid (LNAPL) recovery

The proposed designs of the IMs are intended to achieve the objectives outlined in the EPA approval letter dated August 24, 2009, including description of the IM technology, intended area of influence and/or systems due to the size of the remediation area, description of LNAPL recovery components, and description of how the IMs will reduce off-site migration of the groundwater plume.

Former Coke Oven Area Pilot Test

The COA pilot testing objectives were to:

- Evaluate the potential effectiveness of Dual-Phase technologies (i.e., treatment of both groundwater and vapors) for removing and destroying benzene and naphthalene mass from the unsaturated zone and shallow groundwater at two locations at the former Coke Oven Area (former benzol processing area and coal tar storage area),
- Conduct groundwater pumping to test the effects that groundwater extraction has on: a) optimizing heavy fraction hydrocarbon removal, b) mitigating groundwater elevation increases at the SVE extraction well to optimize extraction well efficiency; and c) lowering the groundwater table elevation at the pilot test area, thus influencing shallow groundwater migration,
- Develop criteria for expanded-scale IM application of the technology(ies) that demonstrate the most potential effectiveness,
- Evaluate other potential IM technologies (including screening and assessment), such as groundwater pumping to influence groundwater migration, LNAPL skimming, surfactant enhanced product recovery, co-solvent enhanced recovery, aerobic and anaerobic bioremediation, etc.

Results of the IM pilot tests indicate:

- AS/SVE, applied at multiple locations simultaneously, significantly enhances benzene removal from the saturated slag zone groundwater at the Former Benzol Processing Area, but not at the Former Coal Tar Storage Area.
- SVE alone (without AS) is not effective for reducing benzene concentrations in the unsaturated slag zone in either the Former Benzol Processing Area or the Former Coal Tar Storage Area.
- The unsaturated slag zone is less permeable than the saturated slag zone in each area. This observation suggests that sparged air is restricted from migrating to the surface and can potentially be directed to engineered collection points within (or slightly above) the saturated-unsaturated zone interface.
- It is likely that localized aerobic conditions could develop around AS wells, could be enhanced, and would encourage aerobic biodegradation of benzene and naphthalene. Beyond the zone of AS well influence, anaerobic conditions probably would prevail.
- Anaerobic bioremediation probably would persist in areas beyond the influence of AS wells due to the COA's prevailing highly anaerobic groundwater conditions. Anaerobic bioremediation in these areas could be enhanced to accelerate reduction of groundwater benzene and naphthalene concentrations.
- Biological and chemical fouling can occur at the COA and influence the operation of any treatment system. Negative influences can be managed by proper treatment system design.

Evaluation of Other Technologies

The presence of LNAPL at the COA and the limited effectiveness of AS/SVE at the Former Coal Tar Storage Area motivate consideration of additional IM technologies. Thirteen additional IM technologies were screened for their interim applicability.

The technologies that passed the screening process, supplemental to AS/SVE at the Former Benzol Processing Area, are:

- LNAPL product skimming, and
- Enhanced In-situ Anaerobic Bioremediation at the Former Benzol Processing Area

Proposed Interim Measures

Based on the pilot test findings and inferences concerning the applicability of LNAPL recovery and in-situ anaerobic bioremediation of benzene and naphthalene, Severstal proposes to implement the following COA Interim Measures;

- Construct, as IM Phase 1, a prototype AS/SVE system at the Former Benzol Processing Area to evaluate the proposed technology performance at operational prototype scale. Operate this Former Benzol Processing Area prototype system for a 6-month to 1-year

period to collect operational data. Pending satisfactory performance of the system (as defined by benzene recovery/destruction efficiencies and groundwater benzene concentration decreases), construct and operate, as IM Phase 2, the Former Coal Storage Area and Cove Area prototype-scale systems, as described in the following paragraphs. Severstal believes it important to confirm satisfactory operation of the proposed AS/SVE technology concept at operational prototype scale in the Former Benzol Processing Area before deploying the technology to other areas.

- Construct a prototype enhanced AB naphthalene and benzene groundwater treatment system at the Former Coal Tar Storage Area, consisting of Phase 1 (Proof of Concept) and Phase 2 (Build-out), and
- LNAPL recovery at the central portion of the LNAPL area defined by the recent EA study (2009).

Locations

AS/SVE systems will ultimately be constructed in three areas associated with the Former Benzol Processing Area and two enhanced in-situ AB systems at two areas at the Former Coal Tar Storage Area. All systems are intended address benzene and naphthalene contamination in the saturated slag zone. The proposed footprints for the systems may be adjusted slightly from those shown, depending on surface features and subsurface utilities yet to be identified.

A prototype AS/SVE system at the Former Benzol Processing Area will be constructed and operated first to evaluate the proposed technology performance at operational scale. This Former Benzol Processing Area prototype system will be operated for a 6-month to 1-year period to collect operational data. Pending satisfactory performance of the system (as defined by benzene recovery/destruction efficiencies and groundwater benzene concentration decreases), the Former Coal Storage Area and Cove Area systems will be constructed and operated, as IM Phase 2.

These systems are intended to reduce offsite migration of the groundwater plume in locations around the former COA where the existing data indicate the greatest potential for offsite migration of benzene and naphthalene in the groundwater. The three proposed systems at the Former Benzol Processing Area employ the AS/SVE technology combination that was demonstrated effective during the pilot tests described herein. Because the AS/SVE technologies will be used in these areas, complimentary aerobic and anaerobic bioremediation processes will be evaluated simultaneously.

The In-situ AB System proposed for the Former Coal Tar Storage Area is coincident with the area of highest groundwater naphthalene concentrations and where DNAPL has been observed in shallow monitoring well CO13-PZM0008.

Design Details

AS/SVE System

The AS/SVE system will utilize a combination of saturated slag zone (shallow aquifer) and deeper (intermediate aquifer) air sparge wells coupled with vapor collection trenches in the unsaturated/saturated slag zone and possibly vapor recovery wells in the intermediate aquifer. All vapor recovery systems will be connected to a dedicated internal combustion engine (ICE) that will provide the vapor extraction vacuum and vapor destruction capacity necessary to destroy the recovered benzene vapors.

It is expected the air sparge systems in both groundwater aquifers will be pulsed in order to maximize benzene vapor recovery rates and not develop air preferential pathways. The ICE unit will be equipped with an integral air compressor to provide the sparge air. In this way, the ICE unit provides both SVE and AS functions while providing a failsafe condition in that if the ICE shuts down, the AS component also automatically shuts down. In the event that the proposed slag zone vapor collection trench does not function properly, the backup concept is to provide a network of SVE collection wells, similar in construction to those installed for the AS/SVE pilot tests described herein.

In-Situ AB System

Implementation of the Prototype In-Situ AB system at the Former Coal Tar Storage Area will focus on the shallow aquifer where naphthalene concentrations are greater than 10,000 ug/L and is considered to be an area with residual DNAPL that feeds the dissolved phase groundwater plume. The planned implementation sequence generally is: 1) deployment of bio-traps, 2) construction of groundwater circulations cells, 3) amend groundwater with biological essential nutrients indicated by the bio-traps, 4) circulate groundwater to distribute the amendments, 5) again utilize bio-traps and groundwater chemistry analysis to monitor system performance and amendment attenuation, 6) repeat amendments as indicated..

Prototype System Installation/Operation Schedule

Pending EPA approval of this IM Work Plan, the proposed IM Phase I operational prototypes for the Former Benzol Processing Area and Coal Tar Area AB systems will be installed about 120 days after EPA's approval as outlined in the EPA approval letter dated August 24, 2009, assuming no extreme site conditions are encountered during construction. Pending satisfactory performance of the IM Phase I prototype systems (as defined by satisfactory benzene/naphthalene mass removal rates and decreases in groundwater benzene/naphthalene concentrations after a 6-month to 1-year operational period), Severstal plans to implement IM Phase 2 consisting of: 1) design, construct, and operate additional IM systems for the Cove Area and Former Coal Storage Area, and 2) implement expanded Coal Tar Area AB systems.

The LNAPL product recovery system has been installed in January 2010; the system includes

- A Xitech REM2500ES remote LNAPL skimmer system skimmer pump that pumps LNAPL from the well
- a control panel, solar panel, battery, air dryer, and air compressor that operate the skimmer pump
- a weather-proof storage box that houses the control instruments
- 500-gallon double wall tank for storing recovered LNAPL

Recovery of LNAPL from a two-inch monitoring well at the former benzol area began in January 2010. The system is undergoing operational review to determine effectiveness of recovery of LNAPL. It is anticipated that additional product recovery systems will be installed in 2010 in conjunction with the other IM technologies at the COA.

4.0 Compliance Requirements

Paragraph 5 of Section XII of the Consent Decree requires a description of the work undertaken in Sections V (Corrective Measures) and VII (Compliance Requirements) of the Decree. Projects included in Section VII are as follows:

- Visible Emissions from BOF Shop Roof Monitor
- Kish Reduction
- Coke Point and Greys Landfill Operation

Visible Emissions from BOF Shop Roof Monitor

Monitoring for the compliance requirements for visible emissions from the Basic Oxygen Furnace (BOF) Shop roof monitor during 2009 was conducted in accordance with the requirements outlined in the Maryland State Implementation Plan (SIP) that was promulgated by the State of Maryland on 10/2/2000 and approved by the US EPA on 11/6/2001 as provided for in Section VII Paragraph A.4. and Section XVII 1.c. of the Consent Decree. With approval of the SIP by the US EPA, compliance requirements for visible emissions from the BOF Shop roof monitor are now implemented by requirements of the SIP and not the Consent Decree.

Kish Reduction

Kish reduction requirements outlined in the Consent Decree and subsequent tasks associated with approved kish reduction work plans have been completed. Ongoing components of kish reduction activities at the facility are the maintenance of control structures and equipment for kish emissions from BOF slag skimmer ladle dumping and Blast Furnace dust catcher operations.

BOF Slag Skimmer Ladle Dumping

In August of 2003, the Skimmer Slag Ladle Dumping process was relocated to the No.2 Soaking Pit Building located northeast of the Caster. This structure provides cover that controls and significantly reduces fugitive kish emissions from the dumping of slag ladles from the slag skimming operation. Originally this process was to be moved under cover in the No 4 Open Hearth Building but was relocated because the open hearth was slated for demolition.

Ongoing inspections and maintenance of the No 2 Soaking Pit Building was completed in 2009. Facility personnel performed routine inspections of the building, dumping areas and dumping procedures completed by the contractors.

Blast Furnace Dust Catcher

A wet dust suppression system has been established for the blast furnace dust catcher discharges. This system operates to reduce fugitive dust from the dust catcher operation in accordance with requests from the Maryland Department of the Environment to control these discharges.

Coke Point and Greys Landfill Operation

The Consent Decree required the preparation of a landfill operations plan and an engineering plan for Greys Landfill and Coke Point Landfill (Landfill Compliance Plan). The Landfill Compliance Plan was submitted on July 15, 1998. The Consent Decree also required the submittal of a plan and timetable for future uses and closure of the landfills. This document was prepared and submitted by BSC on April 8, 1999.

Activities conducted in 2009 for the landfills were as follows:

Greys Landfill

The approved landfill compliance improvements at Greys Landfill initiated in 2005 were completed in 2008. A summary of activities completed for Greys Landfill is as follows:

Items Completed:

- Sediment/stormwater storage basin and outlet controls
- Final stormwater controls and stormwater swales
- Cement Deep Soil Mixing Stabilization Program
- Clearing and Grubbing
- 3-ft diversion swale excavated and riprap lined
- Landfill counter berms and slope regrading
- Final cap system to elevation 85
- Final seeding and slope stabilization measures

A groundwater monitoring program has been instituted for the landfill facility. In 2009, two quarterly groundwater sampling events were conducted for an agreed to well monitoring network and results were submitted in January 2010 (*Greys Landfill, 2009 Groundwater Monitoring Report*, KCI 2010). This semi-annual monitoring report summarizes groundwater-monitoring results at Greys Landfill during the second half of 2009 and was meant to fulfill the applicable environmental monitoring requirements of the MDE letter dated May 27, 2009 with the subject "Ground water monitoring / compliance requirements Greys Landfill".

The following data collection activities occurred during the second half of 2009:

- Quarterly water level measurements in monitoring wells;
- Quarterly sampling of monitoring wells; and
- Laboratory analysis of monitoring well samples.

In accordance with the MDE letter, results of the above investigations are described and presented in this report. This report:

- Provides monitoring well completion logs and a summary of well completion information;
- Provides field data sheets and laboratory reports documenting groundwater sample collection;

- Presents the water level data collected;
- Provides laboratory reports for sample analyses;
- Tabulates laboratory analytical data in time-series format;
- Discusses the water quality results;
- Includes a topographic map based on 2009 aerial photogrammetry with monitoring well locations posted; and
- Includes two groundwater contour maps.

Coke Point Landfill

An engineering analysis of the Coke Point Landfill area was completed in 2004. The analysis included a geotechnical report summarizing the results of a specific subsurface investigation and slope stability evaluation of the landfill site. Grading recommendations and a Concept Plan for future uses of the landfill were also completed. The engineering analysis was submitted to MDE on January 3, 2005 for review and comment.

Comments and recommendations on the engineering analysis and conceptual design of the Coke Point Landfill were received from MDE on September 26, 2005. The recommendations were incorporated into the conceptual design and development of the landfill during 2006.

In 2008, a sediment and erosion control plan for a landfill design for the full build-out of Coke Point Landfill was developed and submitted to Baltimore County Soil Conservation District for review. Comments were received from the District.

The Coke Point Landfill area is currently under review with respect to future use as a solid waste management facility. The State of Maryland (Maryland Port Administration) has shown interest in obtaining the property for a dredged material management facility and completed assessment studies in 2009. It is anticipated that further feasibility analysis will be completed by the Port Administration for this area in 2010. In conjunction with this effort, Severstal is planning on developing interim compliance options for the facility to support the current status of the landfill facility.

5.0 Decree Management Reporting

Community Relations

There were several community relation activities during the year, but none more noteworthy than the commitment made by Sparrows Point to continue a community outreach plan in support of communication efforts for the Multimedia Consent Decree environmental projects.

The intent of the community outreach plan is to provide a forum for discussion of community interests and concerns and maintain ongoing and proactive relations with local community participants and regional environmental organizations. Through past interactions with the public Severstal is aware of the public's interest in maintaining effective, open, on-going communications. It is Severstal's expectation that this partnership with the community will help enable early and continued two-way flow of information, concerns, and expectations.

“The mission of Severstal Sparrows Point Community Outreach is to foster a relationship of respect and understanding through mutual involvement, communication and support”

Community Leader Meetings

A community leader meeting was held in October 2009 with letters of invitation sent to civic, business, environmental and community organizations representing the closest local communities and neighborhoods as well as the larger surrounding area. The leadership group is expected to help disseminate information back to the community through their own organizations, as well as keep Severstal apprised of community concerns. The group is actively engaged with a variety of community improvement issues, of interest to both the Sparrows Point facility and its surrounding neighborhoods, including but not limited to environmental issues. Invitees included:

- US EPA Region 3
- Maryland Department of the Environment
- Maryland Port Administration
- Baltimore County
- Senator Norman Stone
- Councilman John Olszewski
- Delegate John Olszewski, Jr.
- Delegate Joseph Minnick
- Delegate Michael Weir
- Baltimore Harbor Waterkeeper

Chesapeake Bay Foundation
Greater Dundalk Alliance
Greater Dundalk Community Council
North Point Community Coordinating Council
Turners Station
Dundalk Renaissance Corporation
Watersedge
Hart-Miller Oversight Committee
Community College Baltimore County
West Inverness Community Association
United Steelworkers
Millers Island/Edgemere Business Association
Wells McComas Citizens Improvement Association
Dun-Logan Community Association
Sparrows Point High School
Dundalk Chamber of Commerce
Millers Island Community Association
Local Business Representatives
Eastfield-Stanbrook Civic Association

It is anticipated that the community leader meetings will be held on a quarterly basis in 2010.

Newsletters

Newsletters are planned to be developed to be distributed at community leader meetings or at key milestones associated with activities at the Sparrows Point facility. The newsletters are intended to explain specific issues and consent decree activities in an easy to understand manner. A newsletter was developed and distributed at the October 2009 community leader meeting.

Project Management

Project management at the Sparrows Point facility for the Consent Decree includes Mr. Russell Becker, project coordinator for the Consent Decree. URS Corporation has been selected as a subcontractor to support activities associated with Section V of the Consent Decree. Notification of the change in project coordinator was provided in accordance with Section X on October 22, 2008.

Release Reporting

Appendix B contains spill reports for the facility that were reported in 2009. These reports document the status of mitigation of the releases, and the government oversight agency, contact name and telephone number.