

# Severstal Sparrows Point (Formerly: ISG Sparrows Point, Bethlehem Steel)

North Point Blvd  
Sparrows Point, MD 21219  
Congressional District 2  
EPA ID #: MDD053945432  
Site Property Area: 2300 acres  
Last Updated: 08/11/2010

## Status

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### Consent Decree

On October 8, 1997, EPA, MDE, and BSC entered into a 3008(h) Consent Decree to address the following issues:

1. Complete a site wide investigation to investigate releases of hazardous constituents from the facility to learn the need for potential corrective action,
2. Use interim measures to address releases that require immediate action,
3. Apply compliance standards for two solid waste landfills (Greys Landfill and Coke Point Landfill),
4. Apply a compliance standard for visible emissions from the roof monitor at the Basic Oxygen Furnace,
5. Implement projects to minimize kish emissions,
6. Inspect and perform associated repairs of (a) all active sumps and associated trenches that are located in the Cold Sheet Mill and the Tin Mill that contain significant amounts of acid, caustic, plating, and coating solutions, and (b) all above ground storage tanks with capacity greater than 500 gallons that store hazardous substances, and
7. Implement projects to minimize waste production.

### Site Wide Investigation (EPA lead)

The Consent Decree requires BSC to complete a comprehensive evaluation of the potential for both current and future risk to human health and the environment from current and past releases of hazardous wastes and hazardous constituents at the Facility.

The Consent Decree requires that BSC begin the Site Wide Investigation with an evaluation of the onsite areas. BSC submitted a Description of Current Conditions report on the facility on January 20, 1998. The Description of Current Conditions report describes potential contaminant sources and proposes a detailed frame work for future investigations.

On March 8, 1999 BSC submitted Phase 1 Site Wide Investigation Work Plans to EPA which contain a site background summary, a plan for hydrogeologic investigation, a plan for ecological

investigation, a community relations plan, a data management plan, and a data quality assurance plan. EPA provided comments to BSC on December 16, 1999. On February 11, 2000, BSC submitted partial response to EPA's comments deferring response to ecological comments. On March 15, 2000, at EPA's request, BSC submitted to EPA a proposal to refocus the side wide investigation on the Environmental Indicators--groundwater and human health exposure--as the priority, while deferring ecological characterization. EPA accepted the proposal. On December 12, 2000, BSC presented a schedule and the detail on how this refocus approach would be accomplished.

The Consent Decree has designated 5 special study areas that require assessment within 48 months of the effective date of the Consent Decree, excluding agency review time. The five areas are Tin Mill Canal/Finishing Mills, Greys Landfill, Coke Point Landfill, Coke Oven Areas, and Humphreys Impoundment. BSC submitted work plans of all 5 Special Study Areas to EPA in summer 2001. Initial investigation focuses on hydrogeology characterization. EPA approved all work plans and field work began shortly and was completed in fall 2001. Based on the field data collected, BSC submitted a "Site Wide Groundwater Study Report" to EPA in December 2001.

EPA received a work plan, "Site-Wide Investigation Work Plan to Evaluate the Nature and Extent of Releases to Groundwater from the Special Study Areas" in July 2002 which EPA approved in October 2002. This work plan focused on characterizing the nature and extent of contamination in the 5 special study areas. The field work has begun in December 2002 in accordance with the EPA approved work plan tasks and the well installation work was completed in 2003. Sampling from these newly installed wells was delayed in 2003 due to ownership change of the facility. International Steel Corporation (ISG) has become the new owner of the Sparrow Point facility in summer of 2003. On March 12, 2004, ISG submitted a revision to the 2002 EPA approved Work Plan "Site-Wide Investigation Work Plan to Evaluate the Nature and Extent of Releases to Groundwater from the Special Study Areas." EPA approved this revised work plan in April 13, 2004. The sampling required by the Work Plan was completed in 2004 and the Site Wide Investigation Report-Nature and Extent of Releases to Groundwater From Special Study Areas was submitted to EPA in January 2005. EPA has reviewed and determined that the report has met the investigation objectives and no additional field data is needed at this time; however, several clarification revisions are needed to finalize the report.

In accordance with the November 2004 work plan, IAG has completed data collection for the environmental Indicator (EI) Human Health evaluation. ISG submitted the EI-Human Health evaluation report to EPA in spring 2005 and EPA approved the report shortly concluding the EI-Human Health Control has met.

On June 29, 2006, ISG submitted an Ecological Risk Assessment Work Plan for On-Site habitats investigation. This Work Plan will defer investigation of off-shore habitats, surface water and sediment investigation, to the next phase. After a couple rounds of revision, EPA approved the on-site ecological assessment work plan around November 2006. All field work specified in the work plan was completed during 2007. The screening level ecological assessment for on-site habitats was submitted to EPA on April 2, 2008. After several rounds of revision, EPA approved

the screening level assessment on July 9, 2009. Based on approval of the approach in the screening level assessment, EPA is awaiting final baseline ecological assessment for on-site habitats in summer 2010.

On August 13, 2009, MDE requested Severstal to expedite development of an offshore sampling plan. On February 3, 2010, EPA conditionally approved the offshore sampling plan submitted by Severstal, outlining the deficiencies that Severstal must address. On March 4, 2010, Severstal disputed its obligation to assess historical offshore sediment contamination before the bankruptcy sale along the entire shoreline of the steel mill. EPA and Severstal are currently engaged in the dispute resolution process to resolve this matter. Pending on the dispute resolution, Severstal is to complete the ecological and human health risk assessments to conclude the site-wide investigation by 2012

### **Interim Measures (EPA lead)**

The Consent Decree requires BSC to continue operating the ongoing remediation system at the former Rod and Wire Mill, Sludge Bin Storage area, and to report on the remediation activities by January 31 of each year. The remediation addresses releases of cadmium and zinc to the soil and groundwater which resulted from former operations at the former Rod and Wire Mill. When the Consent Decree was entered, the remediation system included leaching of slightly acidic water through contaminated soil and pumping and treating groundwater to remove cadmium and zinc contamination. The system did not operate in low temperatures and had been in operation since 1986. BSC submitted a report on remediation activities in January 1998, continued remediation in 1998, and submitted a report on remediation activities in January, 1999. The January 1999 report included plans to reevaluate the remedy while the remediation components were temporarily dismantled. The remediation components were temporarily dismantled to assist dismantlement of the former mill. Throughout 1999, EPA and MDE reviewed and approved BSC's re-evaluation of the twelve-year-old remedy. The re-evaluation of the remedy is described in BSC's (Annual) Report on Remediation and Monitoring Activities, Sludge Bins Storage Area Closure, Former Rod and Wire Mill submitted to the Agencies on January 28, 2000.

On July 26, 2000, BSC submitted a work plan for reestablishment of the interim measures for the Former Rod & Wire Mill Sludge Bin Storage Area. The interim measures proposed include posting warning signs regarding the contaminated area as an institutional control, installing a pump-and-treat system to recover contaminated groundwater from two recovery wells, and upgrading a groundwater monitoring network to evaluate the effectiveness of the pump-and-treat system. EPA approved the Work Plan on November 3, 2000. Installation of the system was completed in 2001 and the system has been in continuous operation since summer 2001. In 2007, a total of 355 pounds of cadmium and 16,601 pounds of zinc were removed by the system, which is a slightly lower than in 2006 suggesting a continued trend of declining mass in the source area.

Based on the site-wide investigation, EPA has identified that the former Coke Oven area to be heavily contaminated with product phase hydrocarbons (predominantly benzene and naphthalene in groundwater. On February 19, 2009, EPA required Severstal to submit a work plan to implement interim measures to recover hydrocarbon product. In accordance with EPA approved work plan, Severstal conducted pilot testing in 2009 to collect design data for groundwater

pumping and vapor extraction. In August 2010, after several interactions, EPA approved Severatal's plan to phase in installation of 6 remediation cells within 12 months, or until July 2011. The remediation cells employ a combination of groundwater pumping, vapor extraction, product skimming, air sparging, groundwater injection, and enhanced bioremediation technologies to eliminate the source and contain migration of the plume.

#### **Coke Point and Greys Landfills Compliance (MDE lead)**

The 1997 Consent Decree imposed more stringent compliance requirements for the operation of Greys and Coke Point Landfills to meet MDE's standards for solid waste landfill management. MDE has the sole jurisdiction to enforce the requirements.

Construction work for the Greys Landfill to stabilize slopes, control sediment release and surface runoff was initiated in 2005 and completed in 2008. Monitoring wells abandoned due to the slope stabilization process have been replaced and the monitoring well network has been sampled quarterly since July 2009. The landfill will operate until the final elevation of 141 feet is reached and will be capped in accordance with an approved closure plan.

Coke Point landfill has been utilized for mainly for recycling with minimal waste disposal. Since the Coke Point Landfill will not be used for waste disposal to the degree envisioned in grading and closure plans previously submitted by prior owners, Severstal is currently developing an alternate plan to address the slope stabilization issue and revise the operations manual for the landfill.

In June 2010, MDE received a permit application for a new lined landfill to replace both Greys and Coke Point Landfill.

#### **Basic Oxygen Furnace (BOF) Visible Emissions Compliance (MDE lead)**

The 1997 Consent Decree imposed more stringent compliance requirements of air emission from the BOF at the Roof Monitor. EPA and MDE jointly enforce the compliance.

Since October 22, 1997, BSC has been out of compliance with the BOF Roof Monitor visible emission standard on six instances: February 17, 19, and 23, 1999 and October 25, 28, and 29, 1999. BSC was assessed and has paid penalties of \$9000 for the February, 1999 violations and \$19,000 for the October, 1999 violations.

Monitoring is currently 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 EPA on 11/6/2001. With approval of the SIP by EPA, compliance requirements of visible emissions from the BOF Shop roof monitor are now implemented by requirements of the SIP and not the Consent Decree.

#### **Kish Reduction Compliance (MDE lead)**

On January 6, 1998, BSC submitted a Kish Reduction Work Plan pursuant to the Consent Decree. MDE has the jurisdiction to enforce the compliance with EPA to provide technical support.

At the request of the community, EPA collected samples for kish analyses between 1997 and 1998. Bulk kish samples, or source samples, were collected from the BOF and Blast Furnace bag houses, and fallout and air filter samples were collected at the community receptor area. Samples were analyzed by EPA Laboratory by electronic microscopy and X-Ray diffraction for particle size and elemental composition, high temperature combustion for carbon content, and TCLP characteristic. Particulate matter size of 10 micrometers or less is respirable, and is regulated by EPA because of its potential adverse health risk by inhalation. The results were presented in a March 1, 2000 report which determines: (a) that the source kish samples do not exceed TCLP limits to be classified as hazardous waste, (b) that the Blast Furnace kish is finer and more respirable than the BOF, (c) that the BOF kish is alkaline (pH=12.4) and more diverse in elemental composition, (d) that the Blast Furnace kish is acidic (pH=3.4 to 3.8) and less diverse in elemental composition, (e) that respirable sized kish had reached the community, but (f) that receptor air filter sample volumes were too small to be usable in quantifying the elemental composition or potential health effect on the community.

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. The project development included access to the structure by extension of slab hauler road. The south side of the building was altered to provide direct access to the facility. Additional wall sheeting, lighting, fire protection, internal grading and ramps for dumping were installed. Additional improvements to the No. 2 soaking Pit Building were completed in 2004 including installation of a fabricated wall sheet to close in the east side of the building further minimize fugitive emission from the building. Completion of this project satisfies the kish reduction requirements outlined in the Consent Decree.

#### **Waste Minimization Plan (MDE lead)**

1. *Sumps, Trenches and Above Ground Tanks:* On January 18, 1999, EPA and MDE approved a work plan from BSC to identify and inspect all active sumps and associated trenches located in the Cold Sheet Mill and the Tin Mill that contain significant amounts of acid, caustic, plating, and coating solutions as well as all above ground storage tanks with capacity greater than 500 gallons that store hazardous substances. The inspection has been completed and all repair work necessary to prevent leakage has been implemented.
2. *Tin Mill Canal Discharge Report:* A Tin Mill Canal Discharge Report to identify the contribution sources was submitted in July 1998 in accordance with the consent Decree requirements.
3. *Strong Caustic Solution Reuse Work plan:* On December 19, 1997, BSC submitted a work plan that describes a beneficially reuse of spent caustic solution from the Humphreys Creek Wastewater Treatment Plant and a controlled discharge of spent pickle liquor and pickling rinse water to the Tin Mill Canal. BSC has been implementing the Work plan tasks since 1998. Implementation of the approved work plan has been completed.

4. *Waste Minimization Activity Cost Projection:* On April 8, 1998, BSC submitted a waste minimization activity cost projection. This cost projection will be used to ascertain the potential economic infeasibility of any of the three following waste minimization activities (which are more fully described in the Consent Decree): recycling slurry from the treatment of gas from the blast furnace, recycling oxide fume sludge from the treatment of the exhaust gas from the Basic Oxygen Furnace, and recycling the sludge generated from the treatment of waste waters at Humphreys Creek Wastewater Treatment Plant.
5. *Blast Furnace Gas Cleaning Slurry Recycle Work Plan:* On October 8, 1998, BSC submitted a schedule for implementing plans to recycle slurry from the treatment of gas from the blast furnace by February 20, 2003. This recycling activity was expected to reduce the disposal of de-watered filter press cake from the slurry at Greys Landfill from 100 tons a day to less than 30 tons a day. Testing and evaluation of three recycling technologies (Hydrocycloning Scrubber Slurry, BOF Slag Conditioning, and Cement Blending) has been underway. A successful pilot test for the hydrocycloning technology was completed in 2002. Installation of the upgrades was initially anticipated to occur in 2011, but due to unanticipated shut down of the blast furnace in July 2010 due to market conditions, actual upgrade installation will be postponed indefinitely.
6. *Recycling of BOF Fume Sludge Work Plan:* On April 8, 1999, BSC submitted a plan to recycle up to 80% of the fume sludge from the basic oxygen furnace back into the steel making process. Testing and evaluation of two technologies (Cement Blending, and Substitute Coolant at BOF) were underway. Recycling of the fine grained material halted in 2008, due to air emission concerns. The 2009 yearly report details a proposal for incorporating the material into a blend suitable for use as a road base or structural fill at the property. The proposal is currently under consideration.
7. *Humphreys Creek Wastewater Treatment Plant Sludge Work Plan:* On October 8, 1999, BSC submitted a plan to recycle sludge from the wastewater treatment plant. Testing and evaluation of several technologies were underway: Injection in the Sinter Plant, Microbial De-Oiling, Use in Sub-Base for Roadway Construction, Recycling at the BOF, Cement Blending and Microwave De-Oiling. Evaluation of the various recycling options and efforts to lower the levels of oil and grease in the sludge were underway. A study would be conducted during 2010 to determine if the de-oiled sludge can be pelletized and used as feedstock for the sinter plant.
8. *Dredging of the Tin Mill Canal Work Plan:* On October 8, 1998, BSC submitted a work plan that describes the handling of the material generated during maintenance dredging of the Tin Mill Canal. The Work Plan provide for dredging of approximately 500 to 1000 cubic yards of material per event. Dredging is proposed only when wastewater flow from Sewers 34 and 36 becomes restricted into Tin Mill Canal, which occurs about every 18 to 24 months. In accordance with the work plan, a concrete pad has been constructed to contain and dewater the dredged material prior to disposal to landfills. The work plan also requires the facility to notify MDE before each dredging. This project has been

completed and the requirements have been met.

9. *Facility Wide Waste Minimization Plan:* The Plan submitted in 1999 and updated in 2002 have identified 16 voluntary waste minimization projects. As of 2006, 11 of the 16 projects have been completed and the remaining are in progress.

1. Blend kish with BOF sludges - in progress
2. Recycle Chromic Acid - on hold
3. Replace Caster Lubrication System - completed
4. Install Caustic Washer on No. 3 Coating Line - completed
5. Slag Splashing BOF Vessels - completed
6. Replace Dip Tank on Coating Lines - completed
7. MSA Change -Halogen Tin Plating Lines - No. 2 Line completed
8. Reduce process discharges - new Cold Mill - completed
9. Kish Exchange or Sale - no progress
10. Pickle Liquor Reuse - completed
11. Steelmaking Slag Commercial Use - in progress
12. Eliminate Sulphur dioxide in Treatment Process at Chrome Wastewater - completed
13. Hot Strip Mill Lubrication Conservation Program - ongoing
14. Recycle of Blast Furnace/Sinter Plant Wastewater Treatment Plant Discharges - completed
15. Reduction of Loop Seal Discharges - completed
16. Recycle of Humphreys Creek Wastewater Treatment Plant Discharges - completed

#### **Civil Penalties and Pollution Prevention Credits (MDE lead)**

In reaching the Consent Decree agreement, MDE sought a civil penalty from BSC for previous violations of the BOF visible emission standard. As required pursuant to the Consent Decree, BSC (a) paid a penalty of \$350,000 to MDE within 30 days of the effective date of the Consent Decree, and (b) agreed to implement specified pollution prevention and waste minimization activities in lieu of additional penalties ("the pollution prevention credit"). BSC may be required to pay additional penalties if certain waste minimization activities are not completed.

1. EPA and MDE will continue to oversee the site-wide investigation with focus on the Environmental Index
2. EPA and MDE will oversee the implementation of an Interim Measures Work Plan to restart a pump-and-treat system at the Former Sludge Bin Storage Area to reduce cadmium and zinc contamination in groundwater from previous operation.
3. MDE and EPA will continue to oversee the progress of the waste minimization projects and to identify opportunities for further waste minimization.
4. MDE, with EPA's technical support, will continue to enforce compliance requirements for the Greys and Coke Point Landfills operation, the BOF emission compliance, and the kish reduction plan implementation.

## **Facility Description**

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The Bethlehem Steel - Sparrows Point facility is located on approximately 2300 acres of a peninsula on the north side of the Patapsco River approximately nine (9) miles southeast of downtown Baltimore.

Maryland Steel built the first furnace at Sparrows Point in 1887. The first iron was cast in 1889. Bethlehem Steel purchased the facility in 1916 and enlarged it by building finishing mills. During peak production in 1959, the facility operated 12 coke-oven batteries, 10 blast furnaces, and four open-hearth furnaces. The coke ovens ceased operations in December 1991 and the coke batteries have been or are being torn down. BSC currently operates a sintering plant, a blast furnace (for iron production), two basic oxygen furnaces (for steel production), a continuous strip castor (two lines), hot strip mills, cold reduction mills, and tin mills. Waste management at the property includes air pollution controls throughout the manufacturing processes, two solid waste landfills, and waste water treatment. A shipyard on contiguous property owned by BSC when the Consent Decree was entered, a former town on Bethlehem Steel's property, and management of waste iron, oil, and slag by other companies on Bethlehem Steel's property are included in the site wide investigation. Through a RCRA Facility Assessment and review of the Description of Current Conditions Report, EPA and the Maryland Department of the Environment have determined that further investigation and/or action is needed at 81 solid waste management units and 28 areas of concern.

RCRA Corrective Action activities at this facility are being conducted under a Consent Decree issued by EPA and MDE to BSC in 1997. Shortly after issuance of the Consent Decree, BSC sold the shipyard portion of the facility to an independent operator but BSC retained the environmental liability of the shipyard.

In 2001, BSC filed for Chapter 11 reorganization but informed EPA that BSC intends to comply with the Consent Decree requirements. In 2003, the court has approved BSC's bankruptcy proceeding. Effective April 30, 2003, International Steel Group (ISG) has become the new owner of the Sparrow Point Facility and has informed EPA that it will comply with BSC's Consent Decree. EPA subsequently modified the Consent Decree to substitute ISG for BSC for compliance with all Consent Decree requirements.

On July 15, 2006, at the request of the shipyard owner, EPA and MDE approved removal of the shipyard from the Consent Decree compliance so that the shipyard can apply for and pursue clean up under the MDE Voluntary Cleanup Program.

In 2007, the Department of Justice ordered ISG to sell the facility to settle antitrust concerns, suggesting that new ownership of the facility will soon take place. On May 7, 2009, Severstal has become the new owner of the facility and has informed EPA that it will assume the Consent Decree compliance responsibility.

In 2007, the Maryland Port Administration (MPA) expressed interest in purchasing an inactive portion of the ISG property and turns it into a dredged spoil disposal area and ultimately reclaims the land for use as a port facility. The area the Maryland Port Administration interested in acquiring is the southwest peninsular portion of the property covering the Coke Point Landfill and former Coke Oven area. Based on the site-wide investigation, the former Coke Oven area is known to be the most contaminated land with product phase volatile and semi-volatile organic compounds present in groundwater. Any property transaction must address the environmental

liability in cleaning up this highly contaminated portion of the land. The MPA interest in purchasing the parcel is currently on hold awaiting new ownership of the facility.

A broad range of contaminants were detected at the site associated with steel making process: antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, tin, zinc, ammonia, benzene, cyanide, ethyl benzene, ethylene glycol, hydrogen cyanide, hydrogen sulfide, naphthalene, PAHs, PCBs, pentachlorophenol, phenols, pyrene, sodium phenolate, styrene, sulfuric acid, toluene, trichloroethylene, xylene, coal tar, oils, lime sludge, waste alkaline rinses, mill scale, and ship yard wastes.

## Government Contacts

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