FRAMEWORK FOR RG STEEL SPARROWS POINT LLC OFFSHORE ECOLOGICAL AND HUMAN HEALTH INVESTIGATION PORTION OF THE SITE WIDE INVESTIGATION

A. Supporting Information Needed for Investigation of offshore sediment and surface water

As described below, RG Steel Sparrows Point LLC (RG Steel – Sparrows) shall conduct screening, and sampling (as necessary) to assess the impacts of releases – other than "allowed releases" (as defined in Appendix B of the 1997 Consent Decree) – from the facility on the offshore environment to fulfill the off-shore ecological and human health portion of the Site Wide Investigation ("SWI") in accordance with Judge Motz's Opinion and Order dated July 5, 2011.

RG Steel – Sparrows need not conduct an assessment in the area covered by the May, 2011 Maryland Port Administration *Final Risk Assessment of Offshore Areas Adjacent to the Proposed Coke Point Dredged Material Containment Facility at Sparrows Point* (MPA Risk Assessment). The MPA Risk Assessment is accepted by EPA and MDE (the Agencies) for purposes of fulfilling RG Steel – Sparrows' obligation to assess human health and ecological risks in the offshore environment at, and from, the Sparrows Point facility at the Coke Point Peninsula as part of the offshore human health and ecological portion of the SWI. The Agencies recognize that RG Steel – Sparrows reserves its rights to subsequently demonstrate that the scope and nature of the MPA study is not appropriate for the requirement to conduct an off-shore ecological and human health portion of the SWI. RG Steel – Sparrows may collect and submit data and other information regarding the conditions at the Coke Point Peninsula. RG Steel – Sparrows recognizes that any field work whose data RG Steel – Sparrows intends to submit to EPA and MDE must be undertaken pursuant to a workplan approved by the Agencies.

RG Steel – Sparrows need not conduct sampling in the area offshore from the shipyard.

RG Steel – Sparrows may request that the Agencies exclude other areas for which the Agencies determine that sufficient data and information exist. RG Steel – Sparrows may conduct the offshore sampling in phases, beginning on the northwestern shore of the peninsula north of the shipyard.

1. Groundwater Screening

Some of the perimeter groundwater monitoring well results have been screened previously by RG Steel – Sparrows against surface water criteria or benchmarks for aquatic effects in the existing ecological risk assessment documentation. Figure 9 (Comparisons of Groundwater Concentrations in Perimeter Wells to Ecological Surface Water Quality Benchmarks) from the *Screening Level Ecological Risk Assessment for On-Site Areas Report* dated April 2009 shows additional perimeter monitoring wells that have not been sampled previously for any chemical data. RG Steel – Sparrows shall collect samples from each of these wells for analyses of all of the previously identified site groundwater chemicals of potential

interest ('COPI') and include the results in the overall groundwater screening for offshore impacts. After completing this screening process, RG Steel – Sparrows shall identify all perimeter groundwater contaminants exceeding surface water criteria or benchmarks for aquatic effects as surface water and sediment COPIs. RG Steel – Sparrows shall utilize appropriate monitoring wells to identify near-shore[1] locations for sampling. Such locations shall be identified without regard to whether they are also the location of monitored stormwater outfalls.

2. Stormwater Screening

RG Steel – Sparrows shall identify and evaluate locations for near-shore sediment sampling, including stormwater outfalls[2] that are not monitored for COPIs in the relevant stormwater basin, and identified stormwater sheetflow discharge areas. To the Agencies' knowledge, these areas include, but may not be limited to, the Knobby's Ditch area and areas noted in previous MDE inspections related to RG Steel – Sparrows' pollution prevention plan. MDE shall work with RG Steel – Sparrows to further identify these areas. RG Steel – Sparrows shall sample sediment at these outfall and sheetflow discharge locations, and include all potential on-site contaminants as COPIs. In addition to the above, to support subsequent surface water modeling efforts, RG Steel – Sparrows may sample stormwater from current outfalls and sheet flow discharge areas. RG Steel-Sparrows may request exclusion of stormwater outfall locations which have been inactive or closed.

3. Bathymetric Survey

Once sediment and pore water sampling locations have been determined under paragraphs 1 and 2 above, RG Steel – Sparrows shall conduct a bathymetric survey (as described in Attachment A of the October 2009 Severstal *Sediment, Surface Water, and Groundwater Sampling Plan to Assess Current Groundwater Discharge Impacts to the Offshore Environment Work Plan*) for those general sampling locations to characterize water depths and bottom structure. The bathymetric survey will include a sub-bottom profile imaging survey, and will be used together with a visual shore-line survey to identify near-shore habitat areas, physical settings, depositional areas and slag. This information will then be used to determine final near-shore sample site locations proposed by RG Steel – Sparrows that will encompass all types of benthic habitat available.

[1] The near-shore study areas are presumed to be within fifty (50) feet of the shoreline, subject to further refinement as detailed in "B. Sampling Guidelines."

[2] Unmonitored outfalls along the western shore of the facility, north of Tin Mill Canal, include Outfall Nos. 013, 015, 018, 019, 069, 070, and 071. Unmonitored outfalls along the eastern shore of the facility include Outfall Nos. 068, 065, and 059.

4. Study Area Delineation

As noted in footnote 1 above, the near-shore study areas are presumed to be within fifty (50) feet at the shoreline. Further evaluation of groundwater-surface water interactions and unmonitored stormwater outfall impacts shall be conducted based on the application of commonly applied mechanistic equations. The results of this evaluation will be reflected in the final delineation of the offshore areas to be studied in the offshore portion of the human health and ecological portions of the SWI.

B. Sampling Guidelines

RG Steel – Sparrows' dual depth sampling protocol will provide for sediment and pore water sampling at appropriate intervals throughout the 0 to -6 inch and the 0 to -2 centimeter depth ranges in the near-shore area. RG Steel – Sparrows will organize the data into a dataset reflecting conditions in each depth range submitted to the Agencies. RG Steel – Sparrows shall conduct a separate screening level ecological risk assessment (SLERA) on each dataset it prepares, as described below. With respect to RG Steel – Sparrows' proposed 0 to -2 cm sediment depth, the Agencies recognize that RG Steel – Sparrows may alter the depth of sediment sampling from its currently proposed 0 to -2 cm sediment depth. RG Steel – Sparrows proposes to collect sediment cores for analysis of radioisotopes to evaluate recent sedimentation rates, and that sampling locations will be selected following the screening and surveys described above.

Based on the supporting information gathered in accordance with the methodology described above, RG Steel – Sparrows shall place the sediment sample locations near-shore in an overall "parallel to the shore" approach, which RG Steel – Sparrows may augment as necessary. RG Steel – Sparrows shall place the sediment sample locations to capture the full variety of benthic habitat available, and to provide adequate coverage of groundwater influences. RG Steel – Sparrows shall place the stormwater-based sample locations in the area of previously identified unmonitored stormwater discharge areas (including outfalls and sheet flow) offshore, based on identifying near-shore areas where sediment deposition from outfalls and sheet flow could occur. Additional sampling may be conducted if needed to further determine the impacts of releases from the facility on the off-shore environment and to support development of the Corrective Measures Study.

C. Data Assessment – Screening Level Ecological Risk Assessment (SLERA)

RG Steel – Sparrows shall conduct the SLERAs in compliance with EPA's guidance entitled *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments – Interim Final* (EPA 540-R-97-006, June 1997). Specifically, for each data set, the assessment will include tasks to complete Step 1 and 2 screening level ecological risk assessment (SLERA) as well as adding tasks for the Step 3 assessment and incorporating refinements to those processes to reflect site specific knowledge (i.e., Step 3).

Based on the sediment sampling data and evaluation as described above, RG Steel – Sparrows shall prepare one SLERA assessing the risks to ecological receptors in the 0 to -6 inch depth as required by EPA, and one assessing the risks to ecological receptors in the 0 to -2 cm depth (or such other depth as it ultimately may propose). RG Steel – Sparrows may at any time choose to undertake only the SLERA based on the 0 to -6 inch depth sediment data set.

For each SLERA, RG Steel – Sparrows shall map and evaluate sediment contaminant distributions, both for likely source(s) and comparison to EPA Region III BTAG marine sediment benchmarks for benthic effects, supplemented by sediment effects-based values from the primary literature. RG Steel – Sparrows shall screen maximum sediment contaminant concentrations and 95% UCL of the mean concentrations against these same benchmarks in order to derive hazard quotients to be evaluated in the SLERA.

For each SLERA, RG Steel – Sparrows shall evaluate the maximum and 95% UCL of the mean concentration of all bioaccumulative sediment contaminants, as defined by EPA's guidance entitled Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment: Status and Needs (EPA 823-R-00-001, February 2000), in simple food chain modeling using biota-sediment accumulation factors (BSAFs) and water-biota bioconcentration factors, and then evaluate the NOAEL and LOAEL-based hazard quotients.

Additional evaluations will also be conducted that evaluate distributions of maximum and 95% UCL COPI concentrations and incorporate consideration of chemical fate and transport, bioavailability, and receptor movement. These ecological risk assessments will also include pore water. Data from pore water will be used to assess ground water loading, model surface water concentrations, and assess potential uptake and bioaccumulation as an exposure medium for the benthic community. Estimated surface water concentrations will be compared to state and federal ecological criteria supplemented by EPA Region 3 BTAG Marine surface water benchmarks and other appropriate toxicity benchmarks in the published literature.

RG Steel – Sparrows shall conclude the SLERA/BERA Step 3 with a recommendation for the Scientific Management Decision Point, including a data gap analysis.

D. Human Health Risk Assessment

RG Steel – Sparrows agrees to complete a human health risk assessment (HHRA) based on the data to be developed under this workplan and the MPA Study. The HHRA will rely on the general procedures outlined in EPA's Risk Assessment Guidance for Superfund Documents, Maximum and 95% UCL sediment concentrations and modeled surface water concentrations shall be used to assess potential recreational exposures. Potential dietary exposures for human consumption of fish and shellfish will be evaluated using simple bioaccumulation modeling and/or data from the MPA study in conjunction with measured sediment and modeled surface water concentrations. The specified approach to be adopted will be discussed among the Parties and articulated in the final workplan.

E. General provisions

The workplan shall include a map showing all proposed sampling locations. If RG Steel – Sparrows proposes to phase its work, the workplan shall include a schedule showing when each phase will be undertaken and completed. All work required under the workplan shall be completed within three years of EPA's final approval of the workplan.

It is expected and understood that the Parties will work together on the various technical issues that will arise in implementing this framework, and that as with any workplan submittal by RG Steel – Sparrows, the Parties will undertake good faith discussions in advance of the workplan submittal to achieve a workplan that is approvable. The Parties recognize that all rights and arguments are reserved by all Parties, to the extent allowed by law, in connection with this summary and in connection with all workplan negotiations.

Nothing herein shall be interpreted in any way to compromise or otherwise affect the terms of the Consent Decree.

AGREED TO THIS 22nd DAY OF DECEMBER, 2011:

For the United States Environmental Protection Agency:

By: Cecil Rodrigues 22 MM

MARCIA E. MULKEY
Regional Counsel
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

12/22/11

ABRAHAM FERDAS
Director, Land and Chemicals Division
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

12/22/11

SUSAN HODGES
Sr. Assistant Regional Counsel
Office of Regional Counsel
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

12/22/11

CHARLES HOWLAND
Sr. Assistant Regional Counsel
Office of Regional Counsel
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

AGREED TO THIS 21st DAY OF DECEMBER, 2011:

By: _____

(NAME) Horacio Tablada, Director
Land Management Administration

(PARTY) Maryland Department of the Environment

(ADDRESS) 1800 Washington BLVD. Ste. 610
Baltimore MD 21230-1719

Approved as to form and legal sufficiency this
27 day of December, 2011.

_____
Matthew Zimmerman
Assistant Attorney General

AGREED TO THIS 22 DAY OF DECEMBER , 2011:

By: _____

Glenn Mikaloff
Vice President and General Manager
RG Steel Sparrows Point, LLC
1430 Sparrows Point Blvd.
Sparrows Point, MD 21219