

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

UNITED STATES OF AMERICA

AND

STATE OF MARYLAND
MARYLAND DEPARTMENT OF THE ENVIRONMENT

Plaintiffs

v.

BETHLEHEM STEEL CORPORATION

Defendent

Civil Action No. _____

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- EXHIBIT 1: MAP OF FACILITY FOR DEFINITION
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- ATTACHMENT A: INTERIM MEASURES SCOPE OF WORK
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- ATTACHMENT F: WASTE MINIMIZATION PROJECT DESCRIPTIONS
- ATTACHMENT G: WASTE MINIMIZATION PROGRAM SCOPE OF WORK

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MARYLAND DEPARTMENT OF THE ENVIRONMENT)	
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Plaintiffs)	Civil Action
)	
V.)	No. _____
)	
BETHLEHEM STEEL CORPORATION)	
)	
Defendant)	

CONSENT DECREE

WHEREAS, the United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("EPA") has filed a Complaint in this action against the Bethlehem Steel Corporation ("Bethlehem", "BSC" or the "Defendant"), seeking relief from an alleged endangerment to public health, welfare or the environment from contamination at and around BSC's Sparrows Point facility (the "Facility" or the "Site" as hereinafter defined) in Baltimore County, Maryland; and

WHEREAS, the United States filed its Complaint pursuant to the authority vested in it under Section 3008(h) of the Resource Conservation and Recovery Act, as amended ("RCRA"), 42 U.S.C. § 6928(h); and

WHEREAS, BSC operated a hazardous waste treatment, storage or disposal facility at the Site which had or should have had interim status under Section 3005(e) of RCRA;

WHEREAS, EPA has determined that there has been a release of hazardous wastes and/or hazardous constituents into the environment at and/or from the Site; and

WHEREAS, the State of Maryland, Maryland Department of the Environment ("MDE" or the "State") has filed its Complaint pursuant to the authority vested in the Secretary of MDE by the Environment Article of the Annotated Code of Maryland, including Sections 1-301 (Enforcement), 2-101 through 2-613 (Air Pollution Control), 7-201 through 7-268 (Controlled Hazardous Substances), 9-204 through 9-229 and 9-252 through 9-270 (Refuse Disposal Systems), and 9-301 through 9-351 (Water Pollution Control), and pursuant to the authority vested in it as a "citizen" under Section 7002(a)(1)(B) of RCRA, 42 U.S.C. § 6972(a)(1)(B), seeking relief from alleged endangerment to human health and the environment from contamination at and around the Site; and

WHEREAS, MDE alleges in its Complaint that BSC's steel making and finishing operations and waste disposal practices have caused the release or threatened release of hazardous substances to the environment, that BSC violated hazardous waste management and solid waste laws, that BSC has unlawfully discharged pollutants to waters of the State, and that BSC has discharged pollutants into the air which violate air pollution standards; and

WHEREAS, for purposes of this proceeding BSC waives any defenses to this Court's jurisdiction to enter this Consent Decree, and BSC neither admits nor denies the allegations set forth above or in the Complaints, and

WHEREAS, the United States, the State, and BSC agree that settlement of this matter and entry of this Consent Decree are made in good faith in an effort to avoid expensive and protracted litigation and to settle and resolve in accordance with the terms of this Consent Decree claims which were raised by the United States and the State in this action, and that entry of this Consent Decree is in the public interest, and

WHEREAS, all Parties to this Consent Decree consent to the entry hereof;

NOW THEREFORE, it is hereby ORDERED, ADJUDGED and DECREED as follows:

I. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. § 6928, and 28 U.S.C. § 1367 supplemental jurisdiction over state law claims. This Court also has personal jurisdiction over BSC. Solely for the purposes of this Consent Decree and the underlying complaints, BSC waives all objections and defenses that it may have to jurisdiction of the Court or to venue in this District. The Parties shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent

Decree, subject to the United States and MDE's right to withdraw consent, based upon public comment.

2. With respect to notice required pursuant to Section 7002(b) of RCRA, 42 U.S.C. § 6972(b), BSC agrees that notice to it was completed prior to January 1, 1996, and EPA agrees that notice to the Administrator and the Regional Administrator were completed prior to January 1, 1996. The Parties agree not to contest the adequacy of the notice.

II. STATEMENT OF PURPOSE

The purposes of this Consent Decree, as well as the intention of the Parties, are: 1) to comprehensively address issues at the Bethlehem Steel - Sparrows Point Facilities through prioritizing actions, with schedules, and integrating activities to the extent possible in an enforceable agreement which provides sufficient flexibility to BSC to carry out the terms of the agreement in a responsible manner; 2) to protect the public health, welfare and the environment; 3) to employ certain pollution prevention measures at the Facility and to minimize to the extent practicable the generation and/or disposal of solid wastes including hazardous wastes and/or hazardous constituents; 4) to further the public interest by avoiding protracted litigation between the Parties; and 5) to encourage the early and equitable resolution of claims by the United States and the State against BSC.

III. DEFINITIONS

Whenever the following terms are used in this Consent Decree in any exhibits or appendices hereto, the definitions specified hereinafter shall apply:

1. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

2. The "Facility" or the "Site" shall mean, subject to Section XXXVIII, below, the facility whose address is 5111 North Point Boulevard, Sparrows Point, Baltimore County, Maryland which consists of a peninsula bounded by the Back River, Bear Creek and the Northwest Branch of the Patapsco River. The Site is more specifically delineated on a map marked as Exhibit 1, which is attached hereto, and incorporated herein. BSC does not own all of the Facility, and leases some parts of the Facility it owns to others.

3. "Guidance" shall mean only those documents identified as such in this Consent Decree or its appendices and/or those documents identified by EPA or MDE in rulemaking or other official notice as guidance and/or that are publicly available and actually widely applied to projects similar to the work.

4. "Parties" shall mean the United States of America (including EPA), the Maryland Department of the Environment, and Bethlehem Steel Corporation.

5. "Principal Contractor" shall mean an entity or a natural person selected by BSC who has significant responsibility for all or a portion of the Work.

6. "Work" shall mean the initiation, implementation and completion of the tasks required pursuant to this Consent Decree, the exhibits and attachments attached hereto and incorporated herein, and any schedules or plans required to be submitted pursuant thereto.

IV. PARTIES BOUND

1. The provisions of this Consent Decree shall apply to and be binding upon the United States, the Maryland Department of the Environment, the Defendant, and their successors and assigns. Work performed by each Party, its successors and assigns, officers, directors, employees, agents, independent contractors, contractors, subcontractors, and consultants shall be carried out in accordance with the requirements of this Consent Decree.

2. The undersigned representative of BSC certifies that he is fully authorized by Defendant to enter into this Consent Decree and to legally bind Defendant hereto. The undersigned Assistant Attorney General, Environment and Natural Resources Division, U.S. Department of Justice, certifies that she is fully authorized by the United States to enter into this Consent Decree

and to legally bind the United States hereto. The representative of the Maryland Department of the Environment certifies that he is fully authorized by the State to enter into this Consent Decree and to legally bind the State hereto.

3. Except as provided in Section XXXIII, no change in ownership or operation of the Site, or corporate or partnership status of Defendant, including but not limited to, any transfer of assets or real or personal property, shall in any way alter, diminish, or otherwise affect Defendant's obligations and responsibilities under this Consent Decree, except with respect to the obligations under Section VI.3 which shall terminate as they relate to the property conveyed.

4. BSC shall provide one copy of this Consent Decree to each Principal Contractor and laboratory retained to conduct and/or monitor any portion of the Work performed pursuant to this Consent Decree and shall do so within thirty (30) calendar days of the effective date of this Consent Decree or date of such retention, whichever is later. All contracts, agreements or other arrangements with such persons shall require such persons to conduct and/or monitor the Work in accordance with the requirements of this Consent Decree. Notwithstanding the terms of any such contract, agreement or arrangement, BSC is responsible for complying with this Consent Decree and for ensuring that all such persons perform such Work in accordance with this Consent Decree.

5. In the event of any change in ownership of the Facility and/or in the event of any change in majority ownership of BSC, BSC shall notify the United States and the State in writing of the nature of any such change no later than fifteen (15) calendar days after the effective date of such change. In addition, BSC shall provide a copy of this Consent Decree to any successor to BSC and/or to the Facility at least fifteen (15) calendar days prior to the effective date of such change.

V. CORRECTIVE MEASURES WORK TO BE PERFORMED

All work undertaken pursuant to this Section V shall be developed and performed in accordance with RCRA, its implementing regulations and Maryland's Hazardous Substance Control laws. With respect to RCRA, relevant Guidance may include, but is not limited to, the "RCRA Facility Investigation (RFI) Guidance" (Interim Final, May 1989, EPA 530/SW-89-031, Vol. I-IV, OSWER Directive 9502.00-6D Vol.1-4); "RCRA Ground Water Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986); "RCRA Ground-Water Monitoring: Draft Technical Guidance," EPA/530/R-93/001, November 1992; "Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells," EPA/600/4-89/034, April 1989; "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" [SW-846 3rd Edition, November, 1986, including Final Update I (July, 1992), Final Update IIA (August, 1993), Final Update II (September, 1994), Final Update IIB (January, 1995), and Proposed

Update III (January, 1995)]; "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986); "OWRS Guidance for Preparation of QA Project Plans" (OWRS QA-1, May 1984); and "Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual & Volume II, Environmental Evaluation Manual Interim Final" (EPA/540/1-89/022 and 001), March 1989.

The parties anticipate that the work which shall be completed pursuant to this Section V shall be generally consistent with the Conceptual Plan contained in Attachment B. The sequence, timing, and appropriateness of the actual work shall be addressed in the documents required to be submitted to EPA and MDE for approval pursuant to this Consent Decree. The parties agree that the Scopes of Work ("SOWs") attached hereto contain a generic description of work which may need to be performed. EPA and MDE in their sole discretion, which shall not be subject to review under Section XX "Dispute Resolution", or otherwise, may waive, consistent with the objectives of this Consent Decree, any of the requirements or may toll or suspend any of the requirements set forth in the SOWs or this Section V.

A. INTERIM MEASURES ("IM")

1. BSC shall continue to operate and monitor the remediation system (a soil leaching system with a groundwater pump and treat system) at the Rod and Wire Mill Sludge Bin Remediation Area (R&W Mill Remediation Area) in the manner

described in the 1996 Operating and Monitoring Plan included in the "Report of 1995 Remediation and Monitoring Activities, Sludge Bins Storage Area Closure, Rod and Wire Mill, Sparrows Point Plant, Bethlehem Steel Corporation, Sparrows Point, Maryland" (January 1995). BSC shall submit by January 31 of each year an annual report which provides the following information:

- a. A discussion of the activities pertaining to the remediation which occurred during the previous year including a description of the operation and monitoring of the groundwater extraction system;
- b. A discussion on the impact of the remedial activities, including the status of groundwater quality in response to remediation, the effectiveness of the in-situ shallow soils leaching, the effects of pumping on local groundwater flow, and the effectiveness of the treatment of the extracted water; and
- c. An Operation and Monitoring Work Plan for that calendar year.

BSC shall implement the Operation and Monitoring Work Plan as approved by EPA and MDE in accordance with Section XIII.

2. BSC may at any time submit to EPA and MDE for approval, pursuant to Section XIII, a proposal to discontinue or modify the operation and monitoring of the remediation system. Any such proposal shall include justification and may only be implemented in accordance with EPA and MDE approval.

3. If at any time during the pendency of this Consent Decree BSC obtains or discovers information concerning a release or threatened release of any hazardous wastes or hazardous constituents at or from the Facility into the environment, within the meaning of RCRA Section 3008(h), substantially different in material, extent and/or concentration from those described in the "Description of Current Conditions at the Facility" (required pursuant to Paragraph B.1, below) which is not a release allowed pursuant to the Clean Air Act, Clean Water Act, RCRA, or any such program delegated to the State or for which the State has received authorization, BSC shall immediately notify EPA and MDE orally of such release and in writing within ten (10) calendar days of providing oral notification. The notification shall describe the nature and extent of the release and any threat or potential threat to human health or the environment posed by such release. If interim measures are required, they will be designed to mitigate the threat, not necessarily to fully remediate the release.

4. If at any time EPA and/or MDE determines, based on consideration of the factors specified in paragraph 5, below, that a release from the Facility poses a threat to human health or the environment requiring action prior to the development and implementation of a final remedy, EPA and/or MDE shall notify BSC. Within forty-five (45) calendar days of receipt of such notice from EPA or MDE, BSC shall submit to EPA and MDE for approval an IM Workplan which identifies Interim Measures which

will protect human health and the environment from such release and which are, to the extent practicable, consistent with and integrated into any long-term remediation at the Facility. Alternatively, such workplan may contain a reassessment of the situation and conclude either (i) that further information is needed to evaluate the situation (in which case a schedule for collecting and evaluating that information will be included), or (ii) that the situation does not warrant an Interim Measure. If EPA or MDE determines that action or quicker action is required, the EPA and/or MDE Project Coordinators will notify BSC of their determination and BSC shall act in accordance with the timeframe directed in such notification. In the event that BSC determines that more immediate action is required, BSC may act as it deems fit at its own risk.

5. The following factors may be considered by EPA and/or MDE in determining whether Interim Measures are required:

- a) the time required to develop and implement a final remedy;
- b) the significance of the threat, e.g., actual or potential exposure of nearby populations or environmental receptors to hazardous wastes and/or hazardous constituents;
- c) actual or potential contamination of drinking water supplies or sensitive ecosystems;
- d) further degradation of the medium which may occur if remedial action is not initiated expeditiously;
- e) presence of hazardous wastes and/or hazardous constituents in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
- f) presence of hazardous wastes and/or hazardous

constituents in soils largely at or near the surface, that may migrate; g) weather conditions that may cause hazardous wastes and/or hazardous constituents to migrate or be released; h) risks of fire or explosion, or potential for exposure to hazardous wastes and/or hazardous constituents as a result of an accident or failure of a container or handling system; and i) any other situations that may pose threats to human health and/or the environment.

6. Any IM Workplan submitted by BSC to EPA and MDE for approval pursuant to paragraph 4, above, shall address the applicable items in Attachment A "Interim Measures Scope of Work". Upon receipt of EPA and MDE approval of the IM Workplan, BSC shall implement the EPA and MDE-approved IM Workplan in accordance with the requirements and schedules contained therein.

7. Concurrent with submission of any workplan pursuant to this Subsection A, BSC shall submit to EPA and MDE an IM Health and Safety Plan consistent with Attachment E of this Consent Decree.

B. SITE WIDE INVESTIGATION ("SWI")

1. Within ninety (90) calendar days of the effective date of this Consent Decree, BSC shall submit to EPA and MDE for approval a Description of the Current Conditions at the Facility ("Description"). This Description shall address the items in Task I of the Site Wide Investigation Scope of Work contained in Attachment C.

2. Within seventy-five (75) calendar days of EPA's and MDE's approval of the Description, BSC shall submit to EPA and MDE for approval a work plan with a schedule for a Site Wide Investigation ("SWI Work Plan"). The SWI Work Plan shall be consistent with the Conceptual Plan contained in Attachment B and shall address the items in Tasks II, III, IV, V, VI and VII of the SWI Scope of Work contained in Attachment C.

3. The SWI Work Plan shall provide for the submission of interim reports for each phase of the investigation, supplemental workplans for subsequent phases of the investigation, and a final SWI report addressing the complete investigation. Each submission shall be subject to EPA and MDE approval pursuant to Section XIII.

4. Concurrent with the submission of the SWI Work Plan, BSC shall submit a SWI Health and Safety Plan consistent with Attachment E of this Consent Decree.

5. Upon receipt of EPA and MDE approval of the SWI Work Plan, BSC shall implement the EPA and MDE approved SWI Work Plan in accordance with the terms and schedules contained therein.

C. CORRECTIVE MEASURES STUDY ("CMS")

1. Within thirty (30) calendar days of receipt of EPA and MDE's approval of the final SWI Report, BSC shall submit to EPA and MDE for approval a schedule for submission of a Draft CMS Report.

2. BSC shall submit a Draft CMS Report to EPA and MDE in accordance with the approved schedule, and shall address the items in the CMS Scope of Work in Attachment D for those areas of the Facility requiring further action.

3. Within sixty (60) calendar days of receipt of EPA's and MDE's comments on the Draft CMS Report, BSC shall submit to EPA and MDE for approval pursuant to Section XIII the Final CMS Report, revised to respond to all comments received from and/or remedy all deficiencies identified by EPA and/or MDE on the Draft CMS Report.

VI. WASTE MINIMIZATION PLAN

1. BSC agrees to perform the following waste minimization/pollution prevention activities, in accordance with any applicable federal or state regulatory requirements.

a. Sumps, associated trenches, and above ground storage tanks.

1) Within twelve (12) months of the effective date of this Consent Decree BSC shall submit to EPA and MDE for approval pursuant to Section XIII ("Submissions Requiring EPA and MDE Approval") a work plan and schedule for an inventory and visual inspection of 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, or coating solutions,

and an inventory and a visual inspection of all above ground storage tanks with capacity greater than 500 gallons that store hazardous substances (exclusive of oil) ("Sump/Tank Work Plan"). The schedule shall take into account the in-use status of the units and shall allow a sufficient period of time so that the inventory and inspection can be accomplished without interfering with the operation of the facilities.

- 2) Upon EPA and MDE's approval of the work plan and schedule, BSC shall implement the Sump/Tank Work Plan according to the schedule.
- 3) Within sixty (60) days of the completion of the items in the Sump/Tank Work Plan, BSC shall submit to EPA and MDE the following documents:
 - (a) A report which summarizes the results of the inventory;
 - (b) A list of repairs and/or replacements of sumps that BSC was able to perform during the initial inspection period; and
 - (c) A work plan with a schedule to repair and/or replace sumps and/or aboveground storage tanks where necessary.
- 4) Upon EPA and MDE's approval of the work plan and schedule prepared under paragraph 3) (c), above,

BSC shall implement the work plan according to the schedule.

b. Waste minimization/recycling projects.

BSC has developed a comprehensive waste minimization program which it proposes to complete over the next ten (10) years. It consists, among other things, of the projects listed in paragraphs 1 through 6, below. Bethlehem anticipates that the implementation/fulfillment of these projects, as well as other associated activities (e.g., NPDES projects), will result in substantial reductions (e.g., approximately 50%) in toxic substance releases as reported in the Toxic Chemical Release Inventory Reports ("TRI Reports") submitted by BSC pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. § 11023, over the next several years.

In accordance with the schedule stated below, BSC shall submit work plans and schedules for each of these projects. EPA and MDE will review the schedule for approval, consistent with the ten year overall time frame.

- 1) Within nine (9) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a report which identifies and quantifies all discharges to Tin Mill Canal. The data generated

by a study conducted in 1994 that identifies the discharges to Tin Mill Canal may be used for this report to the extent the data satisfy this requirement. BSC agrees to evaluate additional actions to reduce discharges to Tin Mill Canal as part of the Waste Minimization Plan described in Paragraph VI.3 as "Facility Wide Waste Minimization Plan."

- 2) Within two (2) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a work plan for the beneficial reuse of strong caustic solutions at Humphreys Creek Wastewater Treatment Plant consistent with Attachment F. The work plan shall additionally describe the controlled discharge of spent pickle liquor and pickling rinsewaters to the Tin Mill Canal. EPA and MDE will review the schedule for approval pursuant to Section XIII ("Submissions Requiring EPA and MDE Approval").
- 3) Within twelve (12) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a work plan to recycle slurry from the treatment of gas from the blast furnace by installing a hydrocyclone facility to remove zinc and lead from the solids in the slurry and recycle the solids into either the sinter plant or the

iron and steel making processes, consistent with Attachment F. EPA and MDE will review the schedule for approval pursuant to Section XIII ("Submissions Requiring EPA and MDE Approval").

- 4) Within eighteen (18) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a work plan to recycle into either the sinter plant or the iron or steel making processes oxide fume sludge generated from the treatment of the exhaust gas from the Basic Oxygen Furnace, consistent with Attachment F. EPA and MDE will review the schedule for approval pursuant to Section XIII ("Submissions Requiring EPA and MDE Approval").
- 5) Within twenty-four (24) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a work plan to recycle into the sinter plant the sludge generated from the treatment of wastewaters at Humphreys Creek Wastewater Treatment Plant (Humphreys Creek Wastewater Treatment Plan Solids Work Plan) consistent with Attachment F. EPA and MDE will review the schedule for approval pursuant to Section XIII ("Submissions Requiring EPA and MDE Approval").
- 6) Within twelve (12) months of the effective date of this Consent Decree, BSC shall submit a work plan

for handling the material generated during maintenance dredging of the Tin Mill Canal consistent with the description of maintenance dredging contained in Attachment F.

2. If at the time during the pendency of this Consent Decree BSC determines, based on technical, operational or economic infeasibility, that it will not implement or continue one or more of the waste minimization activities set forth in paragraph 1.b.3), 1.b.4), or 1.b.5), above, BSC shall promptly notify EPA and MDE of such a determination. Before BSC can terminate its obligation to perform a waste minimization activity set forth in paragraph 1.b.3), 1.b.4), or 1.b.5), above, BSC must demonstrate to the satisfaction of EPA and MDE that the waste minimization activity is infeasible, or BSC must demonstrate that the cost of the specific waste minimization activity exceeds the current projected cost by 50 percent. This demonstration must be certified by a corporate officer in accordance with Section XII ("Notification and Certification of Documents"). Six months after the effective date of this Consent Decree, BSC shall submit to EPA and MDE its projections for the cost of each waste minimization activity. Additionally BSC shall, in its sole discretion, take either of the following options:

- a. Within a reasonable period of time, not to exceed sixty (60) calendar days of notifying EPA and MDE pursuant to paragraph 2, above, that it will not implement or continue one or more of the waste minimization

activities set forth in paragraph 1.b.3), 1.b.4), or 1.b.5), above, BSC shall submit for approval pursuant to Section XIII ("Submissions Requiring EPA and/or MDE Approval") an alternative plan for managing the material consistent with waste minimization goals. In the event EPA and/or MDE disapprove the alternative plan, BSC shall, within a reasonable period of time not to exceed ninety (90) calendar days of receipt of EPA and/or MDE's disapproval, either terminate the project in accordance with paragraph b, below, or submit for approval pursuant to Section XIII ("Submissions Requiring EPA and/or MDE Approval") another alternative plan which is responsive to EPA and MDE's stated concerns.

- b. Notify EPA and MDE that it is terminating the activity and the reason for the termination. For each such activity terminated, BSC shall pay \$350,000.00 as follows. BSC shall pay MDE the amount indicated in the following table within sixty (60) days of notifying EPA and MDE:

<u>Activity</u>	<u>Amount (\$)</u>
Recycling of Blast Furnace Gas Cleaning Slurry Solids (VI.1.b.3)	100,000.00
Recycling of BOF Fume Sludge (VI.1.b.4)	100,000.00
Recycling of Humphreys Creek Wastewater Treatment Plant Sludge (VI.1.b.5)	100,000.00

In addition, BSC shall apply \$250,000.00 toward an environmentally beneficial project within the State of Maryland. In order to satisfy this requirement, the project must be approved by MDE.

Payments to MDE shall be made payable to the Maryland Clean Air Fund and shall be submitted to:

Maryland Department of the Environment
P.O. Box 1417
Baltimore, MD 21203-1417

Nothing herein shall excuse BSC from managing its solid and hazardous wastes in accordance with all applicable laws at all times.

3. BSC agrees to develop and implement a Facility Wide Waste Minimization Plan. The goal of this task is to identify, if possible, ways to further reduce the volume, mobility and/or toxicity of solid wastes, hazardous wastes, and hazardous constituents generated at the Facility. This shall be performed as follows:

a. Within eighteen (18) months of the effective date of this Consent Decree, BSC shall submit to EPA and MDE a

description and schedule (the "Waste Minimization Plan" or the "Plan") of ongoing and planned pollution prevention and waste minimization activities at the entire Facility, including but not limited to the ship yard, addressing, at a minimum, solid wastes and hazardous waste and the periodic inspection of the sumps and above ground storage tanks described in paragraph 1.a., above. In developing the Waste Minimization Plan, BSC shall consider the items in the Scope of Work for a Waste Minimization Program contained in Attachment G and additionally may describe impediments to potential projects where the Agencies may be of assistance.

- b. EPA and MDE agree to review the regulatory issues and provide comments and/or recommendations in a timely manner.
- c. BSC shall review, assess the effectiveness of, revise as appropriate, and submit an updated Waste Minimization Plan to EPA and MDE every three years until December 31, 2007 or the termination of this Consent Decree, whichever is the first to occur. As a part of that assessment, BSC will determine and report on the extent of the voluntary reductions in currently reportable TRI releases, if any, resulting from the implementation of the various waste recycle/minimization activities at the Facility. The

estimated TRI reduction in Section VI.1.b., above, is a goal and not an enforceable standard and shall not be used in any respect for the evaluation or approval of any waste minimization project or alternative project or the Waste Minimization Plan.

4. BSC shall submit to EPA and MDE an annual report due February 15 for the previous calendar year which describes the status of implementing each Work Plan under this Section VI, and includes sampling data related to hazardous waste regulatory determinations.

VII. COMPLIANCE REQUIREMENTS

A. Compliance Requirements for Visible Emissions from Basic Oxygen Furnace (BOF) Shop Roof Monitor

Commencing one week after the effective date of this Consent Decree and continuing until the Federal effective date of the regulation to be promulgated pursuant to Paragraph A.4 below, BSC shall comply with the following fugitive emission standard specified in Paragraphs A.1, A.2, and A.3:

1. Visible Emission from the BOF Shop roof monitor, other than water in an uncombined form, shall not exceed 15% opacity, based on a 3-observation rolling arithmetic average of the "opacity records" recorded on each of three calendar days of observation, measured and calculated in the manner described

below. This maximum average 15% opacity, measured and calculated in the manner described below, shall be referred to as the "15% standard."

Each observation shall be performed for one hour utilizing EPA Reference Method 9 (Visual Determination of the Opacity of Emissions from Stationary Sources - 40 C.F.R. Ch. 1, Part 60, App. A), except for the sentence within paragraph 2.4 of Method 9 setting the minimum number of 24 observations to be recorded and the data reduction provision in paragraph 2.5 of Method 9. The "opacity record" of each observation is determined as the highest average of any 6 consecutive minutes of readings. Prior to making an "opacity record" calculation, the three highest minutes from the 60-minute observation may be removed in 1, 2, or 3-minute groups. After removing these minutes, the remaining minutes of readings are treated as if they were consecutive when calculating an "opacity record".

Observations may be performed at any time by any qualified EPA, MDE, or BSC observer (including qualified observers who are contractors for EPA, MDE, or BSC) whenever the conditions set forth in EPA Reference Method 9 are satisfied. In the event of any observations performed by EPA or MDE, EPA or MDE shall make the written records available to BSC for copying and BSC shall obtain copies of the written records of such observations to utilize such observations in its compliance and reporting obligations. For each calendar day on which more than one valid observation is performed, and therefore more than one "opacity

record" is established, the highest "opacity record" of that calendar day shall be the only one utilized in a determination of compliance.

For each calendar day when an "opacity record" is established, compliance is determined by calculating the arithmetic average of the "opacity record" for that day and the two immediately preceding "opacity records". The first exceedance of the 15% standard during each calendar year, from January 1 through December 31, shall not constitute a violation of the 15% standard. The second exceedance and all subsequent exceedances of the 15% standard during that calendar year are prohibited.

2. For each exceedance of the 15% standard BSC shall notify EPA and MDE in writing within 5 days of such occurrence. Within 21 days of such exceedance, BSC shall provide EPA and MDE with a report concerning the exceedance including the cause if it can be determined. Upon request of MDE, BSC and MDE shall meet to discuss the exceedance and possible ways to prevent additional exceedances. In addition, for a second and any subsequent exceedances during each calendar year, EPA and MDE fully reserve their rights to seek appropriate penalty and/or injunctive relief for the violations. Any such penalty shall be reduced by the amount of any stipulated penalty BSC paid for the violation pursuant to this Consent Decree.

3. With regard to the 15% standard set forth in Paragraph A.1., above, BSC shall, at a minimum, schedule one observation on

each of three (3) different calendar days per calendar week, and shall perform the observations on the days scheduled, unless weather or other conditions on one or more of those days prevent observations in compliance with Method 9. In that event, BSC shall perform the missing observation(s) during that week or in the following two (2) calendar weeks in addition to the minimum 3 observations required for each calendar week, unless weather or other condition prevent such observation(s) in compliance with Method 9. Should MDE or EPA perform an observation or observations, each such observation shall be deemed to be in lieu of an observation required to be performed by BSC, on a one-for-one basis.

The original written record of each observation performed by BSC shall be maintained by BSC, for inspection and/or copying by EPA or MDE personnel, until two years after termination of the Consent Decree with respect to the 15% standard.

4. BSC agrees that the 15% standard, as set forth in Paragraphs A.1, 2., and 3., above, should be adopted as a regulation by the State of Maryland and submitted to and approved by EPA as part of the Maryland SIP. BSC further agrees not to contest, challenge or oppose in any manner such adoption, submission and approval, so long as the standard adopted is substantially equivalent to that set forth in Paragraphs A.1., 2., and 3., above.

After the effective date of the regulation by the State of Maryland, but prior to approval of the SIP, the Maryland

regulation shall be incorporated in and replace the standard set forth in Paragraphs A.1 - A.3, above.

5. Subject to Section XXVI Reservation of Rights and although MDE on occasion may require an increase in the frequency of monitoring, MDE considers that the frequency of monitoring (Paragraph A.3., above) and the associated compliance calculation methodology (Paragraph A.1., above) herein should produce data of sufficient frequency to judge whether the BOF is being operated in compliance with the 15% standard.

6. Within ninety (90) calendar days of the date of entry of this Consent Decree, BSC shall submit a written report detailing the operational, process, and physical improvements that have been made to the BOF Shop to reduce fugitive emissions since September 1, 1993.

7. During the construction period for the new reladling baghouse and for a limited start-up period thereafter, BSC shall use flame suppression during all reladling. During this construction and start-up, the visible emissions observed during reladling shall be deleted from the calculation of the opacity record for any observation under Paragraph A.1. In order for this paragraph to be effective, BSC must notify EPA and MDE in writing as to the exact dates of the construction schedule of the new reladling baghouse. The start-up period shall not exceed three (3) months after the baghouse is first used to control a hot metal reladling.

B. Compliance Requirements for Kish Reduction

1. Within ninety (90) days after the effective date of this Consent Decree, BSC shall submit a plan to MDE for approval and to EPA for comment on the management of kish. This plan shall be designed to minimize, to the extent practicable, the emissions of kish. This Kish Reduction Plan shall include the following:

- a. Reducing hot metal beaching, including adjusting the production of L Blast Furnace when necessary and practicable and other emergency contingency measures;
- b. Refurbishing the #3 Open Hearth for the unavoidable beaching of hot metal which cannot be used (e.g., off-spec production, slag and iron remaining in hot metal cars, etc.);
- c. Taking reasonable precautions to reduce fugitive kish emissions during landfilling;
- d. Requesting Maryland Pig and C.J. Langenfelder to prepare and follow a kish emission reduction plan at their operations located on the Sparrows Point property. BSC agrees to provide these entities, upon their request, with assistance in developing such plans if such assistance would facilitate kish emission reduction;
- e. Investigating another method for slag skimming that would allow better collection of kish generated at the slag skimming process;

- f. Reducing fugitive kish emissions during the collection and disposal of kish from the BOF Shop baghouses; and
 - g. Investigating potential recycling options.
2. Following MDE approval of the Kish Reduction Plan, BSC shall implement the approved Plan in accordance with the schedule contained therein.
 3. At the completion of implementing the Kish Reduction Plan, or three years from the effective date of this Consent Decree, whichever is earlier, BSC shall submit to MDE for approval and EPA for comment a report which describes the actions taken pursuant to that Plan. The report shall include an assessment of the various actions taken. Within 60 days after submitting the report, BSC shall meet with MDE to discuss the report and whether additional kish reduction measures may be appropriate.

C. Compliance Requirements for Coke Point and
Greys Landfill Operation

1. Acceptable Wastes. BSC shall observe the following waste acceptance restrictions at Coke Point and Greys Landfills ("the landfills"):
 - a. The landfills may only accept solid waste from commercial, industrial, construction, demolition and other activities occurring on the grounds of the Facility, as further described and restricted below.

- b. BSC's asbestos waste may be accepted only at Greys landfill, provided that the material that is received is packaged and labeled as specified in COMAR 26.11.21, and is managed in the following manner:
- i. The waste asbestos is unloaded carefully to prevent the emission of fibers into the air;
 - ii. The area used for asbestos disposal shall be restricted to the working face of the Landfill, or a separate cell dedicated solely to asbestos disposal;
 - iii. The asbestos shall be completely covered with soil or other refuse immediately upon unloading a load or group of loads scheduled to be delivered within one morning or one afternoon, and shall not be compacted or driven over until sufficient cover has been applied to prevent the release of asbestos fibers to the atmosphere during compaction or application of other cover material; and
 - iv. Operators at Greys landfill shall comply with all Occupational, Safety and Health Administration (OSHA) requirements with respect to protective clothing and respiratory protection for protection against asbestos fibers.

- c. Disposal of the following waste materials, regardless of their origin or type, is specifically prohibited at the landfills:
- i. Controlled Hazardous Substances ("CHS"). Waste regulated as CHS under COMAR 26.13 may not be disposed of in the Sparrows Point solid waste acceptance facilities;
 - ii. Liquid wastes and wastes containing free liquids. The presence of free liquids shall be determined by application of the Gravity Test (a.k.a. Paint Filter Test), as described in the Federal Register, Vol. 47 No. 38, on Thursday, February 23, 1982, page 8311, or an acceptable alternative procedure approved by MDE;
 - iii. Infectious waste from hospitals, laboratories, and other health care facilities, as defined in § 9-227 of the Environment Article, unless specifically authorized by MDE;
 - iv. Radioactive materials, as defined in COMAR 26.12.01;
 - v. Septage, sewage sludge, processed sewage sludge, and any other product containing these materials, unless authorized by a sewage sludge utilization permit;
 - vi. Automobiles;

- vii. Drums or tanks, unless empty and flattened or crushed with the ends removed, or empty with the tops removed;
- viii. Animal carcasses; and
- ix. Chemical or petroleum spill cleanup material, unless:
 - 1. The nature of the spilled substance is known;
 - 2. The spill cleanup material is demonstrably not a CHS; and
 - 3. The spilled material is contained in an absorbent of sufficient excess volume that the material deposited at the Landfill does not exhibit free liquids as defined in subcondition C.1.c.ii, above.
- d. Any waste not identified herein as acceptable for disposal ("unacceptable waste") shall not be received without prior written approval from MDE.
- e. As specified in the operations manual, all incoming loads of waste must be inspected adequately before or during unloading at the working face to insure that no unacceptable waste types are contained in the load. For uniform and thoroughly controlled waste streams, the operations manual may specify alternatives to inspection of each load. All incidents that result in a load of unacceptable waste, as defined herein, being unloaded in the landfill shall be telephonically

reported immediately to MDE at (410) 631-3424 and followed up with a written report to MDE within five (5) working days following the incident. The report shall describe corrective measures taken or planned, to remove the unacceptable waste from the landfill and to remediate the impact of the prohibited disposal.

f. Due to the constituents of a particular industrial waste, MDE may require additional material testing to determine its suitability for landfilling.

2. BSC shall perform an engineering study prepared under the direction of, signed by and bearing the seal of a registered professional engineer, of the present construction and the current methods of operation of the landfills. This study shall also include but not be limited to an evaluation of sediment and erosion control and stormwater management issues, and geologic and slope stability issues, and shall specify the horizontal extent and current and design vertical extent of each landfill. No later than July 15, 1998, BSC shall submit to MDE for approval a copy of report(s) of the engineering study ("Engineering Study") and a plan and schedule ("Landfill Compliance Plan") for Greys and Coke Point landfills. The plan shall provide for the improvement of engineering practices and for the attainment of the requirements and criteria set forth below, in Sections C.2.a, b, c, d and e, unless BSC proposes and MDE approves an alternative. To the extent that BSC proposes an alternative to any criteria in Section C.2., such proposal shall be submitted to

MDE as part of the Landfill Compliance Plan and shall be subject to MDE approval as part of such plan. MDE makes no representations regarding whether it will grant or deny any proposed alternative, and the parties agree that this shall be the sole process for BSC to seek such alternatives. Upon approval, BSC shall implement the Landfill Compliance Plan.

- a. Engineering Plans and Operations Manual. Plans, specifications and operations manuals shall be developed for each disposal site, including an individual sediment and erosion control plan submitted for approval to the local Natural Resources Conservation District ("NRCD"). BSC shall make timely application for and diligently pursue approval from the NRCD of its sediment and erosion control plan. If necessary to obtain approval, BSC must amend its sediment and erosion control plan to address all requirements of the NRCD. Upon approval of the sediment and erosion control plan, BSC shall submit it to MDE. The plan must include a current, accurate topographic map, which depicts all pertinent features of the property, and clearly indicates the horizontal extent and current and design vertical extent of each existing Facility. A copy of the approved Engineering Plans and Operations Manual shall be maintained at the facility where they shall be available for reference by the site supervisor and equipment operators.

- b. Waste Placement Avoiding Waters of the State. BSC shall comply with the following criteria for solid waste placed in the landfills after the effective date of this Consent Decree:
- i. Waste placement must be within the existing footprints (as approximately shown on Exhibits 2 and 3 and as shall be specifically delineated in the Engineering Study) of Greys landfill or Coke Point landfill; and
 - ii. No waste may be placed less than three (3) feet above the maximum anticipated groundwater elevation;
- c. Protection From Inundation. The Landfill Compliance Plan shall provide for the following:
- i. Waste placement must be outside of the one hundred (100) year flood plain, or be adequately flood protected to prevent inundation or loss of landfilled materials; and
 - ii. No waste may be placed less than three (3) feet above the maximum anticipated groundwater elevation;
- d. Minimum Operating Procedures. The Landfill Compliance Plan shall provide for the following:
- i. Unloading. Solid waste unloading shall be restricted to the working face of the landfills. The working face shall be specifically described

and limited in size. Also, the Landfill Compliance Plan shall describe how the working face shall progress in accordance with proper engineering practices;

- ii. Solid waste shall be spread in uniform layers and either compacted to its smallest practicable volume or otherwise managed to ensure landfill stability and safety;
- iii. A layer of a cover material approved by MDE shall be placed over exposed solid waste. The nature of, frequency, and depth of the cover application shall be addressed in the Landfill Compliance Plan;
- iv. If the landfills are developed in lifts, the Landfill Compliance Plan shall specify maximum lift heights and address intermediate cover;
- v. Grading and Drainage. The disposal sites shall be graded and drained to:
 - 1. Minimize runoff onto the working faces and other fill area of the landfills;
 - 2. Prevent erosion and ponding within the working faces and other fill areas; and
 - 3. Facilitate runoff from the surface of the landfills;

- vi. Environmental Protection. The landfills shall be operated to prevent air, land, and water pollution, public health hazards, or nuisances;
- vii. Personnel and Equipment. Adequate personnel and equipment shall be maintained at all times to insure proper operation and prompt attention to correct problems associated with the construction and maintenance of the landfills;
- viii. Supervision. BSC shall provide adequate supervision at the disposal site to insure compliance with the Landfill Compliance Plan specifications and operations manual;
- ix. Limited Access. Access to the landfills shall be controlled at all times to prevent unauthorized access and unauthorized disposal.
- x. Litter Control. Scattering of solid wastes by wind shall be controlled by fencing or other barriers, and windblown wastes shall be collected and disposed of properly; and
- xi. Scavenging or Salvaging. Scavenging or salvaging may only be conducted at the Sparrows Point solid waste acceptance facilities as is specifically authorized by MDE. Scavenging or salvaging at these facilities is permitted provided that the following conditions are satisfied:

1. The operations manual for the site clearly describes the scavenging or salvaging process to be employed and the safety precautions to be followed;
2. Areas for scavenging or salvage are clearly designated and are separate from the working face of the fills; and
3. The scavenging or salvaging can be accomplished in a manner that does not endanger the public health or the environment.

e. Additional Monitoring Requirements. BSC's Landfill Compliance Plan shall provide for the monitoring required under Section C.3.c., below. In addition, BSC's Landfill Compliance Plan shall provide for BSC to periodically collect and analyze ground water and surface runoff, related to the landfills. (To the extent that the requirement to periodically collect and analyze landfill related surface runoff is incorporated into BSC's NPDES permit, then such sampling of surface runoff under this paragraph will be deemed satisfied by compliance with that permit requirement.) The purpose of this monitoring is: 1) initially to determine the impact of the landfills on the groundwater; and 2) to provide ongoing monitoring to detect any changes in conditions. MDE reserves all of its rights to require

additional investigation and corrective measures. With respect to the requirement for ongoing monitoring, at a minimum the Landfill Compliance Plan shall include the following:

- i. Number and location of the sampling stations;
- ii. Frequency of sampling and analyses;
- iii. Sampling and analyses procedures;
- vi. Pollutants to be monitored; and
- v. Reporting period.

3. Operational Restrictions. BSC shall comply with the following restrictions:

- a. Burning. Solid waste may not be burned at the Facility except as permitted by MDE;
- b. Operating an Open Dump. Solid waste may not be disposed of by any person in an open dump. A person may not cause, suffer, allow, or permit open dumping on his property; and
- c. Explosive Gases. Industrial waste landfill units at the Facility may not be designed or operated in such a manner that the concentration of explosive gases generated by a unit exceeds twenty-five percent (25%) of the lower explosive limit for the gases inside of a structure, excluding gas control or recovery system components, and the lower explosive limit for the gases at the property boundary. BSC shall conduct such

monitoring as may be necessary to demonstrate compliance with these limits.

4. Closure of Industrial Waste Acceptance Facilities. No later than eighteen (18) months after the effective date of this Consent Decree, BSC shall provide MDE with a plan and timetable for future uses and eventual closure of each solid waste acceptance facility. When such a facility is to be closed, BSC shall comply with the following criteria (set forth in Sections 4.a, b and c) and the closure criteria set forth in COMAR 26.04.07 appropriate to the type of facility involved, unless BSC proposes and MDE accepts an alternative. To the extent that BSC proposes an alternative to any criteria in Sections 4a, b and c or 26.04.07, such proposal shall be submitted to MDE as part of the Closure Plan and shall be subject to MDE approval as part of such plan. MDE makes no representations regarding whether it will grant or deny any proposed alternative, and the parties agree that this shall be the sole process for BSC to seek such alternatives.

a. Closure Plan. At least six (6) months prior to the anticipated date of closure, a set of plans and specifications describing the manner in which the landfill will be closed, and how postclosure care and monitoring will be accomplished, must be submitted to MDE for review. The Closure Plan must include the requirements of COMAR 26.04.07.19, .21 and .22 appropriate to the type of facility involved. The

Closure Plan must also be submitted to the Natural Resources Conservation District (NRCD) for review, and must be approved by MDE and NRCD prior to implementation. If necessary to obtain approval, the plan must be amended to address all requirements of MDE and NRCD;

b. Elements of the Post-closure Plan. BSC shall perform post-closure monitoring and maintenance for a period of time not less than five (5) years after the complete installation of the landfill cap. This time period may be extended by MDE. The following elements must be described in the Closure Plan:

i. Inspections. BSC shall inspect at least twice per year. The inspection shall include:

1. Observation of the cover at the landfill;
2. Notation of any drainage irregularities or signs of erosion of the cover;
3. Notation of any surface expressions of leachate at the landfill; and
4. Evaluating the condition of the monitoring wells.

ii. Maintenance. BSC shall correct irregularities or problems noted during the inspections within thirty (30) days of their observance unless otherwise directed by MDE.

iii. Reporting and Recordkeeping. BSC shall record and report to MDE within sixty (60) days of each inspection, the results of the inspection.

c. Groundwater Monitoring Requirements. BSC shall periodically collect and analyze ground water or surface runoff at the industrial waste landfill units and submit the results to MDE. (To the extent that the requirement to periodically collect and analyze landfill related surface runoff is incorporated into BSC's NPDES permit, then such sampling of surface runoff under this paragraph will be deemed satisfied by compliance with that permit requirement.) The closure plan must contain a detailed description of the manner in which this monitoring shall be performed, and is subject to the approval of MDE. The monitoring portion of the closure plan must address the following elements:

- i. Number and location of the sampling stations;
- ii. Frequency of sampling and analyses;
- iii. Sampling and analyses procedures;
- iv. Pollutants to be monitored; and
- v. Reporting period.

5. Permitting of New, Replacement, or Upgraded Industrial Waste Landfills. BSC understands and agrees that it must obtain a Refuse Disposal Permit, in accordance with Environment Article §§ 9-224 and 204, and COMAR 26.04.07.19 and .20, prior to

operating any new solid waste disposal unit, replacement unit, or any material alteration or material extension of the existing landfills. BSC agrees that a material extension of an existing landfill will have occurred if there is either: 1) a horizontal expansion beyond the footprint of the either Coke Point Landfill or Greys Landfill (as defined in the approved Engineering Study); or 2) a vertical expansion above the design height as indicated in the approved Landfill Compliance Plan. In the event of a material alteration or material extension of an existing landfill, BSC shall not operate such alteration or extension unless BSC has obtained a permit pursuant to Environment Article §9-204(d). If BSC has not obtained a required permit, then BSC shall perform closure of the landfill in accordance with Section C.4, above.

VIII. ADDITIONAL WORK

1. EPA and MDE may determine that certain tasks and deliverables, including, but not limited to, investigatory work, or engineering evaluation, or procedure/methodology modifications, require additional work. These tasks and deliverables may or may not have been in other EPA and/or MDE-approved document(s). Also, at any time during or after implementation of any activity pursuant to this Consent Decree, EPA and/or MDE may determine continued implementation of that activity is not likely to achieve its goal(s) and/or standard(s).

In that event, EPA and/or MDE may determine that additional work is necessary.

2. EPA and/or MDE may request, in writing, that BSC perform such additional work. EPA and/or MDE shall specify the basis and reasons for its determination that additional work is necessary.

3. Within fifteen (15) calendar days after the receipt of such request, BSC shall have the opportunity to meet or confer with EPA and/or MDE, as appropriate, to discuss the additional work. In the event that BSC agrees to perform such additional work, BSC shall submit for approval to EPA and/or MDE, as appropriate, pursuant to Section XIII, a work plan for the additional work. Such work plan shall be submitted within sixty (60) days of receipt of EPA's and/or MDE's written determination that additional work is necessary, or after the conference, if one is held, or otherwise in accordance with a later alternative schedule established by EPA and/or MDE, as appropriate. Upon EPA and/or MDE's approval of a work plan, as appropriate, the work plan shall be incorporated into and become enforceable under this Consent Decree and BSC shall implement it in accordance with the schedule and provisions contained therein.

4. If BSC declines to perform the additional work, EPA and MDE reserve all rights they have under RCRA or all other laws, to order BSC to perform such additional work; to perform such additional work themselves and seek to recover all costs of performing such additional work from BSC; and/or to take any

other appropriate action under RCRA, CERCLA, or any other legal authority.

IX. GENERAL PROVISIONS GOVERNING PERFORMANCE OF WORK

1. BSC agrees to and is hereby directed to perform all of the acts specified in this Consent Decree in the manner and by the dates specified herein and to implement workplans required by this Consent Decree in accordance with EPA and MDE approval.

2. EPA and MDE acknowledge that BSC may have completed some of the tasks required by this Consent Decree and that BSC may have available some of the information and data required by this Consent Decree. This previous work may be used to meet the requirements of this Consent Decree upon submission to and formal approval by EPA and MDE.

3. All Exhibits and Attachments to this Consent Decree are incorporated herein by reference.

4. All actions required to be taken pursuant to this Consent Decree shall be undertaken in accordance with the requirements of all applicable local, State and Federal laws and regulations.

5. BSC agrees to make timely and complete application for all required Federal, State and local permits, including, but not limited to, any permits required under RCRA, the Clean Water Act, and local ordinances for the Work performed pursuant to this Decree.

6. BSC shall ensure that all work performed under this Consent Decree is done by qualified persons.

X. CONTRACTOR REVIEW

1. All Work performed pursuant to Sections V and VII of this Consent Decree shall be under the direction and supervision of one or more qualified professionals (the "Principal Contractors") with expertise in the relevant aspects of engineering, pollution control, investigation and remediation. Within fifteen (15) calendar days after the effective date of this Consent Decree, BSC shall submit to EPA and MDE, in writing, the names, titles, and qualifications of the Principal Contractors, engineers, geologists, contractors and subcontractors (hereinafter "contractors") BSC has engaged to carry out the terms of Sections V and VII of this Consent Decree. Each contractor and subcontractor shall be qualified to perform those portions of the requirements of this Consent Decree for which the contractor or subcontractor has been retained. Within fifteen (15) calendar days of retaining any other contractors to be used in carrying out the terms of Section V and VII of this Consent Decree, BSC shall submit to EPA and MDE, in writing, the names, titles and qualifications of any such additional contractors. Notwithstanding BSC's selection of any qualified contractor, nothing herein shall relieve BSC of its obligation to comply with the terms and conditions of this Consent Decree.

2. EPA shall have the right to disapprove at any time the selection or use of any contractor selected by BSC to be used in carrying out Section V of this Consent Decree. EPA's disapproval of this selection or use shall not be subject to review under Section XX of this Consent Decree ("DISPUTE RESOLUTION") or otherwise. Within a reasonable period of time not to exceed ninety (90) days after receipt from EPA of a written notice disapproving the selection of any contractor, BSC shall notify EPA and MDE, in writing, of the names, titles and qualifications of the personnel who will replace the personnel whose selection was disapproved by EPA.

3. BSC shall notify EPA and MDE fifteen (15) calendar days prior to replacing voluntarily a Principal Contractor to be used in carrying out the terms of this Consent Decree, and shall submit to EPA and MDE the names, titles, and qualifications of replacement personnel.

XI. PROJECT COORDINATORS

1. Within two (2) weeks after the effective date of this Consent Decree, BSC shall designate a Project Coordinator and notify the others, in writing, of its Project Coordinator. EPA's and MDE's Project Coordinators are designated in Section XII, below. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Decree. The EPA and MDE Project Coordinators will be the primary designated representatives for their respective agencies. All

communications between or among the Parties, and all documents, reports, approvals and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Decree, shall be directed through the Project Coordinators.

2. Each Party agrees to provide at least one (1) week written notice, if possible, prior to changing its Project Coordinator.

3. If the EPA or MDE Project Coordinator determines that activities undertaken pursuant to this Consent Decree have caused or may cause a release or threatened release of hazardous substances, hazardous wastes or hazardous constituents, which threaten or may pose a significant threat to the public health or the environment, the EPA and/or MDE Project Coordinator(s) may direct BSC: (a) to stop further implementation of all or part of this Consent Decree for such period of time as may be needed to abate any such release or threatened release or, (b) to undertake any action which EPA or MDE determines is necessary to abate such release or threatened release.

4. The absence of the EPA and/or MDE Project Coordinator(s) from the Facility shall not be cause for the delay or stoppage of Work.

XII. NOTIFICATION AND CERTIFICATION OF DOCUMENTS

1. Unless otherwise specified or agreed among the Project Coordinators in writing, reports, correspondence, approvals, disapprovals, notices or other submissions relating to or required under this Consent Decree shall be in writing and shall be sent by a form of delivery which documents the date sent and the date received to the following:

Two (2) copies of all documents to be submitted to EPA shall be sent to the EPA Project Coordinator:

Diane Schott
RCRA General Programs Branch (3HW90)
U.S. Environmental Protection Agency, Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 566-3430

Two (2) copies of all documents to be submitted to MDE shall be sent to the MDE Project Coordinator:

Richard Johnson, Chief
Hazardous Waste Enforcement Division
Maryland Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224
(410) 631-3400

One (1) copy of all documents filed with the Court and any notices of Invocation of Dispute Resolution shall be submitted to the Department of Justice (DOJ):

Environmental Enforcement Section
U.S. Department of Justice
Land and Natural Resources Division
Chief, Environmental Enforcement Section
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
Attention: DOJ No. 90-7-1-830

Documents to be submitted to BSC shall be sent to the BSC Project Coordinator.

Any party may change the name or address to which its documents are to be sent by giving seven (7) days prior written notice to the other Parties.

2. A reasonable number of additional copies of documents shall be provided by BSC at the request of EPA and/or MDE.

3. Whenever this Consent Decree or its Attachments requires BSC to submit: a) a workplan, study, or report; or b) other document containing factual representations related to Sections VI, XIV.3., XIX, XX (except those documents to be filed in court) and XXXV, it shall be signed and certified as accurate by a responsible corporate officer as defined in 40 C.F.R. § 270.11(a)(1) or his duly authorized representative. A person is a "duly authorized representative" only if: a) the authorization specifies either an individual or position having responsibility for overall operation of the regulated facility or activity such as the position of plant manager, superintendent, or position of equivalent responsibility (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and b) the written authorization is submitted to the Project Coordinators designated by EPA and MDE pursuant to Section XI ("PROJECT COORDINATOR") of this Consent Decree. In addition, BSC shall certify in the same manner any other document containing factual representations, upon request by EPA or MDE.

4. The certification of the responsible corporate officer specified by paragraph 3 of this Section shall be the certification specified in 40 C.F.R. § 270.11(d).

5. In addition to any other requirement of this Consent Decree, BSC shall submit to EPA and MDE a written annual report on the work undertaken pursuant to Sections V and VII that, with respect to such work:

- a. Describes and assesses the progress and percentage of completion of all actions which have been taken toward achieving compliance with this Consent Decree during the reporting period;
- b. Includes a summary of all results of sampling and tests and all other data and reports received or generated by BSC or their contractors or agents in the reporting period;
- c. Includes any modifications to the work plans or other schedules or personnel that BSC has proposed to EPA and MDE that have been approved by EPA and MDE;
- d. Summarizes all contacts with representatives of the local community, or public interest groups during the reporting period relevant to the activities in this Consent Decree;
- e. Summarizes all problems or potential problems encountered during the reporting period, including but not limited to, unresolved or anticipated delays

encountered by BSC that may affect the future schedule for implementation of the requirements of this Consent Decree;

- f. Describes actions being taken to rectify problems;
- g. Describes changes and additions to pertinent BSC personnel and contractors during the reporting period;
- h. Describes all actions, including but not limited to, data collection and implementation of work plans, which are scheduled for the next reporting period; and
- i. Describes all releases reportable under any federal and/or state law which took place at the Facility during the reporting period, the status of mitigation of such releases, and the government oversight agency, contact name and telephone number.

BSC shall submit these progress reports to EPA and MDE on February 15th for the previous calendar year, following the effective date of this Consent Decree. BSC shall continue to submit these progress reports until either: the Consent Decree is terminated or EPA and MDE notify BSC that such reports are no longer necessary.

XIII. SUBMISSIONS REQUIRING EPA AND/OR MDE APPROVAL

1. Any plan, report, or other item which is required to be submitted for approval by EPA and MDE pursuant to this Consent Decree shall be submitted to MDE at the same time it is submitted to EPA. After review of any such plan, report or other item, the

Agency or Agencies (EPA or MDE or both) with the jurisdiction over such plan, report or other item in accordance with this Consent Decree, shall: a) approve, in whole or in part, the submission; b) approve the submission upon specified conditions; c) modify the submission to cure the deficiencies; d) direct that BSC modify the submission; e) disapprove, in whole or in part, the submission, notifying BSC of deficiencies; or f) any combination of the above.

2. If BSC establishes to the satisfaction of EPA and MDE that it is impracticable to commence implementation of a portion of a plan, BSC can wait until the deficiencies are cured before going forward with the plan. During this delay, stipulated penalties will accrue only if a portion of a plan has been deemed substantially deficient, in accordance with paragraph 7 below.

3. Upon BSC's request, EPA and MDE will agree to meet at any time during this process to discuss issues raised by EPA or MDE.

4. In the event of approval, approval upon conditions, or modification by EPA and/or MDE, as appropriate under this Consent Decree, BSC shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA and/or MDE subject only to its right to invoke the Dispute Resolution procedures set forth in Section XX (DISPUTE RESOLUTION) with respect to the modifications or conditions made by EPA and/or MDE.

5. Upon receipt of a notice of disapproval or a notice requiring a modification, BSC shall, within thirty (30) days or such other time as specified by EPA and/or MDE in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval or a notice requiring a modification, BSC shall proceed, at the direction of EPA and/or MDE, to take any action required by any non-deficient portion of the submission.

6. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA or MDE, EPA and/or MDE may again require BSC to correct the deficiencies, in accordance with the preceding paragraphs 2 and 3.

7. If a plan, report, or item is disapproved by EPA or MDE because it is deemed substantially deficient by EPA or MDE, BSC shall be deemed to be in violation of the provision of this Consent Decree requiring BSC to submit such plan, report, or item unless BSC invokes dispute resolution and this Court overturns EPA's and/or MDE's disapproval. The provisions of Section XX (DISPUTE RESOLUTION) and Section XVII (DELAY IN PERFORMANCE/STIPULATED PENALTIES) shall govern the implementation of the requirements of this Consent Decree and accrual and payment of any stipulated penalties during resolution of the dispute.

8. All plans, reports, and other items required to be submitted to EPA and/or MDE under this Consent Decree shall, upon modification and/or approval by EPA and/or MDE, become part of

and be enforceable under this Consent Decree. In the event EPA and/or MDE approve a portion of a plan, report, or other item required to be submitted to EPA and/or MDE under this Consent Decree, the approved portion shall become part of and be enforceable under this Consent Decree.

XIV. ON-SITE AND OFF-SITE ACCESS

1. EPA, MDE, and any authorized representatives of EPA or MDE, are authorized to enter and freely move about all property at the Facility at all reasonable times during the pendency of this Consent Decree for the purposes of monitoring BSC's actions in carrying out the terms of Sections V and VII of this Consent Decree, including but not limited to: inspecting and copying documents, records, photographs and data; conducting such tests, sampling or monitoring as EPA, MDE or their Project Coordinators deem necessary; using a camera, sound recording, or other documentary-type equipment; and verifying the reports and data submitted to EPA and/or MDE by BSC. While at the Facility, EPA and MDE agree to abide by the appropriate portions of the Health and Safety plans submitted under Section V.B.4. In the event that BSC requests that EPA and MDE use special protective equipment or that BSC's escorts accompany EPA and MDE representatives for health and safety considerations, such escorts and/or equipment must be provided promptly, and shall not be restricted to BSC Environmental Health Safety and Control Department personnel. Nothing herein shall be interpreted as

limiting the inspection authority of EPA and MDE under federal and state law.

2. To the extent that activities required by this Consent Decree, or any approved scope(s) of work or work plan(s) prepared pursuant hereto, must be done on property not owned or controlled by BSC, BSC shall use its best efforts, as defined below, to obtain site access agreements from the present owner(s) and/or lessees, as appropriate, of such property within four (4) weeks after receipt of notice of EPA and/or MDE approval of any scope of work or work plan pursuant to this Decree which requires Work on property which is not owned or controlled by BSC. "Best efforts" as used in this paragraph shall include at a minimum, but shall not be limited to, sending a certified letter to the present owners and/or lessees, as appropriate, of such property requesting access agreements to permit BSC, EPA and MDE, and their authorized representatives to enter such property at all reasonable times.

3. In the event that access agreements are not obtained within this time period, BSC shall immediately notify EPA and MDE in writing indicating all efforts made to obtain such agreements. In the event that the United States, the State or both obtain such access, BSC shall be obligated to reimburse the United States and/or the State for any costs incurred in obtaining access including any reasonable negotiated payment of compensation made in consideration of access or court approved compensation for taking of property.

4. Nothing herein shall be interpreted as limiting the authority of the United States or the State to enter the Facility or other location under federal or state law.

XV. SAMPLING

1. BSC shall submit to EPA and MDE the results of all sampling, monitoring and/or other data generated by or on behalf of BSC pursuant to the terms and conditions of Sections V and VII of this Consent Decree and the attachments appended hereto. For Section VII.C., routine daily operational data need not be submitted unless specifically requested, and submissions under Section VII.B. and C. shall be made to MDE only.

2. BSC shall notify EPA and MDE at least fourteen (14) days before engaging in any field activities, such as well drilling, installation of equipment, or sampling conducted pursuant to the requirements of this Consent Decree, unless an emergency makes advance notice impracticable. In such emergency situation, BSC shall provide as much advance notice as possible.

3. At the request of EPA or MDE, BSC shall provide, or allow EPA, MDE, and/or their authorized representatives to take split or duplicate samples of all samples collected by BSC pursuant to this Consent Decree.

4. Except as provided in Paragraph XIV.1, EPA and/or MDE shall notify BSC at least fourteen (14) days before conducting any sampling under this Consent Decree, unless an emergency or unannounced inspection makes advance notice impracticable. In

such emergency situation, EPA and/or MDE shall provide as much advance notice as possible; in the event of an unannounced inspection, EPA and MDE will use best efforts in providing BSC an opportunity to obtain split or duplicate samples.

5. At the request of BSC, EPA and/or MDE shall provide, or allow BSC or its authorized representatives to take split or duplicate samples of samples collected by EPA and/or MDE under this Consent Decree.

6. Nothing herein shall be interpreted as limiting the inspection authority of EPA and MDE under federal and State law.

XVI. QUALITY ASSURANCE

1. Throughout all sample collection and analysis activities under this Consent Decree, BSC shall use procedures to ensure the reliability and quality of the data generated. Such procedures shall be described in work plans required under this Consent Decree. For work performed under Section V ("Corrective Measures Work to Be Performed") of this Consent Decree, BSC shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures and for work performed under that Section BSC shall comply with the following:

- a. Ensure that laboratories it uses for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" [SW-846 3rd Edition, November, 1986, including Final Update I (July, 1992),

Final Update IIA (August, 1993), Final Update II (September, 1994), Final Update IIB (January, 1995), and Proposed Update III (January, 1995)], or other methods approved by EPA and MDE. If methods other than EPA and MDE-approved are to be used, BSC shall submit protocol to be used for analyses to EPA and MDE for approval at least thirty (30) days prior to the commencement of analyses.

- b. Ensure that laboratories it uses for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA or MDE, such laboratories shall be made reasonably available for performance of a systems audit and/or perform analyses of samples provided by EPA or MDE to demonstrate the quality of analytical data.
 - c. At least thirty (30) days in advance of BSC's first use of a laboratory, BSC shall inform the EPA and MDE Project Coordinators of the identity of the laboratory.
2. For regulatory determinations pursuant to Section VI ("Waste Minimization"), BSC shall use quality assurance, quality control, and chain of custody procedures required by 40 C.F.R. § 262.11 and COMAR 26.13.03.02.

XVII. DELAY IN PERFORMANCE/STIPULATED PENALTIES

1. Unless there has been a written modification of a requirement of this Consent Decree by the parties, or excusable delay as defined in Section XIX herein ("FORCE MAJEURE AND EXCUSABLE DELAY"), BSC shall be liable upon demand by EPA or MDE for the following stipulated penalties if BSC fails to comply with any requirements of this Consent Decree in the manner required by this Consent Decree and within the time specified in the schedules approved under this Consent Decree. Such demand may be made by either MDE or EPA for failure arising out of the activities described in Sections V, VI, and VII.A. under this Consent Decree. All other demands may be made only by MDE.

- a. For failure to commence or complete any requirement of this Consent Decree in the time and manner required pursuant to this Consent Decree except as provided in subparagraphs b, c, and d below: \$1,000.00 per day for the first one (1) to seven (7) days of noncompliance, \$3,000.00 per day for each day of noncompliance from eight (8) to thirty (30) days, and \$7,000.00 per day for each day of noncompliance thereafter.
- b. For failure to submit progress reports in the time and manner required pursuant to this Consent Decree:
\$500.00 per day for the first one (1) to seven (7) days of noncompliance, \$1,000.00 per day for each day of

noncompliance from eight (8) to thirty (30) days, and \$2,000.00 per day for each day of noncompliance thereafter.

- c. For any failure to comply with the 15% opacity standard in Section VII Paragraph A.1 which occurs between the effective date of this Consent Decree and the effective date of MDE's promulgation of an opacity standard as provided by Section VII Paragraph A.4., above, and for any violation of that promulgated regulation between its effective date and EPA's approval of a SIP revision containing the promulgated standard, BSC shall pay the following stipulated penalty:

<u>Average Opacity (%)</u>	<u>Penalty</u>
15.1 - 16.0	\$ 1,000.00
16.1 - 17.0	\$ 2,000.00
17.1 - 18.0	\$ 3,000.00
18.1 - 19.0	\$ 4,000.00
19.1 - 20.0	\$ 5,000.00
20.1 - 21.0	\$ 6,000.00
21.1 - 22.0	\$ 7,000.00
22.1 - 23.0	\$ 8,000.00
23.1 - 24.0	\$ 9,000.00
24.1 - 25.0	\$10,000.00
25.1 - 26.0	\$11,000.00
26.1 - 27.0	\$12,000.00
27.1 - 28.0	\$13,000.00
28.1 - 29.0	\$14,000.00
29.1 - 100.0	\$15,000.00

- d. For any failure to comply with any requirement of Section VII.C. in the time and manner required pursuant to this Consent Decree (notwithstanding the provisions of subparagraphs a and b, above): \$1,000.00 per day for the first one (1) to seven (7) days of noncompliance, \$2,000.00 per day for each day of noncompliance from eight (8) to thirty (30) days, and \$5,000.00 per day for each day of noncompliance thereafter.

2. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of noncompliance. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Decree. In any event where BSC misses an interim deadline but makes the final deadline, any stipulated penalties accruing as a result of missing the interim deadline shall be forgiven. EPA and MDE have in their unreviewable discretion, not subject to Section XX ("Dispute Resolution"), the power to reduce or forgive any stipulated penalties that have accrued for whatever purpose.

3. If BSC disputes any demand by EPA or MDE for stipulated penalties hereunder, BSC may seek resolution of such dispute pursuant to the Dispute Resolution provisions of Section XX of this Consent Decree. During the period of dispute resolution, stipulated penalties shall continue to accrue for any on-going non-compliance with this Consent Decree as follows:

- (a) Stipulated penalties shall accrue for each day the violation continues during the thirty day period immediately following the date on which BSC submits its notice of dispute pursuant to Section XX.A.1. Stipulated penalties shall not accrue thereafter until the earlier of (i) the thirty-first day after EPA and/or MDE issues its proposed resolution of the dispute or (ii) the day following the date on which BSC

files a petition for resolution of the dispute with the Court pursuant to Section XX.A.3.

- (b) If BSC does not file a timely petition with the Court for resolution of the dispute, stipulated penalties shall accrue for each day the violation continues on and after the thirty-first day following issuance by EPA and/or MDE of its proposed resolution of the dispute pursuant to Section XX.A.3.
- (c) If BSC does file a timely petition with the Court for resolution of the dispute, stipulated penalties shall accrue for each day the violation continues during the thirty day period immediately following the day on which the petition was filed. The first day of this thirty day period shall be treated as the first day of violation for purposes of setting the amount of the daily stipulated penalty pursuant to Section XVII.1. Following the end of this thirty day period, stipulated penalties shall not accrue until the day following the day on which the Court issues its decision on the dispute. Beginning on that day, stipulated penalties will accrue for each day on which the violation continues.

In the event that BSC seeks resolution of a dispute concerning stipulated penalties, interest will begin to accrue on any unpaid stipulated penalty amounts thirty (30) days after

either the final unappealable judicial decision or the expiration of the time to appeal, whichever is earlier.

All penalties owed to EPA and/or MDE under this Section XVII shall be due within thirty (30) days after receipt of a notification of noncompliance from EPA or MDE; except that penalties accrued under paragraph 3, above, shall be paid within thirty (30) days after final resolution of the dispute, unless and to the extent that BSC prevails upon dispute resolution. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30) day period and shall accrue at the U.S. Department of the Treasury tax and loan rate pursuant to 4 C.F.R. § 102.13(c).

4. Stipulated penalties in connection with failures to comply with Section VII and those arising under Section XVII.1.c and d shall be paid in full to MDE. All other stipulated penalties shall be paid in equal portions to EPA and MDE. The portion payable to EPA shall be paid by certified or cashier's check made payable to "Treasurer, United States of America" and shall be remitted to:

Regional Hearing Clerk
United States Environmental Protection Agency
P.O. Box 360515
Pittsburgh, PA 15251-6515

All payments to EPA and MDE shall reference the name of the Facility, BSC's name and address, and the docket number of this action. Copies of the transmittal of payment shall be sent simultaneously to the EPA and MDE Project Coordinators, and the

Regional Hearing Clerk (3RC00) at the following address: U.S. Environmental Protection Agency, Region III, 841 Chestnut Building, Philadelphia, PA 19107; and to the U.S. Department of Justice, Land and Natural Resources Division, Chief, Environmental Enforcement Section, P.O. Box 7611, Ben Franklin Station, Washington, D.C. 20044.

The portion of the stipulated penalty payable to MDE shall be paid by certified or cashier's check made payable to the fund indicated by MDE in its notification of noncompliance and shall be remitted to:

Maryland Department of the Environment
P.O. Box 1417
Baltimore, MD 21203-1417

5. Neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way BSC's obligation to comply with the requirements of this Consent Decree.

6. The stipulated penalties set forth in this Section do not preclude EPA and/or MDE from pursuing other remedies or sanctions which may be available to them by reason of BSC's failure to comply with any of the requirements of this Consent Decree. However, in the event that the United States or the State seek statutory penalties for a violation of any requirement of this Decree for which BSC has previously paid a stipulated penalty, the amount of the statutory penalty sought shall be reduced by the amount of the stipulated penalty previously paid.

XVIII. CIVIL PENALTIES AND POLLUTION PREVENTION CREDITS

1. MDE sought a civil penalty in this case for violations of the BOF visible emission standard. Having considered the pollution prevention projects in Section VI of this Consent Decree, the estimated costs and time for each project, and the benefit to the public health or the environment, MDE has applied a penalty credit for these pollution prevention activities. Therefore, BSC agrees to pay a penalty of \$350,000.00 to MDE no later than thirty (30) days after the effective date of this Consent Decree. Payments to MDE shall be made payable to the Maryland Clean Air Fund and shall be submitted to:

Maryland Department of the Environment
P.O. Box 1417
Baltimore, MD 21203-1417

2. On or before February 15 of each calendar year, BSC shall submit to MDE and EPA a written report, including supporting documentation, which describes actual pollution prevention expenditures during the previous calendar year for the pollution prevention projects described in Section VI of this Consent Decree. Payment of the pollution prevention credit may become due if certain activities are not completed, as set forth in Section VI, ("Waste Minimization").

XIX. FORCE MAJEURE AND EXCUSABLE DELAY

1. BSC shall perform the requirements of this Consent Decree within the time limits and in the manner specified herein, unless the performance is prevented or delayed by events which

constitute a force majeure. BSC shall have the burden of proving a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of BSC, which cannot be overcome by due diligence and which delays or prevents performance of any obligation in the manner or by the date required by this Consent Decree. Such events do not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather conditions or weather conditions which could have been overcome by due diligence, or failure to obtain federal, state, or local permits, unless BSC made timely and complete application for such permits.

2. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, BSC shall orally notify EPA and MDE of such event within forty-eight (48) hours of when BSC's Project Coordinator first knew or should have known that the event might cause a delay. BSC shall confirm notification of such delay or anticipated delay in writing within seven (7) days of oral notification. Such written notification shall describe the nature of the delay, the estimated length of delay, the measures taken or to be taken to minimize the delay, and the timetable for implementation of these measures. Failure to comply with the notice provisions of this paragraph 2 shall constitute a waiver of BSC's right to assert a force majeure claim with regard to such event. BSC shall take all reasonable actions to prevent or minimize any delay.

3. If EPA and/or MDE determine that the event constitutes a force majeure, the deadlines for completion of the work affected by the event shall be extended for a period of time equal to the delay resulting from such circumstances. This shall be accomplished by written approval by EPA and MDE. Such an extension does not alter the schedule for performance or completion of the tasks required by this Consent Decree not affected by the force majeure event.

4. In the event that EPA, MDE and BSC cannot agree that any delay or failure has been or will be caused by an event that constitutes a force majeure, or if there is no agreement on the length of the extension, the dispute shall be resolved in accordance with Section XX ("DISPUTE RESOLUTION"), below.

XX. DISPUTE RESOLUTION

All disputes between BSC, EPA and/or MDE involving this Consent Decree shall be resolved in accordance with this Section.

A. Disputes between BSC and EPA and/or MDE

1. If BSC disagrees, in whole or in part, with any EPA or MDE disapproval or other decision or directive made by EPA or MDE pursuant to this Consent Decree, BSC shall notify all parties with jurisdiction over that decision pursuant to this Consent Decree (EPA, MDE, or EPA and MDE) in writing of its objections, and the basis therefor, within thirty (30) days after receipt of EPA and/or MDE's disapproval or other decision or directive. Said notice shall set forth the specific points of the dispute,

the basis for BSC's position, and any matters which BSC considers necessary for EPA and/or MDE's determination.

2. EPA and/or MDE, as appropriate in accordance with their jurisdiction over the decision, shall meet with BSC to discuss the points and shall have thirty days from the date of the meeting to reach agreement with BSC on the matters in dispute, or such longer period of time as EPA and/or MDE deem appropriate.

3. If agreement cannot be reached on any issue within this thirty (30) day period (or such longer period of time as provided in paragraph 2, above), EPA and/or MDE, as appropriate, shall provide BSC a written statement setting forth its proposed resolution of the dispute. The dispute shall be resolved in accordance with EPA's and/or MDE's proposed resolution unless, within thirty (30) days after receipt of such proposed resolution, BSC files a petition for resolution of dispute with the Court. Any such petition shall describe the nature of the dispute and BSC's proposal for resolution of the dispute. The Agency(ies) which took the action objected to shall have sixty (60) days from the date of BSC's filing of a petition within which to file a response to the petition.

4. This Court shall have jurisdiction to issue any order or resolve any dispute arising between the Parties with respect to matters within the scope of this Consent Decree and all documents incorporated herein. In proceedings on any dispute governed by this Section, the standard for judicial review of a final agency action shall be applied, and BSC shall have the

burden of demonstrating under such standard that the decision of EPA and/or MDE was in error. For any disputes arising under Section V of this Consent Decree, BSC shall have the burden of demonstrating that the decision of EPA is arbitrary and capricious or otherwise not in accordance with law.

5. Except as otherwise provided by this Consent Decree or ordered by this Court, the existence of a dispute, as defined in this Section, shall not excuse, toll or suspend any obligation or deadline established by this Consent Decree or any stipulated penalties which accrue as a result of a failure to meet any requirement of this Consent Decree.

B. Disputes between EPA and MDE

1. EPA and MDE agree to coordinate to the maximum extent practicable on EPA's and MDE's review and comment and approval/disapproval of any plan, proposal, work plan, report or other submission required by this Consent Decree, before either MDE or EPA transmits its respective comments and/or approval/disapproval to BSC.

2. In the event that the United States and the State Project Coordinators disagree over approval/disapproval of any plan, proposal, work plan, report, submission or portion of the activities undertaken pursuant to this Consent Decree, the Project Coordinators will attempt to resolve such dispute informally within fourteen (14) days of the occurrence of such dispute. If the dispute cannot be resolved at the Project Coordinators' level, the dispute shall be referred for resolution

at the end of the fourteen (14) day time period to the Directors of the appropriate EPA Region III Division and MDE Administration. These individuals will discuss the issue and make a good faith effort to resolve the dispute. If after an additional fourteen (14) days these individuals are unable to resolve the disagreement, EPA and/or MDE will notify the BSC Project Coordinator and provide BSC with a reasonable opportunity to present its position on the issue(s) in dispute. If fourteen (14) days after receiving a position from BSC, the Directors of the appropriate EPA Region III Division and MDE Administration remain unable to resolve the disagreement, the matter will be referred to the EPA Regional Administrator and the Secretary of MDE for discussion and good faith effort to resolve the dispute.

3. If after another fourteen (14) days there is no resolution, then the United States or the State of Maryland or both may petition the Court to resolve the dispute. The United States and the State of Maryland shall each submit a position paper to the Court for consideration and the Court shall resolve such dispute in accordance with applicable law.

4. All deadlines contained in this Paragraph B to reach an agreement may be extended upon mutual agreement.

XXI. ACCESS TO INFORMATION

1. BSC shall provide to EPA and the State, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to the

implementation or requirements of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, and correspondence. Upon request of EPA and/or MDE, BSC shall also make reasonably available to EPA and the State, for interviews or discussions concerning the implementation of this Consent Decree, BSC's employees, agents, or representatives with knowledge of relevant facts.

2. BSC may assert business confidentiality claims covering part or all of the documents or information submitted to EPA or MDE under this Consent Decree. BSC shall substantiate such assertion by providing written notice of such claim to EPA and MDE in accordance with 40 C.F.R. § 2.204(e)(4). Documents or information for which a confidentiality assertion has been made will be afforded the protection by EPA specified in 40 C.F.R. Part 2, Subpart B, and the protection by MDE specified under the State Government Article §§ 10-611 through 10-628, Annotated, Code of Maryland. If no claim of confidentiality accompanies documents or information when they are submitted to EPA and MDE, or if EPA and MDE have notified BSC that the documents or information are not confidential under the standards of 40 C.F.R. Part 2, the public may be given access to such documents or information without further notice to BSC. BSC may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal courts in actions involving the United

States. If BSC asserts such a privilege, upon EPA or MDE request it shall provide the EPA and MDE with the following: a) the title of the document, record, or information; b) the date of the document, record, or information; c) the name and title of the author of the document, record, or information; d) the name and title of each addressee and recipient; e) a description of the contents of the document, record, or information; and f) the nature and basis of the privilege asserted by BSC. However, no documents, records or information which are required to be created, generated or collected pursuant to this Consent Decree shall be withheld on the grounds that they are privileged.

3. No claim of confidentiality shall be made with respect to any data evidencing conditions at or around the Facility, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, or chemical data.

4. Nothing herein shall be construed to limit the information gathering authority of the United States or MDE.

XXII. RECORD PRESERVATION

1. Except as otherwise provided in this Consent Decree, BSC agrees that it shall establish or cause to be established a document repository and that BSC shall deposit or cause to be deposited in the document repository, and preserve, during the pendency of this Consent Decree and for a minimum of at least six (6) years after its termination, all data, records, documents and reports required to be gathered or compiled in connection with

this Consent Decree. After six (6) years, BSC shall make such records available to EPA and/or MDE for inspection and/or copying. BSC shall notify EPA and MDE at least thirty (30) days prior to the destruction of any such records, and shall provide EPA and MDE with a reasonable opportunity to take possession of any such records. BSC shall not destroy any record to which EPA and/or MDE have requested access for inspection and/or copying until EPA and/or MDE have obtained such access or withdrawn their request for such access, or twelve (12) months have passed from the date of the request. Nothing in this Section shall in any way limit the authority of EPA or MDE under Section 3007 of RCRA, 42 U.S.C. Section 6927; Sections 7-222, 7-256, 9-261, and 9-326 of the Environment Article, Annotated Code of Maryland; or any other access or information-gathering authority.

2. BSC further agrees that it will require by written agreement that its agent(s), consultant(s) and/or contractor(s), regularly deposit in the aforementioned document repository all data, records, documents and reports within its possession which relate in any way to this Decree. Copies of such agreements shall be submitted to EPA and MDE within seven (7) days of finalization of such written agreements.

3. Nothing in this Consent Decree shall be interpreted to require BSC to retain multiple copies of identical information in the document repository.

XXIII. INTENTIONALLY LEFT BLANK

XXIV. PUBLIC COMMENT, PARTICIPATION, AND REVIEW OF RECORDS

1. In accordance with 28 C.F.R. § 50.7, the United States shall notify the public, provide the opportunity for a public meeting in the affected area, and provide a reasonable opportunity for the public to comment on this Consent Decree. All significant public comments will be duly considered by the United States and the State before final entry of this Decree.

2. EPA and/or MDE may determine that a public comment period or public meeting is necessary prior to the implementation of any Interim Measure Work Plan. If EPA and/or MDE determine that a public comment period or a public meeting is necessary prior to the implementation of any Interim Measure Work Plan, EPA and MDE shall notify BSC of the necessity for a public comment period or public meeting and those activities which must be undertaken by BSC, EPA and MDE to collect comments (such as a public meeting and submittal of a Revised Interim Measure Work Plan) and shall set forth a schedule for the completion of those activities. BSC shall complete such activities in accordance with the schedule set forth in the EPA and MDE notification.

XXV. EFFECT OF CONSENT DECREE

1. Entry of this Consent Decree shall constitute settlement of the civil claims by the State in Count VII (Kish Emissions) and Count VI (BOF Shop Visible Emission) of the Complaint filed in this matter by the State. Entry of this Consent Decree shall terminate and supersede the

1987 BOF Consent Order, and shall also constitute full settlement of the State lawsuit pending in the Circuit Court for Baltimore County: State of Maryland, Department of Environment v. Bethlehem Steel Corporation, Case No. 90 CSP 3644 69/400. MDE and BSC agree that, after entry of this Consent Decree, they will jointly dismiss the remaining Count 1 (regarding the Basic Oxygen Furnace) of that State lawsuit.

2. Entry of this Consent Decree shall terminate and supersede State Administrative Complaint and Order C-0-85-179. The full performance of the Work pursuant to Section V shall satisfy BSC's obligation to perform certain investigations and to submit certain corrective measures studies pursuant to State Administrative Complaints and Orders C-0-92-056, C-0-92-057, and C-0-92-058. The portions of Administrative Complaints and Orders C-0-92-056, C-0-92-057, and C-0-92-058 requiring BSC to implement remedies to address contamination, including but not limited to requirements to prepare and to implement work plans, are not resolved under this Consent Decree. The parties acknowledge that BSC's appeals with respect to these Administrative Complaints and Orders are pending. The parties intend to address those unresolved issues upon completion of the studies required pursuant to Section V of this Consent Decree.

3. This Consent Decree shall not relieve BSC of its obligations to comply with RCRA or any other applicable local, state or federal law or regulation.

4. This Consent Decree is not intended to be, nor shall it be construed as, a permit. This Consent Decree does not relieve BSC of any obligation to obtain and comply with any local, state or federal permit(s) or approval(s).

XXVI. RESERVATION OF RIGHTS

1. The United States and the State expressly reserve all rights and defenses that they may have, including the right to disapprove of work performed by BSC pursuant to this Consent Decree, to require that BSC correct and/or reperform any work disapproved by the United States or the State, and to request that BSC perform tasks in addition to those stated in the Scope(s) of Work, work plans, or this Consent Decree to protect public health or welfare or the environment.

2. The United States and the State hereby reserve all of their statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including any which may pertain to BSC's failure to comply with any of the requirements of this Consent Decree, including, without limitation, the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. § 6928(h)(2), except as otherwise provided in Section XVII (Delay in Performance/Stipulated Penalties). This Consent Decree shall not be construed as a covenant not to sue, or as a release, waiver or limitation of, or estoppel regarding any rights, remedies, powers and/or authorities, civil or criminal, which the United States and the State have under RCRA, CERCLA or any other

statutory, regulatory or common law authority, except as provided in Section XXV.1 and 2 of this Consent Decree.

3. The signing of this Consent Decree and BSC's consent to comply shall not limit or otherwise preclude the United States or the State from taking additional enforcement action pursuant to Sections 3008(h) or 7003 of RCRA, 42 U.S.C. § 6928(h) or § 6973, Titles 2, 7 or 9 of the Environment Article, or any other authority, should the United States or the State determine that such action is warranted, except as provided in Section XXV.1 and 2 of this Consent Decree.

4. The United States reserves the right to perform any portion of the activities consented to herein or any additional site characterization, feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. The United States may exercise its authority under RCRA, CERCLA or any other authority to undertake or require the performance of response actions at any time. The United States reserves the right to seek reimbursement from BSC for costs incurred by the United States in connection with any such response actions. Notwithstanding compliance with the terms of this Consent Decree, BSC is not released from any liability for the costs of any response actions taken by the United States.

5. The United States and the State reserve whatever rights they may have under CERCLA or any other law, or in equity, to

seek to recover from BSC any costs incurred by the United States and/or the State in overseeing the implementation of this Consent Decree.

6. The United States and the State reserve all of their rights with respect to all monitoring conditions, and other conditions, requirements and/or limitations which may be imposed under permits which in the future may be issued to BSC.

7. BSC expressly reserves all rights and defenses it may have in any suits or other actions brought by the United States or the State under the foregoing reservation of rights by the United States and/or the State.

XXVII. OTHER CLAIMS

Nothing in this Consent Decree shall constitute or be construed as a release from any claim, cause of action or demand in law or equity for any liability BSC may have arising out of or relating in any way to any matter not set forth in specific Counts contained in the Complaints filed in this matter by the United States or the Maryland Department of the Environment.

XXVIII. OTHER APPLICABLE LAW

All actions required to be taken pursuant to this Consent Decree shall be taken in accordance with the requirements of all applicable local, state, and federal laws and regulations. BSC shall obtain all permits and approvals necessary under such laws and regulations.

XXIX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT AND THE STATE OF MARYLAND

BSC agrees to indemnify and save and hold harmless the United States and the State of Maryland, their agencies, departments, agents and employees, from any and all claims or causes of action arising from or on account of acts or omissions of BSC or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Decree. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of BSC, the State of Maryland, or the United States under their various contracts.

XXX. NOTICE OF NON-LIABILITY OF EPA AND MDE

EPA and MDE shall not be deemed a party to any contract involving BSC and relating to activities at the Facility and shall not be liable for any claim or cause of action arising from or on account of any act, or the omission of BSC, its officers, employees, contractors, receivers, trustees, agents or assigns, in carrying out the activities required by this Consent Decree.

XXXI. SUBSEQUENT MODIFICATION

1. Except as provided in paragraph 3, below, this Consent Decree may be amended only by mutual agreement of EPA, MDE and BSC. Any such amendment shall be in writing, shall be signed by

an authorized representative of each party, shall have as its effective date the date ten (10) days after Court approval of the amendment.

2. Any reports, plans, specifications, schedules, other submissions and attachments required by this Consent Decree are, upon written approval by EPA and/or MDE, as appropriate in accordance with the jurisdictions provided in this Consent Decree, incorporated into this Consent Decree. Any noncompliance with such EPA-approved and/or MDE-approved reports, plans, specifications, schedules, other submissions, and attachments shall be considered a violation of this Consent Decree and shall subject BSC to the stipulated penalty provisions included in Section XVII, "DELAY IN PERFORMANCE/STIPULATED PENALTIES."

3. Minor technical modifications in the studies, techniques, procedures or designs utilized in carrying out this Consent Decree ("Minor Technical Modifications"), which do not alter or affect in any way the substance of this Consent Decree, and which are consistent with the objectives of this Consent Decree and necessary to the completion of the project, may be made by mutual agreement of the Project Coordinators. Such Minor Technical Modifications shall be made by letter by the Project Coordinators and shall have as an effective date the date on which the BSC Project Coordinator receives notice that all Project Coordinators have signed the letter. Any Minor Technical Modifications so approved shall be deemed incorporated into and part of this Consent Decree.

4. No informal advice, guidance, suggestions, or comments by EPA or MDE regarding reports, plans, specifications, schedules, or any other submission by BSC shall be construed as relieving BSC of its obligation to obtain written approval, if and when required by this Consent Decree.

XXXII. RETENTION OF JURISDICTION

This Court shall retain jurisdiction over this Consent Decree for the purpose of ensuring compliance with its terms and conditions, including timely implementation by the parties, and resolving disputes under Section XX herein ("DISPUTE RESOLUTION").

XXXIII. REMOVAL OF LAND FROM THE FACILITY OR SITE

BSC may request that EPA and MDE agree to remove certain parcels of land, currently within the definition of Facility or Site, from inclusion within the Facility or Site for the purposes of this Consent Decree. This request shall be supported by evidence showing that the parcel will not require further investigation or corrective measures under the terms of this Consent Decree. EPA's and MDE's grant or denial of such request shall be in their sole unreviewable discretion and such decision shall not be subject to dispute resolution under Section XX.A of this Consent Decree. Upon approval of the removal by EPA and MDE, the parcel shall not be subject to the terms of this Consent Decree, including but not limited to Section XXXIV ("Transfer of

Interest"), and MDE and EPA reserve all of their rights under RCRA, and Titles 7 and 9 of the Environment Article, Annotated Code of Maryland, and other applicable laws and regulations with respect to that parcel.

XXXIV. TRANSFER OF INTEREST, DEED AND CONTRACT RESTRICTIONS

1. BSC shall notify EPA and MDE in writing, by certified mail, return receipt requested, of its intent to convey any interest in the Site and of the name and address of the successor(s) in interest, at least thirty (30) days in advance of transfer. BSC shall also provide a copy of this Decree to the successor(s) in interest at or prior to executing any agreement for transfer. The agreement for transfer shall further require that the successor(s) comply with the provisions of this paragraph 1 in the event of any subsequent conveyance of any interest in the Site, and that any subsequent agreement of transfer contain similar provisions requiring the subsequent transferees to comply with the provisions of this paragraph 1 and to require their successor(s) to likewise so comply.

2. No conveyance of title, easement, or other interest in the site shall be executed by BSC without complete provision, acceptable to EPA and MDE, for the fulfillment of all requirements of the Consent Decree, to the extent they relate to the property conveyed, including but not limited to all work to be performed, and access provisions. Except with respect to the obligations under Section VI.3. which shall terminate as they

relate to the property conveyed, such transfer shall not release BSC from its obligations under the Consent Decree.

XXXV. TERMINATION AND SATISFACTION

The provisions of this Consent Decree shall be deemed satisfied upon BSC's receipt of written notice from EPA and MDE that BSC has demonstrated, to the satisfaction of EPA and MDE, that the terms of this Consent Decree, including any additional tasks determined by EPA and MDE to be required pursuant to this Consent Decree, have been satisfactorily completed. This notice shall not, however, terminate BSC's obligation to comply with any continuing obligations hereunder including, but not limited to, Section XXII ("RECORD PRESERVATION"), XXVI ("RESERVATION OF RIGHTS"), XXVIII ("OTHER APPLICABLE LAWS"), and XXIX ("INDEMNIFICATION OF THE UNITED STATES GOVERNMENT AND THE STATE OF MARYLAND"). However in advance of completion of all requirements of the Consent Decree and upon written request of BSC, EPA and MDE may determine that BSC has completed a discrete portion of the requirements of the Consent Decree and provide notice with respect to that portion.

XXXVI. ATTORNEYS FEES

BSC shall bear its own costs and attorneys fees.

XXXVII. EFFECTIVE DATE

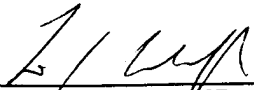
This Consent Decree shall become effective upon the date of its entry by the Court.

WHEREFORE, the parties enter into this Consent Decree and submit it to the Court, in order that it may be approved and entered.

SO ORDERED THIS _____ DAY OF _____, 1997.

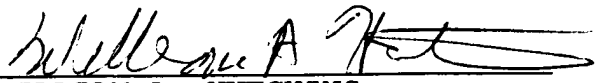
United States District Judge

FOR PLAINTIFF - UNITED STATES OF AMERICA



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DATE: 2/24/97

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FOR PLAINTIFF - THE STATE OF MARYLAND,
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DATE: 1/28/97

Pamela D. Marks

PAMELA D. MARKS
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FOR DEFENDENT - BETHLEHEM STEEL CORPORATION

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A.E. MOFFITT, JR.
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DATE: 1/6/97

Duane R. Dunham

DUANE R. DUNHAM
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ATTACHMENT A



Attachment A

**INTERIM MEASURES
SCOPE OF WORK**

PURPOSE

The purpose of Interim Measures is to identify and correct any actual or potential releases of hazardous wastes and/or hazardous constituents, from regulated units, solid waste management units, and other sources or areas at the facility, the Bethlehem Steel Corporation (BSC), which may present an endangerment to human health or the environment consistent with the requirements of the Consent Decree.

SCOPE

The Interim Measures consist of five tasks:

TASK I: INTERIM MEASURES WORK PLAN

- A. Interim Measures Objectives
- B. Community Relations Plan

TASK II: INTERIM MEASURES INVESTIGATION PROGRAM

- A. Data Collection Quality Assurance Plan
- B. Data Management Plan

TASK III: INTERIM MEASURES DESIGN PROGRAM

- A. Design Plans and Specifications
- B. Operation and Maintenance Plan
- C. Project Schedule
- D. Final Design Documents

TASK IV. INTERIM MEASURES CONSTRUCTION QUALITY ASSURANCE PLAN

- A. Construction Quality Assurance Objectives
- B. Inspection Activities
- C. Sampling Requirements
- D. Documentation

TASK V. REPORTS

- A. Progress Reports
- B. Interim Measures Work Plan
- C. Final Design Documents
- D. Draft Interim Measures Report
- E. Final Interim Measures Report

TASK I: INTERIM MEASURES WORK PLAN

BSC shall prepare an Interim Measures Work Plan. The Work Plan shall include the development of several plans which shall be prepared concurrently.

A. Interim Measures Objectives

The Work Plan shall specify the objectives of the interim measures, demonstrate how the interim measures will abate releases and threatened releases, and, to the extent possible, be consistent and integrated with any long term solution at the facility. The Interim Measures Work Plan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The Work Plan will also include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. This plan shall also document the overall management approach to the interim measures.

B. Community Relations Plan

BSC shall prepare a plan for the dissemination of information to the public regarding interim measure activities and results. These activities shall include the preparation and distribution of fact sheets and participation in public meetings.

TASK II: INTERIM MEASURES INVESTIGATION PROGRAM**A. Data Collection Quality Assurance Plan**

BSC shall prepare a plan to document all monitoring procedures: sampling, field measurements, and sample analysis performed during the investigation to characterize the source and contamination, so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The strategy section of the Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

- a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;

- b. Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data;
- c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Examples of factors which shall be considered and discussed include:
 - i) Environmental conditions at the time of sampling;
 - ii) Number of sampling points;
 - iii) Representativeness of selected media; and
 - iv) Representativeness of selected analytical parameters.
- d. Description of the measures to be taken to assure that the following data sets can be compared to each other:
 - i) Data generated by BSC over some time period;
 - ii) Data generated by an outside laboratory or consultant versus data generated by BSC;
 - iii) Data generated by separate consultants or laboratories; and
 - iv) Data generated by an outside consultant or laboratory over some time period.
- e. Details relating to the schedule and information to be provided in quality assurance reports. The reports should include, but not be limited to:
 - i) Periodic assessment of measurement data accuracy, precision, and completeness;
 - ii) Results of performance audits;
 - iii) Results of system audits;

- iv) Significant quality assurance problems and recommended solutions; and
- v) Resolutions of previously stated problems.

2. Sampling and Field Measurements

The Sampling and Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate sampling and field measurement locations, depths, etc.;
- b. Providing a statistically sufficient number of sampling and field measurement sites;
- c. Measuring all necessary ancillary data;
- d. Determining which media are to be sampled (e.g., groundwater, soil, sediment, etc.);
- e. Determining which parameters are to be measured and where;
- f. Selecting the frequency of sampling and field measurement and the length of sampling period;
- g. Selecting the types of sample (e.g., composites vs. grabs) and the number of samples to be collected;
- h. Documenting field sampling and field measurement operations and procedures, including;
 - i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and adsorbing reagents);
 - ii) Procedures and forms for recording the exact location and specific considerations associated with sample and field measurement data acquisition;
 - iii) Documentation of specific sample preservation method;
 - iv) Calibration of field devices;
 - v) Collection of replicate samples;

- vi) Submission of field-biased blanks, where appropriate;
 - vii) Potential interferences present at the facility;
 - viii) Construction materials and techniques, associated with monitoring wells and piezometers;
 - ix) Field equipment listing and sample containers;
 - x) Sampling and field measurement order; and
 - xi) Decontamination procedures.
- i. Selecting appropriate sample containers;
 - j. Sample preservation; and
 - k. Chain-of-custody, including:
 - i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
 - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

- iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage and holding times;
- c. Sample preparation methods;
- d. Analytical procedures, including:
 - i) Scope and application of the procedure;
 - ii) Sample matrix;
 - iii) Potential interferences;
 - iv) Precision and accuracy of the methodology; and
 - v) Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation and reporting;
- g. Internal quality control checks, laboratory performance and systems audits and frequency, including:
 - i) Method blank(s);
 - ii) Laboratory control sample(s);
 - iii) Calibration check sample(s);
 - iv) Replicate sample(s);
 - v) Matrix-spiked sample(s);
 - vi) "Blind" quality control sample(s);
 - vii) Control charts;
 - viii) Surrogate samples;
 - ix) Zero and span gases; and
 - x) Reagent quality control checks.

A performance audit may be conducted by EPA and/or MDE on the laboratories selected by BSC, consistent with the requirements of the Consent Decree.

- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

B. Data Management Plan

BSC shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Property or component measured; and
- f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for numerical analysis;

- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area, and areas where more data are required;
- c. Display levels of contamination at each sampling location;
- d. Display geographical extent of contamination;
- e. Display contamination levels, averages, and maxima;
- f. Illustrate changes in concentration in relation to distance from the source, time, depth, or other parameters; and
- g. Indicate features affecting intramedia transport and show potential receptors.

TASK III: INTERIM MEASURES DESIGN PROGRAM

A. Design Plans and Specifications

BSC shall develop clear and comprehensive design plans and specifications which include, but are not limited to, the following:

- 1. Discussion of the design strategy and the design basis, including:
 - a. Compliance with all applicable or relevant environmental and public health standards; and
 - b. Minimization of environmental and public impacts.

2. Discussion of the technical factors of importance, including:
 - a. Use of currently accepted environmental control measures and technology;
 - b. The constructability of the design; and
 - c. Use of currently acceptable construction practices and techniques.
3. Description of assumptions made and detailed justification of these assumptions;
4. Discussion of the possible sources of error and references to possible operation and maintenance problems;
5. Detailed drawings of the proposed design, including:
 - a. Qualitative flow sheets;
 - b. Quantitative flow sheets;
 - c. Facility layouts; and
 - d. Utility locations.
6. Tables listing materials, equipment, and specifications;
7. Tables giving material balances; and
8. Appendices, including:
 - a. Sample calculations (one example presented and explained clearly for a significant or unique design calculation);
 - b. Derivation of equations essential to understanding the report; and
 - c. Results of laboratory or field tests.

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, BSC shall coordinate and cross-check the specifications and drawings, and complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

B. Operation and Maintenance Plan

BSC shall prepare an Operation and Maintenance Plan to cover both implementation and long term maintenance of the interim measure(s). The plan shall be composed of the following elements:

1. Equipment start-up and operator training to include, in the technical specifications governing treatment systems, contractor requirements for providing:
 - a. Appropriate service visits by experienced personnel to supervise the installation, adjustment, startup, and operation of the treatment systems; and
 - b. Training covering appropriate operational procedures once the startup has been accomplished successfully.
2. Description of normal operation and maintenance (O&M), including:
 - a. Description of tasks for operation;
 - b. Description of tasks for maintenance;
 - c. Description of prescribed treatment or operation conditions;
 - d. Schedule showing frequency of each O&M task; and
 - e. Common and/or anticipated remedies.
3. Description of routine monitoring and laboratory testing, including:
 - a. Description of monitoring tasks;
 - b. Description of required laboratory tests and their interpretation;
 - c. Required QA/QC; and
 - d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
4. Description of equipment, including:
 - a. Equipment identification;
 - b. Installation of monitoring components;

- c. Maintenance of site equipment; and
 - d. Replacement schedule for equipment and installed components.
5. Records and reporting mechanisms required, including:
- a. Daily operating logs;
 - b. Laboratory records;
 - c. Mechanism for reporting emergencies;
 - d. Personnel and maintenance records; and
 - e. Annual reports to Federal/state agencies.

The Operation and Maintenance Plan shall be submitted with the Final Design Documents.

C. Project Schedule

BSC shall develop a detailed Project Schedule for construction and implementation of the interim measure(s) which identifies timing for initiation and completion of all critical path tasks. BSC shall specifically identify dates for completion of the project and major interim milestones which are enforceable terms of this Decree. A Project Schedule shall be submitted simultaneously with the Final Design Documents.

D. Final Design Documents

The Final Design Documents shall consist of the Final Design Plans and Specifications (100% complete), the Final Draft Operation and Maintenance Plan, and the Project Schedule. BSC shall submit the final documents, 100% complete, with reproducible drawings and specifications. The quality of the design documents should be such that BSC would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK IV: INTERIM MEASURES CONSTRUCTION QUALITY ASSURANCE PLAN

A. Construction Quality Assurance Objectives

Consistent with the Consent Decree and unless already provided pursuant to the Consent Decree, in the CQA plan, BSC shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following:

responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation.

B. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the interim measure(s) shall be summarized in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, BSC shall conduct the following activities:

1. Preconstruction inspection and meeting;

BSC shall conduct a preconstruction inspection and meeting to:

- a. Review methods for documenting and reporting inspection data;
- b. Review methods for distributing and storing documents and reports;
- c. Review work area security and safety protocol;
- d. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and
- e. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes should be transmitted to all parties.

2. Prefinal inspection;

Upon preliminary project completion, BSC shall notify EPA and MDE for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and

with the EPA and MDE approved interim measure(s). Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by BSC. BSC will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final inspection;

Upon completion of any outstanding construction items, BSC shall notify EPA and MDE for the purposes of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the pre-final inspection. Confirmation shall be made that outstanding items have been resolved.

C. Sampling Requirements

The sampling and testing activities, sample size, sample and test locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems should be presented in the CQA plan.

D. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA plan. This plan shall include such items as daily summary reports, inspection data sheets, problem identification and interim measures reports, design acceptance reports, and final documentation. Provisions for the storage of all records shall be presented in the CQA plan, consistent with the requirements of the Consent Decree.

TASK V: REPORTS

A. Progress Reports

BSC shall at a minimum report the progress of the interim measure(s) in the annual report required pursuant to Section XII.5 of the Consent Decree.

B. Interim Measures Work Plan

BSC shall submit an Interim Measures Work Plan as described in this Attachment.

C. Final Design Documents

BSC shall submit the Final Design Documents as described in this Attachment.

D. Draft Interim Measures Report

At the "completion" of the construction of the project (except for long term operation, maintenance, and monitoring), BSC shall submit an Interim Measures Implementation Report to EPA and MDE. The Report shall document that the project is consistent with the design specifications and that the interim measures are performing adequately. The Report shall include, but not be limited to the following elements:

1. Synopsis of the interim measures and certification of the design and construction;
2. Explanation of any modifications to the plans and why these were necessary for the project;
3. Listing of the criteria, established before the interim measures were initiated, for judging the functioning of the interim measures and also for explaining any modification to these criteria;
4. Results of facility monitoring, indicating that the interim measures will meet or exceed the performance criteria; and
5. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report shall include the inspection summary reports, inspection data sheets, problem identification and corrective reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation), and as-built drawings.

E. Final Interim Measures Report

BSC shall finalize the Interim Measures Work Plan and the Interim Measures Implementation Report incorporating comments received on the draft submissions.





ATTACHMENT B



Attachment B

Bethlehem Steel Sparrows Point Plant and Shipyard Conceptual Plan for the Site Wide Investigation

The following paragraphs describe the conceptual plan for the site wide investigation (SWI) the Bethlehem Steel Corporation (BSC) shall implement at the Bethlehem Steel Sparrows Point Plant and Shipyard. Pursuant to Section V of the Consent Decree, BSC shall prepare and submit for approval by the Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE) workplans that are consistent with this Conceptual Plan.

Purpose and Approach of SWI:

The SWI shall be 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 SWI shall initially focus on identifying and investigating these releases and then assess alternatives or methods for remediating and/or stabilizing those releases of hazardous wastes and hazardous constituents which pose unacceptable risk to human health and the environment. The remediation and/or stabilization shall be prioritized to address the greatest risks before lesser risks. BSC shall document the procedures used for prioritizing the various sub-investigations and evaluations in the SWI.

Solid Waste Management Units, Areas of Concern and Releases Subject to Investigation:

BSC will begin the SWI with an evaluation of the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) listed in EPA's August 12, 1993 RCRA Facility Assessment (RFA). Subject to EPA and MDE approval, BSC may eliminate from evaluation any unit or area which was identified in the RFA as "not observed to be releasing", as well as a release allowed pursuant to the Clean Air Act, the Clean Water Act, RCRA, or any such program delegated to the State or for which the State has received authorization ("allowed releases"). Also subject to EPA and MDE approval, BSC may propose to combine SWMUs into AOCs and/or divide the Facility into multiple Study Areas.

BSC may begin a phased, SWI at the perimeter of the Facility to assess off-site releases. Certain portions of the work may be performed and evaluated on a site-wide basis (e.g., characterization of pathways). However, BSC remains responsible for identifying and evaluating all releases of hazardous wastes and hazardous constituents at or from the facility (i.e., releases from SWMUs and AOCs identified in the RFA and any additional SWMUs and AOCs identified during the pendency of this

Consent Decree). Each release of hazardous wastes or hazardous constituents discovered during the SWI that can not be attributed to a SWMU or AOC identified in the RFA will be investigated and, unless the release is an "allowed release" or is a release that has been or is being addressed under another program consistent with the purpose of the SWI, it will be incorporated into the SWI. If BSC can satisfy EPA and MDE that some of the releases are insignificant, no further investigation of those releases will be required.

Analytes to Investigate:

The list of chemicals of potential interest is subject to EPA and MDE approval and may be developed for each SWMU/AOC based on the history of the processes and disposal practices; however, this list must be verified by taking a reasonable percentage of Appendix IX samples at both interior and perimeter sampling points. The percentage and location of Appendix IX samples shall be based on the reliability of background knowledge, the spacing and similarity of SWMU/AOCs and hydrogeological information. With EPA and MDE approval, parameter lists may be narrowed over time as analytical data become available.

Requirements of SWI:

1. Define the horizontal and vertical extent of hazardous waste and hazardous constituents in the groundwater system. The groundwater investigation of an area will be considered complete if the groundwater defining a study area is sufficiently characterized to demonstrate that releases of hazardous wastes and hazardous constituents affecting that area pose no unacceptable risk to human health and the environment. The performance standard to be used to evaluate when the extent of groundwater contamination (i.e., a plume or plumes) has been sufficiently defined shall be as follows:

The extent of hazardous wastes and hazardous constituents in the groundwater system will be considered to be sufficiently characterized if it has been defined through sampling, both horizontally and vertically, to the more stringent risk-based concentration for either human health or ecological receptors, using EPA/MDE-approved exposure assumptions. "Defined through sampling" means that wells up gradient (if possible) and down gradient of an area of contaminated groundwater must exist whose constituent concentrations are below the risk-based concentration so that the area of contaminated groundwater which exceeds the risk-based concentration can be confidently drawn. For the vertical extent of contamination, the extent will be considered to be sufficiently

characterized through sampling, unless BSC can demonstrate to the satisfaction of EPA and MDE that contaminant transport through an underlying confining layer cannot occur.

2. Identify, characterize and determine the full impact of releases of any hazardous wastes or hazardous constituents from the SWMUs/AOCs to air, groundwater, surface water, sediment and soil, throughout the Facility, including on-site and off-site as appropriate. The full impact of a release or a group of releases of hazardous wastes and/or hazardous constituents from an area at the facility will be deemed to have been sufficiently characterized if BSC investigates the release or releases sufficiently to demonstrate, to the satisfaction of EPA and MDE, that adequate information is known to determine the nature and extent of any release or releases that currently pose or in the future will pose an unacceptable risk to human health and the environment, under current and reasonably anticipated future uses of the site.

Evaluation of risks to on-site workers shall include the incidental ingestion, dermal contact, and inhalation routes. Risk from contamination in air for on-site workers shall be evaluated by the use of monitoring data and OSHA PELs. If a PEL is not available for a particular chemical, modification of its ACGIH TLVs or EPA's RfC or inhalation cancer slope factor values shall be used in that order to evaluate on-site air risks. Risks from contamination in air for human receptors at or beyond the facility boundary will be determined through source characterization and computer modeling.

3. In accordance with a schedule to be included in the work plans, within forty-eight (48) months of the effective date of the Consent Decree, exclusive of the time required by EPA and MDE for plan review and approval, BSC shall provide area-specific characterizations through sampling of subsurface conditions, contamination in, and releases from the Tin Mill Canal/Finishing Mills, Greys Landfill, Coke Point Landfill, Coke Oven Areas and Humphrey Impoundment to EPA and MDE. This time may be extended at the request of BSC for good cause shown. Ultimately, BSC shall characterize all releases of hazardous wastes and hazardous constituents which present a threat or potential threat to human health and/or the environment (i.e., releases from SWMUs and AOCs identified in the RFA and any additional SWMUs and AOCs identified during the pendency of this Consent Decree).
4. Conduct a risk assessment which investigates all media pathways that could be responsible for any current and

reasonable future human health and environmental risks to off-site and on-site receptors.

a) Human Health Risk Assessment

- i. For the human health risk assessment, on-site receptors shall at a minimum include current and reasonably anticipated future employees, tenant employees, and reasonably anticipated future residents, if any. Off-site receptors shall include humans interacting with the offshore aquatic ecosystems for recreation, the nearest point where someone could realistically live or work, and those local workers and residents potentially receiving the largest exposure to air-borne contaminants migrating off the site.
- ii. All relevant exposure pathways will be qualitatively evaluated for completeness and potential significance; those pathways which could pose potentially significant risks will be quantitatively evaluated. Pathway significance would be ascertained by either the degree of receptor contact (frequency and duration), and/or chemical concentration screening, and/or in the case of the air pathway, the size of the contaminated area. Pathways to be initially evaluated include inhalation of particulate and vapor phase contamination, surface water contact and incidental ingestion, soil contact and incidental ingestion, sediment contact and incidental ingestion, and consumption of fish and shellfish. The potential impacts of transfer of contaminants from soil to groundwater, from groundwater to surface waters and other groundwaters, and from soil to surface waters shall also be evaluated.
- iii. BSC shall complete a separate evaluation of the suitability of groundwater for potable use. For any groundwater that is or has been impacted by releases from the facility and is found to be suitable for drinking, BSC shall evaluate all risks associated with domestic use of the groundwater including at a minimum drinking, inhalation of vapors, and direct contact. For any groundwater which EPA and MDE determine is not suitable for potable use, BSC shall not evaluate that groundwater for its suitability for potable use, but shall evaluate it for other risks.
- iv. If potential residential use of the site is not plausible, BSC shall establish that fact and satisfy EPA and MDE that sufficient institutional and legal controls, (e.g. deed notifications and deed restrictions) are in place to assure the future land use. BSC must notify EPA and MDE of any proposed land

use change which would modify the assumptions to the risk assessment prior to its occurrence.

- v. As an initial screening evaluation, BSC shall compare detected contaminant concentrations to Region III Risk-Based Concentration Table (RBC) values and RBC values based on newly developed EPA-NCEA provisional criteria, as well as any appropriate regulatory criteria (MCLs, etc.). For areas identified through this screening step as having detected concentrations above the RBC values or any appropriate regulatory criteria, BSC will perform a detailed, site-specific baseline risk assessment (BRA) in accordance with EPA guidelines.
- vi. In the BRA, BSC shall make a reasonable attempt to use literature-based data to evaluate impacts for which no verified regulatory criteria (e.g., IRIS values, MCLs, State criteria) or EPA Region III RBC Table values exist. In the absence of sufficient toxicological criteria or literature data, and subject to EPA and MDE approval, impacts to human health may be evaluated qualitatively. BSC may also propose, subject to EPA and MDE approval, site-specific criteria in the BRA based on site-specific modifications to default exposure assumptions.

b. Ecological Risk Assessment

- i. For the ecological risk assessment (ERA), BSC will assess the risk posed by Facility-impacted media to terrestrial, avian, and aquatic receptors representative of the local ecosystem on and offsite. Specifically, the risk posed to ecological receptors from exposure to impacted media (which potentially include soil, groundwater, surface water, sediment, and, if bioaccumulative contaminants are found, receptor food sources) will be assessed following the procedures outlined in the EPA Environmental Response Team (ERT) guidance document "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (EPA 1994).
- ii. In following the ERT guidance, BSC will perform a preliminary ERA followed by a site-specific ERA, if necessary. When appropriate, these ERAs shall be designed to identify the total risk posed by media potentially impacted by releases from the Facility, and then assess BSC's contribution to that risk taking into account background levels and contamination from offsite sources. Consistent with ERT guidance, the primary purpose of the preliminary ERA will be to

assess total risk and identify whether releases from the facility are contributing.

- iii. As the first step in the preliminary ERA, all relevant exposure pathways will be qualitatively evaluated for completeness. Among other tasks in the preliminary ERA, those pathways which are complete will be further evaluated using a comparison, or screening, of the maximum detected concentration of contaminants in all potentially impacted media (listed above) against ecological effects-based benchmarks.
- iv. Data for use in the preliminary ERA will be collected from both the aquatic and terrestrial environment. If suitable habitat and/or ecological receptors exist in either aquatic or terrestrial areas that have been or may have been impacted by a release from/at the Facility, then BSC will sample appropriate media. To supplement the preliminary ERA, BSC may, when appropriate, rely upon existing sources and previously collected data.
- v. Aquatic data will be collected from seven stations around the perimeter of the BSC site, and three reference stations in or near the Lower Patapsco River. Bulk sediment samples will be collected at all ten stations. At stations adjacent to the BSC site, samples of sediment pore water will be collected as a conservative estimate of BSC's present contribution of current groundwater releases at that point to surface water concentrations. Macroinvertebrate, benthic, and fish community surveys will also be conducted at these 10 stations for use in the preliminary and site-specific ERAs. Surface water samples will be collected around the near perimeter of the BSC site at varying depths. Samples will be collected when dilution from tidal effects is minimal.
- vi. For the terrestrial studies, a habitat and terrestrial/avian species reconnaissance will be conducted on the site. A search of state and federal databases will also be completed to determine whether any rare, threatened or endangered species exist on or in proximity to the facility. The location of upland sample stations may include potential source areas and points of suspected contaminant release or disposal.
- vii. To develop contaminant benchmarks in the preliminary ERA, BSC will use (in the order provided as it applies to the media) Maryland ambient water quality criteria, Federal ambient water quality criteria, EPA Ecotox Thresholds (using sediment quality criteria and

sediment quality benchmarks in preference to effects range-low values), and the EPA Region III BTAG screening levels. If benchmarks for particular contaminants are not available in these lists, BSC will consult literature sources for additional data. BSC may propose or recalculate alternative ecological effects-based benchmarks based on the most sensitive resident species identified through research of the natural history of the area or other reasonable justification.

- viii. If the preliminary ERA indicates that media contaminated by releases from the facility pose a potential risk to terrestrial, avian, or aquatic receptors, BSC will perform a site-specific ERA. Consistent with the ERT guidance, the specific tasks to be performed in this phase will depend upon information gathered in the preliminary ERA. Pathway significance (which may include consideration of the duration and frequency of exposure and the characteristics of the actual receptor populations) is relevant to establishing the appropriate scope of the site-specific ERA. The consideration of exposure duration and frequency in the site-specific ERA will be subject to the determination of sufficient usable data. Additional data that may be required in the site-specific ERA include focused media sampling and analysis, toxicity tests, and tissue residue analyses.
5. Support the development of alternatives in a Corrective Measures Study.



ATTACHMENT C

Attachment C

**SITE WIDE INVESTIGATION
SCOPE OF WORK**

PURPOSE

The purpose of this Site Wide Investigation ("SWI") is to determine the nature and extent of releases consistent with Attachment B of the Consent Decree ("Bethlehem Steel Sparrows Point Plant and Shipyard Conceptual Plan for the Site Wide Investigation" or the "Conceptual Plan") and to gather all necessary data to support the Corrective Measures Study. The SWI includes the collection of site specific data to evaluate any human health and or ecological impacts of contamination from the site. BSC shall furnish all personnel, materials, and services necessary for, or incidental to, performing the SWI.

SCOPE

The SWI consists of seven tasks:

MDE/EPA acknowledges that Bethlehem Steel Corporation ("BSC") may have completed some of the tasks required by this SWI scope of work and submitted them to MDE/EPA. Any other previously completed work may be used by BSC to meet the requirements of this scope of work. All previously completed work should be referred to or submitted to MDE/EPA upon completion of the SWI.

TASK I: DESCRIPTION OF CURRENT CONDITIONS

- A. Facility Background
- B. Nature and Extent of Contamination
- C. Implementation of Interim Measures

TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

TASK III: SWI WORKPLAN REQUIREMENTS

- A. Project Management Plan
- B. Data Collection Quality Assurance Plan
- C. Data Management Plan
- D. Community Relations Plan

TASK IV: SITE WIDE INVESTIGATION

- A. Environmental Setting
- B. Source Characterization
- C. Contamination Characterization
- D. Potential Receptor Identification
- E. Risk Assessment

TASK V: INVESTIGATION ANALYSIS

- A. Data Analysis
- B. Protection Standards and Clean-up Goals

TASK VI: LABORATORY AND BENCH-SCALE STUDIES**TASK VII: REPORTS**

- A. Preliminary (Task) I Report and SWI Workplan
- B. Progress Reports
- C. Draft and Final

TASK I: DESCRIPTION OF CURRENT CONDITIONS

BSC shall submit for MDE/EPA approval a report providing the background information pertinent to the facility, the nature of contamination, and the interim measures as set forth below. The data gathered during any relevant previous investigations or inspections and other relevant data shall be included.

A. Facility Background

BSC's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid wastes, hazardous wastes and hazardous constituents. BSC's report shall include:

1. Map(s) based on existing information and records depicting the following:
 - a. General geographic location;
 - b. Property lines, with the owners of all adjacent property clearly indicated;
 - c. Topography (with a contour interval of 2 feet and a scale of 1 inch = 100 feet), waterways, all known wetlands, floodplains, water features, drainage patterns;
 - d. All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
 - e. All solid waste, hazardous waste, and hazardous constituent treatment, storage, or disposal areas active after November 19, 1980;

- f. All known past solid waste, hazardous waste and hazardous constituent treatment, storage, or disposal areas and all known spill, fire, or other accidental release locations regardless of whether they were active on November 19, 1980;
- g. All known past and present product and waste underground tanks or piping;
- h. Surrounding land uses (residential, commercial, agricultural, recreational); and
- i. Location of all production and groundwater monitoring wells. These wells shall be clearly labeled. Ground and top of casing elevations shall be included (these elevations may be included as an attachment).

All maps shall be consistent with the requirements set forth in 40 C.F.R. Section 270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the site;

- 2. History and description of ownership and operation, solid waste, hazardous waste and hazardous constituent generation, and treatment, storage, and disposal activities at the facility;
- 3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location of the spills, and a description of the response actions conducted (local, state, or Federal response units or private parties), including any inspection reports or technical reports generated as a result of the response; and
- 4. Summary of past permits requested and/or received, any enforcement actions and their subsequent responses.

B. Nature and Extent of Contamination

BSC shall prepare and submit a preliminary report describing the existing information on the nature and extent of contamination.

- 1. BSC's report shall summarize all possible source areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, BSC shall identify the following:

- a. Location of unit/area (which shall be depicted on a facility map);
 - b. Quantities of solid wastes, hazardous wastes and/or hazardous constituents;
 - c. Hazardous waste and/or hazardous constituents, to the extent known; and
 - d. Identification of areas where additional information is necessary.
2. BSC shall prepare an assessment and description of the existing degree and extent of contamination. This should include:
 - a. Available monitoring data and qualitative information on locations and levels of contamination at the facility;
 - b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and
 - c. Potential impact(s) on human health and the environment, including demography, groundwater and surface water use, and land use.

C. Implementation of Interim Measures

BSC's report shall document interim measures which were, or are, being undertaken at the facility. This report shall include:

1. Objectives of the interim measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long-term solution at the facility;
2. Design, construction, operation, and maintenance requirements;
3. Schedules for design, construction, operation and maintenance, and monitoring; and
4. Schedule for progress reports.

TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

Prior to starting the facility investigation, BSC shall submit a report that identifies the potential corrective measures technologies known to BSC at the time of report submittal that may be used on site or off site for the containment, treatment, remediation, and/or disposal of contamination. This report also shall identify any field, laboratory, bench- or pilot-scale data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

TASK III: SWI WORKPLAN REQUIREMENTS

BSC shall prepare a Site Wide Investigation Workplan. This SWI Workplan shall include the development of several plans, which shall be prepared concurrently. During the Site Wide Investigation, it may be necessary to revise the SWI Workplan to increase or decrease the detail of information collected to accommodate the facility-specific situation. Consistent with the Conceptual Plan and the Consent Decree, the SWI Workplan shall include the following:

A. Project Management Plan

BSC shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the SWI, including contractor personnel. This plan shall also document the overall management approach to the Site Wide Investigation.

B. Data Collection Quality Assurance Plan

BSC shall prepare a plan to document all monitoring procedures: sampling, field measurements, and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The Data Collection Strategy section of the Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

- a. Description of the intended uses for the data and of the necessary level of precision and accuracy for these intended uses;
- b. Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data;
- c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Examples of factors which shall be considered and discussed include:
 - i) Environmental conditions at the time of sampling;
 - ii) Number of sampling points;
 - iii) Representativeness of selected media; and
 - iv) Representativeness of selected analytical parameters.
- d. Description of the measures to be taken to assure that the following data sets can be compared to each other:
 - i) SWI data generated by BSC over some time period;
 - ii) SWI data generated by an outside laboratory or consultant versus data generated by BSC;
 - iii) Data generated by separate consultants or laboratories; and
 - iv) Data generated by an outside consultant or laboratory over some time period.

- e. Details relating to the schedule of and information to be provided in quality assurance reports. The reports should include, but not be limited to:
 - i) Periodic assessment of measurement data accuracy, precision, and completeness;
 - ii) Results of performance audits;
 - iii) Results of system audits;
 - iv) Significant quality assurance problems and recommended solutions; and
 - v) Resolutions of previously stated problems.

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate sampling locations, depths, etc.;
- b. Providing a statistically sufficient number of sampling sites;
- c. Measuring all necessary ancillary data;
- d. Determining conditions under which sampling should be conducted;
- e. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);
- f. Determining which constituents are to be measured and where;
- g. Selecting the frequency of sampling and length of sampling period;
- h. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;
- i. Documenting field sampling operations and procedures, including:

- i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and adsorbing reagents);
 - ii) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
 - iii) Documentation of specific sample preservation method;
 - iv) Calibration of field devices;
 - v) Collection of replicate samples;
 - vi) Submission of field-biased blanks, where appropriate;
 - vii) Potential interferences present at the facility;
 - viii) Construction materials and techniques associated with monitoring wells and piezometers;
 - ix) Field equipment listing and sample containers;
 - x) Sampling order; and
 - xi) Decontamination procedures.
- j. Selecting appropriate sample containers;
- k. Sample preservation; and
- l. Chain-of-custody, including:
- i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
 - ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate field measurement locations, depths, etc.;
- b. Providing a statistically sufficient number of field measurements;
- c. Measuring all necessary ancillary data;
- d. Determining conditions under which field measurement should be conducted;
- e. Determining which media are to be addressed by appropriate field measurements (e.g., groundwater, air, soil, sediment, etc.);
- f. Determining which parameters are to be measured and where;
- g. Selecting the frequency of field measurement and length of field measurement periods; and
- h. Documenting field measurement operations and procedures, including:
 - i) Procedures and forms for recording raw data and the exact location, time, and facility-specific considerations associated with the data acquisition;
 - ii) Calibration of field devices;
 - iii) Collection of replicate measurements;
 - iv) Submission of field-biased blanks, where appropriate;
 - v) Potential interferences present at the facility;
 - vi) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;
 - vii) Field equipment listing;
 - viii) Order in which field measurements will be made; and

ix) Decontamination procedures.

4. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, to obtain documents of shipment, and to verify the data entered onto the sample custody records;
 - ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
 - iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersment for analysis.
- b. Sample storage;
- c. Sample preparation methods;
- d. Analytical procedures, including:
 - i) Scope and application of the procedure;
 - ii) Sample matrix;
 - iii) Potential interferences;
 - iv) Precision and accuracy of the methodology; and
 - v) Method detection limits.
- e. Calibration procedures and frequency;
- f. Data reduction, validation, and reporting;
- g. Internal quality control checks, laboratory performance and systems audits, and frequency, including:

- i) Method blank(s);
- ii) Laboratory control sample(s);
- iii) Calibration check sample(s);
- iv) Replicate sample(s);
- v) Matrix-spiked sample(s);
- vi) "Blind" quality control sample(s);
- vii) Control charts;
- viii) Surrogate samples;
- ix) Zero and span gases; and
- x) Reagent quality control checks.

A performance audit may be conducted by MDE and EPA on the laboratories selected by BSC. If MDE and EPA require, this audit must be completed and approved prior to the facility investigation.

- h. Preventive maintenance procedures and schedules;
- i. Corrective action (for laboratory problems); and
- j. Turnaround time.

C. Data Management Plan

BSC shall develop and initiate a Data Management Plan to document and track investigation data and results. This Plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location and sample or measurement type;
- c. Sampling or field measurement raw data;

- d. Laboratory analysis ID number;
- e. Property or component measured; and
- f. Result of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

- a. Unsorted (raw) data;
- b. Results for each medium, or for each constituent monitored;
- c. Data reduction for statistical analysis;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Display sampling location and sampling grid;
- b. Indicate boundaries of sampling area and areas where more data are required;
- c. Display levels of contamination at each sampling location for each sampling event;
- d. Display geographical extent of contamination;
- e. Display contamination levels, averages, and maxima;
- f. Illustrate changes in concentration in relation to distance from the source, time, depth, or other parameters; and
- g. Indicate features affecting intramedia transport and show potential receptors.

D. Community Relations Plan

BSC shall prepare/revise a Community Relations Plan, having considered the "EPA RCRA Public Participation Manual (EPA530-R-96-007, September 1996), to disseminate to the public information regarding investigation and interim measure activities and results. Upon receipt of approval from EPA and MDE of the Community Relations Plan, BSC shall implement the Community Relations Plan.

TASK IV: SITE WIDE INVESTIGATION

Consistent with the Conceptual Plan and the Consent Decree, BSC shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of contamination (Contamination Characterization); identify actual or potential receptors, and determine the impact(s) of contamination on human health and/or ecological receptors (Risk Assessment). For the ecological assessment refer to the EPA Environmental Response Team guidance document "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EPA 1994).

The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measures alternative or alternatives during the Corrective Measures Study.

The site investigation activities shall follow the plans set forth in Task III. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

BSC shall collect information to supplement and verify existing information on the environmental setting at the facility. BSC shall characterize the following:

1. Hydrogeology

BSC shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- a. Description of the regional and facility-specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:

- i) Regional and facility-specific stratigraphy: description of strata, including strike and dip, and identification of stratigraphic contacts;
 - ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - iii) Depositional history;
 - iv) Identification and characterization of areas and amounts of recharge and discharge;
 - v) Regional and facility-specific groundwater flow patterns;
 - vi) Facility-specific groundwater flow patterns in the saturated soil horizon, the shallow bedrock aquifer, and the deep bedrock aquifer systems; and
 - vii) Characterization of seasonal variations in each groundwater flow regime.
- b. Analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis.)
- c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
- i) Hydraulic conductivity and porosity (total and effective);
 - ii) Lithology, grain size, sorting, and degree of cementation;
 - iii) Interpretation of hydraulic interconnections between saturated zones; and

- iv) Attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).
- d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways, identifying:
- i) Sand and gravel deposits in unconsolidated deposits;
 - ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits;
 - iii) Zones of high permeability or low permeability that might direct and/or restrict the flow of contaminants;
 - iv) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs; and
 - v) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration, including perched zones of saturation.
- e. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring, including:
- i) Water-level contour and/or potentiometric maps, considering tidal changes;
 - ii) Hydrologic cross-sections showing vertical gradients;
 - iii) The flow system, including the vertical and horizontal components of flow; and
 - iv) Any temporal changes in hydraulic gradients, for example, due to seasonal influences.

- f. Description of man-made influences that may affect the hydrogeology of the site, identifying:
- i) Active and inactive local water supply and production wells with an approximate schedule of pumping; and
 - ii) Man-made hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

BSC shall conduct a program to characterize the soil, rock and fill units above the water table in the vicinity of the contaminant release(s). Such characterization shall include, but not be limited to, the following information:

- a. Soil Conservation Service (SCS) soil classification;
- b. Surface soil distribution;
- c. Soil profile, including American Standard Test Method (ASTM) classification of soils;
- d. Transects of soil stratigraphy;
- e. Hydraulic conductivity (saturated and unsaturated);
- f. Relative permeability;
- g. Bulk density;
- h. Porosity;
- i. Soil sorptive capacity;
- j. Cation exchange capacity (CEC);
- k. Soil organic content;
- l. Soil pH;
- m. Particle size distribution;
- n. Depth of water table;
- o. Moisture content;

- p. Effect of stratification on unsaturated flow;
- q. Infiltration;
- r. Evapotranspiration;
- s. Storage capacity;
- t. Vertical flow rate; and
- u. Mineral content.

3. Surface Water and Sediment

BSC shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization shall include, but not be limited to, the following activities and information:

- a. Description of the temporal and permanent surface water bodies including:
 - i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;
 - iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year event);
 - iv) Drainage patterns; and
 - v) Evapotranspiration.
- b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH₃, NO₃⁻/NO₂⁻, PO₄⁻³), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics, including:

- i) Deposition area;
- ii) Thickness profile; and
- iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

BSC shall provide information characterizing the climate in the vicinity of the facility. Such information shall include, but not be limited to:

a. Description of the following parameters:

- i) Annual and monthly rainfall averages;
- ii) Monthly temperature averages and extremes;
- iii) Wind speed and direction;
- iv) Relative humidity/dew point;
- v) Atmospheric pressure;
- vi) Evaporation data;
- vii) Development of inversions; and
- viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.

b. Description of topographic and man-made features which affect air flow and emission patterns, including:

- i) Ridges, hills, or mountain areas;
- ii) Canyons or valleys;
- iii) Surface water bodies (e.g., rivers, lakes, bays, etc.);
- iv) Wind breaks and forests; and

v) Buildings.

B. Source Characterization

BSC shall collect analytical data to supplement and update the description prepared pursuant to Task I.B. herein. The data shall completely characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security and engineered barriers).

This information shall include quantification of the following specific characteristics at each source area:

1. Unit/Disposal Area Characteristics:
 - a. Location of unit/disposal area;
 - b. Type of unit/disposal area;
 - c. Design features;
 - d. Operating practices (past and present);
 - e. Period of operation;
 - f. Age of unit/disposal area;
 - g. General physical conditions; and
 - h. Method used to close the unit/disposal area.
2. Waste Characteristics:
 - a. Type of waste/product placed in the unit:
 - i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing, or reducing agent);
 - ii) Quantity; and
 - iii) Chemical composition.
 - b. Physical and chemical characteristics:
 - i) Physical form (solid, liquid, gas);
 - ii) Physical description (e.g., powder, oily sludge);

- iii) Temperature;
- iv) pH;
- v) General chemical class (e.g., acid, base, solvent);
- vi) Molecular weight;
- vii) Density;
- viii) Boiling point;
- ix) Viscosity;
- x) Solubility in water;
- xi) Cohesiveness of the waste; and
- xii) Vapor pressure.

c. Migration and dispersal characteristics of the waste/product:

- i) Sorption;
- ii) Biodegradability, bioconcentration, biotransformation;
- iii) Photodegradation rates;
- iv) Hydrolysis rates; and
- v) Chemical transformations.

BSC shall document the procedures used in making the above determinations.

C. Contamination Characterization

BSC shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. BSC shall address the following types of contamination at the facility:

1. Groundwater Contamination

BSC shall conduct a groundwater investigation to fully characterize all plumes of contamination at the facility. This investigation shall, at a minimum, provide the following information:

- a. Specific origin (source) of each contaminant plume;
- b. Description of the full horizontal and vertical extent of each immiscible or dissolved plume(s) originating from the facility;
- c. Horizontal and vertical direction of contaminant movement;
- d. Velocity of contaminant movement;
- e. Horizontal and vertical concentration profiles of detected contaminants;
- f. Evaluation of factors influencing the plume movement; and
- g. Extrapolation of future contaminant movement.

BSC shall document the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

2. Soil Contamination

BSC shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- a. Specific origin (source) of each soil contamination area;
- b. Description of the full vertical and horizontal extent of contamination;
- c. Description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that

might affect contaminant migration and transformation;

- d. Specific contaminant concentrations;
- e. Velocity and direction of contaminant movement; and
- f. Extrapolation of future contaminant movement.

BSC shall document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

BSC shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility. The investigation shall include, but not be limited to, the following information:

- a. Specific origin (source) of each contaminant release to surface water;
- b. Description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- c. Horizontal and vertical direction of contaminant movement;
- d. Contaminant velocity;
- e. Evaluation of the physical, biological, and chemical factors influencing contaminant movement;
- f. Extrapolation of future contaminant movement; and
- g. Description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

BSC shall document the procedures used in making the above determinations.

4. Air Contamination

BSC shall conduct an investigation to characterize the releases of particulate and gaseous contaminants into the atmosphere. This investigation shall provide the following information:

- a. Specific origin (source) of each contaminant release to the air;
- b. Description of the horizontal and vertical extent and velocity of contaminant movement;
- c. Rate and amount of the release; and
- d. Chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

BSC shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

BSC shall conduct an investigation to characterize subsurface gases emitted from buried hazardous wastes and/or hazardous constituents in the groundwater. This investigation shall include the following information:

- a. Specific origin (source) of each release of subsurface gas contaminants;
- b. Description of the horizontal and vertical extent of subsurface gas mitigation;
- c. Chemical composition of the gases being emitted;
- d. Rate, amount, and density of the gases emitted; and
- e. Horizontal and vertical concentration profiles of the subsurface gases emitted.

BSC shall document the procedures used in making the above determinations.

D. Potential Receptor Identification

BSC shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained. The following characteristics shall be identified:

1. Local uses and possible future uses of groundwater:
 - a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
 - b. Location of groundwater users, including wells and discharge areas.
2. Local uses and possible future uses of surface waters draining from the facility:
 - a. Domestic and municipal (e.g., potable and lawn/garden watering);
 - b. Recreational (e.g., swimming, fishing);
 - c. Agricultural;
 - d. Industrial; and
 - e. Environmental (e.g., fish and wildlife propagation).
3. Human use of or access to the facility and adjacent lands, including, but not limited to:
 - a. Recreation;
 - b. Hunting;
 - c. Residential;
 - d. Commercial;
 - e. Zoning; and
 - f. Relationship between population locations and prevailing wind direction.

4. A description of the ecology overlying and adjacent to the facility must include:
 - a. Location and size of each identified habitat (e.g., stream reaches, roads, wetlands, or forested areas) within the physical boundaries defined for the assessment; and
 - b. Listing and physical assessment of the ecosystems and population potentially exposed to contamination.
5. An evaluation of the pollutant impacts on the ecosystems/populations potentially exposed to contamination. This evaluation may be accomplished through the use of toxicity test (acute and chronic) population surveys and literature reviews.
6. A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age, sex, and sensitive subgroups.
7. A description of the significance, uniqueness, or protected status of potentially exposed ecosystems.

E. Risk Assessment

BSC shall conduct a baseline risk assessment to identify potential adverse human health and environmental effects caused by releases of hazardous waste and/or hazardous constituents at or from the facility in the absence of any actions to control or mitigate these releases (under the assumption of no action). The Risk Assessment shall be performed consistent with the Conceptual Plan. The risk assessment shall include:

1. Identification of contaminants of concern.
2. An exposure assessment to identify: potential human and environmental receptors, estimate the magnitude of actual and/or potential human and environmental exposures, and the frequency and duration of these exposures, and to identify the pathways by which humans and environmental receptors are potentially exposed. Reasonable maximum estimates of exposure will be developed for both current and future land-use assumptions.
3. A toxicity assessment to identify the types of adverse health and environmental effects associated with chemical exposures and the relationship between the magnitude of exposure and adverse effects.

1. Groundwater Contamination

BSC shall conduct a groundwater investigation to fully characterize all plumes of contamination at the facility. This investigation shall, at a minimum, provide the following information:

- a. Specific origin (source) of each contaminant plume;
- b. Description of the full horizontal and vertical extent of each immiscible or dissolved plume(s) originating from the facility;
- c. Horizontal and vertical direction of contaminant movement;
- d. Velocity of contaminant movement;
- e. Horizontal and vertical concentration profiles of detected contaminants;
- f. Evaluation of factors influencing the plume movement; and
- g. Extrapolation of future contaminant movement.

BSC shall document the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

2. Soil Contamination

BSC shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- a. Specific origin (source) of each soil contamination area;
- b. Description of the full vertical and horizontal extent of contamination;
- c. Description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that

- iii) MDE/EPA-approved Alternate Concentration Limit (ACL).
 - b. Information to support MDE's and EPA's selection of Alternate Concentration Limits (ACLs) shall be developed by BSC in accordance with EPA and MDE regulations, having considered applicable Guidance.
 - c. The MDE and EPA shall notify BSC, in writing, of approval, disapproval, or modifications. The EPA and MDE shall specify, in writing, the reason(s) for any disapproval or modification.
 - d. Within thirty (30) calendar days of receipt of MDE's/EPA's notification of disapproval of any proposed ACLs, BSC shall amend and submit revisions to MDE and EPA.
2. Other Relevant Protection Standards

BSC shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

3. Qualitative Goals

BSC shall identify all appropriate qualitative goals for consideration in the Corrective Measures Study (e.g., restoration and/or replacement of wetlands, protection of worker health and safety, etc.).

TASK VI: LABORATORY AND BENCH-SCALE STUDIES

Based on the MDE/EPA approved report submitted pursuant to Task II of this Decree, BSC shall conduct laboratory and/or bench-scale studies to determine the applicability of corrective measures technology or technologies to facility conditions. BSC shall analyze the technologies, based on literature review, vendor contracts, and past experience, to determine the testing requirements.

BSC shall develop a testing plan identifying the types(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation. Upon completion of the testing, BSC shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

BSC shall prepare a report summarizing the testing program and its results, both positive and negative.

TASK VII: REPORTS

A. Preliminary (Task I) Report and SWI Workplan

BSC shall submit to the EPA and MDE reports on Tasks I and II as provided in the Consent Decree.

B. Progress Reports

BSC shall, at a minimum, report the progress of the Site Wide Investigation in the annual report required pursuant to Section XII.5 of the Consent Decree.

C. Draft and Final

BSC shall prepare Site Wide Investigation Reports in accordance with the schedule in the Site Wide Investigation Workplan approved by EPA and MDE.

Two copies of all reports, including the Task I report, Task II report, Task III workplan, Task VI report and both the Draft and Final Site Wide Investigation Reports (Tasks IV-V) shall be provided by BSC to MDE and EPA.

ATTACHMENT D

Attachment D

**CORRECTIVE MEASURES STUDY
SCOPE OF WORK**

PURPOSE

The purpose of this Corrective Measures Study (CMS) is to develop and evaluate the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at the Bethlehem Steel Corporation (BSC) facility. BSC shall furnish the personnel, materials, and services necessary to prepare the Corrective Measures Study, except as otherwise specified.

SCOPE

The Corrective Measures Study consists of four tasks:

TASK I: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE MEASURES ALTERNATIVE OR ALTERNATIVES

- A. Description of Current Situation
- B. Establishment of Corrective Action Objectives
- C. Screening of Corrective Measures Technologies
- D. Identification of the Corrective Measures Alternative or Alternatives

TASK II: EVALUATION OF THE CORRECTIVE MEASURES ALTERNATIVE OR ALTERNATIVES

- A. Technical/Environmental/Human Health/Institutional
- B. Cost Estimate
- C. Waste Minimization Plan

TASK III: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

- A. Technical
- B. Human Health
- C. Environmental

TASK IV: REPORTS

- A. Progress
- B. Draft
- C. Final

TASK I: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Based on the results of the Site Wide Investigation (SWI) and consideration of the identified Preliminary Corrective Measures Technologies (Task II), BSC shall identify, screen, and develop the alternative or alternatives for removal, containment, treatment, and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

BSC shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the Site Wide Investigation Report. BSC shall provide an update to information presented in Task I of the Site Wide Investigation, "DESCRIPTION OF CURRENT CONDITIONS," to EPA and MDE regarding previous response activities and any interim measures which have or are being implemented at the facility. BSC shall also make a facility-specific statement of the purpose for the response, based on the results of the Site Wide Investigation. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

BSC, in conjunction with the EPA and MDE, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the Site Wide Investigation, EPA and MDE guidance, and the requirements of any applicable Federal and State statutes and regulations.

C. Screening of Corrective Measures Technologies

BSC shall review the results of the Site Wide Investigation, reassess the technologies specified in the Pre-Investigation Evaluation of Corrective Measures Technologies (PIECT), as approved by EPA and MDE, and identify additional technologies which are applicable at the facility. BSC shall screen the preliminary corrective measures technologies identified in the PIECT and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measures objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step

may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site characteristics should be eliminated from further consideration.

2. Waste Characteristics

Waste characteristics particularly affect the feasibility of remediating waste by utilizing in-situ methods, direct treatment methods, or land disposal (on-/off-site) methods. Therefore, identification of waste characteristics that limit the effectiveness or feasibility of remediating technologies is an important part of the screening process. Remediating technologies clearly limited by these waste characteristics should be eliminated from consideration.

3. Technology Limitations

During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measures Alternative or Alternatives

BSC shall develop the corrective measures alternative or alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measures Technologies as presented in the PICT and as supplemented following the preparation of the Site Wide Investigation Report. BSC shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a

workable number of option(s) that each appear to address adequately all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. BSC shall document the reasons for excluding technologies, identified in the PIECT, as supplemented in the development of the alternative or alternatives.

TASK II: EVALUATION OF THE CORRECTIVE MEASURES ALTERNATIVE OR ALTERNATIVES

BSC shall describe each corrective measures alternative that passes through the initial screening in Task I and evaluate each corrective measures alternative and its components. The evaluation shall be based on technical, environmental, human health, and institutional concerns. BSC shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

BSC shall provide a description of each corrective measures alternative which includes, but is not limited to, the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. BSC shall evaluate each alternative in the following four areas:

1. Technical

BSC shall evaluate each corrective measure alternative based on performance, reliability, implementability, and safety.

a. BSC shall evaluate performance based on the effectiveness and useful life of the corrective measures, described below:

- i) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measures technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technologies, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. BSC shall provide information on the reliability of each corrective measure, including their operation and maintenance requirements and their demonstrated reliability, described below:

i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. BSC should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies has been used effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. BSC shall describe the implementability of each corrective measure, including the relative ease of installation (constructability) and the time required to achieve a given level of response, described below:

i) Constructability is determined by conditions both internal and external to the facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). BSC shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually obtain beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. BSC shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments, as well as to the safety of workers during implementation. Factors to consider include, but are not limited to, fire, explosion, and exposure to hazardous substances.

2. Environmental

BSC shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative shall include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on

environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

BSC shall assess each alternative in terms of the extent to which it mitigates short- and long-term potential exposure to any residual contamination and protects human health, both during and after implementation of the corrective measures. The assessment will describe the levels and characterizations of contaminants on site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and its reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA and MDE.

4. Institutional

BSC shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations, including requirements for construction and operating permits, on the design, operation, and timing of each alternative.

B. Cost Estimate

BSC shall develop an estimate of the cost of each corrective measures alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

a. Direct capital costs include:

- i) Construction costs: costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measures;

- ii) Equipment costs: costs of treatment, containment, disposal, and/or service equipment necessary to implement the action;
 - iii) Land and site-development costs: expenses associated with purchase of land and development of existing property; and
 - iv) Buildings and services costs: costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.
- b. Indirect capital costs include:
- i) Engineering expenses: costs of administration, design, construction supervision, drafting, and testing of corrective measures alternatives;
 - ii) Legal fees and license or permit costs: administrative and technical costs necessary to obtain licenses and permits for installation and operation;
 - iii) Startup and problem solving immediately following startup (shakedown) costs: costs incurred during corrective measures startup; and
 - iv) Contingency allowances: funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.
2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. BSC shall consider the following operation and maintenance cost components:
- a. Operating labor costs: wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;
 - b. Maintenance materials and labor costs: costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

- c. Auxiliary materials and energy: costs of items such as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;
- d. Purchased services: sampling costs, laboratory fees, and professional fees for which the need can be predicted;
- e. Disposal and treatment costs: costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;
- f. Administrative costs: costs associated with administration of corrective measures operation and maintenance not included under other categories;
- g. Insurance, taxes, and licensing costs: costs of such items as liability and sudden accident insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;
- h. Maintenance reserve and contingency funds: annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
- i. Other costs: items that do not fit any of the above categories.

C. Waste Minimization Plan

BSC shall consider waste minimization options as part of the evaluation of the Corrective Measures Alternatives (CMAs). BSC shall provide for each CMA per year of operation: an estimate and analysis of the quantity, volume and/or toxicity of the waste generated, including but not limited to, contaminated soil, sludge, ground water, etc.; methods to minimize the quantity, volume, toxicity and/or mobility of the waste to be generated, treated, stored or disposed of off site; the economic cost and benefits; and any other benefit, including, but not limited to, compliance benefits, liability benefits, safety benefits, etc.

TASK III: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

BSC shall justify and recommend a corrective measures alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. EPA and MDE will select the corrective measures alternative or alternatives to be implemented, based on the results of Tasks I and II. At a minimum, the following criteria shall be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective in performing the intended functions and maintaining the performance over extended periods of time shall be given preference;
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have been proven to be effective under waste and facility conditions similar to those anticipated shall be given preference;
3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time shall be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments, as well as to workers, during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing EPA and MDE criteria, standards, or Guidance for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure over time shall be preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time, on the environment, shall be favored.

TASK IV: REPORTS

BSC shall prepare a CMS Report presenting the results of Tasks I through III and recommending a corrective measures alternative.

A. Progress

BSC shall, at a minimum, report the progress of the Corrective Measures Study in the annual report required pursuant to Section XII.5 of the Consent Decree.

B. Draft CMS Report

The draft CMS Report shall, at a minimum, include:

1. Description of the facility:
 - a. Site topographic map and preliminary layouts.
2. Summary of the corrective measure or measures:
 - a. Description of the corrective measure or measures and rationale for the selection(s);
 - b. Performance expectations;
 - c. Preliminary design criteria and rationale;
 - d. General operation and maintenance requirements; and
 - e. Long-term monitoring requirements.
3. Summary of the Site Wide Investigation and impact on the selected corrective measure or measures:
 - a. Field studies (ground water, surface water, soil); and
 - b. Laboratory studies (bench scale, etc.).
4. Design and implementation precautions:
 - a. Special technical problems;
 - b. Additional engineering data required;
 - c. Permits and regulatory requirements;
 - d. Access, easements, right-of-way;
 - e. Health and safety requirements; and

f. Community relations activities.

5. Cost estimates and schedules:

a. Capital cost estimate;

b. Operation and maintenance cost estimate; and

c. Project schedule (design, construction, operation).

C. Final CMS Report

BSC shall finalize the CMS Report, incorporating comments received from EPA and MDE on the Draft Corrective Measures Study Report.





ATTACHMENT E



Attachment E

HEALTH AND SAFETY PLAN

The Bethlehem Steel Corporation (BSC) shall prepare a facility Health and Safety Plan.

1. Major elements of the Health and Safety Plan shall include:
 - a. Facility description including availability of resources such as roads, water supply, electricity, and telephone service;
 - b. Description of the known hazards and evaluations of the risks associated with the incident and with each activity conducted, including, but not limited to, on- and off-site exposure to contaminants;
 - c. List of key personnel and alternates responsible for site safety, response operations, and protection of public health;
 - d. Delineation of work area;
 - e. Description of levels of protection to be worn by personnel in work area(s);
 - f. Establishment of procedures to control site access;
 - g. Description of decontamination procedures for personnel and equipment;
 - h. Establishment of site emergency procedures;
 - i. Emergency medical care for injuries and toxicological problems;
 - j. Description of requirements for an environmental surveillance program;
 - k. Routine and special training required for responders; and
 - l. Establishment of procedures for protecting workers from weather-related problems.
2. The facility Health and Safety Plan shall be consistent with:
 - a. NIOSH Occupational Safety and Health Guidance Manual For Hazardous Waste Site Activities (1985);
 - b. EPA Order 1440.3 - Respiratory Protection;

- c. EPA Order 1440.2 - Health and Safety Requirements for Employees Engaged in Field Activities;
 - d. Facility Contingency Plan;
 - e. EPA Standard Operating Safety Guide (1984);
 - f. OSHA regulations, particularly in 29 C.F.R. 1910 and 1926;
 - g. State and local regulations; and
 - h. Other EPA and MDE guidance as provided.
3. The Health and Safety Plan must be revised to address any additions and/or changes in planned activities.

BETHLEHEM STEEL CORPORATION

SPARROWS POINT DIVISION

MULTI-MEDIA CONSENT DECREE

ATTACHMENT F

WASTE MINIMIZATION PROJECT DESCRIPTIONS

Bethlehem Steel Corporation
Sparrows Point Division

Utilizing Spent Caustic Cleaning Solutions

Background: Prior to applying a coating to the steel sheet, such as tin, chromium and galvanize coatings, the steel sheet must be thoroughly cleaned. One of the steps in this cleaning process is to scrub or clean the sheet with a strong caustic cleaning solution containing sodium hydroxide (NaOH). When the cleaning solution becomes too dirty to be an effective cleaner, the spent cleaning solution must be drained from the cleaning tank and replaced with fresh cleaning solution.

Proposed Project: The spent caustic cleaning solutions will be recovered and used as a water treatment chemical at the Humphreys Creek Waste Water Treatment Plant (HCWWTP). The Sparrows Point Division will collect the spent caustic cleaning solutions from the various sources at the steel coating operations and transport them by truck to new storage and feed tank facilities to be located at HCWWTP. From these tanks the spent solutions will be metered into the feed wastewaters to provide part of the basic chemical demand needed to increase the pH of the wastewaters. The balance of the chemical demand will be provided by the addition of lime from the already existing lime handling facilities.

Regulatory Considerations: Spent caustic cleaning solutions that are used or reused as effective substitutes for commercial products as provided in 40 C.F.R. § 261.2(e)(ii), COMAR 26.13.02.02E(1)(b) are not solid wastes and therefore are not hazardous wastes.

Bethlehem Steel Corporation

Sparrows Point Division

Recycling of Blast Furnace Gas Cleaning Slurry Solids

Background: The Sparrows Point Division operates a Blast Furnace to make molten iron (hot metal). The off-gas generated by the Blast Furnace is cleaned using water scrubbers. The cleaned Blast Furnace gas is used as a fuel in several areas at the Sparrows Point Plant. The scrubber water is treated in a water treatment system. One of the waste streams from this treatment system is a slurry that is dewatered and landfilled at Greys Landfill. The solids in this slurry contain iron oxides, carbon, and contaminants, such as, zinc and lead. The zinc and lead preclude these solids from being recycled to the Blast Furnace due to refractory problems associated with zinc (Zn) and lead (Pb).

Proposed Recycling Project: It is proposed to install a Bethlehem Steel Corporation patented hydrocyclone facility to treat the slurry to remove the zinc and lead contaminants. The principal product from this process will be recycled to the Blast Furnace/Sinter Plant, and a small amount of waste material will be landfilled.

The scope of work for this project envisions installing hydrocyclones and ancillary process equipment including thickeners, process tanks and pumps, filters and chemical feed equipment to be located near the Blast Furnace/Sinter Plant facilities. The new equipment will be an integral part of the existing NPDES permitted wastewater treatment system at the Blast Furnace. There may be times, during shutdown or repair and maintenance when the hydrocyclone facility is not operating, that the dewatered Blast Furnace slurry will need to be landfilled.

Regulatory Considerations: Treatment of hazardous waste in a wastewater treatment unit is exempt from RCRA standards and permitting as provided in 40 C.F.R. § 264.1(g)(6) and § 270.1(c)(2)(v), COMAR 26.13.05.01A(3)(g) and 26.13.07.01A. If the proposed equipment meets the criteria for wastewater treatment units, it would qualify for the exemption. Bethlehem will make a hazardous waste determination as required by 40 C.F.R. § 262.11, COMAR 26.13.03.02 for the dewatered Blast Furnace slurry that cannot be processed through the unit, and for the residual waste from the unit, and will dispose of it in accordance with applicable laws and regulations.

Bethlehem Steel Corporation

Sparrows Point Division

Recycling of BOF Fume Sludge

Background: The Basic Oxygen Furnace (BOF) Process is used to make steel from molten iron (hot metal), steel scrap, fluxes, oxygen and other materials including iron ore and alloys. During the BOF steelmaking process a very fine iron oxide fume is generated which is removed from the hot furnace exhaust gas by a high energy, wet gas venturi scrubber system. The collected fine particulate fume is contained in a water slurry which is dewatered in a thickener and landfilled at Greys Landfill. The zinc content of this fume is too high to be recycled to the Blast Furnace.

Proposed Project: Bethlehem is exploring the feasibility of several options for recycling the BOF fume.

One of the projects being considered is a briquetting process that will agglomerate BOF fume to a larger particulate size. These briquettes can then be used to substitute the iron ore now being used as part of the steelmaking process.

While the process appears to be technically feasible, the long term effects of continued recycling of zinc containing fume into the steelmaking process (e.g., steel quality, slag, BOF refractories deterioration and fume generation and composition) need to be evaluated.

Another option being considered is reducing the zinc content of the BOF fume to less than the 0.2% so that it can be recycled directly to the Sinter Plant/Blast Furnace process. This option would involve the use of less scrap in the steelmaking process and/or the use of scrap containing less zinc. Using less scrap and lower zinc scrap would reduce the amount of zinc charged to the BOF steelmaking process and should result in a lower zinc content of the BOF fume.

These BOF fume recycling options will be evaluated by Bethlehem. Both short term and longer term tests may need to be conducted to determine the feasibility of these recycling options. This testing will be included as part of the project schedules to be submitted as part of the work plan following the signing of the Consent Decree.

There may be technical limitations to the amount of BOF slurry that can be recycled and there may be times when the BOF slurry recycling system is not operating. Thus some of the dewatered BOF slurry will need to be landfilled.

Regulatory Considerations: BSC will make a hazardous waste determination as required by 40 C.F.R. § 262.11, COMAR 26.13.03.02 for the BOF slurry that cannot be processed through the unit, and will dispose of it in accordance with applicable laws and regulations.

Bethlehem Steel Corporation

Sparrows Point Division

Recycling of Humphreys Creek Wastewater Treatment Plant Sludge

Background: The Humphreys Creek Wastewater Treatment Plant (HCWWTP) treats wastewaters from the various steel mill operations that discharge their wastewaters to the Tin Mill Canal. In order to address certain regulatory concerns, Bethlehem will seek a separate NPDES permit for the discharge of treated effluent from the chromium waste water treatment plant to Tin Mill Canal.

The effluent from HCWWTP is discharged via the Division's NPDES Outfall #014. The solids and oils, and other substances removed from the wastewaters are settled in large settling basins and then dewatered by centrifuges. At the present time we know of no other domestic steel mill that is recycling wastewater sludges of this nature. For the Sparrows Point Division sludge, Bethlehem is considering various recycling options. One option involves direct addition of the sludge to the Sinter Strand. Another recycling option involves deoiling the sludge and then recycling to the Sinter Plant.

Direct recycling option: The preferred sludge recycling option involves pumping HCWWTP slurry from a storage tank to the Sinter Plant for application onto the moving sinter bed of blended materials prior to the high temperature processing that occurs during the sintering process.

Bethlehem has received a patent for this sludge recycling technology, and successful full scale tests have been conducted at the Sinter Plant at Bethlehem's Burns Harbor Division. However, because of the differences in the Sinter Plants at the Burns Harbor and Sparrows Point Divisions, full scale tests of the process must also be conducted at Sparrows Point to confirm the technical and economic feasibility of the process for the plant's operating conditions. This testing will be included as part of the project schedule to be submitted as part of a work plan following the signing of this Consent Decree.

The sludge de-oiling recycle option under consideration involves de-oiling of the sludge and then adding the de-oiled solids to the sinter blending pile along with all of the other sinter feed materials. This option involves de-oiling the sludge by either a

solvent extraction process or a microwave de-oiling process and then adding it to the feed material bedding pile in a manner consistent with production of an acceptable sinter product.

Both of these de-oiling processes have gone through laboratory testing, but must be tested in larger scale to demonstrate their feasibility. This testing will be included as part of the project schedule to be submitted as part of the work plan following the signing of this Consent Decree.

There may be technical limitations to the amount of HCWWTP sludge that can be recycled; thus some of this HCWWTP sludge may need to be landfilled. Also, there may be times when the HCWWTP sludge recycling system is not operating that the sludge will need to be landfilled.

Regulatory Considerations: Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act are not solid wastes and therefore are not hazardous wastes, pursuant to 40 C.F.R. § 261.4(a), COMAR 26.13.02.04A.(2). Bethlehem will continue to make a hazardous waste determination as required by 40 C.F.R. § 262.11, COMAR 26.13.03.02 for the HCWWTP sludge, and manage and dispose of it in accordance with applicable laws and regulations.

Bethlehem Steel Corporation

Sparrows Point Division

Dredging of the Tin Mill Canal

Background: The Sparrows Point Division utilizes a central wastewater treatment facility. Wastewaters from several steel processing operations, such as steel making and casting, hot and cold rolling of steel, steel pickling and steel coating, flow through sewers to the Tin Mill Canal (TMC), a 7,500 foot long conveyance. In order to address certain regulatory concerns, Bethlehem will seek a separate NPDES permit for the discharge of treated effluent from the chromium waste water treatment plant to Tin Mill Canal.

The combined wastewaters are conveyed down the canal to the Humphreys Creek Wastewater Treatment Plant (HCWWTP) for treatment prior to discharge via the NPDES permitted Outfall 014. This canal has been in continuous use for over 20 years. During this period some of the heavier particles and oils in these wastewaters have settled to the bottom of the TMC. The layer varies in thickness. Since many of the sewers discharge to the TMC at or below the water level of TMC, in some portions of the TMC accumulations of these solids periodically block the discharge of these sewers. This can cause backup of water in the affected sewers and interference with mill operations. Thus, it is necessary to periodically dredge the TMC in the area of these sewers to allow for proper flow of water. Additionally, it may be appropriate in the future to dredge the TMC completely.

Maintenance Dredging of the TMC to the extent necessary to maintain flow.

Bethlehem will submit plans for partial dredging of the TMC. This dredging will be limited in scope and will be conducted only in those areas needed to keep mill sewer discharges and the TMC free flowing to the HCWWTP. For this maintenance dredging it will not be necessary to dredge the entire length of TMC. Also, because the goal is to maintain free flowing waters in the TMC, it is not anticipated that it will be necessary to dredge to the bottom of the TMC. It is difficult to estimate the quantity of dredgings generated during the anticipated maintenance dredging activities, but at this time Bethlehem estimates that 500 tons or less could be dredged during each maintenance dredging period. The dredging plans will identify the dredging technology to be

used, the approximate location of the section of the TMC to be dredged, the testing (including TCLP testing), handling and disposal plans for the dredgings and the time frame of the dredging. Since it may be necessary to conduct this "maintenance" dredging more than once, Bethlehem will notify MDE prior to each dredging period. The dredgings will be dewatered and the waters will be returned to the TMC. Bethlehem plans to test the feasibility of recycling TMC maintenance dredgings by (1) direct recycle to the Sinter Plant, and (2) de-oiling prior to recycling to the Sinter Plant. Maintenance dredgings that cannot be recycled will need to be landfilled.

The recycling options to be evaluated and tested are essentially the same as described for the project for Recycling of Humphreys Creek Wastewater Treatment Plant sludge.

Regulatory Considerations: Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act are not solid wastes and therefore are not hazardous wastes, pursuant to 40 C.F.R. § 261.4(a), COMAR 26.13.02.04A.(2). Bethlehem will continue to make a hazardous waste determination as required by 40 C.F.R. § 262.11, COMAR 26.13.03.02 for the TMC dredgings, and manage and dispose of them in accordance with applicable laws and regulations.

ATTACHMENT G

Attachment G

WASTE MINIMIZATION PROGRAM
SCOPE OF WORK

SCOPE

The Waste Minimization Program consists of two tasks:

TASK I. MANAGEMENT INITIATIVES PROGRAM

- A. Employee Training
- B. Incentives
- C. Waste Audits

TASK II. WASTE MINIMIZATION OPTIONS PROGRAM

- A. Reduction Options
- B. Recycling Options
- C. Treatment Options
- D. Waste Exchange Options

TASK I. MANAGEMENT INITIATIVES PROGRAM

The objective of this program will be to encourage employees to strive conscientiously to reduce waste. This program should consist of the following:

A. Employee Training

Training should be developed and implemented to increase employee awareness of operating practices that reduce both solid and hazardous waste generation. A training program should include:

1. Occupational health and plant safety;
2. Company regulatory compliance requirements; and
3. A statement of the company's approach to waste minimization and/or its waste minimization plan.

B. Incentives

An incentive program should be developed and implemented to provide motivation and to boost employees cooperation and participation in waste minimization. This incentive program should include:

1. Providing incentives for the development of useful waste minimization ideas;

2. Providing recognition and financial awards for outstanding waste minimization programs, practices, and/or suggestions; and
3. Implementing or revising the operational supervisory structure and/or management procedures.

C. Waste Audits

A program of waste audits should be developed and implemented to provide a systematic and periodic survey of the company's operations designed to identify areas of potential waste reduction. This program should include:

1. Identification of hazardous substances in waste and the sources of these substances;
2. Prioritization of various waste reduction actions to be undertaken;
3. Evaluation of some technically, economically, and ecologically feasible approaches to waste minimization;
4. Development of an economic comparison of waste minimization and waste management options; and
5. Evaluation of waste minimization modification results.

TASK II. WASTE MINIMIZATION OPTIONS PROGRAM

This program should be developed to investigate, evaluate and recommend waste minimization options. This program should include a step-by-step analysis of waste reduction options, recycling options, and finally, only after acceptable waste minimization techniques have been investigated and evaluated, waste treatment options.

A. Reduction Options

These options would be characterized as good operating practices (also known as good housekeeping practices), material substitutions, and technology changes. These techniques avoid the generation of waste, thereby eliminating the problems associated with handling waste.

1. Good operating practices;

These practices involve the procedural or organizational aspects of a manufacturing process and, in some areas, changes in operating practices, in order to reduce the amount of waste generated. These

practices would include, at a minimum, the following elements:

- a. Material handling improvements;
- b. Scheduling improvements;
- c. Spill and leak prevention;
- d. Preventive maintenance;
- e. Corrective maintenance;
- f. Material/waste tracking or inventory control;
- g. Communication documentation; and
- h. Waste stream segregation according to toxicity, type of contaminant, and physical state.

2. Material substitution practices;

The purpose of these practices is to find substitute process/manufacturing materials which are less hazardous than those currently utilized and which result in the generation of waste in smaller quantities and/or of less toxicity.

3. Technological modification practices;

These practices are oriented toward process and equipment modification to reduce waste, primarily in a production setting. These practices can range from changes that can be implemented in a matter of days at low cost to the replacement of processes involving large capital cost. These modifications include changes in the following:

- a. Processes;
- b. Equipment;
- c. Process automation;
- d. Operation settings, including, but not limited to, flow rates, temperatures, pressures, and/or residence times;
- e. Water conservation; and
- f. Energy conservation.

B. Recycling Options

These options are characterized as use/reuse and resource recovery techniques.

1. Use and reuse practices;

These practices involve the return of a waste material either to the originating process or to another process as a substitute for an input material.

2. Reclamation practices;

These practices differ from the use and reuse practices in that the recovered material is not used in the facility, but is sold to another company.

C. Treatment Options

These options should be oriented to the changes of the physical, chemical, or biological character of any hazardous waste in order to reduce the toxicity and the volume of such waste.

D. Waste Exchange Options

These options are attempts to match the waste from one business with the raw material requirements of another business, thereby finding a market for what one business sees as a waste but what another business sees as a material.