FINAL
Assessment of Contaminated Sediments
River Rouge/Ecorse Shoreline
Site Characterization Report

Detroit River Area of Concern, Wayne County, Michigan

Great Lakes Architect-Engineer Services
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LIST OF ACRONYMS AND ABBREVIATIONS

µg/kg	Microgram(s) per kilogram
µmol	Micromole(s)
µmol/g_{oc}	Micromole(s) per gram organic carbon
aka	Also known as
AOC	Area of Concern
AVS	Acid volatile sulfide
BUI	Beneficial use impairment
cfs	Cubic feet per second
COC	Constituent of concern
cy	Cubic yard(s)
DQO	Data quality objective
DRO	Diesel range organics
DTE	DTE Energy Corporation
DWSD	Detroit Water and Sewerage Department
EA	EA Engineering, Science, and Technology (MI), PLC
EPA	U.S. Environmental Protection Agency
ESB_{AVS}	Equilibrium partitioning sediment benchmark based on acid volatile sulfide
ESBTU	Equilibrium partitioning sediment benchmark toxic unit
EVS	Environmental Visualization System
FCV	Final chronic value
FD	Field duplicate
FSP	Field Sampling Plan
ft	Foot (feet)
GLNPO	Great Lakes National Program Office
g	Gram
g_{oc}	Gram organic carbon
GPS	Global positioning system
IGLD	International Great Lakes Datum
in	Inch(es)
K_{oc}	Organic carbon-water partition coefficient
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mg/kg	Milligram(s) per kilogram

MRO	Mid-range organics
MS	Matrix spike
MSD	Matrix spike duplicate
ND	Non-detect
NOAA	National Oceanic and Atmospheric Administration
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PEC	Probable effects concentration
ppb	Part(s) per billion
ppm	Part(s) per million
QAPP	Quality Assurance Project Plan
RL	Reporting limit
R/V	Research Vessel
SEM	Simultaneously extracted metals
SIM	Selected ion monitoring
SOP	Standard Operating Procedure
SQG	Sediment Quality Guidelines
TEC	Threshold effects concentration
TOC	Total organic carbon
TPH	Total petroleum hydrocarbons
U.S. Steel	United States Steel Corporation
WDNR	Wisconsin Department of Natural Resources
WGS84	World Geodetic System 1984

EXECUTIVE SUMMARY

This report presents the contaminated sediments site characterization for the River Rouge/Ecorse Shoreline (the Site), located within the Detroit River Area of Concern (AOC), Wayne County, Michigan (Figure 1-1). This work was conducted by EA Science and Technology and its affiliate EA Engineering, Science, and Technology, (MI) PLC (EA)[1] and the U.S. Environmental Protection Agency's (EPA) Great Lakes National Program Office (GLNPO) in accordance with the Quality Assurance Project Plan (QAPP) (EA 2013) and Field Sampling Plan (FSP) (EA 2013, Appendix A) for the River Rouge/Ecorse Shoreline Site Characterization, Detroit River AOC, Wayne County, Michigan, finalized December 2013. The purpose of the field investigation was to determine the nature and extent of chemical contamination in the areas of soft sediment deposition within the Site. Primary objectives were to determine depth of contamination, provide information about depositional areas, and identify high priority areas for remediation or for further investigation in the River Rouge/Ecorse Shoreline area. This Site Characterization Report summarizes the findings from the field investigation, including data tables and maps, and data interpretation. The results of the field investigation were evaluated to assess the sediment quality for the River Rouge/Ecorse Shoreline area. This Executive Summary presents a summary of the findings of the Site Characterization Report; details on the site background and methodology, as well as further details of the findings, are presented within the report itself.

ES.1 SAMPLING RESULTS

Lithology

Sediment cores collected within the Rouge River/Ecorse Shoreline site contained sediment types consistent with a fluvial system. Most cores were characterized by thick alternating layers of clay and silty clay interspersed with smaller amounts of sandy or gravelly material. Native and non-native material such as shells, roots and organic material, hydrocarbon odor, and woody debris were frequently observed within various sediment types and depths.

Bulk Chemistry

The validated data collected under this investigation were compared to the consensus-based threshold effects concentrations (TECs) and the probable effects concentrations (PECs) of the Sediment Quality Guidelines (SQG) for Freshwater Systems (MacDonald et al. 2000) to address the objectives of this assessment.

Polychlorinated biphenyl (PCB)-Aroclors were detected in 81 percent of the samples submitted for analysis, and more than a third of the locations sampled had PCB-Aroclor concentrations exceeding 10 times the PEC in at least one depth interval. Polycyclic aromatic hydrocarbons

[1] EA Engineering, Science, and Technology, Inc. does business as EA Science and Technology in the State of Michigan and EA is affiliated with EA Engineering, Science, and Technology, (MI) PLC.

(PAHs) were detected in all of the samples analyzed, and PAH concentrations exceeded 5 times the PEC in at least one depth interval for more than one-quarter of the locations sampled. PEC exceedances for metal concentrations varied across the suite of metals analyzed. Less than 25 percent of samples analyzed had arsenic or mercury concentrations that exceeded the PEC. Concentrations of copper, chromium, and cadmium each exceeded the PEC in approximately half of the samples analyzed. For iron, lead, nickel, and zinc, the majority of samples analyzed contained concentrations that exceeded the respective PEC.

Further analysis of COC concentrations was performed by calculation of various benchmarks for both PAHs and metals. PAH equilibrium partitioning sediment benchmark toxic units (ESBTUs) were calculated as an additional tool for evaluating potential risk associated with sediment contamination (EPA 2003). For PAH ESBTUs, 57 percent of samples had values greater than 1.

The ratio of simultaneously extracted metals to acid-volatile sulfide (SEM/AVS), which has been termed an Equilibrium Partitioning Sediment Benchmark based on AVS (ESB_{AVS}), provides a method to predict the lack of toxicity in divalent metals (cadmium, copper, lead, nickel, silver and zinc) contaminated sediments. When SEM/AVS ratios are less than 1 the sediment is predicted to be non-toxic. When the ratio of SEM/AVS is greater than 1 the metals contaminated sediment is either toxic or toxicity is uncertain. Within the Detroit River AOC ESB_{AVS} was calculated, resulting in 44% of the samples with ratios of less than 1 indicating that the sediment at these locations was not toxic. ESB_{AVS} ratios were greater than 1 in 56 percent of samples, which indicates that these samples may or may not be toxic to benthic organisms (EPA 2005). A modification to the ESB_{AVS} method was also performed to improve the prediction of mortality by accounting for the presence of total organic carbon and the ability of metals to partition to the organic carbon as well as the AVS. This further refinement of the toxicity predictions accounts for the presence of organic carbon in addition to AVS, and their effect on metals bioavailability, and it involves taking the SEM-AVS difference and normalizing by organic carbon (EPA 2005). When this calculation was performed, 11 percent of samples exhibited organic carbon normalized metals values exceeding the threshold value of 130 micromoles (µmol) per gram organic carbon (g_{oc}) for uncertain toxicity, and no samples exceeded the threshold value of 3,000 $\mu mol/g_{oc}$ for likely toxicity. This would indicate that sediment organic carbon at the site plays an important role in reducing bioavailability and toxicity from divalent metals.

ES.2 SPATIAL ANALYSIS AND VOLUME ESTIMATION

To determine the location of hotspots within the Detroit River AOC, the dataset of all individual constituents exceeding their respective PECs in sediment samples was spatially interpolated to develop an estimate of the level and distribution of elevated concentrations of constituents across the study area. Potential hotspots identified by the all constituent analysis were then verified by comparison to spatial interpolations of two additional datasets: (1) the calculated PAH ESBTUs; and (2) the calculated organic carbon normalized metal concentrations. Hotspot determination allows priority areas to be targeted for further investigation or remediation. Interpolation was performed by using a spatial statistical method called kriging, which determined that for the

majority of the study area one or more analytes were present in concentrations exceeding the PEC. The areas containing PEC exceedances were divided into two large hotspots (Hotspots 1 and 3) and one smaller hotspot (Hotspot 2).

The River Rouge shoreline area (Hotspot 1) includes the mouth of the Rouge River and stretches south to the mouth of the Nicholson North (also known as Allied Oil) boat slip. The majority of this area has constituent concentrations exceeding 3 times the PEC, about one-quarter of the area has constituent concentrations between 2 and 3 times the PEC, and the remaining portion (less than one-quarter) has constituent concentrations between 1 and 2 times the PEC. The estimated volume of sediment concentrations of at least one constituent of concern (COC) exceeding the PEC is 794,000 cubic yards (cy) for Hotspot 1. The COCs present in Hotspot 1 with concentrations greater than 3 times their respective PECs include total 17PAHs, total PCBs, cadmium, chromium, copper, iron, lead, nickel, and zinc.

Hotspot 2 consists of the western two-thirds of the Nicholson North (aka. Allied Oil) boat slip. PEC exceedances in Hotspot 2 include total 17PAHs, total PCBs, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc. Total PCB concentrations exceeded 2 times the PEC at all 4 of the sampling locations within Hotspot 2. The estimated volume of impacted sediment in Hotspot 2 is 56,000 cy.

The Ecorse Shoreline area (Hotspot 3) has constituent concentrations exceeding 3 times the PEC in the majority of the hotspot, including all of the Nicholson South boat slip. Constituent concentrations exceeding 1 or 2 times the PEC are present primarily in the southern end of the hotspot in the areas surrounding Mud Island. The estimated volume of sediment with constituent concentrations exceeding the PEC is 1,338,000 cy. The COCs present in portions of Hotspot 3 include total 17PAHs, total PCBs, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc. The southern end of this hotspot includes the mouth of the Ecorse River, near which concentrations of total 17PAHs exceeded 3 times the PEC, and concentrations of total PCBs exceeded 10 times the PEC.

ES.3 CONCLUSIONS

Based on the data collected during the River Rouge/Ecorse Shoreline sediment investigation, a large portion of the site contains elevated constituent concentrations that are potentially harmful to benthic organisms. The 3 hotspots identified have an estimated total volume of 2,188,000 cy of sediment with COC concentrations exceeding PECs, and they should be considered as priority areas for further investigation and potential remediation efforts.

Model results indicated that each of the 3 hotspots has significant volumes of sediment with elevated COC concentrations exceeding 2 or 3 times PEC levels. Modeling of the PAH ESBTUs also showed elevated values reflecting impacted sediment throughout most of the hotspot areas that were identified by modeling of all COCs with concentrations above the PEC. Modeling of organic carbon normalized metals indicated three areas where the threshold value of 130 $\mu mol/g_{oc}$, were exceeded and these three areas all fell within the identified hotspots. This

reinforces that these 3 hotspots should be considered priority areas for additional assessment and potential remediation.

Further investigation is recommended in part because estimates regarding the areal extent of the 3 hotspots and the volumes of sediment with elevated concentrations of COCs contain significant uncertainty. This uncertainty stems in part from the limited number of samples, as well as the occurrence of PEC exceedances in the bottom interval of some cores that were not collected to refusal due to field conditions. Although further assessment should improve estimates, the present study serves to effectively characterize much of the River Rouge/Ecorse Shoreline Site as containing sediment impacted by elevated levels of COCs.

1. INTRODUCTION

This report presents the contaminated sediments site characterization for the River Rouge/Ecorse Shoreline (the Site), located within the Detroit River Area of Concern (AOC), Wayne County, Michigan (Figure 1-1). This work was conducted by EA Science and Technology and its affiliate EA Engineering, Science, and Technology, (MI) PLC (EA)[1] and the U.S. Environmental Protection Agency's (EPA) Great Lakes National Program Office (GLNPO) in accordance with the Quality Assurance Project Plan (QAPP) (EA 2013) and Field Sampling Plan (FSP) (EA 2013, Appendix A) for the River Rouge/Ecorse Shoreline Site Characterization, Detroit River AOC, Wayne County, Michigan, finalized December 2013.

1.1 WORK SCOPE AND OBJECTIVES

1.1.1 Project Objectives

The purpose of the field investigation was to determine the nature and extent of chemical contamination in the areas of soft sediment deposition within the site. Primary objectives were to determine depth of contamination, provide information about depositional areas, and identify high priority areas for remediation or for further investigation in the River Rouge/Ecorse Shoreline area.

1.1.2 Objectives of the Site Characterization Report

This Site Characterization Report summarizes the findings from the field investigation, including data tables and maps, and data interpretations. The results of this site characterization were evaluated to assess the sediment quality for the River Rouge/Ecorse Shoreline area. The overall objectives of this report are to define the spatial extent of contaminants and soft sediment, develop a preliminary estimate of the volume of contaminated soft sediment, and identify priority areas within the River Rouge/Ecorse Shoreline area at which remediation efforts should be initiated.

1.2 SITE LOCATION AND HISTORY

1.2.1 Detroit River and Rouge River AOCs

The Detroit River has a drainage area of 700 square miles of land in Michigan and Ontario, as well as the 107-square-mile City of Detroit sewershed. A part of the international connecting waterway that also includes the St. Clair River and Lake St. Clair, the 32-mile strait of the Detroit River links Lake Erie to the Upper Great Lakes, which include Lakes Huron, Michigan, and Superior (Figure 1-1). The mean discharge of the Detroit River into Lake Erie is 185,000

[1] EA Engineering, Science, and Technology, Inc. does business as EA Science and Technology in the State of Michigan and EA is affiliated with EA Engineering, Science, and Technology, (MI) PLC.

cubic feet per second (cfs). It has five tributaries, although greater than 95 percent of its total flow comes from Lake Huron via the St. Clair River and Lake St. Clair. The most significant tributary to the Detroit River is the Rouge River. Like the Detroit River, the Rouge River is a Great Lakes AOC.

The Detroit River has a past and present use as an industrial and drinking water source. It is believed that contaminated sediments in the study area contribute to beneficial use impairments (BUIs) in the AOC. Impairment of beneficial use means an unacceptable change in the chemical, physical, or biological integrity of the Great Lakes ecosystem. A Detroit River Stage 1 Remedial Action Plan was completed by the Michigan Department of Natural Resources (MDNR) in 1991, and it identifies the following 11 BUIs for the Detroit River AOC:

1. Restrictions on fish and wildlife consumption
2. Tainting of fish and wildlife flavor
3. Restrictions on drinking water consumption, or taste and odor
4. Degradation of fish and wildlife populations
5. Beach closings
6. Fish tumors or other deformities
7. Degradation of aesthetics
8. Bird or animal deformities or reproduction problems
9. Degradation of benthos
10. Restriction on dredging activities
11. Loss of fish and wildlife habitat.

At the time the Stage 1 Remedial Action Plan was drafted, six municipal drinking water intakes serving approximately 4.1 million people in nearly 100 communities and approximately 25 industries withdrew water from the Detroit River. In addition to serving as a water source, approximately 30 industries and power plants discharged cooling water and/or process water to the Detroit River, and 10 municipal wastewater treatment plants discharged industrial and domestic wastewater. The principal industrial discharges were on the Michigan shoreline along the lower 15 miles of the river from Zug Island downstream through the Trenton Channel to the mouth of Lake Erie.

Major industries included steel mills, petroleum refineries, electrical power generating plants, chemical manufacturing plants, and automotive part manufacturers. The largest discharger to the river was the Detroit Water and Sewerage Department (DWSD), which discharged an average of 715 million gallons per day, including waste from more than 700 industrial users. An additional 46 facilities discharged to Detroit River tributaries. The river also received urban and industrial runoff directly and through its tributaries and storm sewer systems (MDNR 1991).

Use of the river today is similar to 1991 except that there are fewer industries and wastewater treatment plants. Currently along the Michigan shoreline, there are four municipal drinking water intakes serving about 4.2 million people in nearly 127 communities. Approximately 20 industries and power plants discharge cooling water and/or process water to the river, and about 29 additional facilities discharge to the tributaries. There are five municipal wastewater

treatment plants. DWSD is still the largest discharger, discharging an average of 1.3 billion gallons per day, including waste from about 400 industrial users (EPA 2013).

The Stage 1 Remedial Action Plan and subsequent studies found that sediment contaminant concentrations in the Detroit River are generally much greater along the Michigan shoreline compared to the middle portion of the river and the Ontario shoreline. The Michigan shoreline from the Rouge River downstream through the mouth of the Trenton Channel appears to be the most impacted. Contaminant distributions in sediment are reflective of a combination of historical point sources and hydrological effects (MDNR 1991).

Because there is little lateral mixing in the Detroit River, contaminated sediments are believed to deposit according to long-shore water flow following a longitudinal vector. This has resulted in high contaminant levels in nearshore zones, particularly downstream of point sources and tributaries, while large areas of the Detroit River exhibit moderate to low levels of contamination further away from the Michigan shore (EPA 2013).

1.2.2 River Rouge/Ecorse Shoreline

Located in the Detroit River along the shorelines of the cities of River Rouge and Ecorse, Michigan, the area of investigation is bounded on the upstream by the Rouge River cut-off channel and extends downstream approximately 3 river miles to below Mud Island (Figure 1-2). Nicholson North (also known as Allied Oil) and Nicholson South boat slips are included in the project footprint.

The River Rouge/Ecorse Shoreline project area is considered one of the most highly impacted areas of contaminated sediment in the Detroit River. The area is located adjacent and directly downstream of the confluence of the Detroit and Rouge Rivers, and is therefore immediately influenced by two AOCs. Historically, the City of Ecorse's municipal waste outfall and 15 industrial outfalls discharged within the project area. There are currently 14 industrial discharges. Roughly 1,000 feet (ft) directly upstream of the River Rouge/Ecorse Shoreline site is DWSD's main outfall, the largest point source discharge in the Great Lakes, discharging 1.3 billion gallons per day of municipal and industrial wastewater. The mouth of the Rouge River is also directly upstream of the site, discharging about 1,090 cfs. The Rouge River is not only another AOC, but due to the concentration of industry in the lower Rouge, more than 50 percent of its flow when it reaches the Detroit River is comprised of continuous industrial discharge.

In addition to being influenced by Rouge River outflow and the DWSD outfall, the River Rouge/Ecorse Shoreline is dominated by a DTE Energy Corporation (DTE) power plant, and United States Steel Corporation's (U.S. Steel) Main Plant and 80″ Mill. Eleven of the 14 current outfalls are from U.S. Steel, 2 belong to DTE, and 1 is from Praxair that discharges into the Nicholson North (aka. Allied Oil) boat slip. The combined discharge from all facilities is about 1 billion gallons per day.

To address the delisting criteria and allow for the eventual removal of the Degradation of Benthos BUI, EPA GLNPO, Michigan Department of Environmental Quality (MDEQ), Detroit River Public Advisory Committee, and Friends of the Detroit River initiated an effort in 2012 to define the "known contaminated sediment sites" in the Detroit River. The group conducted a content analysis of a number of contaminant studies and established six sediment target sites. The River Rouge/Ecorse Shoreline is one of the six target areas (EPA 2013).

2. RIVER ROUGE/ECORSE SHORELINE SITE INVESTIGATION

The purpose of this field investigation was to determine the nature and extent of chemical contamination in the areas of soft sediment deposition. Primary objectives were to determine depth of contamination, provide information about depositional areas, and identify high priority areas for remediation or for further investigation in the River Rouge/Ecorse Shoreline area.

The River Rouge/Ecorse Shoreline site characterization was conducted in coordination with EPA. The investigations, including all sampling activities and analytical testing, were carried out in accordance with procedures outlined in the QAPP (EA 2013) and FSP (EA 2013, Appendix A).

2.1 SAMPLING PROGRAM DESIGN AND RATIONALE

The site-specific QAPP details the project data quality objectives (DQOs) and outlines how the sample collection program fulfills the project objectives (EA 2013). Sampling was conducted to delineate the nature and extent of sediment contamination in the River Rouge/Ecorse Shoreline area of the Detroit River AOC.

2.1.1 Sample Locations

The sample locations for the River Rouge/Ecorse Shoreline site characterization were chosen based on historical sampling data, location of historic and current outfalls (Figure 1-2), water depths, and proximity to the shipping channel. Input from MDEQ and the Detroit Riverkeeper was also received prior to finalization of sample locations. Additional information regarding the analytical program is included in the QAPP (EA 2013).

A total of 50 sample locations were attempted using a vibracoring system and ponar grab sampler (Figure 2-1) onboard the GLNPO *Research Vessel (R/V) Mudpuppy II*. Several sample locations were abandoned; therefore, 1 core sample was collected from 43 locations and 1 grab sample was collected from 45 locations for physical and chemical analysis. The onboard global positioning system (GPS) of the *R/V Mudpuppy II* was used to navigate to each location. Target coordinates for each subsurface sediment sample location were provided to EA by EPA. Variance from these coordinates was calculated and documented; the actual coordinates sampled are provided in Table 2-1. Sample locations that needed to be moved or abandoned in the field are described in Section 2.8.

2.1.2 Number of Samples

Sediment core samples were collected from 43 sample locations. The deviation from the 50 target sample locations is described in Section 2.8. Core samples were taken from up to six intervals at each location. A total of 188 core sediment samples (not including quality control samples) were submitted for analysis (Table 2-2). The sampling interval depths were as follows: 0-1 ft, 1-3 ft, and every 2 feet (ft) thereafter until refusal. Sediment from each interval was

homogenized prior to separation into individual containers for submittal to the laboratory. Sediment cores varied in length from 0.5 to 9.9 ft.

A surface sample of the top 6 inches (in.) (0-0.5 ft) of sediment was also collected with a ponar grab/dredge sampler at 45 of the proposed coring locations. Approximately 42 ounces was needed from each location in order to provide sufficient sample volume to support analysis of this uppermost interval. A total of 45 grab samples (not including quality control samples) were submitted for analysis (Table 2-2).

2.2 NAVIGATION AND SURVEY

The *R/V Mudpuppy II* navigated to each proposed sampling location using GPS with sub-meter accuracy. The onboard GPS of the *R/V Mudpuppy II* utilized the World Geodetic System 1984 (WGS84) to navigate and record each individual sampling location. The unit was checked daily for accuracy prior to use in accordance with EPA's *Interim Guidance for Developing Global Positioning System Data Collection Standard Operating Procedures and Quality Assurance Project Plans* (EPA 2008) and the procedures outlined in the QAPP (EA 2013). The sample locations are presented in Table 2-1. Once the vessel navigated to the sample location, the sampling team visually confirmed that the proximal location or surroundings agreed with the proposed sample location map (Figure 2-1) prior to sampling.

Sediment elevation was calculated by normalizing measured water depths to the International Great Lakes Datum (IGLD) 1985 height above sea level using the National Oceanic and Atmospheric Administration (NOAA) buoy Station ID 9044020, located in Gibraltar, Michigan, proximal to the study area (http://glakesonline.nos.noaa.gov/monitor.html). Water depths were measured in the field using the depth finder onboard the *R/V Mudpuppy* and verified manually by lowering a weighted tape measure to the sediment surface. NOAA buoy Station ID 9044020 collects real-time water surface elevation in reference to IGLD85 in six-minute intervals. The water depth measured at the time of core collection was subtracted from the calculated sea surface elevation at time of core collection to determine the sediment surface elevation at each core location.

2.3 SEDIMENT SAMPLING

Mobilization for the River Rouge/Ecorse Shoreline sediment sampling commenced on 27 October 2013. Sample collection was initiated on 28 October 2013 and continued through 5 November 2013. Staging for the field effort took place at the EPA Large Lakes Research Station on Grosse Ile, Michigan. Modified Level D personal protective equipment (i.e., Saranex-coated Tyvek, safety glasses, work boots, and Nitrile gloves) were worn during core collection (EA 2013). In addition, all personnel aboard the *R/V Mudpuppy II* had a respirator fit test within the last year and respirators were onboard for each individual.

Field books and sample collection data sheets were prepared in accordance with the procedures outlined in the FSP (EA 2013, Appendix A) and EA Standard Operating Procedures (SOPs) 016 and 059 (Appendix B of the FSP) throughout sample collection and processing.

2.3.1 Vibracore Sampling

A total of 43 sediment cores were collected using a vibracoring system onboard the GLNPO sampling vessel *R/V Mudpuppy II*. The vibracoring system consisted of a core liner with an inside diameter of 4 inches (in.). A core liner with a length of 5, 7.5, or 10 ft was fitted into the vibracoring unit with a one-way valve at the top to retain sediment during retrieval and a plastic or stainless steel catcher inserted into the bottom of the core. Coring operations were conducted using an onboard crane, winch, and generator.

To obtain sediment samples, a dedicated, decontaminated cellulose acetate butyrate core liner was inserted directly into the vibracore unit and secured. The core was penetrated to the depth of refusal (except in instances where soft sediment depth exceeded the length of available core liners) and then retrieved using the winch system. The core liner was removed from the vibracore unit and excess liner was cut to the sediment interface with an electric saw. The core was capped at both ends, sealed, and measured. Each core was labeled with the location number and the direction of the top and bottom of the core.

Following collection, sediment cores were transferred to a refrigeration truck (cooled to 4 degrees Celsius) and then transported to the onshore staging area at the EPA's Grosse Isle facility. The cores were stored in the secured refrigeration truck until they could be processed. A log of coring activities, sampling locations, water depths, and core recoveries was recorded in permanently bound logbooks in indelible ink. Personnel names, local weather conditions, and other information that impacted the field sampling program were also recorded. Each page of the logbook was numbered and dated by the personnel entering information. Copies of the field logbooks are provided in Appendix A.

2.3.2 Ponar Grab Sampling

A total of 45 surface sediment samples (not including quality control samples) were successfully collected using a ponar onboard the *R/V Mudpuppy II.* The ponar sampler was mechanically deployed and retrieved as described in SOP MP102 (EA 2013, Appendix A). The procedure included deploying the sampler off of the gunwale of the boat, retrieving the sampler to the boat deck, decanting water at the top of the sampler, and emptying the sediment into an appropriate pan. Decontaminated stainless-steel pans and bowls were used to capture the sediment as it was emptied from the dredge. Multiple deployments were sometimes necessary to collect sufficient volume. Samples to be analyzed for simultaneously extracted metals/acid volatile sulfide (SEM/AVS) were placed directly into jars as the ponar sample was collected. Sediment was transferred to the sample processing area located onshore.

2.3.3 Sediment Processing

Sediment sample processing was performed onshore at a temporary location at EPA's Grosse Isle facility. At the processing facility, cores were split lengthwise in the liner for examination. Sediment was then removed from the liner by subsample intervals. The cores were logged and

photographed from the top of the core (sediment surface) to the bottom (recovery depth), representing a vertical profile of the soft sediment. Sediments were classified in general accordance with the Unified Soil Classification System under ASTM International D2487-11. These sediment logging activities were performed in accordance with SOP 016 (EA 2013, Appendix A).

After the log was completed, the sediment from each subsample interval was removed from the core or grab sampler with a clean stainless-steel spatula or spoon and placed in a clean disposable pan or stainless steel tray. Cores collected via vibracoring were subsampled at several depth intervals. Core samples were homogenized by removing all material collected from the designated depth interval in a single core and mixing until consistency was uniform. Sediment samples were packaged and shipped in accordance with EA SOPs (EA 2013, Appendix A). Equipment that was re-used (e.g., cutting tools, broad knife, spatula, bowls, etc.) was decontaminated in accordance with the decontamination procedures described in Section 2.6. Lithologic and photographic logs of sediment cores are included in Appendices B and C, respectively.

2.4 ANALYTICAL PROGRAM

The analytical program is summarized in Table 2-2. Each sediment core and ponar grab sample underwent the following analyses:

- Total polychlorinated biphenyls (PCBs) (Aroclors)
- 34 polycyclic aromatic hydrocarbons (PAHs)
- Michigan 10 metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc) plus iron and nickel
- Total organic carbon (TOC)
- Percent solids.

In addition to the above analytical parameters, ponar grab sediment samples from the 0 to 0.5 ft interval were also analyzed for:

- SEM/AVS
- Grain size
- Total petroleum hydrocarbons (TPH).

These analyses were only performed on surface sediment because the data they yield are useful for assessing toxicity to organisms in the biologically active zone that typically is represented by the surface sediments (top 6 in.). Field duplicates were not collected for grain size analysis.

2.5 SAMPLE HANDLING, CHAIN-OF-CUSTODY, AND QUALITY ASSURANCE/QUALITY CONTROL

2.5.1 Sample Handling, Chain-of-Custody and Documentation

Sediment samples analyzed for PCBs (Aroclors), 34PAHs, Michigan 10 metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc) plus iron and nickel, TOC, percent solids, SEM/AVS, TPH and grain size were shipped from the site to TestAmerica's Burlington laboratory. Samples were placed in the appropriate sample containers (obtained from TestAmerica), preserved, and labeled in accordance with the QAPP/FSP (EA 2013). In preparation for shipment to the laboratories, all samples were packaged in accordance with the procedures outlined in the FSP (EA 2013, Appendix A).

Sample labeling was performed in accordance with SOP 001 (EA 2013, Appendix A). Individual sample containers were labeled with a unique designation that corresponded to the specific geographic location, year of collection, and subsample depth interval. The FSP (EA 2013, Appendix A) outlines the specific sample identification procedures that were implemented. Sample identifications included River Rouge/Ecorse, the year of sampling, the location number, and the targeted end point of the interval in feet. "RREC" was used for River Rouge/Ecorse and "13" was used to identify the sampling year 2013. An example of a sample identifier is "RREC13-01-0001." This identifier describes a sample taken at River Rouge/Ecorse in 2013 at the depth interval of 0-1 ft below the sediment surface. Sample depths were at intervals of 0-0.5 ft (ponar grab for SEM/AVS and grain size), 0-1 ft, and every 2 ft thereafter; therefore, the depth intervals were as follows: SURF (ponar grab), 0001, 0103, 0305, 0507, 0709 and 0911. Field duplicates (FDs) were designated by adding "FD" to the end of the sample designation. Matrix spikes (MSs) and matrix spike duplicates (MSDs) were designated by adding "MS" and "MSD" to the end of the sample designation. For example: RREC13-01-0001FD or RREC13-01-0001MS.

Chain-of-custody forms were completed and used to track samples from the time of sampling to the arrival of samples at the laboratory. Completed chain-of-custody forms are available in Appendix A of the Data Usability Assessment Report, which has been provided under separate cover.

2.5.2 Quality Control

Throughout the project, various measures were implemented to ensure the overall quality, credibility, and usability of the collected data. The field investigation activities included collection of additional quality control samples (e.g., FDs, MS/MSDs) sufficient to meet the requirements of the DQOs as defined in Section A.7 of the QAPP (EA 2013). Duplicate samples were submitted as described in the FSP (EA 2013, Appendix A), and field and laboratory quality control requirements were completed in accordance with Section B.5 of the QAPP (EA 2013). Deviations from the QAPP/FSP (EA 2013) are discussed in Section 2.8.

2.6 DECONTAMINATION

Decontamination procedures were implemented during the field investigation to prevent cross-contamination between sampling locations. During sampling activities, disposable or dedicated sampling tools and materials were utilized whenever possible to minimize the decontamination efforts. Decontamination procedures were carried out in accordance with Section 4.6 of the FSP (EA 2013, Appendix A).

2.7 INVESTIGATION-DERIVED WASTE

Following collection of the sediment samples, investigation-derived waste was managed in accordance with the procedures described in Section 4.7 of the FSP (EA 2013, Appendix A). In general, residual sediments and decontamination water were returned to the respective sample location onsite. Disposable materials and personal protective equipment that came into contact with site sediments were bagged and disposed of as general municipal waste.

2.8 DEVIATIONS FROM THE QAPP AND FSP

2.8.1 Sampling Locations

Actual coordinates are presented in Table 2-1. A total of 24 of the target sample locations were moved during the field activities (Table 2-1). A total of 3 locations (RREC13-03, -06, and -11) were moved offshore from the proposed locations due to close proximity of large rocks along shore at the proposed locations. Location RREC13-33 was moved due to pilings at the proposed location. A total of 3 locations were moved slightly offshore due to shallow water (RREC13-01, -05, and -41). A total of 5 locations (RREC13-14, -26, -27, -29, and -46) were moved inshore from the proposed locations and away from the channel. Location RREC13-07 was moved because the strong current at the proposed location prevented sampling. A total of 8 locations (RREC13-09, -13, -24, -25, -35, -42, -44, and -47) were moved slightly by EPA to areas of greater deposition. Location RREC13-39 was moved slightly because of a steep slope at the proposed location. Location RREC13-15 was moved because a ship was docking in the area of the proposed location, and location RREC13-22 was moved because a barge was tied off at the proposed location. All moves were approved by EPA at the time of sampling.

A total of 5 sample locations were abandoned (RREC13-04, -08, -10, -12, and -43) and no core or grab samples were collected. After consultation with EPA, in accordance with the QAPP (EA 2013), vibracoring and ponar attempts were abandoned at RREC13-04 and RREC13-43 after three attempts. Locations RREC13-08, -10, and -12 were abandoned after consultation with EPA due to lack of soft sediments at the proposed locations. Core penetration and recovery for each subsurface coring location were recorded in a field logbook (Appendix A) and are presented in Table 3-1.

2.8.2 Proposed Analytical Program

Table 2-2 compares the proposed and actual analytical program for the River Rouge/Ecorse Shoreline area. The QAPP and FSP assumed that an average of 5 analytical samples would be collected from each location with MS/MSDs and FDs submitted for 5 and 10 percent of total samples submitted, respectively. Therefore, it was proposed that a total of 250 samples would be submitted for PCB-Aroclors, selected ion monitoring (SIM) 34PAHs (SIM 34PAHs), Michigan 10 metals plus iron and nickel, TOC, and percent solids. Fifty of the 250 samples (surface samples only) were also to be submitted for analysis of the ratio of SEM to AVS and grain size analysis. Actual core lengths varied (Table 3-1); however, the average length was less than 10 ft. A total of 233 samples (not including quality control samples) were submitted for PCB-Aroclors, SIM 34PAHs, Michigan 10 metals (plus iron and nickel), TOC, and percent solids; 45 samples (surface samples only and not including quality control duplicates) were submitted for grain size and SEM/AVS. FDs and MS/MSDs were submitted for 10 and 5 percent of the samples submitted, respectively, with two exceptions: grain size samples were not submitted for FD or MS/MSD analyses and percent solids were not submitted for MS/MSD analysis, as specified in the QAPP/FSP (EA 2013).

2.8.3 Sample Collection and Processing

A total of 27 cores (RREC13-02, -03, -13, -14, -17, -18, -21, -22, -23, -25, -26, -27, -28, -29, -30, -31, -33, -35, -37, -38, -39, -41, -46, -47, -48, -49, and -50) were not collected to refusal, at the discretion of an EPA official at the time of sampling, because soft sediment deposition extended deeper than the length of available core tubes. To reduce the overall number of samples to be submitted for analysis, the 7 to 9 ft interval and 9 to11 ft interval were combined into a 7 to 10 ft interval for 6 locations (RREC13-14, -25, -27, -46, -48, and -49). This was noted in the sample identification and approved by EPA in the field at the time of sample processing.

The QAPP and FSP (EA 2013) stated that surface samples would be collected and processed onboard the *R/V Mudpuppy II*. Once in the field, EPA deemed it more efficient to transfer the ponar sample to a container and process it at the onshore staging area with the cores. Surface sample volume was transported to shore in stainless steel containers with lids, and noted in the core processing logbook in Appendix A. The SEM/AVS samples were an exception to this as they were placed into jars directly after the ponar sample was taken.

3. RESULTS

3.1 DATA EVALUATION

The overall DQO for the project was to provide data of known and documented quality to characterize current site conditions at the River Rouge/Ecorse Shoreline area. Data collected from the River Rouge/Ecorse Shoreline area were validated by evaluating the completeness, correctness, and conformance of the data set against the method, SOP, or contract requirements documented in the QAPP/FSP (EA 2013). The overall data review and validation program attained the project objectives.

The validated data collected under this investigation were compared to the consensus-based threshold effects concentrations (TECs) and the probable effects concentrations (PECs) of the Sediment Quality Guidelines (SQG) for Freshwater Systems (MacDonald et al. 2000) to address the goals of this assessment. Contaminant concentrations exceeding the applicable sediment quality criteria were identified. Figures were prepared to visually present contaminant concentrations and identify potential hotspots or focus areas within the study area.

Detected values greater than or equal to the Method Detection Limit, but less than the laboratory Reporting Limit (RL), were identified as "J" qualified and are estimated. Analytes that were not detected were identified as "U" qualified. For samples submitted with FDs, the maximum concentration between the sample and its FD was used in reporting the bulk chemistry and modeling results.

3.1.1 Comparison to Sediment Quality Guidelines

The SQG were developed as informal (non-regulatory) guidelines for use in interpreting chemical data from analyses of sediments. Several biological-effects approaches have been used to assess freshwater sediment quality relative to the potential for adverse effects on benthic organisms, including the TEC/PEC (MacDonald et al. 2000) approach. The TEC and PEC levels were derived using concentrations with both effects and no observed effects (MacDonald et al. 2000). TECs typically represent concentrations below which adverse biological effects were rarely observed, while PECs typically represent concentrations in the middle of the effects range and above which effects were more frequently observed (MacDonald et al. 2000). Concentrations that are between the TEC and PEC represent the concentrations at which adverse biological effects occasionally occur.

TEC and PEC levels for iron were not available from the MacDonald et al. document. Iron concentrations in sediment from the River Rouge/Ecorse Shoreline area were compared to the iron TEC and PEC values documented in the Ontario effect-based freshwater sediment quality guidelines (Persaud et al. 1993). This iron benchmark was also recommended for use by the Wisconsin Department of Natural Resources (WDNR 2003).

3.1.2 Calculation of Total Polycyclic Aromatic Hydrocarbons and Total Polychlorinated Biphenyls

When calculating total PAHs, J-qualified results were used and results that were U-qualified were calculated using one-half the RL. Substituting one-half the RL (non-detect [ND] = ½RL) for each non-detect provides a conservative estimate of the concentration. This method, however, tends to produce results that are biased high, especially in data sets where many samples are non-detects. This overestimation is important to consider when comparing calculated total values to criteria. Due to the frequency of non-detects for individual PCB-Aroclors, total PCB-Aroclor concentrations were calculated by summing the concentrations of each PCB-Aroclor with non-detects set equal to zero (ND=0).

3.1.3 Simultaneously Extracted Metals/Acid Volatile Sulfide Ratio

The SEM/AVS approach, termed the Equilibrium Partitioning Sediment Benchmark based on Acid Volatile Sulfide (ESB_{AVS}), has been recommended by EPA as a predictor of the bioavailability and toxicity of some divalent metals in sediment (EPA 2005). The bioavailability of divalent metals to aquatic organisms is influenced by the presence of AVS. In low oxygenated (anaerobic) environments metals may precipitate with sulfides, making them unavailable for uptake by aquatic organisms. Using this method, six metals (cadmium, copper, lead, nickel, mercury, and zinc) were extracted using dilute cold acid, measured, and added together (including any values that were "J" qualified) to calculate SEM. If a metal was not detected, it was considered a zero in the calculation. The sum of the concentrations of these six metals was then compared to the amount of AVS detected in the same sediment sample. If AVS was not detected in the sample, the ESB_{AVS} ratio was not calculated. The reaction between SEM and AVS is on a molar basis, consequently the standard unit for each of these parameters is micromoles (µmol) per gram (g) sediment, and the ratio of SEM/AVS is therefore dimensionless.

An ESB_{AVS} ratio less than 1 indicates a high degree of probability that the metals are bound to material and not bioavailable to aquatic organisms. If the ESB_{AVS} is greater than 1, then the metals in sediment exceed the sulfide binding ability and may have a higher probability of being bioavailable to aquatic organisms. The ESB_{AVS} ratio provides a dimensionless value that can serve as an indicator of potential toxicity such that when SEM/AVS ratios are less than 1 the sediment is predicted to be non-toxic. When the ratio of SEM/AVS is greater than 1 the metals contaminated sediment is either toxic or toxicity is uncertain. These ESB_{AVS} ratios can be used to predict the lack of toxicity but not the presence of toxicity, as the method does not allow for a prediction of the onset of toxicity at values greater than 1. In addition, toxicity due to metals has been shown to be heavily influenced by the presence of organic carbon; which removes additional metal from the bioavailable pool (EPA 2005). In order to further reduce uncertainty in toxicity predictions, the relationship between SEM and AVS can be normalized based on the fraction of organic carbon present in the sediment sample. Further details regarding this calculation are presented in Section 4.2.

3.2 RESULTS FROM THE RIVER ROUGE/ECORSE SHORELINE SEDIMENT INVESTIGATION

For reporting and visual presentation of the results of the sediment investigation, the River Rouge/Ecorse Shoreline area was divided into two separate areas (Figure 2-1). Area A includes the lower section of the Rouge River Cut-off Channel below the DT&I railroad bridge, and continues downriver to slightly beyond the Nicholson North (aka. Allied Oil) and South slips. Area B begins just north of the Nicholson boat slips and extends downriver past the southern shore of Mud Island, ending just below the mouth of the Ecorse River. The two areas overlap such that the Nicholson boat slips are included within both Area A and Area B (Figure 2-1).

3.2.1 Core Recovery

Cores were collected from 43 of the 50 locations. Vibracore samples could not be collected at locations RREC13-04, RREC13-07, RREC13-08, and RREC13-11 because the vibracore could not penetrate the substrate at these proposed locations. However, ponar samples were able to be collected at locations RREC13-07 and RREC13-11. Locations RREC13-10 and RREC13-12 were abandoned by EPA and not sampled. Location RREC13-43 could not be sampled due to the strong current. The remaining 43 cores were collected aboard the *R/V Mudpuppy*. Core recovery ranged from 0.5 ft (RREC13-19) to 9.9 ft (RREC13-23) (Table 3-1). Sediment cores were collected to refusal or to a maximum of 10 ft. Detailed lithographic descriptions of the 43 collected cores are presented in Appendix B.

3.2.2 Lithology

The sediment cores collected within the Rouge River/Ecorse Shoreline site contained sediment types consistent with a fluvial system. Most cores were characterized by thick alternating layers of clay and silty clay interspersed with smaller amounts of sandy or gravelly material. Native and non-native material such as shells, roots and organic material, hydrocarbon odor, and woody debris were frequently observed in various sediment types and depths.

Complete core logs and photographs are included in Appendices B and C, respectively. A general description of cores collected during the investigation is included in the text that follows.

3.2.2.1 Area A

Cores collected in Area A between the Rouge River outfall and the northernmost boat slip included RREC13-01 through -14, -46 and -50. These cores were comprised mostly of 2 to 6 ft thick layers of clay and silty clay interspersed with some 0.5 to1.5 ft layers of sandy clay, although the thickest clay layer was greater than 9 ft at RREC13-14. Hydrocarbon odor was detected for all but two of the cores (RREC13-05 and RREC13-46) in Area A and was present at depths ranging from 0 to7 ft. A sour or sewage odor was detected in the top 1 ft of sediment in the cores collected from RREC13-46 and in the 4 to7 ft depth range of RREC13-13. Organic debris, shell fragments, or wood pieces were noted in all but one of the cores (RREC13-09) from

Area A. A crimson colored streak was noted in the 0.5 to1 ft range of the core from RREC13-06, and RREC13-50 contained pieces of cement and asphalt throughout the length of the core.

3.2.2.2 Boat Slips

Cores collected within or near the four primary boat slips in the middle of the site included RREC13-15 through -23, as well as cores from RREC13-42, -44, 45, -47, -48, and 49. The majority of cores from the boat slip area were comprised of layers of clay or silty clay with gravel. Silt and clay was generally darker and sometimes black in these cores, compared to the generally gray colored layers in the rest of the cores from Areas A and B. Hydrocarbon odor was detected in 11 of the 15 cores from near the boat slips; RREC13-47 had a particularly strong hydrocarbon odor throughout the length of the core. Asphalt pieces were present in the first 3 ft of RREC13-16, -18, and -45, and throughout most of RREC13-21 and -49. The cores from RREC13-18, -21, and -45 had dark soupy silt in the first 1-2 ft of the core. Red or orange striations were visible in four cores (RREC13-15, -18, -21, and -42) at various depths, and charcoal was present in a small layer at 9 ft in the core collected from RREC13-48.

3.2.2.3 Area B

Cores collected in Area B between the boat slips and the southern edge of the site included RREC13-24 through -41. The majority of these cores consisted of 1 to 9 ft layers of gray or dark gray clay or silty clay interspersed with a few smaller layers (mostly less than 1 ft) of sand or sandy clay. Hydrocarbon odor was present in all but 4 of the cores (RREC13-25, -31, -38, and 40). In the southern portion of Area B around Mud Island, sewage odor was detected in four cores (RREC13-32, -35, -36, -38), mostly from depths near 2 to3 ft. Organic debris, wood, or shell fragments were present in all but two cores from Area B (RREC13-29 and RREC13-31) at depths ranging from the surface to greater than 9 ft. Yellow, orange, or red striations were present in the core from RREC13-24 between 2.5 and 3.5 ft, and in the core from RREC13-32 between 2 and 4 ft.

3.2.3 Bulk Sediment Results

For bulk sediment chemistry analysis, 233 sediment samples and 37 quality control samples (270 samples total) were submitted for PCB-Aroclors, SIM 34PAHs, metals and TOC; 45 sediment samples and 8 quality control samples (53 samples total) were submitted for analysis of the SEM/AVS ratio and TPH; and 45 samples were submitted for grain size analysis (Table 2-2). Of the 233 sediment samples (not including quality control samples), 188 were sediment core samples and 45 were ponar grab samples.

Analytical data were submitted to a subcontracted data validator, Environmental Data Services, Inc., for 100 percent Tier I and 20 percent Tier II data validation as specified in the Great Lakes Legacy Act Data Reporting Standard (Version 1.0, March 2010). Data validation included completeness and compliance checks, data assessment, and validation at Stage 2 following *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*

(Office of Solid Waste and Emergency Response No. 9200.1-85, EPA 540-R-08-005, 13 January 2009) to assess compliance with the Laboratory Statement of Work.

3.2.3.1 Grain Size, Particle Size, and Density

Analytical results for grain size are presented in Table 3-2. A total of 22 samples (49 percent) were composed primarily (greater than 50 percent) of sand and gravel. The remaining 23 samples (51 percent) were composed primarily of silt and clay. The samples composed primarily of silt and clay were collected from the southern end of Area A, the boat slips, and throughout Area B. All of the samples collected from the northern half of Area A were dominated by sand and gravel. Particle size distribution graphs for each sample are presented in Appendix D.

3.2.3.2 Polychlorinated Biphenyls (Aroclors)

Total PCB-Aroclor concentrations were calculated by summing the concentrations of individual PCB-Aroclors with NDs treated as equal to zero, as shown in Table 3-3. PCB-Aroclors were detected in 188 of the 233 total samples submitted (81 percent). Figures 3-1A and 3-1B display the distribution of total PCB-Aroclor SQG exceedances for all surface grab samples and sediment core samples at each location and depth interval. Results from the surface grab are shown on the aerial photo, and results from the core depth intervals are shown on the associated graphs. Total PCB-Aroclor concentrations exceeding the PEC were found at locations throughout the site.

PCB-Aroclors were detected in all ponar surface samples. Ninety-three percent of the ponar samples had total PCB concentrations that exceeded the TEC (59.8 µg/kg [parts per billion (ppb)]) and 42 percent of the ponar samples had total PCB concentrations that exceeded the PEC (676 ppb). Total PCB concentrations ranged from 16 ppb in RREC13-01-SURF to 9,900 ppb in RREC13-30-SURF. The highest total PCB concentration was detected at location RREC13-30 in the southern section of Area B (Figure 3-1B). Elevated total PCB concentrations (greater than 3 times the PEC) were also detected near the Nicholson boat slips (RREC13-15 and RREC13-23) along the middle and southern portions of the shoreline in Area B (RREC13-26 and RREC13-29) and in the southern end of Area B between the main shore and Mud Island (RREC13-34).

PCB-Aroclors were detected in 143 of the 188 sediment core samples (76 percent). Sixty-seven percent of the core samples had total PCB concentrations that exceeded the TEC (59.8 ppb) and 57 percent of the core samples had total PCB concentrations that exceeded the PEC (676 ppb). The highest total PCB concentration (26,200 ppb) was detected in the top foot of sediment at location RREC13-30 in the southern section of Area B (Figure 3-1B). Total PCB concentrations exceeded 10 times the PEC around the two smaller boat slips in Area A (RREC13-14, -47, -48, and -49) and throughout the Nicholson South boat slip (RREC13-21, -22, -23, and -44) at multiple depth intervals (Figure 3-1A; Table 3-3). Elevated total PCB concentrations of greater than 10 times the PEC were also detected at locations throughout the length of the shoreline in

Area B in multiple depth intervals (RREC13-25, -26, -28, -29, -30, -33, -35, and -36) (Figure 3-1B; Table 3-3).

3.2.3.3 Polycyclic Aromatic Hydrocarbons

Individual results and total PAHs are provided in Table 3-4. Individual 34PAHs were detected in each of the sediment samples submitted for analysis. Of the individual analyzed PAHs, 9 [anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene] have TEC/PEC values. Dibenzo(a,h)anthracene has a TEC value only. More than 70 percent of the submitted samples had concentrations of individual PAHs that exceeded respective TEC values. More than 40 percent of the submitted samples had concentrations of individual PAHs that exceeded respective PEC values.

Total 17PAHs (ND=½RL) were calculated using 17 individual PAHs to be consistent with the derivation of the TEC/PEC values. Figures 3-2A and 3-2B display the total 17PAH concentrations for the surface grab samples and for the core samples at each depth interval at each location. These data will be used for derivation of equilibrium partitioning sediment benchmarks (ESBs) presented in Chapter 4. Total 17PAH concentrations exceeding the PEC were found at locations throughout the site.

All of the ponar samples had total 17PAH concentrations that exceeded the TEC (1,610 ppb) and 58 percent of the ponar samples had total 17PAH concentrations that exceeded the PEC (22,800 ppb). Total 17PAH concentrations ranged from 4,335 ppb in RREC13-20-SURF to 226,840 ppb in RREC13-16-SURF. The highest total 17PAH concentration was detected at RREC13-16 near the west end of the Nicholson North (aka. Allied Oil) boat slip. In addition, total 17PAH concentrations elevated 5 times the PEC were detected in surface samples from locations near the Rouge River outfall at RREC13-03 and RREC13-46 (Figure 3-2A; Table 3-4).

Eighty percent of the core samples had total 17PAH concentrations that exceeded the TEC (1,610 ppb) and 61 percent of the core samples had total 17PAH concentrations that exceeded the PEC (22,800 ppb). Total 17PAH concentrations in core samples ranged from 27.6 ppb in RREC13-42-0305 to 300,000 ppb in RREC13-01-0103. The highest total 17PAH concentration was detected in the 1 ft to 3 ft depth interval at location RREC13-01, collected from just south of the Rouge River outfall (Figure 3-2A). Core samples from 10 locations (RREC13-01, -02, -03, -13, -29, -33, -39, -41, -46, and -50) had at least one depth interval with Total 17PAH concentrations exceeding 5 times the PEC. Five of these locations were in the north end of Area A near the Rouge River outfall (RREC-01, -02, -03, -46 and -50) (Figure 3-2A) and 4 were located in the south end of Area B near Mud Island (RREC13-29, -33, -39, and -41) (Figure 3-2B).

3.2.3.4 Total Organic Carbon

TOC results are provided in Table 3-5. In the surface grab samples, TOC ranged from 1.5 percent at location RREC13-50-SURF in Area A near the Rouge River outfall, to 13.9 percent at location RREC13-36-SURF at the southernmost point in Area B. In the core

samples, TOC ranged from 0.1 percent in sample RREC13-35-0305 collected from the southern end of Area B near Mud Island, to 21 percent in sample RREC13-17-0507 collected from within the Nicholson North (aka. Allied Oil) boat slip.

3.2.3.5 Metals

Metals results were compared to respective TEC and PEC values and are presented in Table 3-5. Of the 12 analyzed metals, 3 (barium, selenium, and silver) do not have TEC or PEC values. The detected concentrations for each metal with TEC/PEC exceedances at each location are displayed in the following figures: Figures 3-3A and 3-3B (arsenic), Figures 3-4A and 3-4B (cadmium), Figures 3-5A and 3-5B (chromium), Figures 3-6A and 3-6B (copper), Figures 3-7A and 3-7B (iron), Figures 3-8A and 3-8B (lead), Figures 3-9A and 3-9B (mercury), Figures 3-10A and 3-10B (nickel), and Figures 3-11A and 3-11B (zinc). Results from the surface grab samples (0 to 0.5 ft interval) are shown on aerial photos and results from the core samples are shown on the associated graphs.

Arsenic

Figures 3-3A and 3-3B show the distribution of the arsenic SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Arsenic concentrations in the surface grab samples ranged from 3.5 mg/kg (parts per million [ppm]) at RREC13-40-SURF to 15.9 ppm in RREC13-50-SURF in Area A near the Rouge River outfall. Of the 45 surface grab samples submitted for arsenic analysis, 31 percent (14 out of 45) had concentrations that exceeded the TEC (9.79 ppm) and none had concentrations that exceeded the PEC (33 ppm) (Table 3-5). The majority of samples exceeding the TEC in Area A occurred near the Rouge River outfall. Arsenic PEC exceedances were found near the boat slips and along the Ecorse shoreline from the boat slips downriver to just north of Mud Island (Figures 3-3A and 3-3B).

In the core samples, arsenic concentrations ranged from 2.1 ppm in RREC13-38-0001 and RREC13-39-0305 to 54.9 ppm at RREC13-21-0305 located within the Nicholson South boat slip. Sixty-four percent of the grab samples had concentrations that exceeded the TEC (9.79 ppm) and 2.7 percent had concentrations that exceeded the PEC (33 ppm) (Table 3-5). Samples with arsenic concentrations greater than the PEC were collected at 3 locations: RREC13-19 (0-1 ft), RREC13-21 (1-5 ft) and RREC13-44 (3 to7 ft). All of these locations were located within the Nicholson boat slips (Figures 3-3A and 3-3B).

Cadmium

Figures 3-4A and 3-4B show the distribution of the cadmium SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Cadmium concentrations in the surface grab samples ranged from 0.43 ppm at RREC13-24-SURF to 18 ppm at RREC13-34-SURF located in Area B along the Ecorse shoreline opposite

Mud Island. Seventy-one percent of the grab samples had concentrations that exceeded the TEC (0.99 ppm) and 20 percent had concentrations that exceeded the PEC (4.98 ppm) (Table 3-5). The majority of samples with concentrations of cadmium exceeding the PEC occurred in Area A near the Rouge River outfall and along the southern portion of the River Rouge shoreline to just north of the Nicholson North (aka. Allied Oil) boat slip, as well as in Area B along the Ecorse shoreline just north of Mud Island (Figures 3-4A and 3-4B). Of these, the grab sample collected from RREC13-34 was the only one to exceed 3 times the PEC.

The highest cadmium concentration in core samples (28.3 ppm) was detected in sample RREC13-41-0305 in the southern portion of Area B along the Ecorse shoreline north of Mud Island. Seventy-four percent of the core samples had concentrations that exceeded the TEC (0.99 ppm) and 56 percent had concentrations that exceeded the PEC (4.98 ppm) (Table 3-5). Twelve different locations had at least 1 sample where cadmium concentrations exceeded 3 times the PEC. These major exceedances occurred across all depth intervals throughout Areas A and B, with the exception of the area south of Mud Island (Figures 3-4A and 3-4B).

Chromium

Figures 3-5A and 3-5B show the distribution of the chromium SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Chromium concentrations in surface grab samples ranged from 18.9 ppm in sample RREC13-42-SURF to 810 ppm in sample RREC13-34-SURF collected in the southern portion of Area B between the Ecorse shoreline and Mud Island (Figure 3-5B). Seventy-eight percent of the grab samples had chromium concentrations that exceeded the TEC (43.4 ppm) and 29 percent had concentrations that exceeded the PEC (111 ppm) (Table 3-5). Concentrations of chromium exceeding the PEC were detected in locations stretching from the middle of Area A downriver to just north of Mud Island in Area B (Figures 3-5A and 3-5B).

Chromium concentrations in sediment core samples ranged from 5.3 ppm in sample RREC13-35-0103 to 994 ppm in the 7 to 10 ft interval of sample RREC13-25-0710 (Table 3-5). Sixty-nine percent of core samples had chromium concentrations that exceeded the TEC (43.4 ppm) and 55 percent had concentrations that exceeded the PEC (111 ppm) (Table 3-5). The majority of samples in which chromium concentrations exceeded 3 times the PEC were collected in the area around the boat slips and throughout Area B with the exception of the area south of Mud Island. Exceedances of 3 times the PEC were present throughout the sediment profile (Figures 3-5A and 3-5B).

Copper

Figures 3-6A and 3-6B show the distribution of the copper SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Copper concentrations in surface grab samples ranged from 22.9 ppm at RREC13-50-SURF to 261 ppm at RREC13-34-SURF in the southern portion of Area B in between the Ecorse

shoreline and Mud Island. Ninety-three percent of the grab samples had copper concentrations that exceeded the TEC (31.6 ppm) and 13 percent had concentrations that exceeded the PEC (149 ppm). Copper concentrations exceeded the PEC at locations in both Areas A and B. In Area A, PEC exceedances occurred near the Rouge River outfall, in the middle of Area A, and near the smaller boat slips. In Area B, PEC exceedances occurred in the middle of Area B and along the Ecorse shoreline near Mud Island (Figures 3-6A and 3-6B).

Copper concentrations in sediment core samples ranged from 6.2 ppm in sample RREC13-39-0709 to 798 ppm in sample RREC13-41-0305 collected from the southern portion of Area B near the Ecorse shoreline north of Mud Island (Figure 3-6B). Seventy-three percent of the core samples had concentrations that exceeded the TEC (31.6 ppm) and 55 percent had concentrations that exceeded the PEC (149 ppm) (Table 3-5). Copper concentrations exceeding the PEC were widespread throughout the site. Copper concentrations exceeding 3 times the PEC were detected at sample locations in the Nicholson South boat slip (typically in the 3 to 5 and 5 to 7 ft depth intervals). Concentrations that exceeded 3 times the PEC also occurred throughout the sediment profile in cores collected along the Ecorse shoreline north of Mud Island.

Iron

Figures 3-7A and 3-7B show the distribution of the iron SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Iron concentrations in the surface grab samples ranged from 13,700 ppm in sample RREC13-45-SURF to 409,000 ppm in RREC13-13-SURF collected in the central portion of Area A near the River Rouge shoreline (Figure 3-7A). Ninety-one percent of the grab samples had concentrations that exceeded the TEC (20,000 ppm) and 62 percent had concentrations that exceeded the PEC (40,000 ppm). The majority of iron concentrations exceeding 3 times the PEC were detected in samples from locations along the River Rouge shoreline in Area A, starting near the middle of Area A and stretching downriver to just north of the first boat slip (Figure 3-7A).

Iron concentrations in the sediment core samples ranged from 3,490 ppm in sample RREC13-35-0103 to 373,000 ppm in sample RREC13-13-0103. Seventy-four percent of the core samples had concentrations that exceeded the TEC (20,000 ppm) and 62 percent had concentrations that exceeded the PEC (40,000 ppm) (Table 3-5). The majority of iron concentrations exceeding 3 times the PEC occurred in three areas: along the River Rouge shoreline running from the middle of Area A to just north of the boat slips; within the boat slips; and along the Ecorse shoreline in the middle of Area B. In these areas, iron concentrations exceeded 3 times the PEC throughout the sediment profile (Figures 3-7A and 3-7B).

Lead

Figures 3-8A and 3-8B show the distribution of the lead SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Lead concentrations in the surface grab samples ranged from 23.6 ppm at RREC13-20-SURF to 577 ppm at RREC13-11-SURF collected in the central portion of Area A near the River Rouge shoreline (Figure 3-8A). Eighty-seven percent of the grab samples had lead concentrations that exceeded the TEC (35.8 ppm) and 38 percent had concentrations that exceeded the PEC (128 ppm). Lead concentrations exceeding the PEC were widespread along the shoreline in Areas A and B, with the exception of the middle section of Area A where lead concentrations in surface grabs fell between the TEC and PEC. Lead concentrations exceeding 3 times the PEC were detected in 2 samples collected from the southern portion of Area A upriver from the smaller boat slips (Figures 3-8A and 3-8B).

Lead concentrations in the sediment core samples ranged from 5.8 ppm in samples RREC13-39-0507 and RREC13-39-0709 to 1,490 ppm in sample RREC13-13-0103. Seventy-four percent of core samples had concentrations that exceeded the TEC (35.8 ppm) and 68 percent had concentrations that exceeded the PEC (128 ppm) (Table 3-5). Lead concentrations exceeding 3 times the PEC were detected at sample locations near the Rouge River outfall and along a stretch of the River Rouge and Ecorse shorelines from the middle of Area A to south of the boat slips. In Area B, concentrations exceeding 3 times the PEC occurred in samples collected along the Ecorse shoreline just north of Mud Island. Within these areas, lead concentrations exceeding 3 times the PEC were present throughout the sediment profile (Figures 3-8A and 3-8B).

Mercury

Figures 3-9A and 3-9B show the distribution of the mercury SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Mercury concentrations in surface grab samples ranged from 0.042 ppm in sample RREC13-50-SURF to 1.5 ppm in sample RREC13-34-SURF collected from the southern portion of Area B between the Ecorse shoreline and Mud Island. Seventy-three percent of the grab samples had concentrations that exceeded the TEC (0.18 ppm) and 4.4 percent had concentrations that exceeded the PEC (1.06 ppm) (Table 3-5). PEC exceedances were detected in samples collected from the northern portion of Area A near the Rouge River outfall (RREC13-01) and in the southern portion of Area B along the Ecorse shoreline opposite Mud Island (RREC13-34) (Figures 3-9A and 3-9B).

The highest mercury concentration (3.3 ppm) was detected in sample RREC13-41-0911-FD. Seventy-six percent of the core samples had concentrations that exceeded the TEC (0.18 ppm) and 24 percent had concentrations that exceeded the PEC (1.06 ppm) (Table 3-5). The highest concentrations of mercury in core samples were detected in the northern portion of Area A near the Rouge River outfall, and in the southern portion of Area B along the Ecorse shoreline just north of Mud Island. Other locations where mercury concentrations exceeded the PEC included the southern portion of Area A, the area in and around the boat slips, and along the Ecorse shoreline throughout the central portion of Area B. PEC exceedances in these areas occurred throughout the sediment profile (Figures 3-9A and 3-9B).

Nickel

Figures 3-10A and 3-10B show the distribution of the nickel SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Nickel concentrations in surface grab samples ranged from 17 ppm in sample RREC13-42-SURF to 314 ppm in sample RREC13-34-SURF collected from the southern portion of Area B between the Ecorse shoreline and Mud Island (Figure 3-10B). Eighty percent of the grab samples had concentrations that exceeded the TEC (22.7 ppm) and 40 percent had concentrations that exceeded the PEC (48.6 ppm) (Table 3-5). The majority of the nickel PEC exceedances occurred along the River Rouge shoreline from the middle of Area A to south of the boat slips, within the boat slips, and along the Ecorse shoreline from the middle of Area B to Mud Island (Figures 3-10A and 3-10B).

Nickel concentrations in sediment core samples ranged from 4.7 ppm in sample RREC13-35-0103 to 388 ppm in sample RREC13-23-0305. Seventy-eight percent of the core samples had concentrations that exceeded the TEC (22.7 ppm), and 60 percent had concentrations that exceeded the PEC (48.6 ppm) (Table 3-5). Concentrations of nickel exceeding 3 times the PEC were detected throughout the sediment profile in cores from many locations in Area B, extending from north of the first boat slip downriver to just north of Mud Island (Figures 3-10A and 3-10B).

Zinc

Figures 3-11A and 3-11B show the distribution of the zinc SQG exceedances for surface grab samples and for core samples in Areas A and B, respectively.

Zinc concentrations in surface grab samples ranged from 89.7 ppm in sample RREC13-20-SURF to 3,630 ppm in sample RREC13-11-SURF collected from the central portion of Area A near the River Rouge shoreline (Figure 3-11A). Ninety-eight percent of the grab samples had concentrations that exceeded the TEC (121 ppm) and 31 percent had concentrations that exceeded the PEC (459 ppm). Zinc concentrations exceeded 3 times the PEC in samples collected along the River Rouge shoreline in the southern portion of Area A (Figure 3-11A).

Zinc concentrations in sediment core samples ranged from 27.3 ppm (RREC13-39-0709) to 11,800 ppm (RREC13-13-0103). Seventy-three percent of the core samples had concentrations that exceeded the TEC (121 ppm) and 64 percent had concentrations that exceeded the PEC (459 ppm) (Table 3-5). Excluding the area around Mud Island, all but 4 of the remaining sample locations had zinc concentrations exceeding the PEC in at least one depth interval. Most of the zinc concentrations exceeding 3 times the PEC occurred throughout Area A along the River Rouge shoreline (Figure 3-11A).

3.2.3.6 Equilibrium Partitioning Sediment Benchmarks based on Acid Volatile Sulfide (ESB_{AVS})

All ESB_{AVS} results are presented in Table 3-6. SEM and AVS data, along with sample-specific TOC, will be used for derivation of organic carbon normalized metal toxicity predictors presented in Section 4.2. As discussed in Section 3.1.3, this current analysis addresses only the effect of sulfide on bioavailability of SEM. When AVS exceeds SEM, the ESB_{AVS} ratio is less than 1 and the metals are unlikely to be available for toxicity. Alternatively, ESB_{AVS} ratios greater than 1 indicate that metals may, or may not, be available to result in toxic effects. Fifty-six percent of the samples analyzed for SEM and AVS had ESB_{AVS} ratios greater than 1, with the maximum of 18.2 occurring at RREC13-13 in the southern portion of Area A. The descending rank order for the top five locations is RREC13-13, -14, -25, -47, and -09 with ESB_{AVS} ratio values of 18.2, 6.83, 6.53, 5.53, and 4.31, respectively.

3.2.3.7 Total Petroleum Hydrocarbons - Diesel Range Organics and Mid-Range Organics

Results for diesel range organics (DRO) and mid-range organics (MRO) are presented in Table 3-7. The highest concentration of DRO (C10-C20) (8,800 ppm) was detected at location RREC13-34. Concentrations of DRO (C10-C28) ranged from 180 ppm at RREC13-07 to 23,000 ppm at RREC13-34. Concentrations of MRO (C20-C36) ranged from 220 ppm at RREC13-50 to 29,000 ppm at RREC13-34 and RREC13-41.

The TPH concentration was determined for each location by summing DRO (C10-C28) and MRO (C20-C36) concentrations. Samples in which TPH was greater than 10,000 ppm were considered to constitute major exceedances. A total of 7 locations (RREC13-01, -15, -21, -23, -30, -34, and -41) had TPH values that indicated major exceedances. These elevated TPH values occurred in Area A near the Rouge River outfall, around the boat slips, and in the southern portion of Area B along the Ecorse shoreline (Figure 3-12).

4. EQUILIBRIUM PARTITIONING SEDIMENT BENCHMARKS AND ORGANIC CARBON NORMALIZED METALS

PAH ESB toxic units (ESBTUs) were calculated as an additional tool for evaluating potential risk associated with sediment contamination. ESBTUs are used to estimate whether there is potential ecological risk associated with exposure to pore water that is in equilibrium with a measured concentration of the contaminant in the sediment. Thus, ESBTUs are calculated using an assumed relationship for partitioning between sediment and water and are discussed in Section 4.1.

Similarly, organic carbon normalized metal concentrations have been calculated as a tool for evaluating potential risk from divalent metals using the bioavailability and toxicity effects of both AVS and TOC (EPA 2005), and are discussed in Section 4.2.

4.1 PAHS

ESBs for total 34PAHs were calculated following the methods outlined in *Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures* (EPA 2003). Based on this guidance, individual PAH concentrations in sediment were first divided by the fraction of organic carbon measured in the sediment sample, resulting in an organic carbon-based PAH concentration or normalized concentration. This value was then compared to the maximum solubility of that PAH in sediment on an organic carbon basis. If the organic carbon normalized PAH concentration was greater than the maximum solubility concentration, then the maximum solubility concentration was used to calculate the PAH ESBTU instead of the normalized concentration. If the organic carbon normalized PAH concentration was less than the maximum solubility, the normalized concentration was used. This value was then divided by the individual PAH's effective concentration in sediment, defined as the product of its final chronic value (FCV) and organic carbon-water partition coefficient (K_{oc}), resulting in an ESB for each individual PAH. The PAH ESB for a sediment sample is the sum of the 34 individual PAH's ESBTUs (Table 4-1).

Typically, a PAH ESBTU less than or equal to 1.0 indicates that benthic organisms are not expected to be harmed by contamination present in the sediments, while samples with PAH ESBTUs greater than 1.0 may be toxic to aquatic life (EPA 2003). Of the 233 total sediment samples, 100 had a PAH ESBTU less than 1.0 and 133 samples had a PAH ESBTU greater than or equal to 1.0 (Table 4-1).

Twenty-two ponar grab samples had a PAH ESBTU greater than 1 (Figures 4-1A and 4-1B), and eight had PAH ESBTUs greater than 2. Of those eight samples, all but one occurred either in Area A along the River Rouge Shoreline or near the boat slips. The highest PAH ESBTUs occurred at locations RREC13-16 (ESBTU = 6.348) in the west end of the Nicholson North (aka. Allied Oil) boat slip, and RREC13-24 (ESBTU = 3.161) along the Ecorse shoreline, just south of the Nicholson South boat slip (Table 4-1).

In the sediment core samples, PAH ESBTUs greater than 3 were found in at least one depth at 15 of the 43 locations where cores were collected (Table 4-1). PAH ESBTUs greater than 7.5 were present in two samples: RREC13-01-0305 (ESBTU = 7.954) near the Rouge River outfall and RREC13-23-0305 (ESBTU = 8.215) at the mouth of the Nicholson South boat slip (Figures 4-1A and 4-1B). No ESBTUs greater than 10 were calculated at any locations.

4.2 METALS

Metal toxicity was evaluated through an indirect estimate of bioavailability based on the concentrations of AVS and SEM (ESB_{AVS} as discussed in Section 3.2.3.6), and TOC in the sediments. Predictors of metal bioavailability and toxicity using AVS, SEM, and TOC were calculated following the methods outlined in *Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Metal Mixtures (Cadmium, Copper, Lead, Nickel, Silver, and Zinc)* (EPA 2005). This calculation accounts for the relationship between SEM and AVS, and also provides a normalized value that incorporates the influence of organic carbon present in the sediment, resulting in a more accurate predictor of sediment toxicity. The molar concentration of AVS was subtracted from the molar concentration of the sum of the SEM measured in each sediment sample, and the result was divided by the fraction of organic carbon, accounting for preferential sorption of metals to organic carbon.

$$\frac{(\sum SEM - AVS)}{f_{oc}}$$

Where
∑SEM = Sum of Simultaneously Extracted Meals (µmol/g sediment)
AVS = Acid Volatile Sulfide (µmol/g sediment)
f_{oc} = Fraction of organic carbon

Units of this predictor are µmol per gram organic carbon (g_{oc}). It should be noted that if the particular sample has excess AVS such that all SEM is accounted for, the numerator can be negative. As discussed in EPA (2005), when this method is used, a value less than 130 µmol (including negative values) of residual SEM per g_{oc} indicates that the sediment poses a low risk of adverse biological effects associated with metals. Values between 130 and 3,000 µmol/g_{oc} may have adverse effects, and values over 3,000 µmol/g_{oc} are expected to be associated with adverse effects. These results for metals were above the threshold of 130 µmol of residual SEM/g_{oc} in 5 of the 45 ponar grab samples (RREC13-13, -14, -15, -25, and -27) (Table 4-2). The highest result was 955 µmol/g_{oc} from RREC13-13 in Area A along the River Rouge shoreline just north of the first boat slip, which is also the sample that exhibited the highest ESB_{AVS} ratio (Section 3.2.3.6). The locations that produced samples exceeding the 130 µmol/g_{oc} were located in the southern portion of Area A near the boat slips, and along the Ecorse shoreline in the northern portion of Area B. None of the samples had values greater than 3,000 µmol/g_{oc}.

5. SPATIAL ANALYSIS TO DETERMINE HOTSPOTS WITHIN THE RIVER ROUGE/ECORSE SHORELINE AREA

To determine the location of hotspots within the Detroit River AOC, the dataset of all individual constituents exceeding their respective PECs in sediment samples (Section 3.2) was spatially interpolated to develop an estimate of the level and distribution of elevated concentrations of constituents across the study area. Potential hotspots identified by the all constituent analysis were then verified by comparison to spatial interpolations of two additional datasets: (1) the calculated PAH ESBTUs (Section 4.1); and (2) the calculated organic carbon normalized metals concentrations (Section 4.2). This hotspot determination allows for prioritizing areas to be targeted for remediation.

Interpolation was performed by using a spatially explicit statistical method called kriging. Section 5.3 describes the kriging analysis results for all constituents and Section 5.4 describes the kriging analysis results for PAH ESBTUs and organic carbon normalized simultaneously extracted metals.

5.1 METHODOLOGY

A three-dimensional model of each analyte measured in the sediment samples was constructed using the statistical interpolation method of kriging with C-Tech's Environmental Visualization System (EVS) Pro Version. The model region excluded the navigation channel and was bounded on the bottom by the observed recovery depth at each core location. Input included each analyte's concentration at every location and the results were combined to identify all areas with one or more analyte concentrations above the respective PEC levels, 2 times above the PEC levels, and 3 times above the PEC levels. To supplement the identification of hotspots identified from modeling all constituents, PAH ESBTUs were modeled separately and those areas with PAH ESBTU values of greater than 1, and between 1 and 10, were identified. Kriging models were also produced for organic carbon normalized simultaneously extracted metals, and areas where these values exceeded 130 $\mu mol/g_{oc}$ were identified.

The kriging methodology is subject to some uncertainties which can potentially impact the resulting volume estimations. Kriging assumes that the variogram does not change over the model domain (i.e., the variogram is stationary). In order to minimize the impact from violating this assumption, the study area was divided into several zones that were kriged independently. The kriging model used to estimate contaminated sediment volume is also particularly sensitive to the directional dependency parameter. Results of the sediment core data showed a higher degree of spatial correlation in the horizontal versus vertical directions, and this observation was incorporated into the kriging model. The assumed relative difference between horizontal and vertical directional dependence of the data had the effect of smearing the interpolated sediment plume in the horizontal direction, and this assumption therefore could result in higher volume estimates.

5.2 MODEL RESULTS FOR ALL CONSTITUENTS IN THE RIVER ROUGE/ECORSE SHORELINE STUDY AREA

Concentrations of all individual constituents were input into the model, and the kriging analysis identified any areas that contained PEC exceedances of total PCBs, total PAHs, and/or any of the nine metals for which PECs were available (MacDonald et al. 2000, Persaud et al. 1993).

This kriging analysis determined that for the majority of the study area one or more analytes were present in concentrations exceeding the PEC. Three hotspots (two larger hotspots and one smaller hotspot) containing PEC exceedances were identified. Figures 5-1A and 5-1B present the results for all constituents exceeding the respective PECs in Areas A and B. Section 5.3.1 describes the two major hotspots; major hotspots are defined as areas having concentrations of at least one contaminant exceeding three times the PEC and estimated sediment volumes exceeding 100,000 cubic yards (cy). These two major hotspots have the largest estimated volumes of sediment with constituents of concern (COCs) exceeding the PEC. Section 5.3.2 describes the one smaller hotspot area that has similarly elevated COC concentrations, but a smaller estimated sediment volume (below 100,000 cy) containing PEC exceedances.

The volume estimations presented on Figures 5-1A and 5-1B are based on the data and methods used in geostatistical modeling as described in Section 5.1 and, as such, are subject to a number of limitations and uncertainties which include the following factors:

- **Limitations in data coverage:** Accuracy of the models is dependent upon the sample design; areas of limited sample coverage, areas where sediments may be heterogeneous at small scales and areas where physical features interrupt spatial patterns in chemical distribution may not be accurately represented by model predictions. If required, such uncertainty can be addressed by additional sampling guided by geostatistical results. Statistical accuracy is also limited by the available information regarding sediment surface elevation and depth of soft sediments, which may change the geometry used in spatial statistics.

- **Uncertainties associated with comparison criteria:** Volumes are based on statistical analysis of chemical concentrations exceeding sediment quality benchmarks. While these benchmarks are consensus and risk-based and were approved for use in the site characterization additional interpretation may be required to fully assess the risks associated with the contaminants of concern. As such, the relevance of estimated volumes is dependent on the application of benchmarks.

- **Limited relevance to remediation:** As stated above, volumes are based solely on statistical analysis of chemical concentrations exceeding sediment quality benchmarks. While these volumes provide an indicator of the in situ volume that exceeds guidelines and could require remedial action, they are considered preliminary and additional information would improve the estimate. For example remediation by

dredging would require removal of additional volume, including overburden, horizontal and vertical overdredge, contingency associated with statistical uncertainty.

Additionally, both the combining of the deepest subsampling intervals at some locations to reduce total samples and the number of locations where PEC exceedances occurred in the bottom interval of cores that were not collected to refusal are potential contributors to uncertainty in the sediment volume estimations. In summary, the volumes presented here are initial indicators of sediments that may require action, but involve uncertainties and limitations that may require refinement prior to use in remedial decision-making.

5.3 DETERMINATION OF PRIORITY HOTSPOT AREAS IN THE RIVER ROUGE/ECORSE SHORELINE AREA

5.3.1 Major Hotspot Locations

Based on the interpolation results, 2 major hotspot areas are identified: the River Rouge shoreline area (Hotspot 1); and the Ecorse shoreline area (Hotspot 3).

5.3.1.1 Hotspot 1: River Rouge Shoreline

The River Rouge shoreline area hotspot includes the mouth of the Rouge River and stretches south to the mouth of the Nicholson North (aka. Allied Oil) boat slip (Figure 5-1A). The model estimates that the majority of this area has constituent concentrations exceeding 3 times the PEC, about one-quarter of the area has constituent concentrations between 2 and 3 times the PEC, and the remaining portion (less than one-quarter) has constituent concentrations between 1 and 2 times the PEC (Figure 5-1A). The estimated volume of sediment with constituent concentrations exceeding the PEC is 794,000 cy for Hotspot 1 (Figure 5-1A).

The COCs present in Hotspot 1 at concentrations greater than 3 times their respective PECs include total 17PAHs, total PCBs, cadmium, chromium, iron, lead, nickel and zinc. Mercury concentrations exceeded 2 times the PEC near the Rouge River outfall. The northern portion of Hotspot 1 around the mouth of the Rouge River was dominated by concentrations of cadmium, lead, total PCBs, and total 17PAHs. Total PCBs, total 17PAHs, and lead concentrations continued to exceed 3 times their respective PECs throughout the central portion of Hotspot 1, and concentrations of iron, nickel and zinc also exceeded 3 times their PECs in this section of the River Rouge shoreline. The southern portion of Hotspot 1 extending downriver to the mouth of the Nicholson North (aka. Allied Oil) boat slip had concentrations of total PCBs, iron, lead, and nickel that exceeded 3 times their respective PECs (Figure 5-2).

5.3.1.2 Hotspot 3: Ecorse Shoreline

The Ecorse shoreline area (Figure 5-1B) has constituent concentrations exceeding 3 times the PEC in the majority of the hotspot, including all of the Nicholson South boat slip. The model estimates that approximately two-thirds of this hotspot has constituent concentrations exceeding

3 times the PEC, while the remaining one-third has concentrations exceeding the PEC or 2 times the PEC. Constituent concentrations exceeding 1 or 2 times the PEC are present primarily in the southern end of the hotspot in the areas surrounding Mud Island (Figure 5-4). The estimated volume of sediment with contaminant concentrations exceeding the PEC is 1,338,000 cy (Figure 5-1B).

The COCs present in Hotspot 3 include total PAHs, total PCBs, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc. Arsenic concentrations exceeding the PEC were detected only at 2 sampling locations within the Nicholson South boat slip. All other COCs had concentrations exceeding their respective PECs throughout the majority of Hotspot 3. In particular, concentrations of total PCBs, cadmium, chromium, iron, nickel and lead exceeded 2 and 3 times their respective PECs throughout most of Hotspot 3. Concentrations of total 17PAHs exceeding 3 times the PEC were detected mostly in the southern half of the hotspot (Figure 5-4).

The southern end of Hotspot 3 includes sampling location RREC13-36 at the mouth of the Ecorse River. COCs exceeding their PECs near the Ecorse River outfall include total 17PAHs, total PCBs, cadmium, chromium, copper, lead, mercury, nickel and zinc. Concentrations of total 17PAHs exceeded 3 times the PEC at the mouth of Ecorse River, and concentrations of total PCBs exceeded 10 times the PEC (Figure 5-4).

5.3.2 Other Hotspot Locations

Spatial analysis identified one smaller area that also contained measured concentrations of one or more constituents above PECs (Figures 5-1A and 5-1B).

5.3.2.1 Hotspot 2: Nicholson North (aka. Allied Oil) Boat Slip

Hotspot 2 consists of the western two-thirds of the Nicholson North (aka. Allied Oil) boat slip, and includes sampling locations RREC13-16, -17, -18 and -19 (Figure 5-4). The model estimates that approximately one-quarter of the area has constituent concentrations that exceed 3 times the PEC. PEC exceedances in Hotspot 2 included total PAHs, total PCBs, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc. Total PCB concentrations exceeded 2 times the PEC at all four of the sampling locations within this hotspot. The PEC exceedances for PCBs in this hotspot were limited to the top 5 ft of sediment. Concentrations of total 17 PAHs, cadmium, chromium, copper, iron, lead, nickel, and zinc that exceeded the PEC occurred in the 0 to 5 ft depth interval, with PEC exceedances also extending down to the 10 ft limit of core recovery. The presence of elevated constituent concentrations near refusal depth results in an estimated volume of impacted sediment in Hotspot 2 of 56,000 cy (Figures 5-1A and 5-3).

5.4 MODEL RESULTS FOR PAH AND ORGANIC CARBON NORMALIZED METALS FOR THE RIVER ROUGE/ECORSE SHORELINE STUDY AREA

PAH ESBTUs were also modeled using the kriging statistical method. This analysis identified the areas within the River Rouge/Ecorse Shoreline site with ESBTUs greater than 1 (Figures 5-5A and 5-5B). The results mirror almost exactly the hotspots identified in the cumulative COC model, with the exception of a gap in the middle section of Hotspot 1 where the PAH ESBTUs were determined to be less than 1.

The spatial analysis for PAH ESBTUs in Area A identified three areas where sediment samples had PAH ESBTUs greater than 1. Figure 5-5A presents the areas identified along with the maximum PAH ESBTU in each area. These areas with elevated PAH ESBTUs in Area A are in the same location as Hotspots 1 and 2, as identified in Section 5.3 (Figure 5-1A). PAH ESBTUs were all between 1 and 10. The highest PAH ESBTU in Area A (7.95) was present in the 3- to 5-ft depth interval at location RREC13-01 within Hotspot 1 in the northern portion of Area A. The PAH ESBTU kriging results for Area A almost exactly match the hotspots identified in the cumulative COC model, with the exception of a gap in the middle section of Hotspot 1 where the PAH ESBTUs were determined to be less than 1 (Figure 5-5A).

The spatial analysis for PAH ESBTUs in Area B identified one large area along the Ecorse shoreline where sediment samples had PAH ESBTUs greater than 1. Figure 5-5B presents the areas identified along with the maximum PAH ESBTU in each area. This area with elevated PAH ESBTUs is in the same location as Hotspot 1 (Figure 5-1A). PAH ESBTUs were all between 1 and 10. The highest PAH ESBTU in Area B (8.22) was present in the 3- to 5-ft depth interval at location RREC13-23.

Additionally, organic carbon normalized metals were modeled using the kriging statistical method. This analysis identified 3 areas where organic carbon normalized metals exceeded the threshold value of 130 $\mu mol/g_{oc}$ (Figures 5-6A and 5-6B). The largest of these three areas of exceedance occurred within Hotspot 1 (Figure 5-6A). The other two areas where organic carbon normalized metals exceeded 130 $\mu mol/g_{oc}$ occurred within Hotspot 3 (Figure 5-6B). These results therefore reinforce the previously identified hotspots and serve to further distinguish locations where bioavailable metals may be present at concentrations that are potentially harmful to benthic organisms.

6. CONCLUSIONS

Based on the data collected during the River Rouge/Ecorse Shoreline sediment investigation, a large portion of the site contains elevated concentrations of constituents that are potentially harmful to benthic communities. The impacted areas of the site are identified as 2 major hotspots (Hotspots 1 and 3) and 1 smaller hotspot (Hotspots 2). These 3 hotspots have an estimated total of 2,188,000 cy of sediment with COC concentrations exceeding PECs, and they should be considered as priority areas for further investigation and potential remediation efforts.

Model results indicated that each of the 3 hotspots has significant volumes of sediment with elevated COC concentrations exceeding 2 or 3 times PEC levels. Further delineation of the extent of sediment with elevated concentrations of COCs is recommended. Modeling of the PAH ESBTUs also showed elevated values reflecting impacted sediment throughout most of the hotspot areas that were identified by modeling of all COCs with concentrations above the PEC. This confirms that these 3 hotspots should be considered priority areas for additional assessment and potential remediation.

Further investigation in each hotspot is recommended in part because estimates regarding the areal extent of the 3 hotspots and the volumes of sediment containing elevated concentrations of COCs are subject to significant uncertainty due to the limited number of samples analyzed. Estimates regarding the extent of impaired sediment conditions stretching away from shore into the shipping channel could be improved with additional sampling locations. Sampling locations where cores were not collected to refusal and where elevated COC concentrations were detected in the deepest interval present uncertainty regarding the extent of contamination below the sediment surface that could be addressed through further investigation.

Although additional assessment should improve estimates, the present study serves to provide an effective initial characterization indicating that much of the River Rouge/Ecorse Shoreline Site contains sediment impacted by elevated levels of COCs.

7. REFERENCES

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Figures

River Rouge/
Ecorse Shoreline

Lake St. Clair

Lake Erie

VICINITY MAP

Legend

- River Rouge/Ecorse Shoreline Area
- Detroit River Area of Concern

0 4 8
Miles

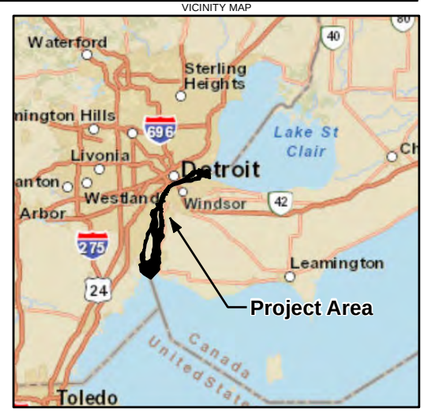
Data Sources: EPA 2013, USGS 2013, ArcGIS Online 2012

Map Date: July 2014

FIGURE 1-1
Project Site Location

River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

VICINITY MAP



Legend

- River Rouge/Ecorse Shoreline Area Outfalls
- River Rouge/Ecorse Shoreline Area
- Detroit River Area of Concern

0 0.25 0.5
Miles

Data Sources: EPA 2013, USGS 2013
ArcGIS Online 2012
Map Date: July 2014

FIGURE 1-2
River Rouge/Ecorse Shoreline Area

River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

VICINITY MAP

Legend

- Surface and Subsurface Sample Location
- Surface Sample Location per EPA Field Guidance
- Location Abandoned per EPA Field Guidance

Zone

- Area A
- Area B
- Area A/B Overlap
- Detroit River Area of Concern

0 1,500 3,000
Feet

Data Sources: EPA 2013, USGS 2013
Aerial Source: ESRI ArcGIS Online
Map Date: July 2014

FIGURE 2-1
Sample Locations
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

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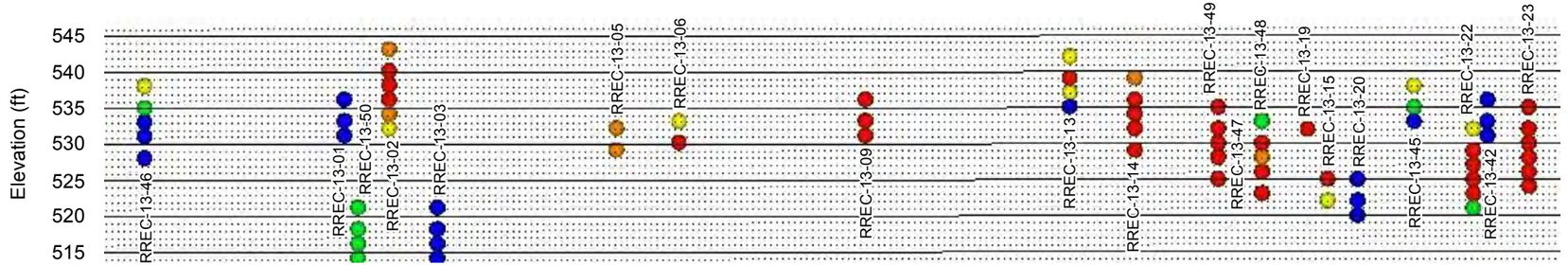

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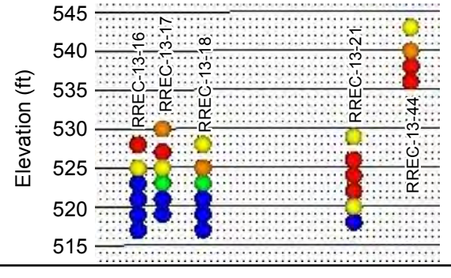

VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon Total (ND = 0) PCB-Aroclor results.

Total (ND = 0) PCB-Aroclor Concentrations

- ≥ 3x PEC (2,028 µg/kg)
- ≥ 2x PEC (1,352 µg/kg)
- ≥ PEC (676 µg/kg)
- ≥ TEC (59.8 µg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-1A
Total (ND= 0) PCB-Aroclor Concentrations (ug/kg) Detected in Area A
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

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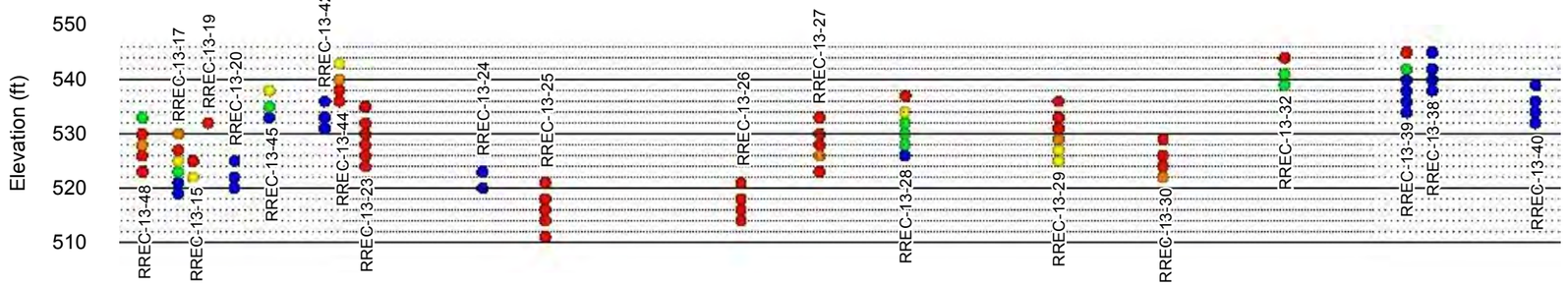

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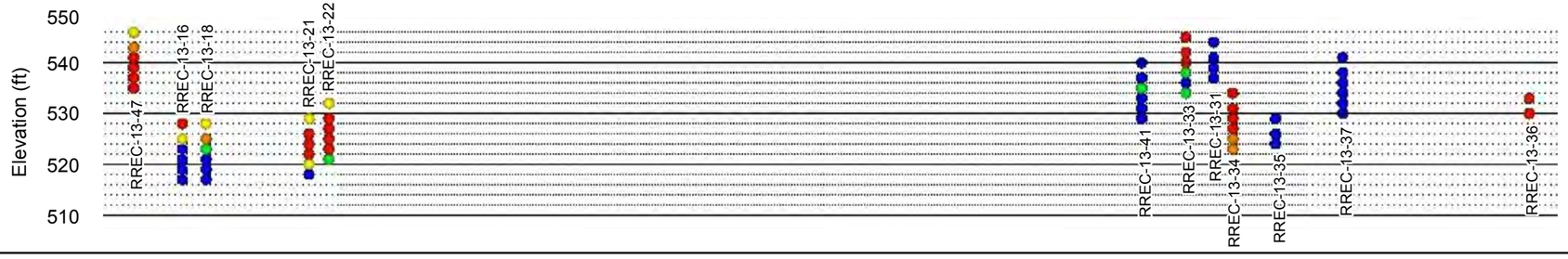

VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon Total (ND = 0) PCB-Aroclor results.

Total (ND = 0) PCB-Aroclor Concentrations

- ≥ 3x PEC (2,028 µg/kg)
- ≥ 2x PEC (1,352 µg/kg)
- ≥ PEC (676 µg/kg)
- ≥ TEC (59.8 µg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-1B
Total (ND= 0) PCB-Aroclor Concentrations (ug/kg) Detected in Area B
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

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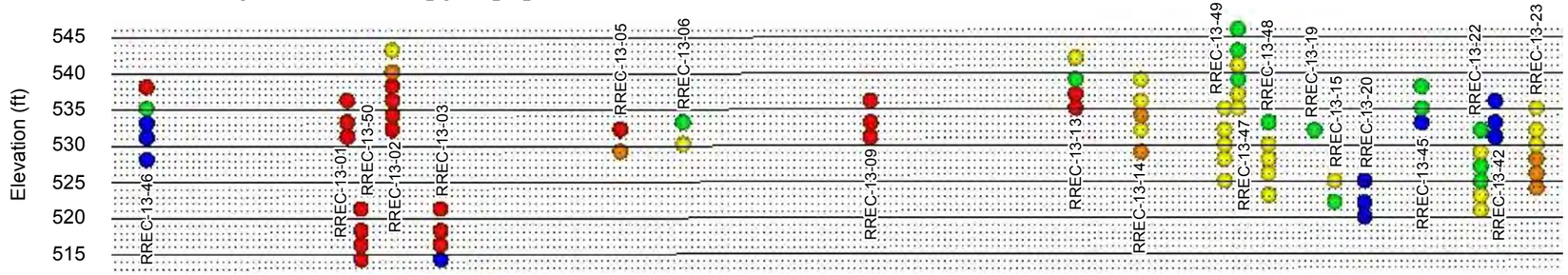

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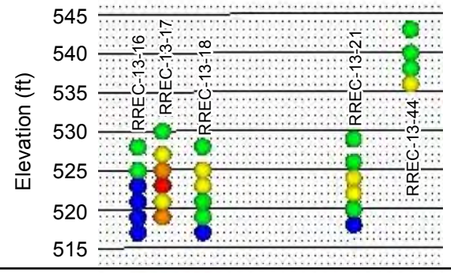

VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon Total (ND = ½ RL) 17PAH results.

Total (ND = ½ RL) 17PAH Concentrations

- ≥ 3x PEC (68,400 µg/kg)
- ≥ 2x PEC (45,600 µg/kg)
- ≥ PEC (22,800 µg/kg)
- ≥ TEC (1,610 µg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-2A
Total (ND= ½ RL) 17PAH Concentrations (ug/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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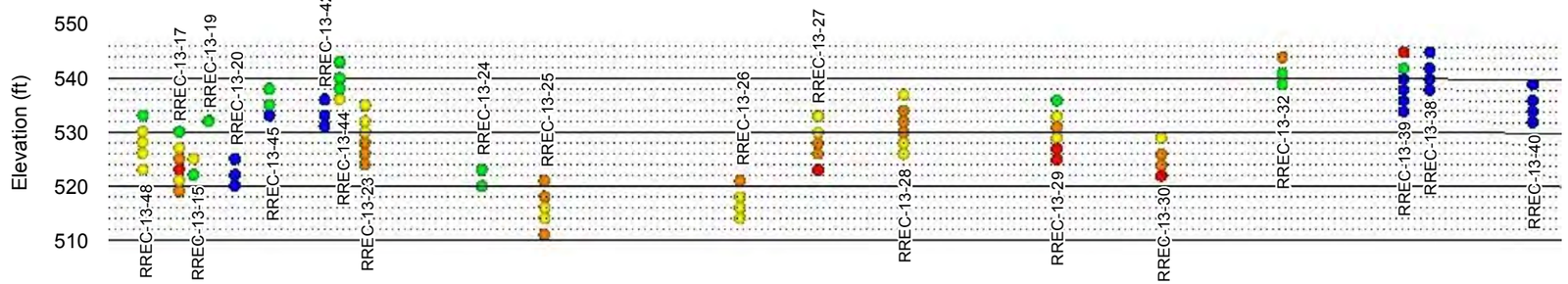

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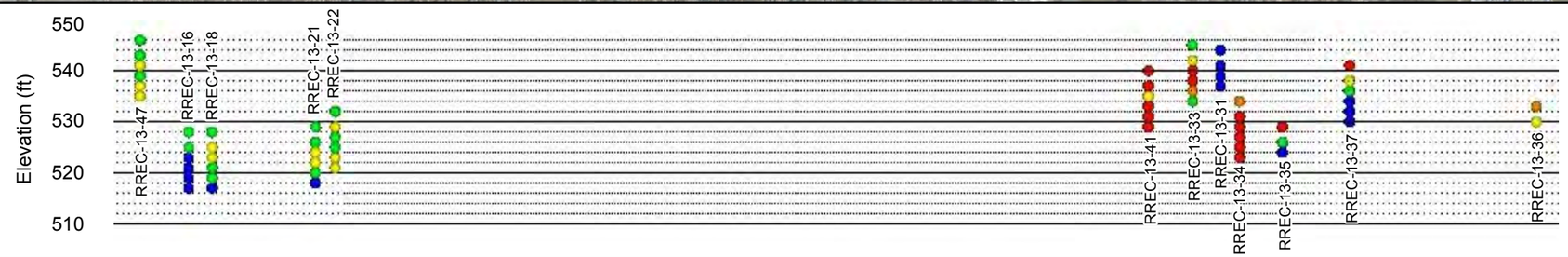

WEST

VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon Total (ND = ½ RL) 17PAH results.

Total (ND = ½ RL) 17PAH Concentrations

- ≥ 3x PEC (68,400 µg/kg)
- ≥ 2x PEC (45,600 µg/kg)
- ≥ PEC (22,800 µg/kg)
- ≥ TEC (1,610 µg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-2B
Total (ND= ½ RL) 17PAH Concentrations (ug/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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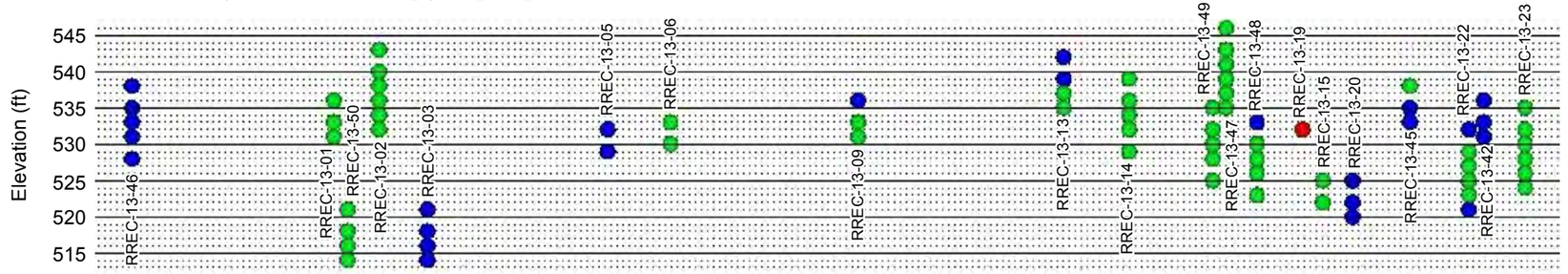

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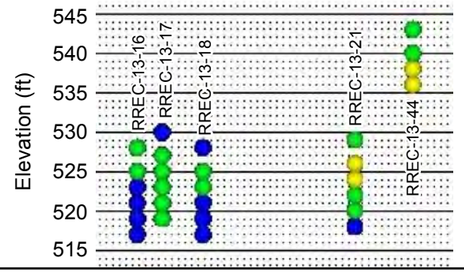

VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon arsenic results.

Arsenic Concentrations

- ≥ 3x PEC (99 mg/kg)
- ≥ 2x PEC (66 mg/kg)
- ≥ PEC (33 mg/kg)
- ≥ TEC (9.79 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-3A
Arsenic Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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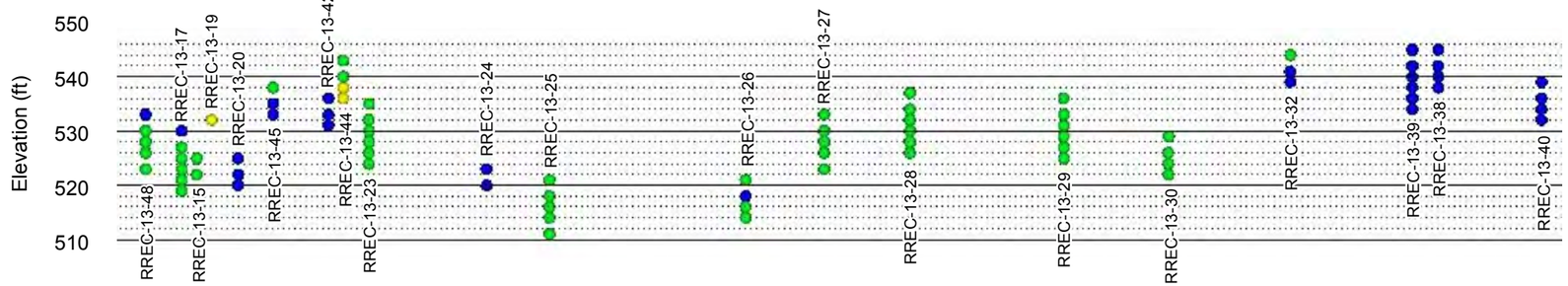

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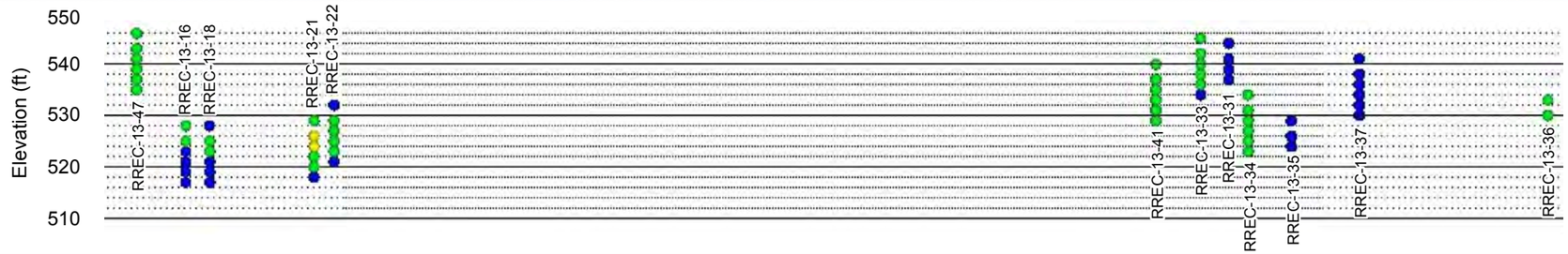

VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon arsenic results.

Arsenic Concentrations

- ≥ 3x PEC (99 mg/kg)
- ≥ 2x PEC (66 mg/kg)
- ≥ PEC (33 mg/kg)
- ≥ TEC (9.79 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-3B
Arsenic Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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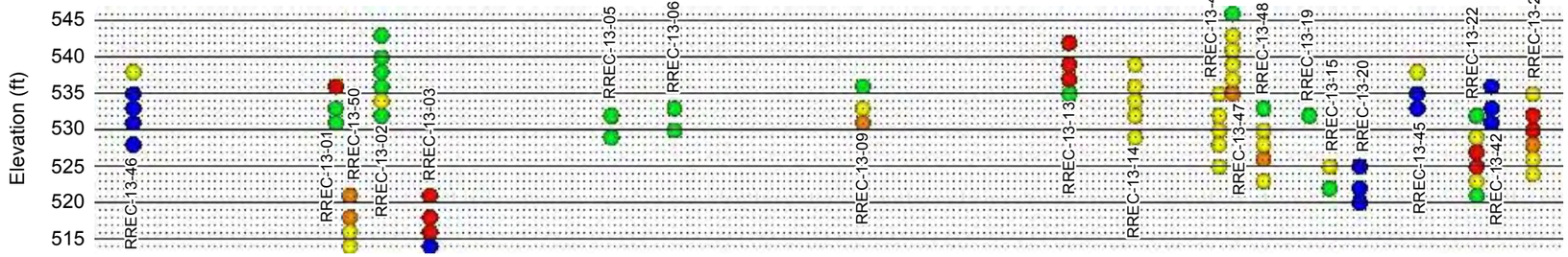

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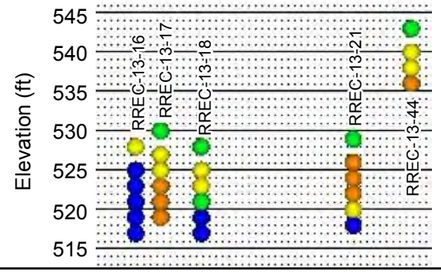

VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon cadmium results.

Cadmium Concentrations

- ≥ 3x PEC (14.94 mg/kg)
- ≥ 2x PEC (9.96 mg/kg)
- ≥ PEC (4.98 mg/kg)
- ≥ TEC (0.99 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-4A
Cadmium Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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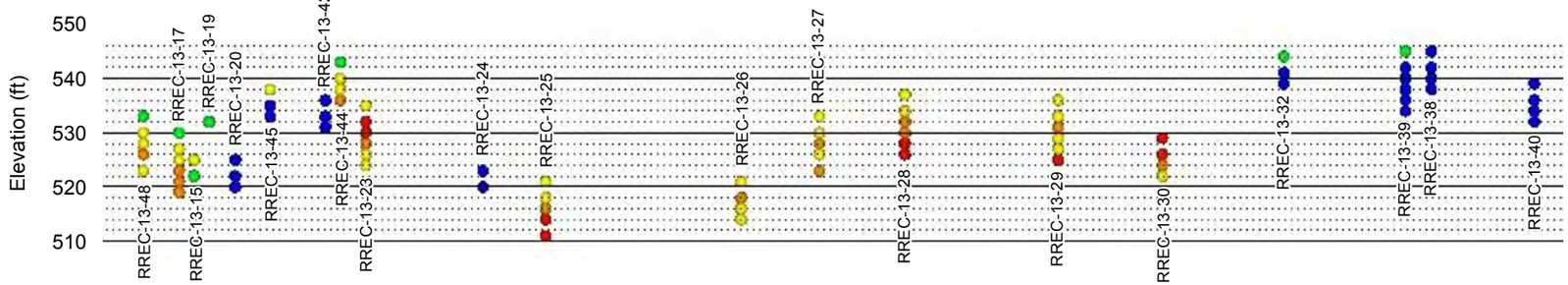

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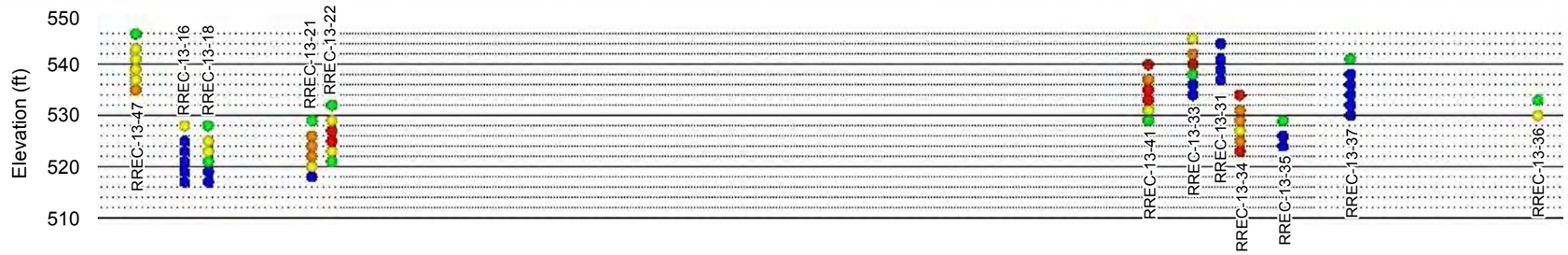
WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon cadmium results.

Cadmium Concentrations

- ≥ 3x PEC (14.94 mg/kg)
- ≥ 2x PEC (9.96 mg/kg)
- ≥ PEC (4.98 mg/kg)
- ≥ TEC (0.99 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-4B
Cadmium Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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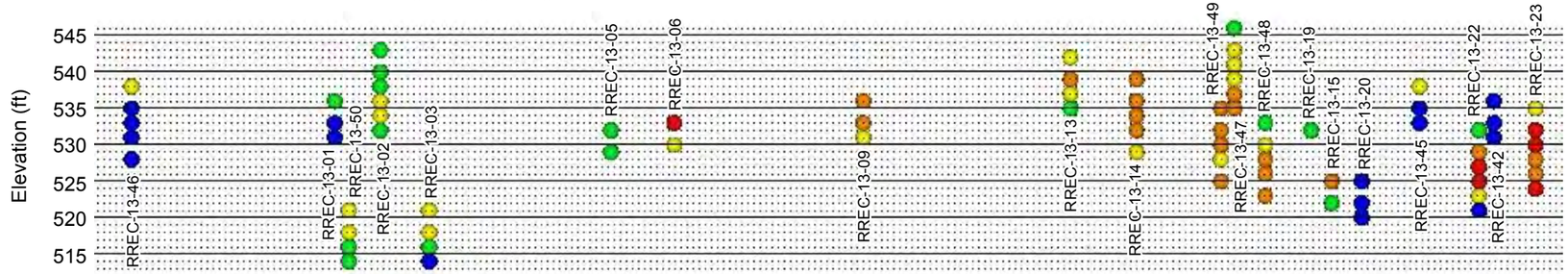

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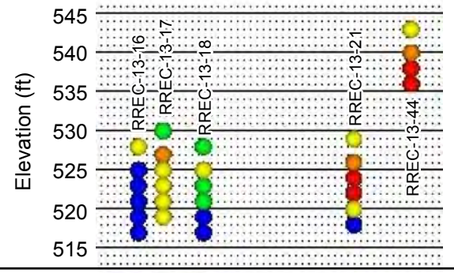


VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon chromium results.

Chromium Concentrations

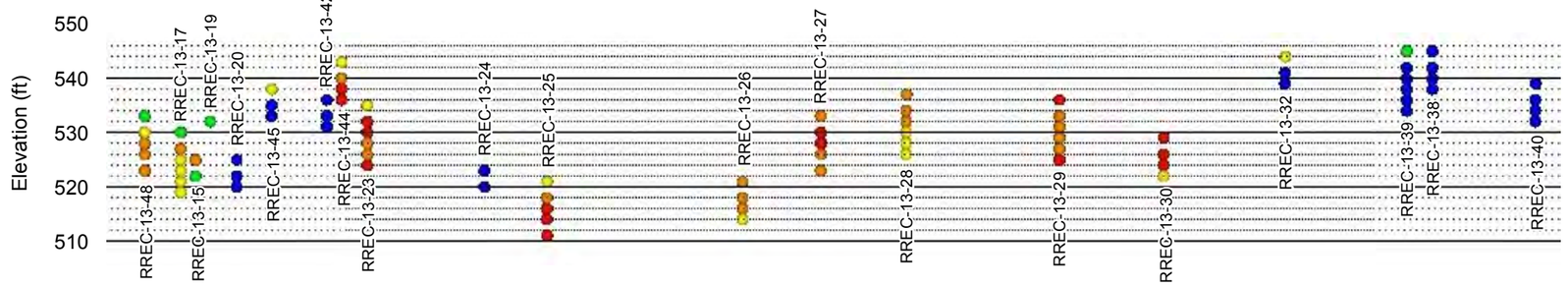
- ≥ 3x PEC (333 mg/kg)
- ≥ 2x PEC (222 mg/kg)
- ≥ PEC (111 mg/kg)
- ≥ TEC (43.4 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

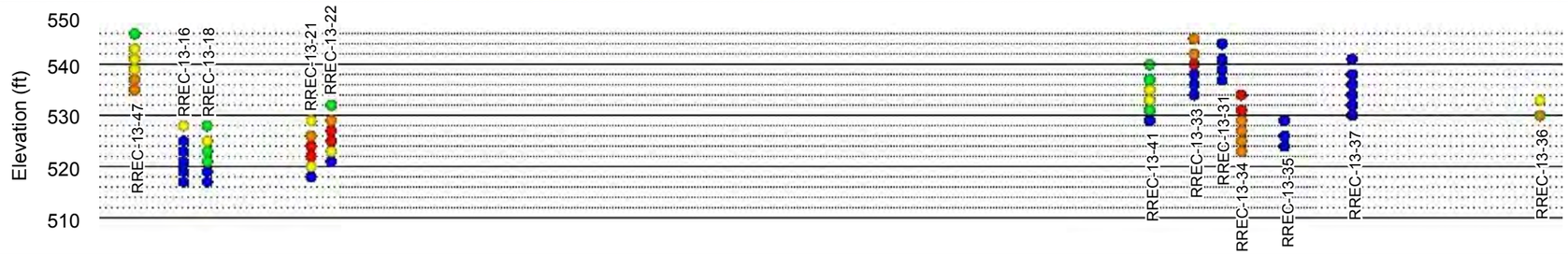
FIGURE 3-5A
Chromium Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-5B_Chromium_AreaB.mxd



EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon chromium results.

Chromium Concentrations

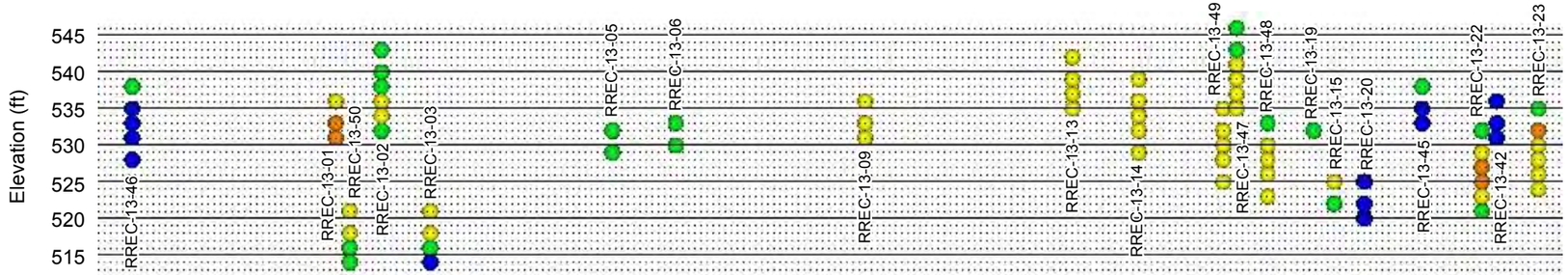
- ≥ 3x PEC (333 mg/kg)
- ≥ 2x PEC (222 mg/kg)
- ≥ PEC (111 mg/kg)
- ≥ TEC (43.4 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

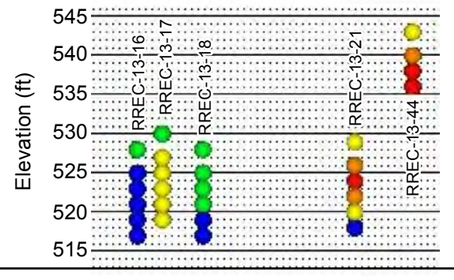
FIGURE 3-5B
Chromium Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-6A_Copper_AreaA.mxd



EAST

WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon copper results.

Copper Concentrations

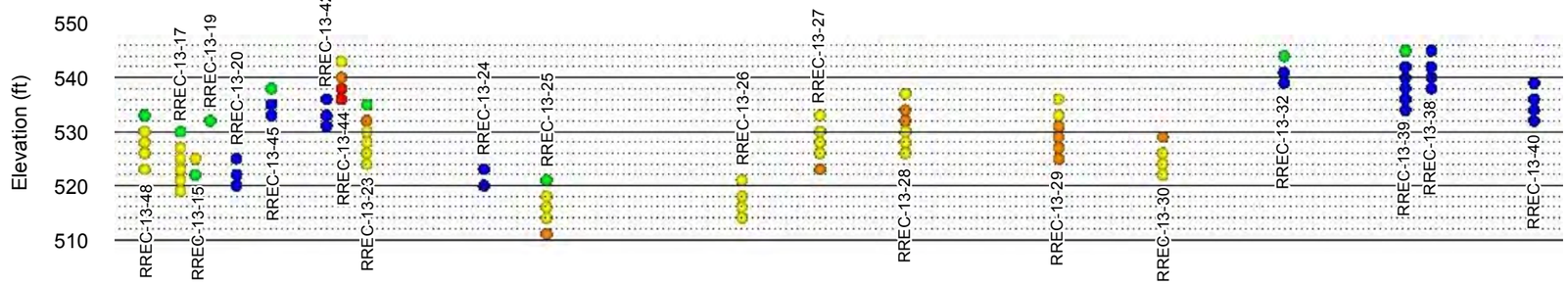
- ≥ 3x PEC (447 mg/kg)
- ≥ 2x PEC (298 mg/kg)
- ≥ PEC (149 mg/kg)
- ≥ TEC (31.6 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-6A
Copper Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-6B_Copper_AreaB.mxd



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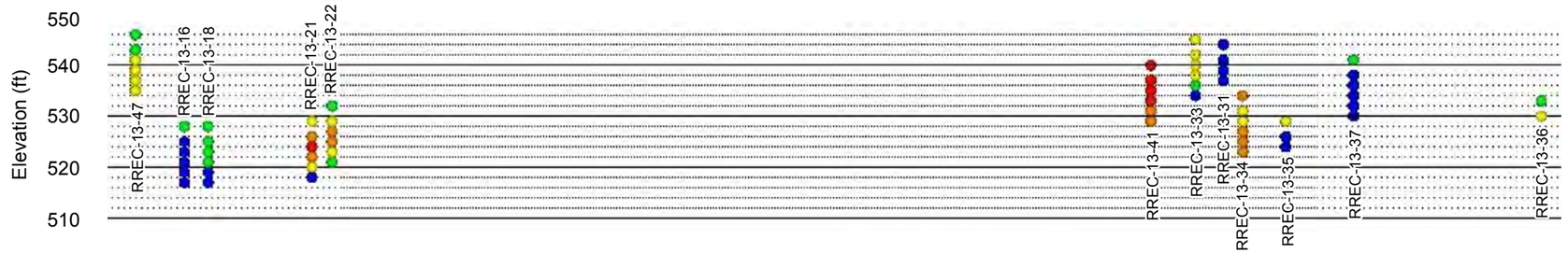


WEST

VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon copper results.

Copper Concentrations

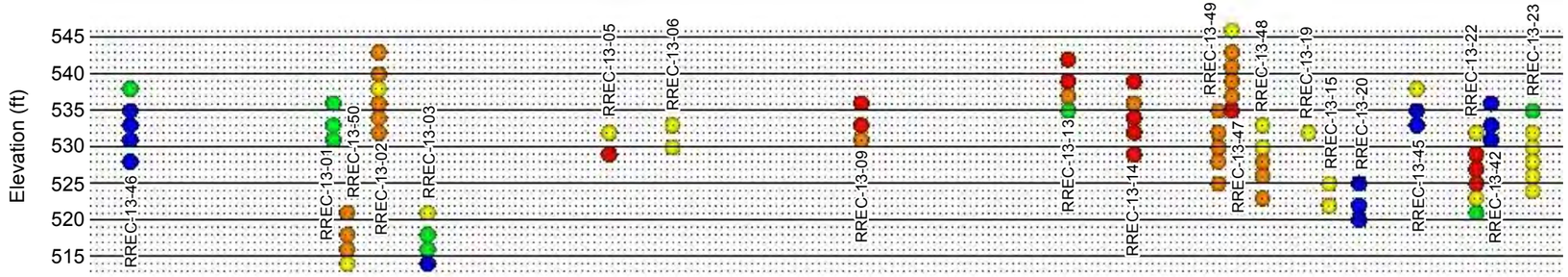
- ≥ 3x PEC (447 mg/kg)
- ≥ 2x PEC (298 mg/kg)
- ≥ PEC (149 mg/kg)
- ≥ TEC (31.6 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-6B
Copper Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-7A_Iron_AreaA.mxd



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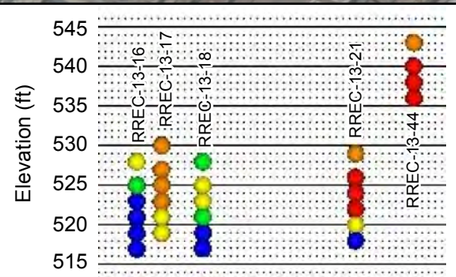
WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon iron results.

Iron Concentrations

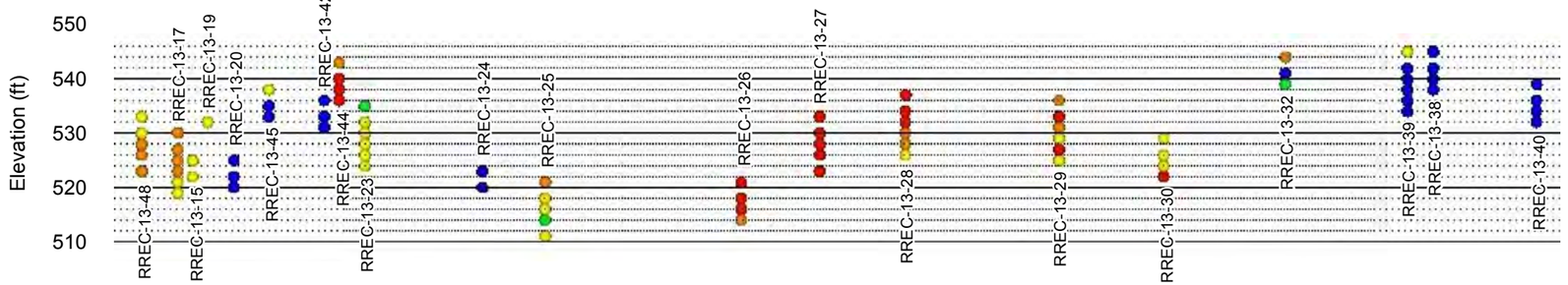
- ≥ 3x PEC (120,000 mg/kg)
- ≥ 2x PEC (80,000 mg/kg)
- ≥ PEC (40,000 mg/kg)
- ≥ TEC (20,000 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

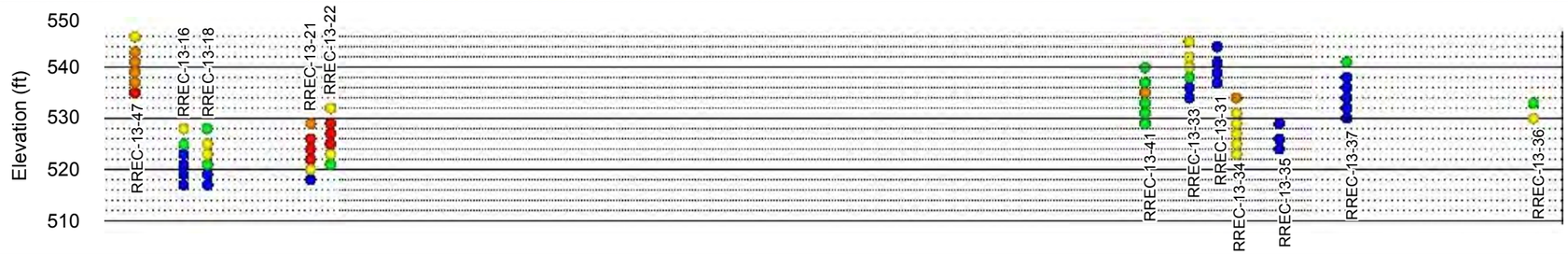
FIGURE 3-7A
Iron Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-7B_Iron_AreaB.mxd



EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon iron results.

Iron Concentrations

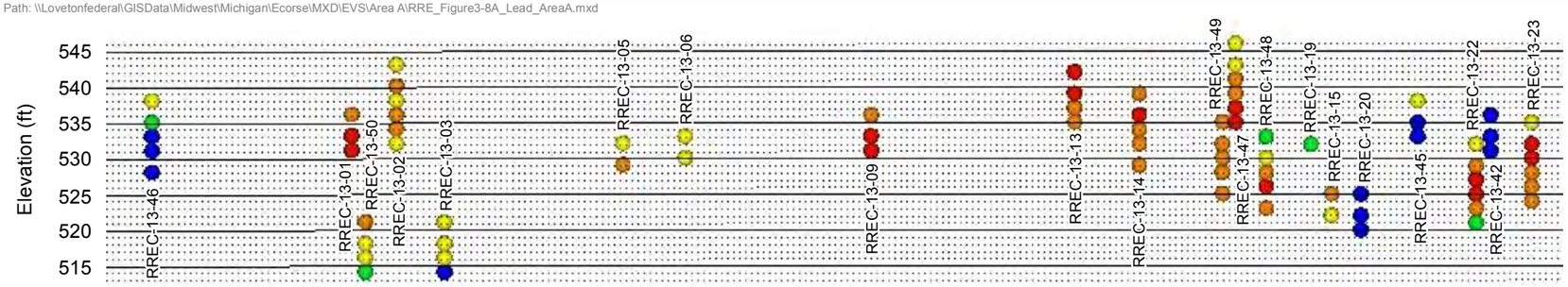
- ≥ 3x PEC (120,000 mg/kg)
- ≥ 2x PEC (80,000 mg/kg)
- ≥ PEC (40,000 mg/kg)
- ≥ TEC (20,000 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-7B
Iron Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-8A_Lead_AreaA.mxd



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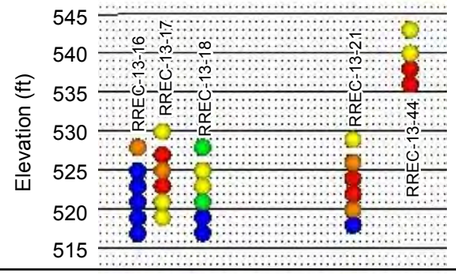
WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon lead results.

Lead Concentrations

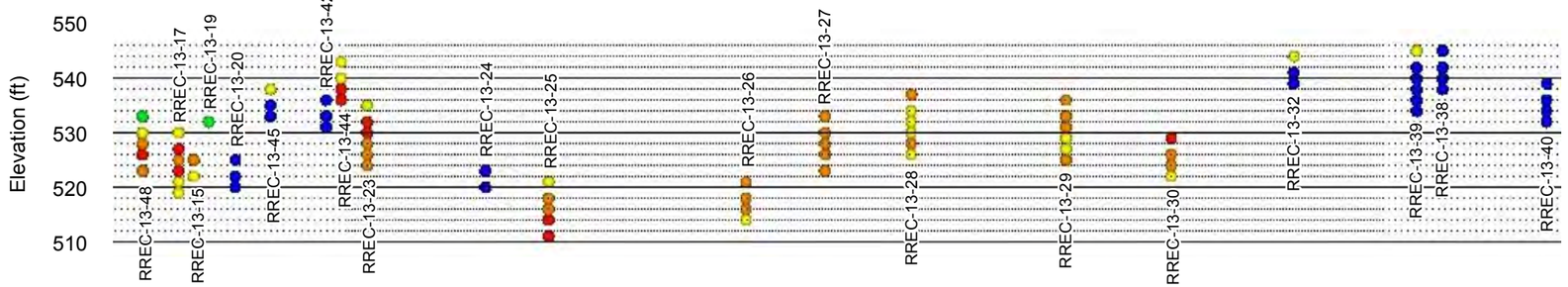
- ≥ 3x PEC (384 mg/kg)
- ≥ 2x PEC (256 mg/kg)
- ≥ PEC (128 mg/kg)
- ≥ TEC (35.8 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

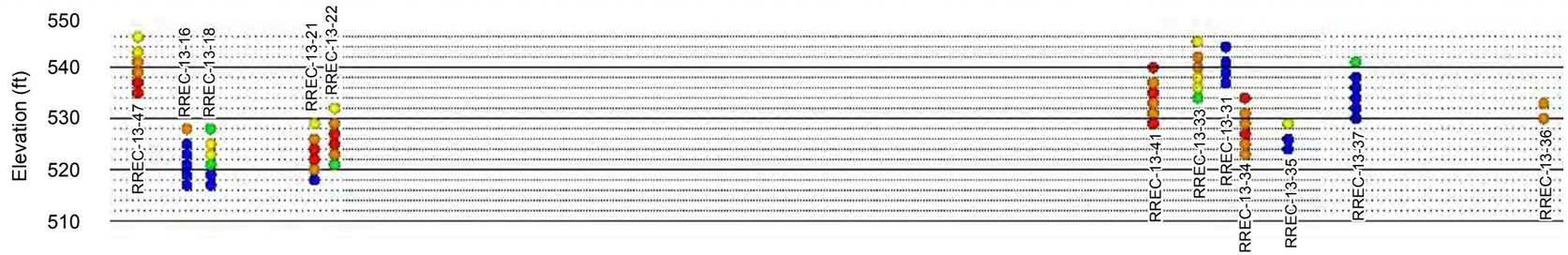
FIGURE 3-8A
Lead Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-8B_Lead_AreaB.mxd



EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon lead results.

Lead Concentrations

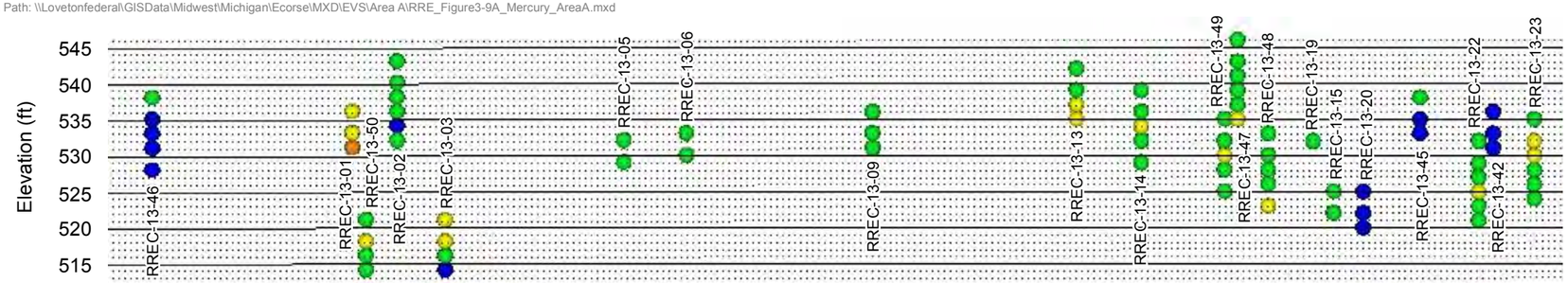
- ≥ 3x PEC (384 mg/kg)
- ≥ 2x PEC (256 mg/kg)
- ≥ PEC (128 mg/kg)
- ≥ TEC (35.8 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

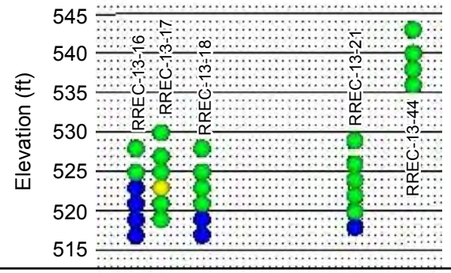
FIGURE 3-8B
Lead Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-9A_Mercury_AreaA.mxd



EAST

WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon mercury results.

Mercury Concentrations

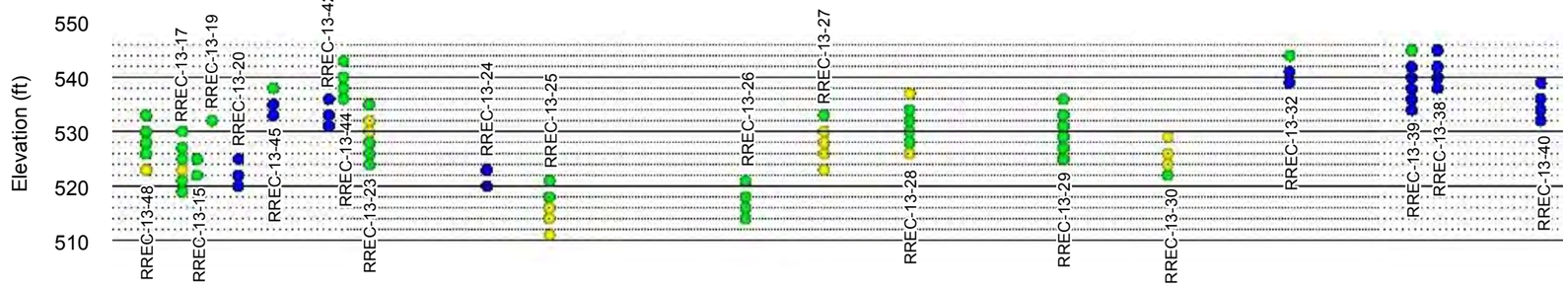
- ≥ 3x PEC (3.18 mg/kg)
- ≥ 2x PEC (2.12 mg/kg)
- ≥ PEC (1.06 mg/kg)
- ≥ TEC (0.18 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

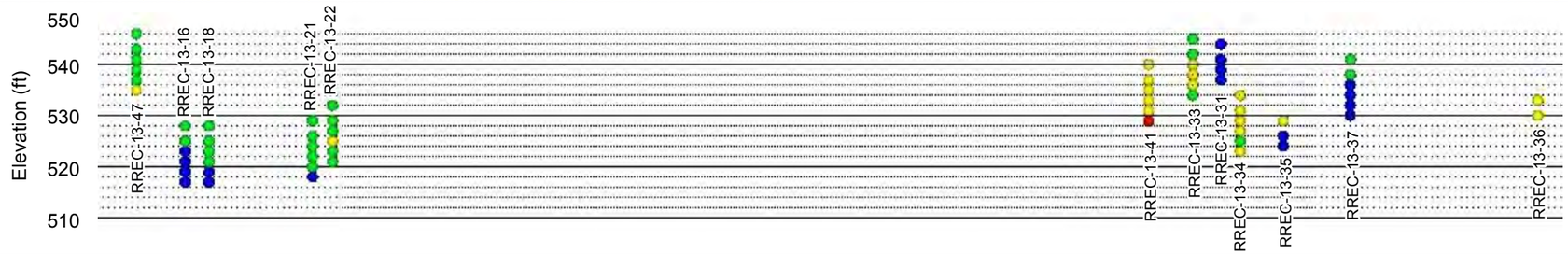
FIGURE 3-9A
Mercury Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-9B_Mercury_AreaB.mxd



EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon mercury results.

Mercury Concentrations

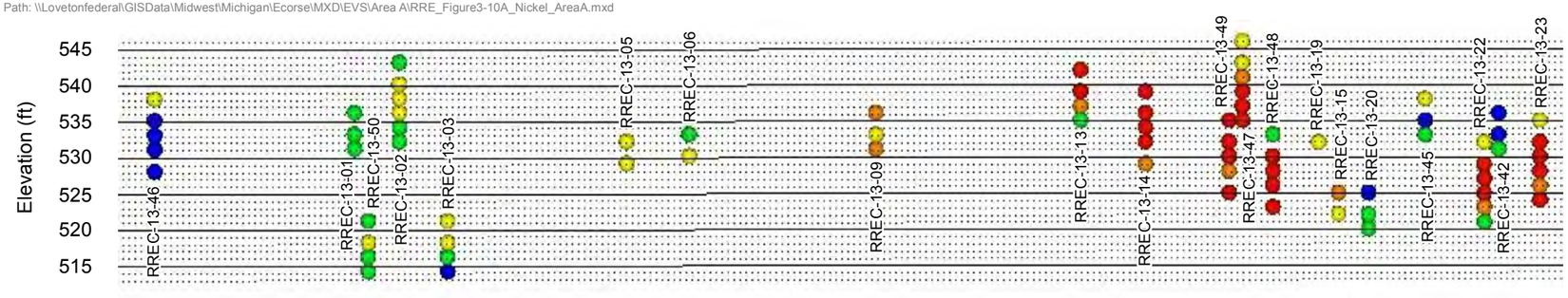
- ≥ 3x PEC (3.18 mg/kg)
- ≥ 2x PEC (2.12 mg/kg)
- ≥ PEC (1.06 mg/kg)
- ≥ TEC (0.18 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

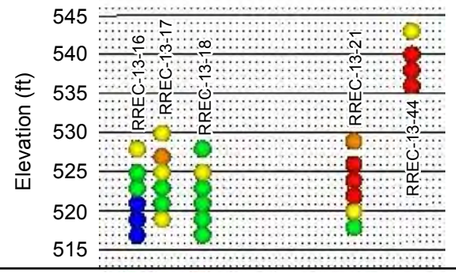
FIGURE 3-9B
Mercury Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-10A_Nickel_AreaA.mxd



EAST

WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon nickel results.

Nickel Concentrations

- ≥ 3x PEC (145.8 mg/kg)
- ≥ 2x PEC (97.2 mg/kg)
- ≥ PEC (48.6 mg/kg)
- ≥ TEC (22.7 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-10A
Nickel Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

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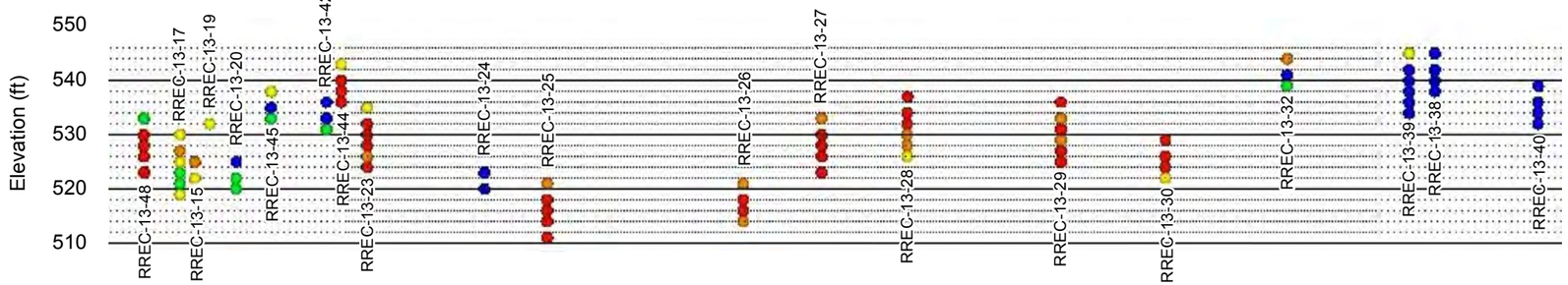
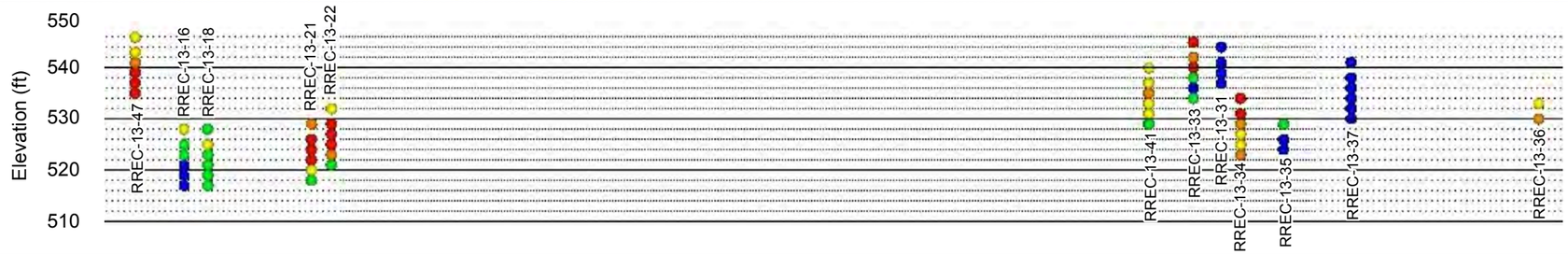


EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon nickel results.

Nickel Concentrations

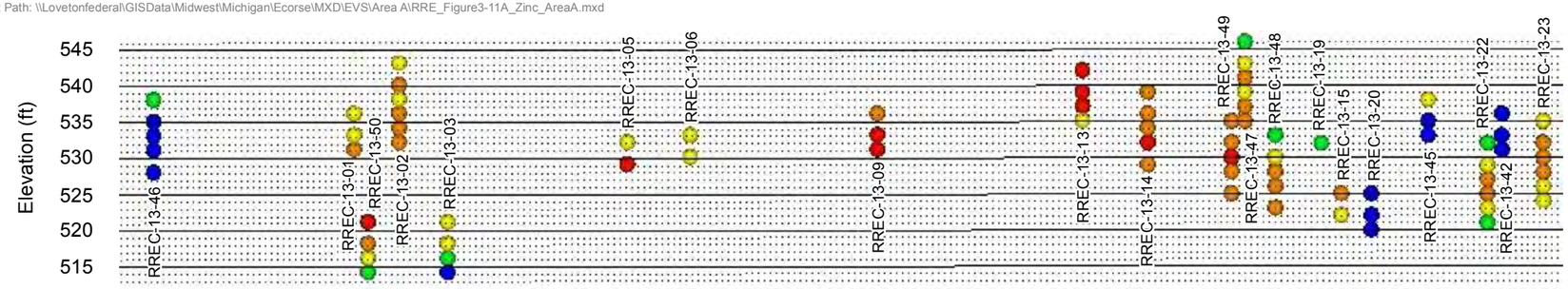
- ≥ 3x PEC (145.8 mg/kg)
- ≥ 2x PEC (97.2 mg/kg)
- ≥ PEC (48.6 mg/kg)
- ≥ TEC (22.7 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

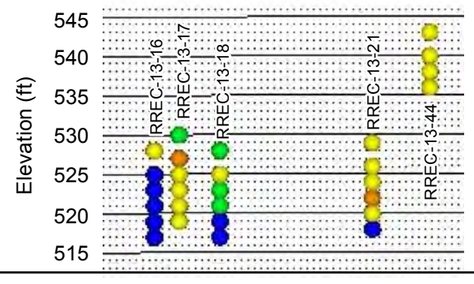
FIGURE 3-10B
Nickel Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure3-11A_Zinc_AreaA.mxd



EAST

WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon zinc results.

Zinc Concentrations

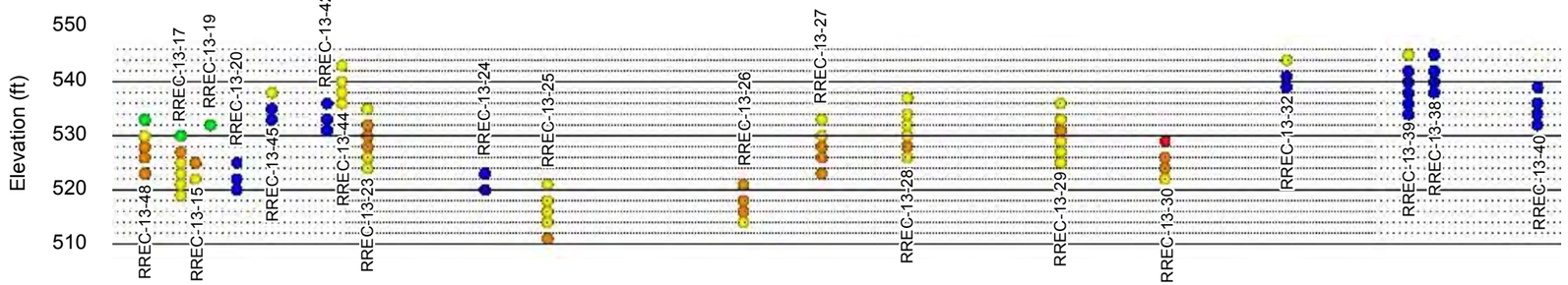
- ≥ 3x PEC (1,377 mg/kg)
- ≥ 2x PEC (918 mg/kg)
- ≥ PEC (459 mg/kg)
- ≥ TEC (121 mg/kg)
- < TEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-11A
Zinc Concentrations (mg/kg) Detected in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area B\RRE_Figure3-11B_Zinc_AreaB.mxd



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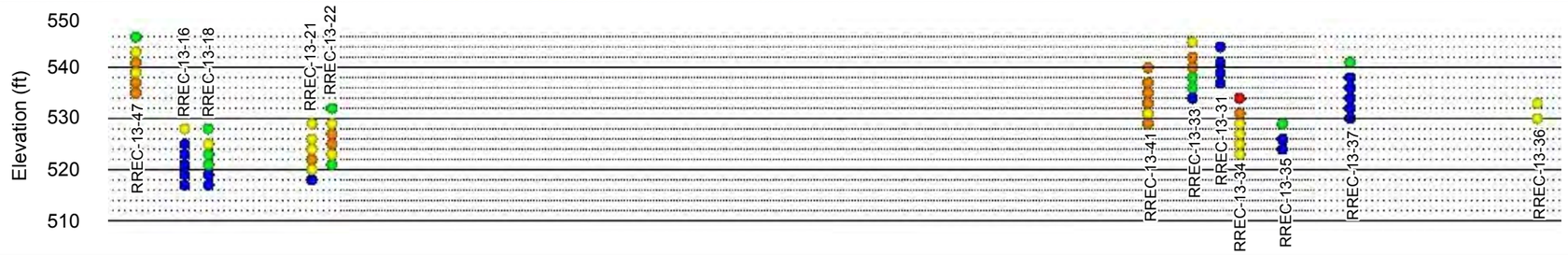
WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon zinc results.

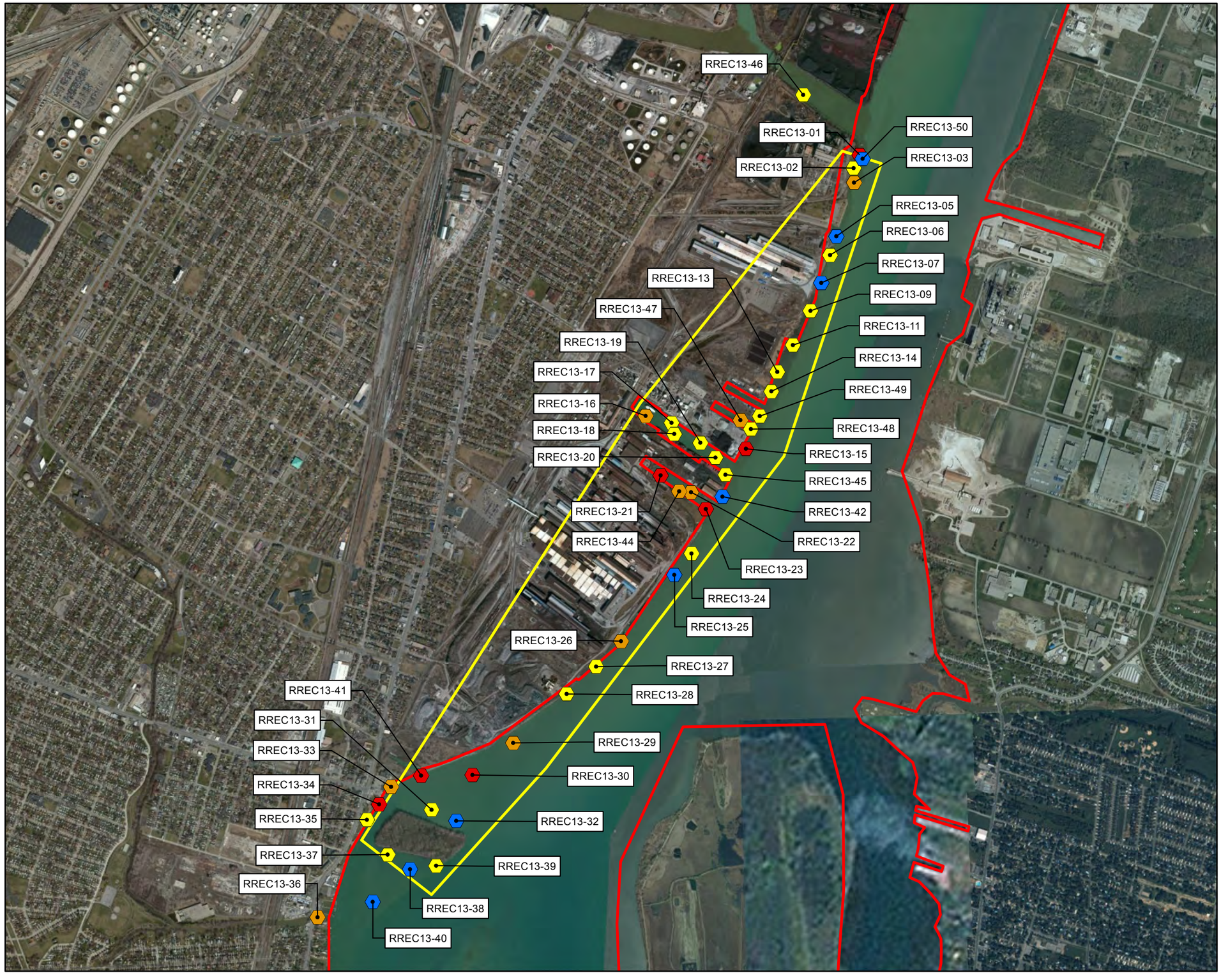
Zinc Concentrations

- ≥ 3x PEC (1,377 mg/kg)
- ≥ 2x PEC (918 mg/kg)
- ≥ PEC (459 mg/kg)
- ≥ TEC (121 mg/kg)
- < TEC

0 400 800 1,200 1,600
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 3-11B
Zinc Concentrations (mg/kg) Detected in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments



VICINITY MAP

Legend

TPH Concentrations*

- ≤ 100 mg/kg
- ≤ 1,000 mg/kg
- ≤ 5,000 mg/kg
- ≤ 10,000 mg/kg
- > 10,000 mg/kg

River Rouge/Ecorse Shoreline Area

Detroit River Area of Concern

*Total Petroleum Hydrocarbons (TPH) were analyzed. in the surface interval (0-0.5 ft) only.
TPH analysis range - C10 through C36
Sample Date: October and November 2013
mg/kg = milligrams per kilogram
ft = foot/feet

0 1,500 3,000
Feet

Data Sources: EPA 2013, USGS 2013
Aerial Source: ESRI ArcGIS Online
Map Date: July 2014

FIGURE 3-12
Total Petroleum Hydrocarbons
River Rouge/Ecorse Shoreline Assessment of Contaminated Sediments

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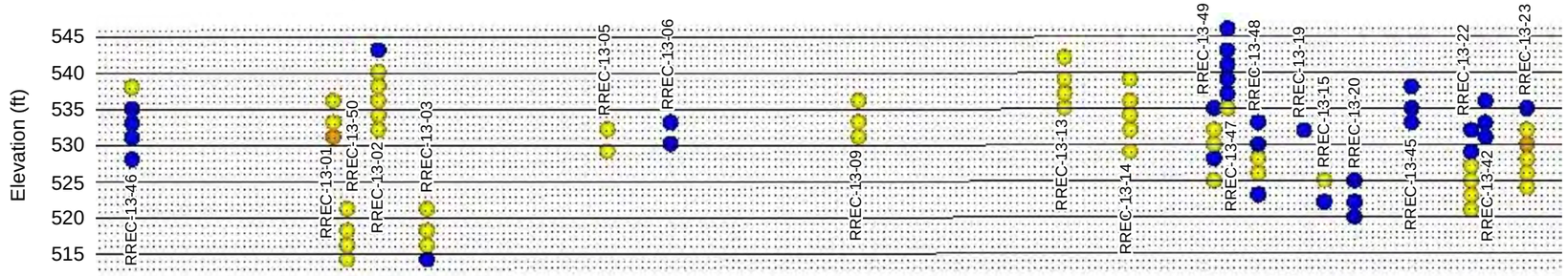
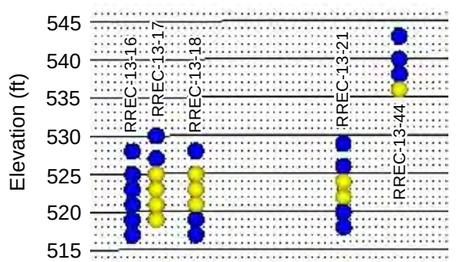


EAST

WEST



VICINITY MAP

Legend

- Area A (east side)
- Area A (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon ESBTU results.

ESBTU

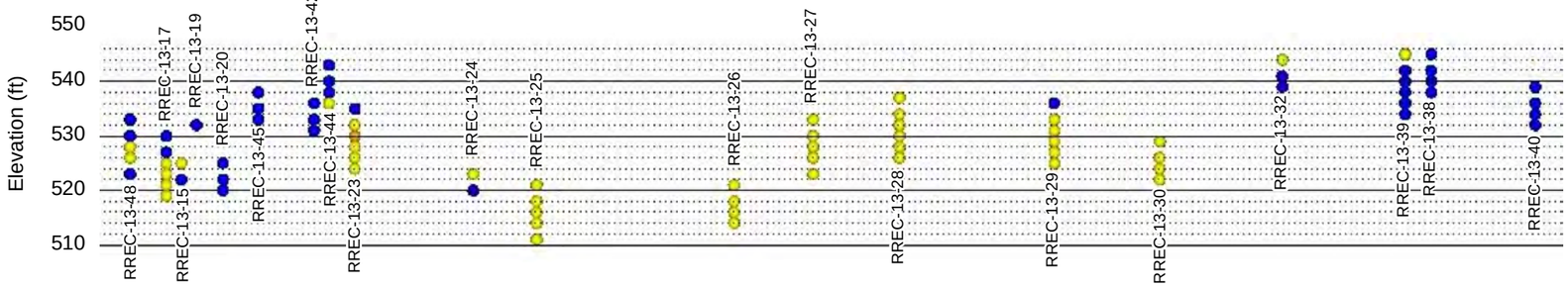
- > 10
- 7.5 - 10
- 1 - 7.5
- < 1

0 250 500 750 1,000
Feet

Map Created: 8/6/2014
Basemap: ESRI 2012

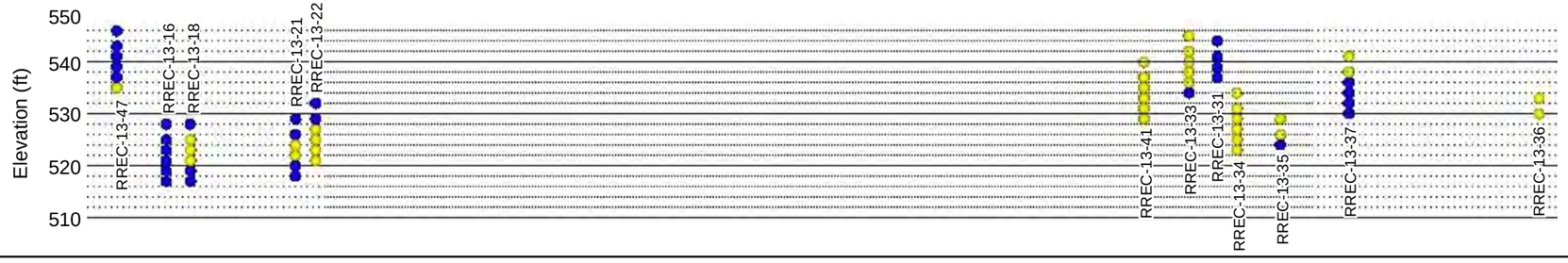
FIGURE 4-1A
Equilibrium Sediment Benchmark Toxic Units for Polycyclic Aromatic Hydrocarbons in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: L:\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Area A\RRE_Figure4-1B_ESBTU_AreaB.mxd



EAST

WEST



VICINITY MAP

Legend

- Area B (east side)
- Area B (west side)

Ponar sample results are shown on the map.
Vibracore sample results are shown on the graphs.
Locations are color coded based upon ESBTU results.

ESBTU

- > 10
- 7.5 - 10
- 1 - 7.5
- < 1

0 400 800 1,200 1,600
Feet

Map Created: 8/7/2014
Basemap: ESRI 2012

FIGURE 4-1B
Equilibrium Sediment Benchmark Toxic Units for Polycyclic Aromatic Hydrocarbons in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-1A Spatial Analysis for All Const in Area A.mxd

VICINITY MAP

Legend

Sample Locations- Area A

All Constituents

≥ 3x PEC

≥ 2x PEC

≥ PEC

0 250 500 750 1,000

Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-1A
Spatial Analysis for All Constituents in Area A

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-1B Spatial Analysis for All Const in Area B.mxd

VICINITY MAP

Legend

△ Sample Locations- Area B

All Constituents

- ≥ 3x PEC
- ≥ 2x PEC
- ≥ PEC

0 250 500 750 1,000
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-1B
Spatial Analysis for All Constituents in Area B

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-2 Hotspot 1.mxd

RREC13-02

Analyte	Result
Cadmium	5.9
Chromium	135
Copper	172
Iron	102000
Lead	305
Nickel	71.7
Zinc	1140
PAHs	184210
PCBs	3360

RREC13-06

Analyte	Result
Chromium	637
Iron	76600
Lead	228
Nickel	60.5
Zinc	863
PAHs	36070
PCBs	2300

RREC13-09

Analyte	Result
Cadmium	10.2
Chromium	254
Copper	202
Iron	235000
Lead	831
Nickel	139
Zinc	1570
PAHs	93350
PCBs	4250

RREC13-11

Analyte	Result
Cadmium	7.6
Chromium	157
Copper	180
Iron	263000
Lead	577
Nickel	91.6
Zinc	3630
PAHs	26470

RREC13-49

Analyte	Result
Cadmium	9.6
Chromium	287
Copper	203
Iron	113000
Lead	367
Mercury	1.3
Nickel	194
Zinc	1380
PAHs	50930
PCBs	10200

RREC13-50

Analyte	Result
Cadmium	14.2
Chromium	112
Copper	237
Iron	100000
Lead	259
Mercury	1.4
Nickel	51.6
Zinc	1420
PAHs	270000

RREC13-05

Analyte	Result
Iron	135000
Lead	362
Nickel	53.7
Zinc	1540
PAHs	70980
PCBs	1580

RREC13-14

Analyte	Result
Cadmium	9.2
Chromium	282
Copper	256
Iron	181000
Lead	403
Mercury	1.1
Nickel	217
Zinc	1460
PAHs	53680
PCBs	11200

RREC13-01

Analyte	Result
Cadmium	16.2
Copper	332
Lead	451
Mercury	2.2
Zinc	997
PAHs	300000

RREC13-08
No Recovery

RREC13-15

Analyte	Result
Cadmium	9.1
Chromium	267
Copper	177
Iron	76300
Lead	360
Nickel	123
Zinc	1260
PAHs	44685
PCBs	4320

RREC13-03

Analyte	Result
Cadmium	21.2
Chromium	124
Copper	225
Iron	58800
Lead	222
Mercury	1.4
Nickel	61.1
Zinc	792
PAHs	162400

RREC13-04
No Recovery

RREC13-07

Analyte	Result
Chromium	242
Iron	67500

RREC13-10
No Recovery

RREC13-12
No Recovery

RREC13-45

Analyte	Result
Cadmium	5
Chromium	136
Iron	44900
Lead	209
Nickel	67.7
Zinc	669
PAHs	32310
PCBs	850

RREC13-46

Analyte	Result
Cadmium	5.1
Lead	209
Nickel	60.9
PAHs	134930
PCBs	1020

RREC13-13

Analyte	Result
Cadmium	31
Chromium	272
Copper	271
Iron	409000
Lead	1490
Mercury	1.9
Nickel	178
Zinc	11800
PAHs	210200
PCBs	2490

RREC13-47

Analyte	Result
Cadmium	10.4
Chromium	300
Copper	221
Iron	123000
Lead	447
Mercury	1.2
Nickel	182
Zinc	1270
PAHs	36680
PCBs	11500

RREC13-48

Analyte	Result
Cadmium	10.5
Chromium	304
Copper	197
Iron	100000
Lead	402
Mercury	1.2
Nickel	220
Zinc	1270
PAHs	35670
PCBs	7230

Sediment Benchmarks for Contaminants				
Analyte	Unit	PEC	PEC x2	PEC x3
Arsenic	mg/kg	33	66	99
Cadmium	mg/kg	4.98	9.96	14.94
Chromium	mg/kg	111	222	333
Copper	mg/kg	149	298	447
Iron	mg/kg	40000	80000	120000
Lead	mg/kg	128	256	384
Mercury	mg/kg	1.06	2.12	3.18
Nickel	mg/kg	48.6	97.2	145.8
Zinc	mg/kg	459	918	1377
Total PAHs ND=1/2 RL	µg/kg	22800	45600	68400
Total PCBs ND=0	µg/kg	676	1352	2028

VICINITY MAP

Legend

Sample Locations- Area A

All Constituents

≥ 3x PEC

≥ 2x PEC

≥ PEC

0 250 500 750 1,000

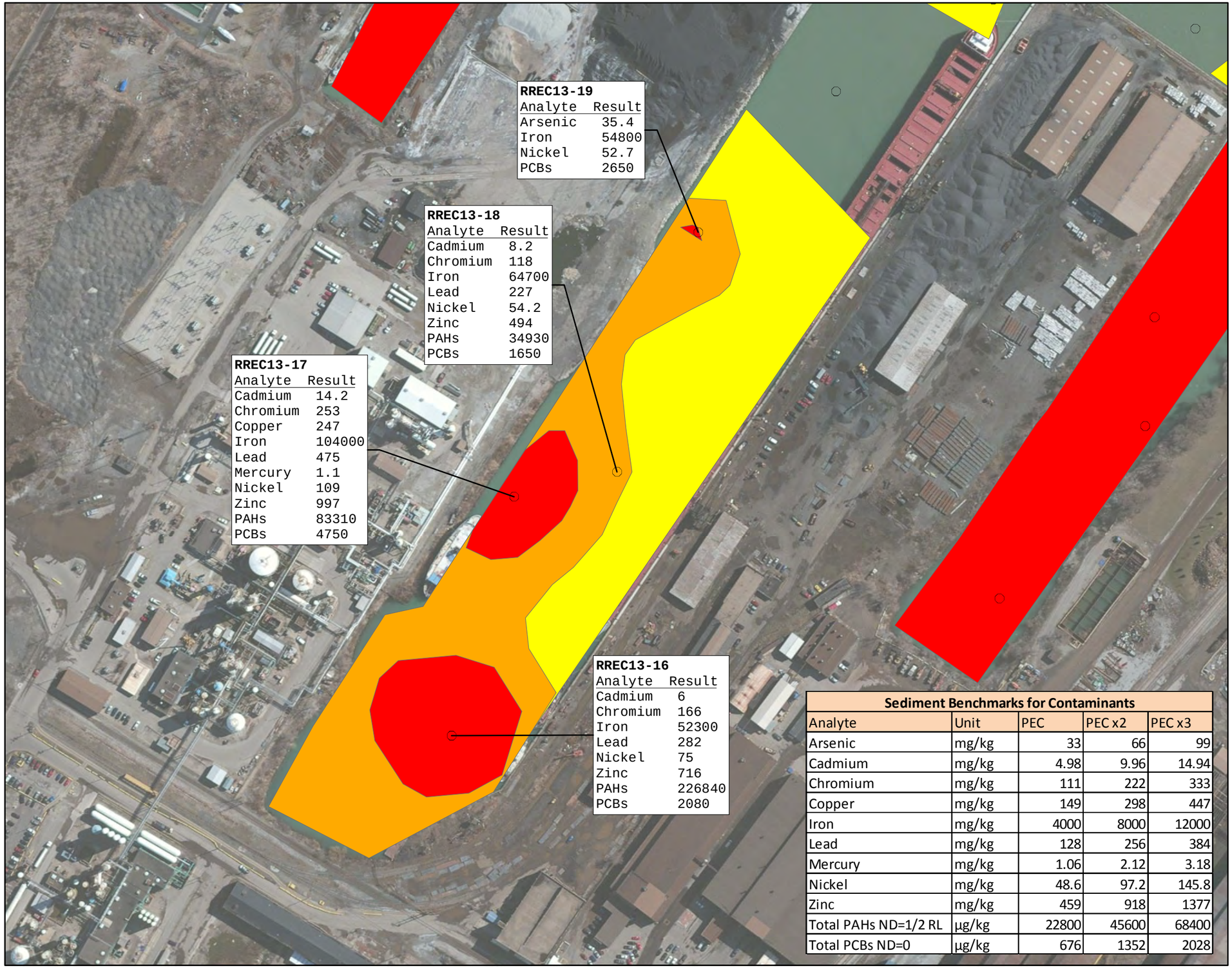
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-2
Hotspot 1

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-3 Hotspot 2.mxd



Sediment Benchmarks for Contaminants				
Analyte	Unit	PEC	PEC x2	PEC x3
Arsenic	mg/kg	33	66	99
Cadmium	mg/kg	4.98	9.96	14.94
Chromium	mg/kg	111	222	333
Copper	mg/kg	149	298	447
Iron	mg/kg	4000	8000	12000
Lead	mg/kg	128	256	384
Mercury	mg/kg	1.06	2.12	3.18
Nickel	mg/kg	48.6	97.2	145.8
Zinc	mg/kg	459	918	1377
Total PAHs ND=1/2 RL	µg/kg	22800	45600	68400
Total PCBs ND=0	µg/kg	676	1352	2028

VICINITY MAP

Legend

- Sample Locations- Area A

All Constituents

- ≥ 3x PEC
- ≥ 2x PEC
- ≥ PEC

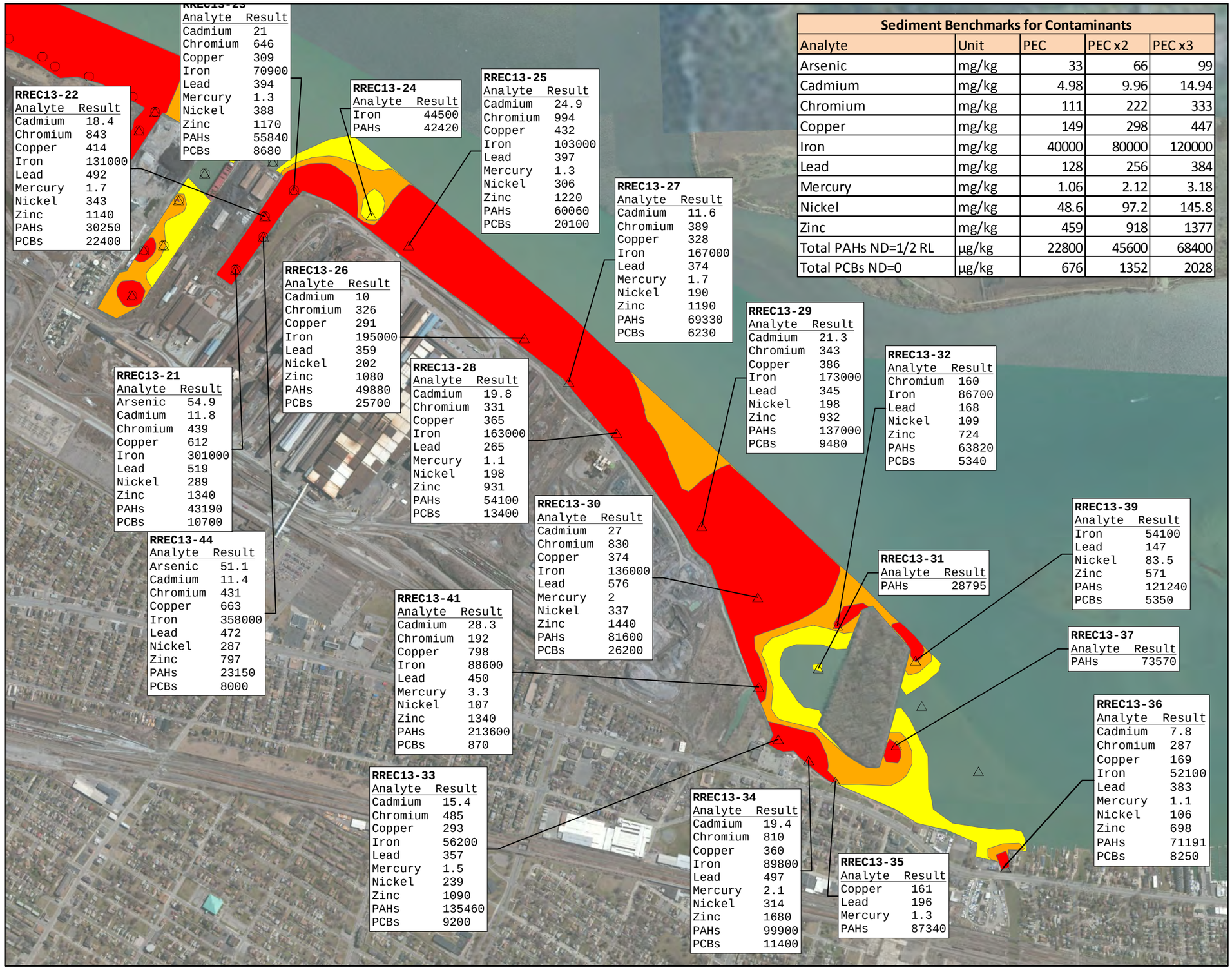
0 50 100 150 200
Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-3
Hotspot 2

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-4 Hotspot 3.mxd



Sediment Benchmarks for Contaminants

Analyte	Unit	PEC	PEC x2	PEC x3
Arsenic	mg/kg	33	66	99
Cadmium	mg/kg	4.98	9.96	14.94
Chromium	mg/kg	111	222	333
Copper	mg/kg	149	298	447
Iron	mg/kg	40000	80000	120000
Lead	mg/kg	128	256	384
Mercury	mg/kg	1.06	2.12	3.18
Nickel	mg/kg	48.6	97.2	145.8
Zinc	mg/kg	459	918	1377
Total PAHs ND=1/2 RL	µg/kg	22800	45600	68400
Total PCBs ND=0	µg/kg	676	1352	2028

VICINITY MAP

Legend

Sample Locations- Area A

Sample Locations- Area B

All Constituents

≥ 3x PEC

≥ 2x PEC

≥ PEC

0 250 500 750 1,000

Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-4
Hotspot 3

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\Lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure 5-5A Spatial Analysis for ESBTUs in Area A.mxd

VICINITY MAP

Legend

Sample Locations- Area A

PAH ESBTUs

- > 10
- 7.5 - 10
- 1 - 7.5

0 250 500 750 1,000

Feet

Map Created: 7/22/2014
Basemap: ESRI 2012

FIGURE 5-5A
Spatial Analysis for PAH ESBTUs in Area A

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: L:\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure5-5B Spatial Analysis for ESBTUs in Area B.mxd

VICINITY MAP

Legend

△ Sample Locations- Area B

PAH ESBTUs

- > 10
- 7.5 - 10
- 1 - 7.5

0 250 500 750 1,000

Feet

Map Created: 8/1/2014
Basemap: ESRI 2012

FIGURE 5-5B
Spatial Analysis for PAH ESBTUs in Area B

River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: L:\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure5-6A Spatial Analysis for ESBTUs Metals in Area A.mxd

RREC13-43

RREC13-01
24 µmol/g_{oc}

RREC13-50
88 µmol/g_{oc}

RREC13-03
63 µmol/g_{oc}

RREC13-05
22 µmol/g_{oc}

RREC13-07
16 µmol/g_{oc}

RREC13-04

RREC13-02
22 µmol/g_{oc}

RREC13-06

RREC13-08

RREC13-46

RREC13-10

RREC13-11

RREC13-09
112 µmol/g_{oc}

RREC13-12

RREC13-13
955 µmol/g_{oc}

RREC13-15
167 µmol/g_{oc}

RREC13-42
53 µmol/g_{oc}

RREC13-14
203 µmol/g_{oc}

RREC13-48

RREC13-49
78 µmol/g_{oc}

RREC13-45

RREC13-20

RREC13-47
92 µmol/g_{oc}

RREC13-23

RREC13-19

RREC13-18

RREC13-17

RREC13-21

RREC13-16

RREC13-44
13 µmol/g_{oc}

RREC13-22
17 µmol/g_{oc}

VICINITY MAP

Sample Locations- Area

- Value Not Calculated (due to insufficient AVS value)
- Value Was Negative
- No Recovery
- < 130 µmol/g_{oc}
- 130 - 3,000 µmol/g_{oc}

Organic Carbon Normalized Metals in µmol/g_{oc}

- > 3,000
- 130 - 3,000
- < 130

NOTE: All sample depths are 0-0.5 ft

0 250 500 750 1,000
Feet

Map Created: 8/7/2014
Basemap: ESRI 2012

FIGURE 5-6A
Spatial Analysis for Organic Carbon Normalized Metals in Area A
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Document Path: \\lovetonfederal\GISData\Midwest\Michigan\Ecorse\MXD\EVS\Krigs\RRE_Figure5-6B Spatial Analysis for ESBTUs Metals in Area B.mxd

VICINITY MAP

Sample Locations- Area B

- Value Was Negative
- No Recovery
- < 130 µmol/g_{oc}
- 130 - 3,000 µmol/g_{oc}

Organic Carbon Normalized Metals in µmol/g_{oc}

- > 3,000
- 130 - 3,000
- < 130

NOTE: All sample depths are 0-0.5 ft

0 250 500 750 1,000
Feet

Map Created: 8/7/2014
Basemap: ESRI 2012

FIGURE 5-6B
Spatial Analysis for Organic Carbon Normalized Metals in Area B
River Rouge/Ecorse Shoreline
Assessment of Contaminated Sediments

Tables

TABLE 2-1. RIVER ROUGE/ECORSE SHORELINE SITE CHARACTERIZATION COORDINATES
DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

Location ID	Date Collected	Time Collected	Latitude	Longitude	Distance from Target Coordinate (ft)	NOTES
RREC13-01	10/30/13	9:54	42° 16.4079	-83° 06.6083	51.40	Location moved slightly offshore by EPA (R. Ellison)
RREC13-02	10/30/13	10:31	42° 16.3670	-83° 06.6333	9.68	Did not encounter refusal
RREC13-03	11/5/13	10:48	42° 16.3229	-83° 06.6321	64.68	Location moved slightly offshore by EPA (R. Ellison) due to rocks near proposed location; did not encounter refusal
RREC13-04	11/5/13	--	--	--	--	Location abandoned by EPA (R. Ellison) after failed attempts at recovery with vibracore and ponar
RREC13-05	11/5/13	10:13	42° 16.1596	-83° 06.7085	39.65	Location moved slightly offshore by EPA (R. Ellison)
RREC13-06	11/5/13	9:36	42° 16.1026	-83° 06.7361	42.78	Location moved slightly offshore by EPA (R. Ellison) due to rocks near proposed location
RREC13-07	11/5/13	8:56	42° 16.0176	-83° 06.7739	42.18	Location moved slightly by EPA (R. Ellison) due to strong current
RREC13-08		--	--	--	--	Location abandoned by EPA (R. Ellison)
RREC13-09	11/4/13	16:11	42° 15.9326	-83° 06.8201	21.12	Location moved slightly by EPA (R. Ellison)
RREC13-10		--	--	--	--	Location abandoned by EPA (R. Ellison)
RREC13-11	11/4/13	15:25	42° 15.8280	-83° 06.8943	95.97	Location moved slightly by EPA (R. Ellison) due to rocks near proposed location. Vibracore attempts unsuccessful -- ponar collected only
RREC13-12		--	--	--	--	Location abandoned by EPA (R. Ellison)
RREC13-13	11/4/13	14:47	42° 15.7470	-83° 06.9614	72.67	Location moved slightly by EPA (R. Ellison); no refusal
RREC13-14	11/4/13	14:07	42° 15.6877	-83° 06.9863	18.95	Location moved inshore by EPA (R. Ellison) away from channel; no refusal
RREC13-15	11/4/13	13:29	42° 15.5124	-83° 07.0950	32.24	Location moved because a ship was docking in the area of the proposed location
RREC13-16	10/29/13	8:39	42° 15.6176	-83° 07.5062	3.56	
RREC13-17	10/29/13	15:21	42° 15.5956	-83° 07.3997	7.54	Returned to location to collect core with double catcher. No refusal.
RREC13-18	10/29/13	10:17	42° 15.5613	-83° 07.3893	8.42	No refusal
RREC13-19	10/29/13	11:04	42° 15.5331	-83° 07.2826	12.68	
RREC13-20	10/29/13	13:29	42° 15.4866	-83° 07.2205	22.53	Lost approximately 16 inches out of bottom of core on retrieval
RREC13-21	10/29/13	16:05	42° 15.4348	-83° 07.4484	34.71	No refusal
RREC13-22	10/29/13	16:38	42° 15.3818	-83° 07.3237	132.81	Location moved because a barge was tied off at proposed location; no refusal
RREC13-23	10/30/13	9:02	42° 15.3300	-83° 07.2630	26.01	No refusal
RREC13-24	11/4/13	9:56	42° 15.1944	-83° 07.3252	96.41	Location moved slightly by EPA (R. Ellison)
RREC13-25	11/4/13	9:04	42° 15.1300	-83° 07.3973	47.41	Location moved slightly by EPA (R. Ellison); no refusal
RREC13-26	11/4/13	8:11	42° 14.9291	-83° 07.6209	106.19	Location moved inshore by EPA (R. Ellison) away from channel; no refusal
RREC13-27	11/4/13	7:34	42° 14.8520	-83° 07.7260	109.48	Location moved inshore by EPA (R. Ellison) away from channel; no refusal
RREC13-28	11/1/13	17:40	42° 14.7693	-83° 07.8486	148.40	Location approximately 75 feet downstream of outfall; no refusal
RREC13-29	11/1/13	17:00	42° 14.6218	-83° 08.0718	169.81	Location moved closer to shore by EPA (R. Ellison); no refusal
RREC13-30	11/1/13	16:15	42° 14.5253	-83° 08.2418	35.83	No refusal
RREC13-31	10/30/13	15:40	42° 14.4205	-83° 08.4118	13.46	No refusal
RREC13-32	10/30/13	14:55	42° 14.3860	-83° 08.3116	9.69	
RREC13-33	10/30/13	16:45	42° 14.4929	-83° 08.5782	32.27	Location moved slightly by EPA (R. Ellison) due to pilings at proposed location; no refusal
RREC13-34	11/1/13	15:40	42° 14.4403	-83° 08.6289	4.25	
RREC13-35	10/30/13	17:25	42° 14.3934	-83° 08.6793	62.15	Location moved slightly by EPA (R. Ellison). No refusal
RREC13-36	10/28/13	15:33	42° 14.0963	-83° 08.8892	15.41	
RREC13-37	10/28/13	16:39	42° 14.2855	-83° 08.5958	8.48	No refusal
RREC13-38	10/30/13	13:40	42° 14.2395	-83° 08.5045	36.70	No refusal
RREC13-39	10/30/13	14:20	42° 14.2497	-83° 08.3972	130.90	Location moved by EPA (R. Ellison) due to steep slope at proposed location; no refusal
RREC13-40	10/28/13	16:04	42° 14.1417	-83° 08.6605	7.53	
RREC12-41	10/30/13	16:13	42° 14.5261	-83° 08.4540	23.12	Location moved slightly way from shore by EPA (R. Ellison); no refusal
RREC13-42	11/4/13	10:46	42° 15.3669	-83° 07.1948	148.35	Location moved slightly by EPA (R. Ellison)
RREC13-43	11/5/13	--	--	--	0.09	Location abandoned by EPA (R. Ellison) due to very strong current
RREC13-44	10/30/13	8:25	42° 15.3855	-83° 07.3724	--	Location moved slightly by EPA (R. Ellison)
RREC13-45	10/29/13	14:38	42° 15.4340	-83° 07.1805	39.20	
RREC13-46	11/5/13	15:32	42° 16.5942	-83° 06.8372	179.64	Location moved inshore away from channel by EPA (R. Ellison); no refusal
RREC13-47	10/30/13	11:19	42° 15.6007	-83° 07.1160	129.61	Location moved slightly by EPA (R. Ellison); no refusal
RREC13-48	11/5/13	7:42	42° 15.5722	-83° 07.0724	16.89	No refusal
RREC13-49	11/5/13	8:19	42° 15.6119	-83° 07.0358	67.90	No refusal
RREC13-50	11/5/13	14:53	42° 16.3952	-83° 06.5955	55.42	No refusal

TABLE 2-2 RIVER ROUGE/ECORSE SHORELINE SITE CHARACTERIZATION ANALYTICAL PROGRAM
DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

	Proposed Analytical Sample Count				Actual Analytical Sample Count			
Sample Location/Sample ID	**Grain Size (with hydrometer)**	**SEM/AVS and DRO/MRO**	**Total PCBs-Aroclors, 34PAHs, Michigan 10 metals, Iron, Nickel, TOC**	**Percent Solids**	**Grain Size (with hydrometer)**	**SEM/AVS and DRO/MRO**	**Total PCBs-Aroclors, 34PAHs, Michigan 10 metals, Iron, Nickel, TOC**	**Percent Solids**
RREC13-01	1	1	5	5	1	1	4	4
RREC13-02	1	1	5	5	1	1	7	7
RREC13-03	1	1	5	5	1	1	5	5
RREC13-04	1	1	5	5	0	0	0	0
RREC13-05	1	1	5	5	1	1	3	3
RREC13-06	1	1	5	5	1	1	3	3
RREC13-07	1	1	5	5	1	1	1	1
RREC13-08	1	1	5	5	0	0	0	0
RREC13-09	1	1	5	5	1	1	4	4
RREC13-10	1	1	5	5	0	0	0	0
RREC13-11	1	1	5	5	1	1	1	1
RREC13-12	1	1	5	5	0	0	0	0
RREC13-13	1	1	5	5	1	1	5	5
RREC13-14	1	1	5	5	1	1	6	6
RREC13-15	1	1	5	5	1	1	3	3
RREC13-16	1	1	5	5	1	1	7	7
RREC13-17	1	1	5	5	1	1	7	7
RREC13-18	1	1	5	5	1	1	7	7
RREC13-19	1	1	5	5	1	1	2	2
RREC13-20	1	1	5	5	1	1	4	4
RREC13-21	1	1	5	5	1	1	7	7
RREC13-22	1	1	5	5	1	1	7	7
RREC13-23	1	1	5	5	1	1	7	7
RREC13-24	1	1	5	5	1	1	3	3
RREC13-25	1	1	5	5	1	1	6	6
RREC13-26	1	1	5	5	1	1	5	5
RREC13-27	1	1	5	5	1	1	6	6
RREC13-28	1	1	5	5	1	1	7	7
RREC13-29	1	1	5	5	1	1	7	7
RREC13-30	1	1	5	5	1	1	5	5
RREC13-31	1	1	5	5	1	1	5	5
RREC13-32	1	1	5	5	1	1	4	4
RREC13-33	1	1	5	5	1	1	7	7
RREC13-34	1	1	5	5	1	1	7	7
RREC13-35	1	1	5	5	1	1	4	4
RREC13-36	1	1	5	5	1	1	3	3
RREC13-37	1	1	5	5	1	1	7	7
RREC13-38	1	1	5	5	1	1	5	5
RREC13-39	1	1	5	5	1	1	7	7
RREC13-40	1	1	5	5	1	1	5	5
RREC13-41	1	1	5	5	1	1	7	7
RREC13-42	1	1	5	5	1	1	4	4
RREC13-43	1	1	5	5	0	0	0	0
RREC13-44	1	1	5	5	1	1	5	5
RREC13-45	1	1	5	5	1	1	4	4
RREC13-46	1	1	5	5	1	1	6	6
RREC13-47	1	1	5	5	1	1	7	7
RREC13-48	1	1	5	5	1	1	6	6
RREC13-49	1	1	5	5	1	1	6	6
RREC13-50	1	1	5	5	1	1	5	5
Total Sediment Samples	**50**	**50**	**250**	**250**	**45**	**45**	**233**	**233**
Field Quality Control Samples								
Field Duplicates (assume 10% of samples)	**0**	**5**	**25**	**25**	**0**	**5**	**25**	**25**
Matrix Spike/Matrix Spike Duplicate (assume 5% of samples)	**0**	**3**	**13**	**0**	**0**	**3**	**12**	**0**
Total Field Quality Control Samples	**0**	**8**	**38**	**25**	**0**	**8**	**37**	**25**
Total Samples	**50**	**58**	**288**	**275**	**45**	**53**	**270**	**258**

NOTES:
DRO/MRO = Diesel Range Organics/Mid-Range Organics
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
SEM/AVS = Simultaneously Extracted Metals/Acid Volatile Sulfide
TOC = Total organic carbon.

TABLE 3-1. RIVER ROUGE/ECORSE SHORELINE SITE CHARACTERIZATION SAMPLE COLLECTION DATA
DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

Location ID	Sample Date	Sample Time	Collected By	Water Depth (ft)	Sediment Surface Elevation* IGLD 1985 (ft)	Ponar Sample Collected (Y/N)	Sediment Core					Field Duplicate Samples	MS/MSD Samples
							Penetration Depth (ft)	Sediment Recovery (in.)	Sediment Recovery (ft)	Percent Recovery	Collected to Refusal (Y/N)		
RREC13-01	10/30/13	9:54	R/V Mudpuppy II	12.3	536.4	Y	5.5	45.6	3.8	69.6	Y		
RREC13-02	10/30/13	10:31	R/V Mudpuppy II	5.5	542.7	Y	10.0	114.0	9.5	95.0	N		
RREC13-03	11/5/13	10:48	R/V Mudpuppy II	23.0	521.4	Y	7.5	82.8	6.9	92.0	N		
RREC13-04	--	--	--	--	--	N	0.0	0.0	0.0	0.0	--		
RREC13-05	11/5/13	10:13	R/V Mudpuppy II	12.1	532.1	Y	5.0	42.0	3.5	70.0	Y		
RREC13-06	11/5/13	9:36	R/V Mudpuppy II	10.8	532.7	Y	3.0	30.0	2.5	83.3	Y		
RREC13-07	--	--	R/V Mudpuppy II	9.9	534.2	Y	0.5	0.0	0.0	0.0	--		
RREC13-08	--	--	--	--	--	N	0.0	0.0	0.0	0.0	--		
RREC13-09	11/4/13	16:11	R/V Mudpuppy II	6.6	536.4	Y	4.5	45.6	3.8	84.4	Y	RREC13-09-0001-FD; RREC13-09-0103-FD; RREC13-09-0305-FD	
RREC13-10	--	--	--	--	--	N	0.0	0.0	0.0	0.0	--		
RREC13-11	11/4/13	15:25	R/V Mudpuppy II	3.9	540.2	Y	0.0	0.0	0.0	0.0	--		
RREC13-12	--	--	--	--	--	N	0.0	0.0	0.0	0.0	--		
RREC13-13	11/4/13	14:47	R/V Mudpuppy II	2.1	542.0	Y	7.5	84.0	7.0	93.3	N		RREC13-13-0305-MS/MSD
RREC13-14	11/4/13	14:07	R/V Mudpuppy II	5.4	539.1	Y	10.0	114.0	9.5	95.0	N	RREC13-14-SURF-FD	RREC13-14-0103-MS/MSD
RREC13-15	11/4/13	13:29	R/V Mudpuppy II	20.6	525.3	Y	3.5	36.0	3.0	85.7	Y		RREC13-15-0103-MS/MSD
RREC13-16	10/29/13	8:39	R/V Mudpuppy II	19.0	528.5	Y	9.0	112.8	9.4	104.4	Y		
RREC13-17	10/29/13	15:21	R/V Mudpuppy II	17.4	530.1	Y	10.0	114.0	9.5	95.0	N		
RREC13-18	10/29/13	10:17	R/V Mudpuppy II	21.5	527.8	Y	10.0	112.8	9.4	94.0	N		RREC13-18-0103-MS/MSD
RREC13-19	10/29/13	11:04	R/V Mudpuppy II	17.3	532.4	Y	1.5	6.0	0.5	33.3	Y		RREC13-19-SURF-MS/MSD
RREC13-20	10/29/13	13:29	R/V Mudpuppy II	24.0	525.5	Y	7.0	76.8	6.4	91.4	Y		
RREC13-21	10/29/13	16:05	R/V Mudpuppy II	17.8	528.8	Y	10.0	114.0	9.5	95.0	N	RREC13-21-0001-FD; RREC13-21-0103-FD; RREC13-21-0305-FD; RREC13-21-0507-FD; RREC13-21-0709-FD; RREC13-21-0911-FD	
RREC13-22	10/29/13	16:38	R/V Mudpuppy II	13.6	531.9	Y	10.0	117.6	9.8	97.5	N		
RREC13-23	10/30/13	9:02	R/V Mudpuppy II	13.6	535.1	Y	10.0	118.8	9.9	99.0	N		
RREC13-24	11/4/13	9:56	R/V Mudpuppy II	18.6	523.1	Y	3.5	39.6	3.3	94.3	Y		
RREC13-25	11/4/13	9:04	R/V Mudpuppy II	19.0	520.5	Y	10.0	117.6	9.8	97.5	N		

NOTES:
* Sediment elevation calculated using NOAA buoy Station ID 9044020, located in Gibraltar, MI
Shaded cells indicate locations where no sample was collected
MS/MSD = Matrix Spike/Matrix Spike Duplicate

TABLE 3-1. RIVER ROUGE/ECORSE SHORELINE SITE CHARACTERIZATION SAMPLE COLLECTION DATA
DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

Location ID	Sample Date	Sample Time	Collected By	Water Depth (ft)	Sediment Surface Elevation* IGLD 1985 (ft)	Ponar Sample Collected (Y/N)	Sediment Core					Field Duplicate Samples	MS/MSD Samples
							Penetration Depth (ft)	Sediment Recovery (in.)	Sediment Recovery (ft)	Percent Recovery	Collected to Refusal (Y/N)		
RREC13-26	11/4/13	8:11	R/V Mudpuppy II	17.5	520.5	Y	7.5	87.6	7.3	96.7	N		
RREC13-27	11/4/13	7:34	R/V Mudpuppy II	4.6	532.8	Y	10.0	114.0	9.5	95.0	N		
RREC13-28	11/1/13	17:40	R/V Mudpuppy II	3.9	537.5	Y	10.0	112.8	9.4	94.0	N		RREC13-28-0305-MS/MSD
RREC13-29	11/1/13	17:00	R/V Mudpuppy II	4.3	535.8	Y	10.0	112.8	9.4	94.0	N		RREC13-29-SURF-MS/MSD
RREC13-30	11/1/13	16:15	R/V Mudpuppy II	11.5	528.6	Y	7.5	85.2	7.1	94.7	N	RREC13-30-0001-FD; RREC13-30-0103-FD; RREC13-30-0305-FD; RREC13-30-0507-FD	
RREC13-31	10/30/13	15:40	R/V Mudpuppy II	3.8	543.8	Y	7.5	85.2	7.1	94.7	N		RREC13-31-0305-MS/MSD
RREC13-32	10/30/13	14:55	R/V Mudpuppy II	3.8	543.8	Y	4.3	46.8	3.9	91.8	Y		
RREC13-33	10/30/13	16:45	R/V Mudpuppy II	2.8	545.1	Y	10.0	117.6	9.8	97.5	N		
RREC13-34	11/1/13	15:40	R/V Mudpuppy II	6.5	533.6	Y	9.0	111.6	9.3	102.8	Y		RREC13-34-SURF-MS/MSD
RREC13-35	10/30/13	17:25	R/V Mudpuppy II	17.6	529.2	Y	5.5	55.2	4.6	83.6	N		
RREC13-36	10/28/13	15:33	R/V Mudpuppy II	8.6	533.5	Y	3.0	33.6	2.8	93.3	Y		
RREC13-37	10/28/13	16:39	R/V Mudpuppy II	3.1	541.3	Y	10.0	114.0	9.5	95.0	N		
RREC13-38	10/30/13	13:40	R/V Mudpuppy II	2.9	545.1	Y	7.5	70.8	5.9	78.7	N	RREC13-38-SURF-FD	
RREC13-39	10/30/13	14:20	R/V Mudpuppy II	3.5	544.5	Y	10.0	114.0	9.5	95.0	N		
RREC13-40	10/28/13	16:04	R/V Mudpuppy II	3.5	539.2	Y	7.0	85.2	7.1	101.4	Y		
RREC13-41	10/30/13	16:13	R/V Mudpuppy II	8.2	540.0	Y	10.0	114.0	9.5	95.0	N	RREC13-41-0103-FD; RREC13-41-0305-FD; RREC13-41-0507-FD; RREC13-41-0709-FD; RREC13-41-0911-FD	
RREC13-42	11/4/13	10:46	R/V Mudpuppy II	31.6	536.4	Y	4.5	49.2	4.1	91.1	Y		
RREC13-43	--	--	--	--	--	N	--	0.0	0.0	0.0	--		
RREC13-44	10/30/13	8:25	R/V Mudpuppy II	13.3	543.5	Y	7.5	87.6	7.3	96.7	Y		
RREC13-45	10/29/13	14:38	R/V Mudpuppy II	30.58	538.2	Y	5.5	63.6	5.3	95.5	Y		RREC13-45-0001-MS/MSD
RREC13-46	11/5/13	15:32	R/V Mudpuppy II	13.2	537.9	Y	10.0	102.0	8.5	85.0	N		
RREC13-47	10/30/13	11:19	R/V Mudpuppy II	17.25	546.3	Y	10.0	117.6	9.8	98.0	N	RREC13-47-SURF-FD; RREC13-47-0103-FD; RREC13-47-0305-FD	RREC13-47-0709-MS/MSD
RREC13-48	11/5/2013	7:42	R/V Mudpuppy II	11.8	532.9	Y	10.0	114.0	9.5	95.0	N	RREC13-48-SURF-FD	
RREC13-49	11/5/2013	8:19	R/V Mudpuppy II	9.5	535.2	Y	10.0	117.6	9.8	98.0	N	RREC13-49-SURF-FD	
RREC13-50	11/5/2013	14:53	R/V Mudpuppy II	29.4	520.9	Y	7.5	74.4	6.2	82.7	N		

NOTES:
* Sediment elevation calculated using NOAA buoy Station ID 9044020, located in Gibraltar, MI
Shaded cells indicate locations where no sample was collected
MS/MSD = Matrix Spike/Matrix Spike Duplicate

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-01	RREC13-02	RREC13-03
	Sample Name:	RREC13-01-SURF	RREC13-02-SURF	RREC13-03-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13
Analyte	**Units**			
Gravel	%	12.4	1.5	0.8
Sand	%	41.4	79.3	52.8
Coarse Sand	%	10.7	1	0.6
Medium Sand	%	8.2	7.9	4.2
Fine Sand	%	22.5	70.4	48
Silt	%	27.9	14.3	35
Clay	%	18.3	4.9	11.4
Silt + Clay	%	46.2	19.2	46.4
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	96.9	100	100
Sieve Size #4 - Percent Finer	% passed	87.6	98.5	99.2
Sieve Size #10 - Percent Finer	% passed	76.9	97.5	98.6
Sieve Size #20 - Percent Finer	% passed	71.5	95.8	97.5
Sieve Size #40 - Percent Finer	% passed	68.7	89.6	94.4
Sieve Size #60 - Percent Finer	% passed	59.4	76.7	86.9
Sieve Size #80 - Percent Finer	% passed	55	64	77.9
Sieve Size #100 - Percent Finer	% passed	52.4	52.3	69.5
Sieve Size #200 - Percent Finer	% passed	46.2	19.2	46.4
Hydrometer Reading 1 - Percent Finer	% passed	33.4	10.1	27.7
Hydrometer Reading 2 - Percent Finer	% passed	31.7	8.8	23.6
Hydrometer Reading 3 - Percent Finer	% passed	25	7.5	16.8
Hydrometer Reading 4 - Percent Finer	% passed	21.6	6.2	14.1
Hydrometer Reading 5 - Percent Finer	% passed	18.3	4.9	11.4
Hydrometer Reading 6 - Percent Finer	% passed	12.9	4.7	8.6
Hydrometer Reading 7 - Percent Finer	% passed	8.6	3.3	4.5

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-05	RREC13-06	RREC13-07
	Sample Name:	RREC13-05-SURF	RREC13-06-SURF	RREC13-07-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/5/13	11/5/13	11/5/13
Analyte	**Units**			
Gravel	%	15.6	7.2	39.4
Sand	%	78.3	48	51.9
Coarse Sand	%	13.6	11.9	14.7
Medium Sand	%	18	18.5	13.1
Fine Sand	%	46.7	17.6	24.1
Silt	%	4.9	34.4	5.7
Clay	%	1.2	10.4	3
Silt + Clay	%	6.1	44.8	8.7
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	96.2	100	84.3
Sieve Size #4 - Percent Finer	% passed	84.4	92.8	60.6
Sieve Size #10 - Percent Finer	% passed	70.8	80.9	45.9
Sieve Size #20 - Percent Finer	% passed	61.8	72	39.2
Sieve Size #40 - Percent Finer	% passed	52.8	62.4	32.8
Sieve Size #60 - Percent Finer	% passed	39.7	56.1	24.5
Sieve Size #80 - Percent Finer	% passed	32.4	54	20.5
Sieve Size #100 - Percent Finer	% passed	26.8	52.8	18
Sieve Size #200 - Percent Finer	% passed	6.1	44.8	8.7
Hydrometer Reading 1 - Percent Finer	% passed	3.7	22.2	6.4
Hydrometer Reading 2 - Percent Finer	% passed	3.7	19.5	5.8
Hydrometer Reading 3 - Percent Finer	% passed	2.2	14.9	4.2
Hydrometer Reading 4 - Percent Finer	% passed	1.7	13.1	3.6
Hydrometer Reading 5 - Percent Finer	% passed	1.2	10.4	3
Hydrometer Reading 6 - Percent Finer	% passed	1.2	7.6	2.5
Hydrometer Reading 7 - Percent Finer	% passed	1.2	5.8	1.9

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-09	RREC13-11	RREC13-13
	Sample Name:	RREC13-09-SURF	RREC13-11-SURF	RREC13-13-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	11/4/13
Analyte	**Units**			
Gravel	%	12.5	12	0
Sand	%	80	66.9	39.2
Coarse Sand	%	13.1	4	0
Medium Sand	%	18.1	8.9	0.9
Fine Sand	%	48.8	54	38.3
Silt	%	5.6	19	59.2
Clay	%	1.9	2.1	1.6
Silt + Clay	%	7.5	21.1	60.8
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	96.9	90.2	100
Sieve Size #4 - Percent Finer	% passed	87.5	88	100
Sieve Size #10 - Percent Finer	% passed	74.4	84	100
Sieve Size #20 - Percent Finer	% passed	66.8	80.3	99.4
Sieve Size #40 - Percent Finer	% passed	56.3	75.1	99.1
Sieve Size #60 - Percent Finer	% passed	34	67.9	97
Sieve Size #80 - Percent Finer	% passed	22.5	60.2	93.4
Sieve Size #100 - Percent Finer	% passed	16.8	51.9	89.4
Sieve Size #200 - Percent Finer	% passed	7.5	21.1	60.8
Hydrometer Reading 1 - Percent Finer	% passed	4.6	4.6	9
Hydrometer Reading 2 - Percent Finer	% passed	4.2	4	6.5
Hydrometer Reading 3 - Percent Finer	% passed	3.3	3.4	2.9
Hydrometer Reading 4 - Percent Finer	% passed	2.4	2.1	1.6
Hydrometer Reading 5 - Percent Finer	% passed	1.9	2.1	1.6
Hydrometer Reading 6 - Percent Finer	% passed	1.4	1.4	0.2
Hydrometer Reading 7 - Percent Finer	% passed	1	0.7	0.2

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-14	RREC13-15	RREC13-16
	Sample Name:	RREC13-14-SURF	RREC13-15-SURF	RREC13-16-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	10/29/13
Analyte	**Units**			
Gravel	%	1.1	0	0
Sand	%	34.4	11.9	2.6
Coarse Sand	%	0.5	0	0.2
Medium Sand	%	1.8	1.2	0.1
Fine Sand	%	32.1	10.7	2.3
Silt	%	51.8	56.8	58.3
Clay	%	12.7	31.3	39.1
Silt + Clay	%	64.5	88.1	97.4
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	100	100
Sieve Size #4 - Percent Finer	% passed	98.9	100	100
Sieve Size #10 - Percent Finer	% passed	98.4	100	99.8
Sieve Size #20 - Percent Finer	% passed	97.7	99.2	99.7
Sieve Size #40 - Percent Finer	% passed	96.6	98.8	99.7
Sieve Size #60 - Percent Finer	% passed	94.5	97.8	99.4
Sieve Size #80 - Percent Finer	% passed	91.5	96.8	99.3
Sieve Size #100 - Percent Finer	% passed	88.5	95.9	99.2
Sieve Size #200 - Percent Finer	% passed	64.5	88.1	97.4
Hydrometer Reading 1 - Percent Finer	% passed	27.3	54.8	84.2
Hydrometer Reading 2 - Percent Finer	% passed	24	48.9	74.3
Hydrometer Reading 3 - Percent Finer	% passed	18.3	41.6	56
Hydrometer Reading 4 - Percent Finer	% passed	15	35.7	46
Hydrometer Reading 5 - Percent Finer	% passed	12.7	31.3	39.1
Hydrometer Reading 6 - Percent Finer	% passed	10.5	24	28.8
Hydrometer Reading 7 - Percent Finer	% passed	6	16.6	18.8

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-17	RREC13-18	RREC13-19
	Sample Name:	RREC13-17-SURF	RREC13-18-SURF	RREC13-19-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/29/13	10/29/13
Analyte	**Units**			
Gravel	%	0	0	33
Sand	%	5.2	7.8	44.7
Coarse Sand	%	0	0.1	13.9
Medium Sand	%	0.2	0.3	12.4
Fine Sand	%	5	7.4	18.4
Silt	%	63.6	64.4	13.9
Clay	%	31.2	27.8	8.4
Silt + Clay	%	94.8	92.2	22.3
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	100	79
Sieve Size #4 - Percent Finer	% passed	100	100	67
Sieve Size #10 - Percent Finer	% passed	100	99.9	53.1
Sieve Size #20 - Percent Finer	% passed	99.9	99.7	46.5
Sieve Size #40 - Percent Finer	% passed	99.8	99.6	40.7
Sieve Size #60 - Percent Finer	% passed	99.2	98.6	31.7
Sieve Size #80 - Percent Finer	% passed	98.5	97.7	27.5
Sieve Size #100 - Percent Finer	% passed	97.9	96.9	25.6
Sieve Size #200 - Percent Finer	% passed	94.8	92.2	22.3
Hydrometer Reading 1 - Percent Finer	% passed	74.4	67.8	21.4
Hydrometer Reading 2 - Percent Finer	% passed	60.6	57.7	18.3
Hydrometer Reading 3 - Percent Finer	% passed	57.8	42.1	12.1
Hydrometer Reading 4 - Percent Finer	% passed	37	33.5	9.7
Hydrometer Reading 5 - Percent Finer	% passed	31.2	27.8	8.4
Hydrometer Reading 6 - Percent Finer	% passed	24	20.4	7
Hydrometer Reading 7 - Percent Finer	% passed	15.7	13.3	5.8

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-20	RREC13-21	RREC13-22
	Sample Name:	RREC13-20-SURF	RREC13-21-SURF	RREC13-22-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/29/13	10/29/13
Analyte	**Units**			
Gravel	%	10.9	0	0
Sand	%	41	0.7	8.9
Coarse Sand	%	9.9	0	0.1
Medium Sand	%	15.7	0.1	1
Fine Sand	%	15.4	0.6	7.8
Silt	%	25.5	61.4	64.5
Clay	%	22.6	37.9	26.6
Silt + Clay	%	48.1	99.3	91.1
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	97.2	100	100
Sieve Size #4 - Percent Finer	% passed	89.1	100	100
Sieve Size #10 - Percent Finer	% passed	79.2	100	99.9
Sieve Size #20 - Percent Finer	% passed	70.5	99.9	99.5
Sieve Size #40 - Percent Finer	% passed	63.5	99.9	98.9
Sieve Size #60 - Percent Finer	% passed	56.6	99.6	97.6
Sieve Size #80 - Percent Finer	% passed	53.8	99.6	96.5
Sieve Size #100 - Percent Finer	% passed	52.3	99.6	95.5
Sieve Size #200 - Percent Finer	% passed	48.1	99.3	91.1
Hydrometer Reading 1 - Percent Finer	% passed	40.1	97.1	69.8
Hydrometer Reading 2 - Percent Finer	% passed	36	83.6	53.6
Hydrometer Reading 3 - Percent Finer	% passed	29.4	60	38.8
Hydrometer Reading 4 - Percent Finer	% passed	25.1	46.6	32
Hydrometer Reading 5 - Percent Finer	% passed	22.6	37.9	26.6
Hydrometer Reading 6 - Percent Finer	% passed	16.7	25.8	20.7
Hydrometer Reading 7 - Percent Finer	% passed	12.6	17.4	14

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-23	RREC13-24	RREC13-25
	Sample Name:	RREC13-23-SURF	RREC13-24-SURF	RREC13-25-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	11/4/13	11/4/13
Analyte	**Units**			
Gravel	%	0	28.1	4.9
Sand	%	12.5	61.3	89
Coarse Sand	%	0.3	16.3	1.3
Medium Sand	%	0.9	10.9	5.3
Fine Sand	%	11.3	34.1	82.4
Silt	%	60.6	6.8	4.8
Clay	%	26.9	3.8	1.3
Silt + Clay	%	87.5	10.6	6.1
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	91.8	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	85.9	98.4
Sieve Size #4 - Percent Finer	% passed	100	71.9	95.1
Sieve Size #10 - Percent Finer	% passed	99.7	55.6	93.8
Sieve Size #20 - Percent Finer	% passed	99.3	49.1	92.6
Sieve Size #40 - Percent Finer	% passed	98.8	44.7	88.5
Sieve Size #60 - Percent Finer	% passed	97.2	33	70
Sieve Size #80 - Percent Finer	% passed	96.3	22.6	44.7
Sieve Size #100 - Percent Finer	% passed	95.4	17.6	29.4
Sieve Size #200 - Percent Finer	% passed	87.5	10.6	6.1
Hydrometer Reading 1 - Percent Finer	% passed	54.2	6.5	2.9
Hydrometer Reading 2 - Percent Finer	% passed	46	6.5	2.9
Hydrometer Reading 3 - Percent Finer	% passed	36.4	5.6	2.3
Hydrometer Reading 4 - Percent Finer	% passed	29.6	4.7	1.8
Hydrometer Reading 5 - Percent Finer	% passed	26.9	3.8	1.3
Hydrometer Reading 6 - Percent Finer	% passed	19.6	3	0.7
Hydrometer Reading 7 - Percent Finer	% passed	13.9	1.9	0.6

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-26	RREC13-27	RREC13-28
	Sample Name:	RREC13-26-SURF	RREC13-27-SURF	RREC13-28-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	11/1/13
Analyte	**Units**			
Gravel	%	13.3	5	1
Sand	%	56.2	39	46.6
Coarse Sand	%	6.8	1.9	0.5
Medium Sand	%	5.7	5.8	2.6
Fine Sand	%	43.7	31.3	43.5
Silt	%	24.7	50.5	43
Clay	%	5.8	5.5	9.4
Silt + Clay	%	30.5	56	52.4
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	94.9	98.7	100
Sieve Size #4 - Percent Finer	% passed	86.7	95	99
Sieve Size #10 - Percent Finer	% passed	79.9	93.1	98.5
Sieve Size #20 - Percent Finer	% passed	77.2	90.3	97.9
Sieve Size #40 - Percent Finer	% passed	74.2	87.3	95.9
Sieve Size #60 - Percent Finer	% passed	69.2	81.9	84.2
Sieve Size #80 - Percent Finer	% passed	63.6	76.9	74.6
Sieve Size #100 - Percent Finer	% passed	56.7	73.2	69.9
Sieve Size #200 - Percent Finer	% passed	30.5	56	52.4
Hydrometer Reading 1 - Percent Finer	% passed	11.3	16.9	23.1
Hydrometer Reading 2 - Percent Finer	% passed	10.2	13.1	17.6
Hydrometer Reading 3 - Percent Finer	% passed	8	9.3	12.2
Hydrometer Reading 4 - Percent Finer	% passed	6.9	6.8	10.3
Hydrometer Reading 5 - Percent Finer	% passed	5.8	5.5	9.4
Hydrometer Reading 6 - Percent Finer	% passed	3.5	4	6.7
Hydrometer Reading 7 - Percent Finer	% passed	2.4	2.7	5.8

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-29	RREC13-30	RREC13-31
	Sample Name:	RREC13-29-SURF	RREC13-30-SURF	RREC13-31-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/1/13	11/1/13	10/30/13
Analyte	**Units**			
Gravel	%	0	0.5	0
Sand	%	18.4	43.9	24.7
Coarse Sand	%	0	1.5	0.6
Medium Sand	%	0.9	4.2	1.3
Fine Sand	%	17.5	38.2	22.8
Silt	%	62.8	33.3	60.1
Clay	%	18.8	22.3	15.2
Silt + Clay	%	81.6	55.6	75.3
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	100	100
Sieve Size #4 - Percent Finer	% passed	100	99.5	100
Sieve Size #10 - Percent Finer	% passed	100	98	99.4
Sieve Size #20 - Percent Finer	% passed	99.4	96.5	98.7
Sieve Size #40 - Percent Finer	% passed	99.1	93.8	98.1
Sieve Size #60 - Percent Finer	% passed	98.6	89.2	94.9
Sieve Size #80 - Percent Finer	% passed	97.5	85.1	90.6
Sieve Size #100 - Percent Finer	% passed	95.9	79.9	85.9
Sieve Size #200 - Percent Finer	% passed	81.6	55.6	75.3
Hydrometer Reading 1 - Percent Finer	% passed	40	41.1	51.1
Hydrometer Reading 2 - Percent Finer	% passed	32.9	34.8	42.1
Hydrometer Reading 3 - Percent Finer	% passed	25.9	30.1	29.6
Hydrometer Reading 4 - Percent Finer	% passed	21.6	27	20.6
Hydrometer Reading 5 - Percent Finer	% passed	18.8	22.3	15.2
Hydrometer Reading 6 - Percent Finer	% passed	13.2	16.1	11.4
Hydrometer Reading 7 - Percent Finer	% passed	10.1	11.2	9.6

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-32	RREC13-33	RREC13-34
	Sample Name:	RREC13-32-SURF	RREC13-33-SURF	RREC13-34-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	10/30/13
Analyte	**Units**			
Gravel	%	0.1	0.3	1.2
Sand	%	84.2	6.3	35.3
Coarse Sand	%	0.4	0.3	4.8
Medium Sand	%	8.4	0.3	14
Fine Sand	%	75.4	5.7	16.5
Silt	%	12.2	79.6	38.5
Clay	%	3.5	13.8	25
Silt + Clay	%	15.7	93.4	63.5
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	100	100
Sieve Size #4 - Percent Finer	% passed	99.9	99.7	98.8
Sieve Size #10 - Percent Finer	% passed	99.5	99.4	94
Sieve Size #20 - Percent Finer	% passed	97.3	99.2	86.5
Sieve Size #40 - Percent Finer	% passed	91.1	99.1	80
Sieve Size #60 - Percent Finer	% passed	81.8	98.3	72.7
Sieve Size #80 - Percent Finer	% passed	65.4	97.8	68.7
Sieve Size #100 - Percent Finer	% passed	45.7	97.3	66.9
Sieve Size #200 - Percent Finer	% passed	15.7	93.4	63.5
Hydrometer Reading 1 - Percent Finer	% passed	8.2	48	51.3
Hydrometer Reading 2 - Percent Finer	% passed	6.6	37.5	45.7
Hydrometer Reading 3 - Percent Finer	% passed	5.9	24.3	36.3
Hydrometer Reading 4 - Percent Finer	% passed	3.5	19.1	30.6
Hydrometer Reading 5 - Percent Finer	% passed	3.5	13.8	25
Hydrometer Reading 6 - Percent Finer	% passed	2.6	11	17.2
Hydrometer Reading 7 - Percent Finer	% passed	2.6	8.3	11.6

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-35	RREC13-36	RREC13-37
	Sample Name:	RREC13-35-SURF	RREC13-36-SURF	RREC13-37-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/28/13	10/28/13
Analyte	**Units**			
Gravel	%	44.8	4.1	0
Sand	%	42.4	19.5	35.5
Coarse Sand	%	3	6.2	0.3
Medium Sand	%	3.7	1.3	0.7
Fine Sand	%	35.7	12	34.5
Silt	%	8.9	55.1	59.1
Clay	%	3.9	21.3	5.4
Silt + Clay	%	12.8	76.4	64.5
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	60.7	100	100
Sieve Size #4 - Percent Finer	% passed	55.2	95.9	100
Sieve Size #10 - Percent Finer	% passed	52.2	89.7	99.7
Sieve Size #20 - Percent Finer	% passed	50.6	89.4	99.3
Sieve Size #40 - Percent Finer	% passed	48.5	88.4	99
Sieve Size #60 - Percent Finer	% passed	41.6	86.7	97
Sieve Size #80 - Percent Finer	% passed	31.8	85.3	95.3
Sieve Size #100 - Percent Finer	% passed	25.2	83.2	93.3
Sieve Size #200 - Percent Finer	% passed	12.8	76.4	64.5
Hydrometer Reading 1 - Percent Finer	% passed	8.6	50.3	19.2
Hydrometer Reading 2 - Percent Finer	% passed	6.8	43.6	15.3
Hydrometer Reading 3 - Percent Finer	% passed	5.7	34.7	9.4
Hydrometer Reading 4 - Percent Finer	% passed	4.5	28	7.5
Hydrometer Reading 5 - Percent Finer	% passed	3.9	21.3	5.4
Hydrometer Reading 6 - Percent Finer	% passed	2.6	16.4	5
Hydrometer Reading 7 - Percent Finer	% passed	2.6	9.7	4.1

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-38	RREC13-39	RREC13-40
	Sample Name:	RREC13-38-SURF	RREC13-39-SURF	RREC13-40-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	10/28/13
Analyte	**Units**			
Gravel	%	0	0	0.9
Sand	%	67.3	71.6	61.3
Coarse Sand	%	0.4	0	0.7
Medium Sand	%	0.6	3.1	1.7
Fine Sand	%	66.3	68.5	58.9
Silt	%	28.9	23.6	34
Clay	%	3.8	4.8	3.8
Silt + Clay	%	32.7	28.4	37.8
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	100	100
Sieve Size #4 - Percent Finer	% passed	100	100	99.1
Sieve Size #10 - Percent Finer	% passed	99.6	100	98.4
Sieve Size #20 - Percent Finer	% passed	99.2	99.3	98
Sieve Size #40 - Percent Finer	% passed	99	96.9	96.7
Sieve Size #60 - Percent Finer	% passed	96.2	90.9	93.1
Sieve Size #80 - Percent Finer	% passed	90.3	83.3	88.8
Sieve Size #100 - Percent Finer	% passed	77	72	83.5
Sieve Size #200 - Percent Finer	% passed	32.7	28.4	37.8
Hydrometer Reading 1 - Percent Finer	% passed	12.2	10.9	9.4
Hydrometer Reading 2 - Percent Finer	% passed	8.8	9.2	7.3
Hydrometer Reading 3 - Percent Finer	% passed	6.3	7.4	5.3
Hydrometer Reading 4 - Percent Finer	% passed	4.6	5.7	4.6
Hydrometer Reading 5 - Percent Finer	% passed	3.8	4.8	3.8
Hydrometer Reading 6 - Percent Finer	% passed	2	2.9	3.6
Hydrometer Reading 7 - Percent Finer	% passed	2	2.9	2.2

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-41	RREC13-42	RREC13-44
	Sample Name:	RREC13-41-SURF	RREC13-42-SURF	RREC13-44-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	11/4/13	10/30/13
Analyte	**Units**			
Gravel	%	6.9	42.7	0
Sand	%	40.4	52.9	5.8
Coarse Sand	%	16.3	7.9	0
Medium Sand	%	12.8	15.3	0.3
Fine Sand	%	11.3	29.7	5.5
Silt	%	34.5	3.1	70
Clay	%	18.2	1.3	24.2
Silt + Clay	%	52.7	4.4	94.2
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	100	72.1	100
Sieve Size #4 - Percent Finer	% passed	93.1	57.3	100
Sieve Size #10 - Percent Finer	% passed	76.8	49.4	100
Sieve Size #20 - Percent Finer	% passed	66.2	43.2	99.8
Sieve Size #40 - Percent Finer	% passed	64	34.1	99.7
Sieve Size #60 - Percent Finer	% passed	54.3	20.9	99.2
Sieve Size #80 - Percent Finer	% passed	53.5	14.3	98.7
Sieve Size #100 - Percent Finer	% passed	53.4	10.8	98.1
Sieve Size #200 - Percent Finer	% passed	52.7	4.4	94.2
Hydrometer Reading 1 - Percent Finer	% passed	40.2	3.2	64.6
Hydrometer Reading 2 - Percent Finer	% passed	35.2	2.8	52.2
Hydrometer Reading 3 - Percent Finer	% passed	27.5	2	35.5
Hydrometer Reading 4 - Percent Finer	% passed	22.4	1.7	30
Hydrometer Reading 5 - Percent Finer	% passed	18.2	1.3	24.2
Hydrometer Reading 6 - Percent Finer	% passed	10.4	0.8	18.5
Hydrometer Reading 7 - Percent Finer	% passed	6.2	0.4	12.7

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-45	RREC13-46	RREC13-47
	Sample Name:	RREC13-45-SURF	RREC13-46-SURF	RREC13-47-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	11/5/13	10/30/13
Analyte	**Units**			
Gravel	%	1	35.2	0
Sand	%	20.9	55.6	5.3
Coarse Sand	%	1	11.2	0.1
Medium Sand	%	1.5	15.4	0.4
Fine Sand	%	18.4	29	4.8
Silt	%	54.4	5.8	69.1
Clay	%	23.7	3.4	25.6
Silt + Clay	%	78.1	9.2	94.7
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	85.4	100
Sieve Size 0.375 inch - Percent Finer	% passed	99.8	75	100
Sieve Size #4 - Percent Finer	% passed	99	64.8	100
Sieve Size #10 - Percent Finer	% passed	98	53.6	99.9
Sieve Size #20 - Percent Finer	% passed	97.4	45.1	99.6
Sieve Size #40 - Percent Finer	% passed	96.5	38.2	99.5
Sieve Size #60 - Percent Finer	% passed	91.9	27.5	98.8
Sieve Size #80 - Percent Finer	% passed	89.6	21.1	98.4
Sieve Size #100 - Percent Finer	% passed	87.7	17.2	98.1
Sieve Size #200 - Percent Finer	% passed	78.1	9.2	94.7
Hydrometer Reading 1 - Percent Finer	% passed	50.2	8.8	71.2
Hydrometer Reading 2 - Percent Finer	% passed	41.8	6.7	52.2
Hydrometer Reading 3 - Percent Finer	% passed	32.2	5	40.5
Hydrometer Reading 4 - Percent Finer	% passed	27.3	3.9	31.7
Hydrometer Reading 5 - Percent Finer	% passed	23.7	3.4	25.6
Hydrometer Reading 6 - Percent Finer	% passed	17.3	2.8	19.5
Hydrometer Reading 7 - Percent Finer	% passed	11.3	1.7	13.4

TABLE 3-2 SEDIMENT RESULTS FOR GRAIN SIZE
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-48	RREC13-49	RREC13-50
	Sample Name:	RREC13-48-SURF	RREC13-49-SURF	RREC13-50-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/5/13	11/5/13	11/5/13
Analyte	**Units**			
Gravel	%	6.6	6.6	8.6
Sand	%	25.8	53.6	85.1
Coarse Sand	%	2	7.3	7.3
Medium Sand	%	6.4	4.6	17.6
Fine Sand	%	17.4	41.7	60.2
Silt	%	48.5	30.4	5.1
Clay	%	19.1	9.4	1.2
Silt + Clay	%	67.6	39.8	6.3
Sieve Size 3 inch - Percent Finer	% passed	100	100	100
Sieve Size 2 inch - Percent Finer	% passed	100	100	100
Sieve Size 1.5 inch - Percent Finer	% passed	100	100	100
Sieve Size 1 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.75 inch - Percent Finer	% passed	100	100	100
Sieve Size 0.375 inch - Percent Finer	% passed	97.3	100	98.1
Sieve Size #4 - Percent Finer	% passed	93.4	93.4	91.4
Sieve Size #10 - Percent Finer	% passed	91.4	86.1	84.1
Sieve Size #20 - Percent Finer	% passed	88.7	84.2	77.5
Sieve Size #40 - Percent Finer	% passed	85	81.5	66.5
Sieve Size #60 - Percent Finer	% passed	81.3	75.7	45
Sieve Size #80 - Percent Finer	% passed	78.8	70.5	28.3
Sieve Size #100 - Percent Finer	% passed	77	65.7	18.7
Sieve Size #200 - Percent Finer	% passed	67.6	39.8	6.3
Hydrometer Reading 1 - Percent Finer	% passed	39.1	20.6	2.8
Hydrometer Reading 2 - Percent Finer	% passed	33.7	17.3	2.3
Hydrometer Reading 3 - Percent Finer	% passed	27.1	12.8	1.7
Hydrometer Reading 4 - Percent Finer	% passed	23.1	10.5	1.2
Hydrometer Reading 5 - Percent Finer	% passed	19.1	9.4	1.2
Hydrometer Reading 6 - Percent Finer	% passed	13.8	7.1	1.2
Hydrometer Reading 7 - Percent Finer	% passed	11.1	6	0.6

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-01	RREC13-01	RREC13-01	RREC13-01	RREC13-02	RREC13-02	RREC13-02	RREC13-02	RREC13-02	RREC13-02
			Sample Name:	RREC13-01-SURF	RREC13-01-0001	RREC13-01-0103	RREC13-01-0305	RREC13-02-SURF	RREC13-02-0001	RREC13-02-0103	RREC13-02-0305	RREC13-02-0507	RREC13-02-0709
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-9
			Date Sampled:	10/30/13	10/31/13	10/31/13	10/31/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Aroclor-1221	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Aroclor-1232	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Aroclor-1242	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	91	550	1300	810	1300	410
Aroclor-1248	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Aroclor-1254	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	150	1100	1700	1700	1500	1000
Aroclor-1260	NSL	NSL	µg/kg	16 J	17 J	81 U	60 U	100	260	360	420	500	360
Aroclor-1262	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Aroclor-1268	NSL	NSL	µg/kg	61 U	64 U	81 U	60 U	47 U	230 U	340 U	300 U	300 U	240 U
Total PCBs ND=0	59.8	676	µg/kg	16	17	0	0	**341**	**1,910**	**3,360**	**2,930**	**3,300**	**1,770**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**260**	**273**	**365**	**270**	**482**	**2,600**	**4,380**	**3,830**	**4,200**	**2,490**

			Sample Location:	RREC13-02	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-05	RREC13-05	RREC13-05	RREC13-06
			Sample Name:	RREC13-02-0911	RREC13-03-SURF	RREC13-03-0001	RREC13-03-0103	RREC13-03-0305	RREC13-03-0507	RREC13-05-SURF	RREC13-05-0001	RREC13-05-0103	RREC13-06-SURF
			Sample Depth (ft):	9-11	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	0-0.5
			Date Sampled:	11/2/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Aroclor-1221	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Aroclor-1232	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Aroclor-1242	NSL	NSL	µg/kg	150 J	37 J	83 U	94 U	74 U	42 U	25 J	490	410	33 J
Aroclor-1248	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Aroclor-1254	NSL	NSL	µg/kg	510	100 J	83 U	28 J	74 U	42 U	27 J	700 J	870 J	40 J
Aroclor-1260	NSL	NSL	µg/kg	230	120	83 U	15 J	74 U	42 U	36 J	220 J	300	74
Aroclor-1262	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Aroclor-1268	NSL	NSL	µg/kg	160 U	64 U	83 U	94 U	74 U	42 U	43 U	240 U	260 U	64 U
Total PCBs ND=0	59.8	676	µg/kg	**890**	**257**	0	43	0	0	**88**	**1,410**	**1,580**	**147**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**1,370**	**449**	**374**	**372**	**333**	**189**	**217**	**2,130**	**2,360**	**339**

			Sample Location:	RREC13-06	RREC13-06	RREC13-07	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09
			Sample Name:	RREC13-06-0001	RREC13-06-0103	RREC13-07-SURF	RREC13-09-SURF	RREC13-09-0001	RREC13-09-0001-FD	RREC13-09-0103	RREC13-09-0103-FD	RREC13-09-0305	RREC13-09-0305-FD
			Sample Depth (ft):	0-1	1-3	0-0.5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/4/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Aroclor-1221	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Aroclor-1232	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Aroclor-1242	NSL	NSL	µg/kg	380	940	45 U	12 J	780	600	970	770	950	440
Aroclor-1248	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Aroclor-1254	NSL	NSL	µg/kg	300	930	24 J	41 J	1300	1100	2000	1600	2200 J	1100 J
Aroclor-1260	NSL	NSL	µg/kg	190	430	29 J	45 J	500 J	370	600 J	490	1100 J	480
Aroclor-1262	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Aroclor-1268	NSL	NSL	µg/kg	96 U	270 U	45 U	47 U	260 U	270 U	640 U	320 U	650 U	330 U
Total PCBs ND=0	59.8	676	µg/kg	**870**	**2,300**	53	**98**	**2,580**	**2,070**	**3,570**	**2,860**	**4,250**	**2,020**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**1,158**	**3,110**	**211**	**239**	**3,360**	**2,880**	**5,490**	**3,820**	**6,200**	**3,010**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-11	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-14	RREC13-14	RREC13-14	RREC13-14
			Sample Name:	RREC13-11-SURF	RREC13-13-SURF	RREC13-13-0001	RREC13-13-0103	RREC13-13-0305	RREC13-13-0507	RREC13-14-SURF	RREC13-14-SURF-FD	RREC13-14-0001	RREC13-14-0103
			Sample Depth (ft):	0-0.5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-0.5	0-1	1-3
			Date Sampled:	11/4/13	11/4/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13	11/4/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Aroclor-1221	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Aroclor-1232	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Aroclor-1242	NSL	NSL	µg/kg	27 J	26 J	220	1100	330	59 U	270	310	590	1800
Aroclor-1248	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Aroclor-1254	NSL	NSL	µg/kg	58	48	280 J	930	260 J	59 U	330	330	650	2100
Aroclor-1260	NSL	NSL	µg/kg	71	60	320 J	460	96 J	59 U	410	470	760 J	2700
Aroclor-1262	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Aroclor-1268	NSL	NSL	µg/kg	46 U	44 U	150 U	280 U	120 U	59 U	260 U	270 U	490 U	1100 U
Total PCBs ND=0	59.8	676	µg/kg	**156**	**134**	**820**	**2,490**	**686**	0	**1,010**	**1,110**	**2,000**	**6,600**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**294**	**266**	**1,270**	**3,330**	**1,046**	**266**	**1,790**	**1,920**	**3,470**	**9,900**

			Sample Location:	RREC13-14	RREC13-14	RREC13-14	RREC13-15	RREC13-15	RREC13-15	RREC13-16	RREC13-16	RREC13-16	RREC13-16
			Sample Name:	RREC13-14-0305	RREC13-14-0507	RREC13-14-0710	RREC13-15-SURF	RREC13-15-0001	RREC13-15-0103	RREC13-16-SURF	RREC13-16-0001	RREC13-16-0103	RREC13-16-0305
			Sample Depth (ft):	3-5	5-7	7-10	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/4/13	11/5/13	11/5/13	10/29/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	1100 U	1100 U	550 U	610 U	580 U	210 U	180 U	370 U	220 U	43 U
Aroclor-1221	NSL	NSL	µg/kg	1100 U	1100 U	550 U	610 U	580 U	210 U	180 U	370 U	220 U	43 U
Aroclor-1232	NSL	NSL	µg/kg	1100 U	1100 U	550 U	610 U	580 U	210 U	180 U	370 U	220 U	43 U
Aroclor-1242	NSL	NSL	µg/kg	6100	5100	2400	610 U	1300	290	210	440	180 J	5.2 J
Aroclor-1248	NSL	NSL	µg/kg	1100 U	1100 U	550 U	2200	580 U	210 U	180 U	370 U	220 U	43 U
Aroclor-1254	NSL	NSL	µg/kg	3500	3400	2100	610 U	2200	580	400	780	380	9.8 J
Aroclor-1260	NSL	NSL	µg/kg	1600 J	1100 J	510 J	630 J	820	230	380	860	380	8.5 J
Aroclor-1262	NSL	NSL	µg/kg	1100 U	1100 U	550 U	610 U	580 U	210 U	180 U	370 U	220 U	43 U
Aroclor-1268	NSL	NSL	µg/kg	1100 U	1100 U	550 U	610 U	580 U	210 U	180 U	370 U	220 U	43 U
Total PCBs ND=0	59.8	676	µg/kg	**11,200**	**9,600**	**5,010**	**2,830**	**4,320**	**1,100**	**990**	**2,080**	**940**	24
Total PCBs ND=1/2RL	59.8	676	µg/kg	**14,500**	**12,900**	**6,660**	**4,965**	**6,060**	**1,730**	**1,530**	**3,190**	**1,600**	**153**

			Sample Location:	RREC13-16	RREC13-16	RREC13-16	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17
			Sample Name:	RREC13-16-0507	RREC13-16-0709	RREC13-16-0911	RREC13-17-SURF	RREC13-17-0001	RREC13-17-0103	RREC13-17-0305	RREC13-17-0507	RREC13-17-0709	RREC13-17-0911
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/29/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Aroclor-1221	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Aroclor-1232	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Aroclor-1242	NSL	NSL	µg/kg	6.6 J	39 U	40 U	120	530	1600	54 J	50 J	67 U	62 U
Aroclor-1248	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Aroclor-1254	NSL	NSL	µg/kg	12 J	39 U	40 U	250	660	2500	310 J	340	67 U	62 U
Aroclor-1260	NSL	NSL	µg/kg	10 J	39 U	40 U	190	420	650	510	120 J	29 J	62 U
Aroclor-1262	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Aroclor-1268	NSL	NSL	µg/kg	41 U	39 U	40 U	87 U	340 U	640 U	220 U	140 U	67 U	62 U
Total PCBs ND=0	59.8	676	µg/kg	29	0	0	**560**	**1,610**	**4,750**	**874**	**510**	29	0
Total PCBs ND=1/2RL	59.8	676	µg/kg	**152**	**176**	**180**	**821**	**2,630**	**6,670**	**1,534**	**930**	**297**	**279**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-19	RREC13-19	RREC13-20
			Sample Name:	RREC13-18-SURF	RREC13-18-0001	RREC13-18-0103	RREC13-18-0305	RREC13-18-0507	RREC13-18-0709	RREC13-18-0911	RREC13-19-SURF	RREC13-19-0001	RREC13-20-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	0-0.5
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/29/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Aroclor-1221	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Aroclor-1232	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Aroclor-1242	NSL	NSL	µg/kg	160	220	250 J	17 J	4.9 J	44 U	46 U	96	1200	50
Aroclor-1248	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Aroclor-1254	NSL	NSL	µg/kg	330	310 J	900 J	130 J	26 J	44 U	46 U	190	1200	89
Aroclor-1260	NSL	NSL	µg/kg	260	250 J	500 J	76 J	11 J	44 U	46 U	94 J	250 J	59 J
Aroclor-1262	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Aroclor-1268	NSL	NSL	µg/kg	83 U	140 U	310 U	53 U	50 U	44 U	46 U	56 U	420 U	49 U
Total PCBs ND=0	59.8	676	µg/kg	**750**	**780**	**1,650**	**223**	42	0	0	**380**	**2,650**	**198**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**999**	**1,200**	**2,580**	**382**	**192**	**198**	**207**	**548**	**3,910**	**345**

			Sample Location:	RREC13-20	RREC13-20	RREC13-20	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21
			Sample Name:	RREC13-20-0001	RREC13-20-0103	RREC13-20-0305	RREC13-21-SURF	RREC13-21-0001	RREC13-21-0001-FD	RREC13-21-0103	RREC13-21-0103-FD	RREC13-21-0305	RREC13-21-0305-FD
			Sample Depth (ft):	0-1	1-3	3-5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5
			Date Sampled:	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Aroclor-1221	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Aroclor-1232	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Aroclor-1242	NSL	NSL	µg/kg	41 U	41 U	40 U	240	260	280	780	600	1700	1900
Aroclor-1248	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Aroclor-1254	NSL	NSL	µg/kg	41 U	41 U	40 U	430	320	400	830	570	1400	1400
Aroclor-1260	NSL	NSL	µg/kg	41 U	41 U	40 U	440	400	500	1600	1200	3100	1400
Aroclor-1262	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Aroclor-1268	NSL	NSL	µg/kg	41 U	41 U	40 U	210 U	190 U	180 U	770 U	400 U	350 U	350 U
Total PCBs ND=0	59.8	676	µg/kg	0	0	0	**1,110**	**980**	**1,180**	**3,210**	**2,370**	**6,200**	**4,700**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**185**	**185**	**180**	**1,740**	**1,550**	**1,720**	**5,520**	**3,570**	**7,250**	**5,750**

			Sample Location:	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-22	RREC13-22	RREC13-22	RREC13-22
			Sample Name:	RREC13-21-0507	RREC13-21-0507-FD	RREC13-21-0709	RREC13-21-0709-FD	RREC13-21-0911	RREC13-21-0911-FD	RREC13-22-SURF	RREC13-22-0001	RREC13-22-0103	RREC13-22-0305
			Sample Depth (ft):	5-7	5-7	7-9	7-9	9-11	9-11	0-0.5	0-1	1-3	3-5
			Date Sampled:	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Aroclor-1221	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Aroclor-1232	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Aroclor-1242	NSL	NSL	µg/kg	5100	4800	200	81	40 U	14 J	180	330	900	2200
Aroclor-1248	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Aroclor-1254	NSL	NSL	µg/kg	4400	4200	620	270	11 J	24 J	220	370 J	770 J	1700 J
Aroclor-1260	NSL	NSL	µg/kg	1200 J	1200 J	270	110 J	40 U	8.7 J	310	630	1600	1500 J
Aroclor-1262	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Aroclor-1268	NSL	NSL	µg/kg	1300 U	1300 U	160 U	51 U	40 U	41 U	160 U	210 U	590 U	630 U
Total PCBs ND=0	59.8	676	µg/kg	**10,700**	**10,200**	**1,090**	**461**	11	47	**710**	**1,330**	**3,270**	**5,400**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**14,600**	**14,100**	**1,570**	**614**	**171**	**170**	**1,190**	**1,960**	**5,040**	**7,290**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%

U = Indicates the analyte was analyzed for but not detected.

RL=Reporting limit

µg/kg = Micrograms per kilogram.

NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.

Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-22	RREC13-22	RREC13-22	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23
			Sample Name:	RREC13-22-0507	RREC13-22-0709	RREC13-22-0911	RREC13-23-SURF	RREC13-23-0001	RREC13-23-0103	RREC13-23-0305	RREC13-23-0507	RREC13-23-0709	RREC13-23-0911
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	11/1/13	11/1/13	11/1/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Aroclor-1221	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Aroclor-1232	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Aroclor-1242	NSL	NSL	µg/kg	13000	3900	63	650 J	430 J	1800	2300	4500	3100	3900
Aroclor-1248	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Aroclor-1254	NSL	NSL	µg/kg	7000	3900 J	67 J	770 J	430 J	1500 J	1700	2900	2900	3900
Aroclor-1260	NSL	NSL	µg/kg	2400 J	1000 J	22 J	3500	1200	3600	2000 J	640 J	430 J	880 J
Aroclor-1262	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Aroclor-1268	NSL	NSL	µg/kg	2600 U	1500 U	48 U	1600 U	680 U	1600 U	900 U	860 U	850 U	1500 U
Total PCBs ND=0	59.8	676	µg/kg	**22,400**	**8,800**	**152**	**4,920**	**2,060**	**6,900**	**6,000**	**8,040**	**6,430**	**8,680**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**30,200**	**13,300**	**296**	**9,720**	**4,100**	**11,700**	**8,700**	**10,620**	**8,980**	**13,180**

			Sample Location:	RREC13-24	RREC13-24	RREC13-24	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-26
			Sample Name:	RREC13-24-SURF	RREC13-24-0001	RREC13-24-0103	RREC13-25-SURF	RREC13-25-0001	RREC13-25-0103	RREC13-25-0305	RREC13-25-0507	RREC13-25-0710	RREC13-26-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Aroclor-1221	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Aroclor-1232	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Aroclor-1242	NSL	NSL	µg/kg	27 J	41 U	41 U	87	1200	2900	4200	11000	12000	1000
Aroclor-1248	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Aroclor-1254	NSL	NSL	µg/kg	33 J	41 U	41 U	93	1300	1900	2300	5200	6000	880
Aroclor-1260	NSL	NSL	µg/kg	23 J	41 U	41 U	50	1200 J	950 J	850 J	1500 J	2100 J	360
Aroclor-1262	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Aroclor-1268	NSL	NSL	µg/kg	39 U	41 U	41 U	43 U	540 U	520 U	620 U	1800 U	2200 U	250 U
Total PCBs ND=0	59.8	676	µg/kg	**83**	0	0	**230**	**3,700**	**5,750**	**7,350**	**17,700**	**20,100**	**2,240**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**200**	**185**	**185**	**359**	**5,320**	**7,310**	**9,210**	**23,100**	**26,700**	**2,990**

			Sample Location:	RREC13-26	RREC13-26	RREC13-26	RREC13-26	RREC13-27	RREC13-27	RREC13-27	RREC13-27	RREC13-27	RREC13-27
			Sample Name:	RREC13-26-0001	RREC13-26-0103	RREC13-26-0305	RREC13-26-0507	RREC13-27-SURF	RREC13-27-0001	RREC13-27-0103	RREC13-27-0305	RREC13-27-0507	RREC13-27-0710
			Sample Depth (ft):	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	3-5	5-7	7-10
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	960 U	2700 U	560 U	510 U	120 U	760 U	800 U	580 U	290 U	620 U
Aroclor-1221	NSL	NSL	µg/kg	960 U	2700 U	560 U	510 U	120 U	760 U	800 U	580 U	290 U	620 U
Aroclor-1232	NSL	NSL	µg/kg	960 U	2700 U	560 U	510 U	120 U	760 U	800 U	580 U	290 U	620 U
Aroclor-1242	NSL	NSL	µg/kg	5400	16000	560 U	510 U	210	3100	2700	1600	510	610 J
Aroclor-1248	NSL	NSL	µg/kg	960 U	2700 U	3100	2700	120 U	760 U	800 U	580 U	290 U	620 U
Aroclor-1254	NSL	NSL	µg/kg	3600	8200	560 U	510 U	210	2300	2800	2500 J	1000 J	1500 J
Aroclor-1260	NSL	NSL	µg/kg	890 J	1500 J	540 J	400 J	230	600 J	730 J	900 J	500 J	580 J
Aroclor-1262	NSL	NSL	µg/kg	960 U	2700 U	560 U	510 U	120 U	760 U	800 U	580 U	290 U	620 U
Aroclor-1268	NSL	NSL	µg/kg	960 U	2700 U	560 U	510 U	120 U	760 U	800 U	580 U	290 U	620 U
Total PCBs ND=0	59.8	676	µg/kg	**9,890**	**25,700**	**3,640**	**3,100**	**650**	**6,000**	**6,230**	**5,000**	**2,010**	**2,690**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**12,770**	**33,800**	**5,600**	**4,885**	**1,010**	**8,280**	**8,630**	**6,740**	**2,880**	**4,550**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-29	RREC13-29	RREC13-29
			Sample Name:	RREC13-28-SURF	RREC13-28-0001	RREC13-28-0103	RREC13-28-0305	RREC13-28-0507	RREC13-28-0709	RREC13-28-0911	RREC13-29-SURF	RREC13-29-0001	RREC13-29-0103
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3
			Date Sampled:	11/1/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Aroclor-1221	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Aroclor-1232	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Aroclor-1242	NSL	NSL	µg/kg	320	7300 J	240	44 J	26 J	60 U	60 U	1600	5000	1800
Aroclor-1248	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Aroclor-1254	NSL	NSL	µg/kg	240	5000	540 J	98 J	55 J	53 J	60 U	870	3500	2000
Aroclor-1260	NSL	NSL	µg/kg	120	1100 J	200	89 J	60 J	70	26 J	270 J	980 J	630 J
Aroclor-1262	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Aroclor-1268	NSL	NSL	µg/kg	53 U	1500 U	160 U	62 U	61 U	60 U	60 U	320 U	1200 U	630 U
Total PCBs ND=0	59.8	676	µg/kg	**680**	**13,400**	**980**	**231**	**141**	**123**	26	**2,740**	**9,480**	**4,430**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**839**	**17,900**	**1,460**	**417**	**324**	**333**	**266**	**3,700**	**13,080**	**6,320**

			Sample Location:	RREC13-29	RREC13-29	RREC13-29	RREC13-29	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-30
			Sample Name:	RREC13-29-0305	RREC13-29-0507	RREC13-29-0709	RREC13-29-0911	RREC13-30-SURF	RREC13-30-0001	RREC13-30-0001-FD	RREC13-30-0103	RREC13-30-0103-FD	RREC13-30-0305
			Sample Depth (ft):	3-5	5-7	7-9	9-11	0-0.5	0-1	0-1	1-3	1-3	3-5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Aroclor-1221	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Aroclor-1232	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Aroclor-1242	NSL	NSL	µg/kg	610	280 J	160 J	41 J	6100	12000	11000	11000	7300	12000
Aroclor-1248	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Aroclor-1254	NSL	NSL	µg/kg	1100 J	760 J	550 J	500 J	3100	9500	8900	9900	5700	6300
Aroclor-1260	NSL	NSL	µg/kg	460 J	350 J	190 J	180 J	700	4700	4300	3700	2000	1500 J
Aroclor-1262	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Aroclor-1268	NSL	NSL	µg/kg	290 U	290 U	170 U	200 U	690 U	3000 U	1900 U	1800 U	1300 U	1600 U
Total PCBs ND=0	59.8	676	µg/kg	**2,170**	**1,390**	**900**	**721**	**9,900**	**26,200**	**24,200**	**24,600**	**15,000**	**19,800**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**3,040**	**2,260**	**1,410**	**1,321**	**11,970**	**35,200**	**29,900**	**30,000**	**18,900**	**24,600**

			Sample Location:	RREC13-30	RREC13-30	RREC13-30	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-32	RREC13-32
			Sample Name:	RREC13-30-0305-FD	RREC13-30-0507	RREC13-30-0507-FD	RREC13-31-SURF	RREC13-31-0001	RREC13-31-0103	RREC13-31-0305	RREC13-31-0507	RREC13-32-SURF	RREC13-32-0001
			Sample Depth (ft):	3-5	5-7	5-7	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	11/4/13	11/4/13	11/4/13	10/30/13	10/31/13	10/31/13	10/31/13	10/31/13	10/30/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Aroclor-1221	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Aroclor-1232	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Aroclor-1242	NSL	NSL	µg/kg	7900	780	700	52 J	48 U	47 U	48 U	44 U	170	2900
Aroclor-1248	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Aroclor-1254	NSL	NSL	µg/kg	4600	680	690	79	48 U	47 U	48 U	44 U	500	1900
Aroclor-1260	NSL	NSL	µg/kg	940 J	190	190	85	48 U	47 U	48 U	44 U	170	540 J
Aroclor-1262	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Aroclor-1268	NSL	NSL	µg/kg	1100 U	160 U	170 U	61 U	48 U	47 U	48 U	44 U	140 U	560 U
Total PCBs ND=0	59.8	676	µg/kg	**13,440**	**1,650**	**1,580**	**216**	0	0	0	0	**840**	**5,340**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**16,740**	**2,130**	**2,090**	**399**	**216**	**212**	**216**	**198**	**1,260**	**7,020**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%

U = Indicates the analyte was analyzed for but not detected.

RL=Reporting limit

µg/kg = Micrograms per kilogram.

NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.

Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-32	RREC13-32	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-34
			Sample Name:	RREC13-32-0103	RREC13-32-0305	RREC13-33-SURF	RREC13-33-0001	RREC13-33-0103	RREC13-33-0305	RREC13-33-0507	RREC13-33-0709	RREC13-33-0911	RREC13-34-SURF
			Sample Depth (ft):	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5
			Date Sampled:	11/1/13	11/1/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Aroclor-1221	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Aroclor-1232	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Aroclor-1242	NSL	NSL	µg/kg	92	90	300	1200	4300	2200	77	17 J	41 J	1300
Aroclor-1248	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Aroclor-1254	NSL	NSL	µg/kg	68	66	370	1200	2800	1700	63 J	14 J	30 J	1200
Aroclor-1260	NSL	NSL	µg/kg	16 J	15 J	260	2100	2100	1500	66	12 J	37 J	1200 J
Aroclor-1262	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Aroclor-1268	NSL	NSL	µg/kg	60 U	55 U	170 U	730 U	990 U	630 U	62 U	56 U	55 U	780 U
Total PCBs ND=0	59.8	676	µg/kg	**176**	**171**	**930**	**4,500**	**9,200**	**5,400**	**206**	43	**108**	**3,700**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**356**	**336**	**1,440**	**6,690**	**12,170**	**7,290**	**392**	**211**	**273**	**6,040**

			Sample Location:	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-35	RREC13-35	RREC13-35	RREC13-35
			Sample Name:	RREC13-34-0001	RREC13-34-0103	RREC13-34-0305	RREC13-34-0507	RREC13-34-0709	RREC13-34-0911	RREC13-35-SURF	RREC13-35-0001	RREC13-35-0103	RREC13-35-0305
			Sample Depth (ft):	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	10/30/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Aroclor-1221	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Aroclor-1232	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Aroclor-1242	NSL	NSL	µg/kg	1400	3700	5700	680	290	93 J	46 J	61 U	42 U	41 U
Aroclor-1248	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Aroclor-1254	NSL	NSL	µg/kg	1100 J	2600	4700	1500	1100	1200 J	64	61 U	42 U	41 U
Aroclor-1260	NSL	NSL	µg/kg	1100 J	1000 J	1000 J	540	370	390	35 J	61 U	42 U	41 U
Aroclor-1262	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Aroclor-1268	NSL	NSL	µg/kg	410 U	670 U	1300 U	290 U	280 U	300 U	51 U	61 U	42 U	41 U
Total PCBs ND=0	59.8	676	µg/kg	**3,600**	**7,300**	**11,400**	**2,720**	**1,760**	**1,683**	**145**	0	0	0
Total PCBs ND=1/2RL	59.8	676	µg/kg	**4,830**	**9,310**	**15,300**	**3,590**	**2,600**	**2,583**	**298**	**275**	**189**	**185**

			Sample Location:	RREC13-36	RREC13-36	RREC13-36	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37
			Sample Name:	RREC13-36-SURF	RREC13-36-0001	RREC13-36-0103	RREC13-37-SURF	RREC13-37-0001	RREC13-37-0103	RREC13-37-0305	RREC13-37-0507	RREC13-37-0709	RREC13-37-0911
			Sample Depth (ft):	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	10/28/13	10/31/13	10/31/13	10/28/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Aroclor-1221	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Aroclor-1232	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Aroclor-1242	NSL	NSL	µg/kg	170 J	1200	3800	75	7 J	53 U	52 U	51 U	50 U	50 U
Aroclor-1248	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Aroclor-1254	NSL	NSL	µg/kg	330 J	1000	3600	92	15 J	53 U	52 U	51 U	50 U	50 U
Aroclor-1260	NSL	NSL	µg/kg	640 J	380 J	850 J	75	7.1 J	53 U	52 U	51 U	50 U	50 U
Aroclor-1262	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Aroclor-1268	NSL	NSL	µg/kg	330 UJ	390 U	1000 U	66 U	53 U	53 U	52 U	51 U	50 U	50 U
Total PCBs ND=0	59.8	676	µg/kg	**1,140**	**2,580**	**8,250**	**242**	29	0	0	0	0	0
Total PCBs ND=1/2RL	59.8	676	µg/kg	**2,130**	**3,750**	**11,250**	**440**	**188**	**239**	**234**	**230**	**225**	**225**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-39	RREC13-39	RREC13-39	RREC13-39
			Sample Name:	RREC13-38-SURF	RREC13-38-SURF-FD	RREC13-38-0001	RREC13-38-0103	RREC13-38-0305	RREC13-38-0507	RREC13-39-SURF	RREC13-39-0001	RREC13-39-0103	RREC13-39-0305
			Sample Depth (ft):	0-0.5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	3-5
			Date Sampled:	10/30/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	10/30/13	11/2/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Aroclor-1221	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Aroclor-1232	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Aroclor-1242	NSL	NSL	µg/kg	37 J	50	47 U	47 U	43 U	46 U	410	2900	39 J	44 U
Aroclor-1248	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Aroclor-1254	NSL	NSL	µg/kg	48	41 J	47 U	47 U	43 U	46 U	300	2000	27 J	44 U
Aroclor-1260	NSL	NSL	µg/kg	38 J	35 J	47 U	47 U	43 U	46 U	160	450 J	40 U	44 U
Aroclor-1262	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Aroclor-1268	NSL	NSL	µg/kg	48 U	49 U	47 U	47 U	43 U	46 U	100 U	490 U	40 U	44 U
Total PCBs ND=0	59.8	676	µg/kg	**123**	**126**	0	0	0	0	**870**	**5,350**	**66**	0
Total PCBs ND=1/2RL	59.8	676	µg/kg	**267**	**273**	**212**	**212**	**194**	**207**	**1,170**	**6,820**	**206**	**198**

			Sample Location:	RREC13-39	RREC13-39	RREC13-39	RREC13-40	RREC13-40	RREC13-40	RREC13-40	RREC13-40	RREC13-41	RREC13-41
			Sample Name:	RREC13-39-0507	RREC13-39-0709	RREC13-39-0911	RREC13-40-SURF	RREC13-40-0001	RREC13-40-0103	RREC13-40-0305	RREC13-40-0507	RREC13-41-SURF	RREC13-41-0001
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	11/2/13	11/2/13	11/2/13	10/28/13	11/1/13	11/1/13	11/1/13	11/1/13	10/30/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Aroclor-1221	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Aroclor-1232	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Aroclor-1242	NSL	NSL	µg/kg	43 U	44 U	46 U	87	49 U	50 U	50 U	52 U	110 J	64 UJ
Aroclor-1248	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Aroclor-1254	NSL	NSL	µg/kg	43 U	44 U	46 U	82	4.3 J	50 U	50 U	52 U	500	64 UJ
Aroclor-1260	NSL	NSL	µg/kg	43 U	44 U	46 U	75	49 U	50 U	50 U	52 U	260 J	7 J
Aroclor-1262	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Aroclor-1268	NSL	NSL	µg/kg	43 U	44 U	46 U	53 U	49 U	50 U	50 U	52 U	170 U	64 UJ
Total PCBs ND=0	59.8	676	µg/kg	0	0	0	**244**	4	0	0	0	**870**	7
Total PCBs ND=1/2RL	59.8	676	µg/kg	**194**	**198**	**207**	**403**	**200**	**225**	**225**	**234**	**1,380**	**263**

			Sample Location:	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41
			Sample Name:	RREC13-41-0103	RREC13-41-0103-FD	RREC13-41-0305	RREC13-41-0305-FD	RREC13-41-0507	RREC13-41-0507-FD	RREC13-41-0709	RREC13-41-0709-FD	RREC13-41-0911	RREC13-41-0911-FD
			Sample Depth (ft):	1-3	1-3	3-5	3-5	5-7	5-7	7-9	7-9	9-11	9-11
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1221	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1232	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1242	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1248	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1254	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1260	NSL	NSL	µg/kg	66 U	65 U	88	66 J	24 J	23 J	72 U	70 U	64 U	61 U
Aroclor-1262	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Aroclor-1268	NSL	NSL	µg/kg	66 U	65 U	64 U	67 U	65 U	65 U	72 U	70 U	64 U	61 U
Total PCBs ND=0	59.8	676	µg/kg	0	0	**88**	**66**	24	23	0	0	0	0
Total PCBs ND=1/2RL	59.8	676	µg/kg	**297**	**293**	**344**	**334**	**284**	**283**	**324**	**315**	**288**	**275**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-42	RREC13-42	RREC13-42	RREC13-42	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-45
			Sample Name:	RREC13-42-SURF	RREC13-42-0001	RREC13-42-0103	RREC13-42-0305	RREC13-44-SURF	RREC13-44-0001	RREC13-44-0103	RREC13-44-0305	RREC13-44-0507	RREC13-45-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	0-0.5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	10/30/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Aroclor-1221	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Aroclor-1232	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Aroclor-1242	NSL	NSL	µg/kg	100	4.6 J	43 U	46 U	110	270	410	1600	4300	160
Aroclor-1248	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Aroclor-1254	NSL	NSL	µg/kg	94	45 U	43 U	46 U	170	340	490	1600	2400	240
Aroclor-1260	NSL	NSL	µg/kg	42 J	45 U	43 U	46 U	250	490	1000	4600	1300	160
Aroclor-1262	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Aroclor-1268	NSL	NSL	µg/kg	44 U	45 U	43 U	46 U	87 U	150 U	350 U	990 U	610 U	80 U
Total PCBs ND=0	59.8	676	µg/kg	**236**	5	0	0	**530**	**1,100**	**1,900**	**7,800**	**8,000**	**560**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**368**	**185**	**194**	**207**	**791**	**1,550**	**2,950**	**10,770**	**9,830**	**800**

			Sample Location:	RREC13-45	RREC13-45	RREC13-45	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-47
			Sample Name:	RREC13-45-0001	RREC13-45-0103	RREC13-45-0305	RREC13-46-SURF	RREC13-46-0001	RREC13-46-0103	RREC13-46-0305	RREC13-46-0507	RREC13-46-0710	RREC13-47-SURF
			Sample Depth (ft):	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5
			Date Sampled:	11/1/13	11/1/13	11/1/13	11/5/13	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Aroclor-1221	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Aroclor-1232	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Aroclor-1242	NSL	NSL	µg/kg	260	190	16 J	54	270	37 J	5.5 J	3.8 J	43 U	220 J
Aroclor-1248	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Aroclor-1254	NSL	NSL	µg/kg	390	310	25 J	41 J	250 J	26 J	4.6 J	2.2 J	43 U	350 J
Aroclor-1260	NSL	NSL	µg/kg	200 J	100	40 U	43 J	500	39 J	5.7 J	3.4 J	43 U	620
Aroclor-1262	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Aroclor-1268	NSL	NSL	µg/kg	120 U	82 U	40 U	48 U	130 U	44 U	42 U	42 U	43 U	440 U
Total PCBs ND=0	59.8	676	µg/kg	**850**	**600**	41	**138**	**1,020**	**102**	16	9	0	**1,190**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**1,210**	**846**	**181**	**282**	**1,410**	**234**	**142**	**135**	**194**	**2,510**

			Sample Location:	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-48
			Sample Name:	RREC13-47-SURF-FD	RREC13-47-0001	RREC13-47-0103	RREC13-47-0103-FD	RREC13-47-0305	RREC13-47-0305-FD	RREC13-47-0507	RREC13-47-0709	RREC13-47-0911	RREC13-48-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	1-3	3-5	3-5	5-7	7-9	9-11	0-0.5
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**										
Aroclor-1016	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Aroclor-1221	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Aroclor-1232	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Aroclor-1242	NSL	NSL	µg/kg	130 J	200 J	370	430	400 J	400 J	530 J	2100	6100	240
Aroclor-1248	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Aroclor-1254	NSL	NSL	µg/kg	210	280 J	410 J	480 J	650 J	510 J	650	1400	3900 J	170 J
Aroclor-1260	NSL	NSL	µg/kg	380	780 J	700 J	1000 J	1300 J	1300 J	2100	810	1500 J	320
Aroclor-1262	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Aroclor-1268	NSL	NSL	µg/kg	180 U	360 U	330 U	330 U	630 U	630 U	610 U	580 U	1200 U	230 U
Total PCBs ND=0	59.8	676	µg/kg	**720**	**1,260**	**1,480**	**1,910**	**2,350**	**2,210**	**3,280**	**4,310**	**11,500**	**730**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**1,260**	**2,340**	**2,470**	**2,900**	**4,240**	**4,100**	**5,110**	**6,050**	**15,100**	**1,420**

NOTES:

J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.

P = the percent difference between the original and confirmation analysis is greater than 40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.

TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-3 SEDIMENT RESULTS FOR PCB-AROCLORS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan
(November 2013)

			Sample Location:	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-49	RREC13-49	RREC13-49
			Sample Name:	RREC13-48-SURF-FD	RREC13-48-0001	RREC13-48-0103	RREC13-48-0305	RREC13-48-0507	RREC13-48-0710	RREC13-49-SURF	RREC13-49-SURF-FD	RREC13-49-0001
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5	0-0.5	0-1
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**									
Aroclor-1016	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Aroclor-1221	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Aroclor-1232	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Aroclor-1242	NSL	NSL	µg/kg	250	160	320	420	1600	3800	100	110	860
Aroclor-1248	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Aroclor-1254	NSL	NSL	µg/kg	200 J	170 J	380 J	470	970	2500	110 J	120 J	750
Aroclor-1260	NSL	NSL	µg/kg	340	220	1400 J	580	520 J	930	150	140	480 J
Aroclor-1262	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Aroclor-1268	NSL	NSL	µg/kg	230 U	130 U	190 U	130 U	240 U	800 U	62 U	65 U	170 U
Total PCBs ND=0	59.8	676	µg/kg	**790**	**550**	**2,100**	**1,470**	**3,090**	**7,230**	**360**	**370**	**2,090**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**1,480**	**940**	**2,670**	**1,860**	**3,810**	**9,630**	**546**	**565**	**2,600**

			Sample Location:	RREC13-49	RREC13-49	RREC13-49	RREC13-49	RREC13-50	RREC13-50	RREC13-50	RREC13-50	RREC13-50
			Sample Name:	RREC13-49-0103	RREC13-49-0305	RREC13-49-0507	RREC13-49-0710	RREC13-50-SURF	RREC13-50-0001	RREC13-50-0103	RREC13-50-0305	RREC13-50-0507
			Sample Depth (ft):	1-3	3-5	5-7	7-10	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/6/13	11/6/13	11/6/13	11/6/13
Analyte	**TEC**	**PEC**	**Units**									
Aroclor-1016	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Aroclor-1221	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Aroclor-1232	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Aroclor-1242	NSL	NSL	µg/kg	3200	5300	2700	1600	21 J	27 J	75 U	25 J	12 J
Aroclor-1248	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Aroclor-1254	NSL	NSL	µg/kg	1600	3200	2200	1500	14 J	48 J	41 J	67	60
Aroclor-1260	NSL	NSL	µg/kg	690 J	1700	610	430	16 J	50 J	57 J	41 J	22 J
Aroclor-1262	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Aroclor-1268	NSL	NSL	µg/kg	560 U	850 U	550 U	300 U	44 U	82 U	75 U	52 U	58 U
Total PCBs ND=0	59.8	676	µg/kg	**5,490**	**10,200**	**5,510**	**3,530**	51	**125**	**98**	**133**	**94**
Total PCBs ND=1/2RL	59.8	676	µg/kg	**7,170**	**12,750**	**7,160**	**4,430**	**183**	**371**	**361**	**289**	**268**

NOTES:
Detection Limit (MDL) and the concentration is an approximate value.
40%
U = Indicates the analyte was analyzed for but not detected.
RL=Reporting limit
µg/kg = Micrograms per kilogram.
NSL = No Screening Level.
Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al.
Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-01	RREC13-01	RREC13-01	RREC13-01	RREC13-02	RREC13-02	RREC13-02	RREC13-02	RREC13-02	RREC13-02
			Sample Name:	RREC13-01-SURF	RREC13-01-0001	RREC13-01-0103	RREC13-01-0305	RREC13-02-SURF	RREC13-02-0001	RREC13-02-0103	RREC13-02-0305	RREC13-02-0507	RREC13-02-0709
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-0.5	1-3	3-5	5-7	7-9
			Date Sampled:	10/30/13	10/31/13	10/31/13	10/31/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	2000 J	3100	8500	13000	290 J	320 J	550 J	580 J	2500 J	1200 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	2700	4200	13000	21000	490 J	780 U	1400 U	2000 U	4300	2400 U
Acenaphthene [a]	NSL	NSL	µg/kg	1700 J	1700 J	3500 J	10000	540 J	440 J	890 J	1700 J	5500	1800 J
Acenaphthylene [a]	NSL	NSL	µg/kg	680 J	2600 U	8200 U	2600 J	320 J	200 J	310 J	430 J	710 J	630 J
Anthracene [a]	57.2	845	µg/kg	**4500**	**4900**	**18000**	**18000**	**1600**	**890**	**2200**	**3700**	**7100**	**4200**
Benzo(a)anthracene [a]	108	1050	µg/kg	**6700**	**9000**	**27000**	**19000**	**5800**	**3100**	**5300**	**7400**	**11000**	**9000**
Benzo(a)pyrene [a]	150	1450	µg/kg	**4500**	**6000**	**20000**	**12000**	**5600**	**2700**	**4000**	**5400**	**9000**	**6300**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	4000	5700	14000	8600 J	5400	2900	4800	6400	7600	6700
Benzo(e)pyrene	NSL	NSL	µg/kg	3200	4400	13000	7300 J	3600	1900	3000	3900	5700	4300
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1500 J	3600	9000	4500 J	2000	1200	1800	2600	4300	2900
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	4100	4500	15000	10000	5000	2700	4400	6000	9900	5600
C1 Chrysenes	NSL	NSL	µg/kg	6100 J	11000 J	30000 J	18000 J	3000 J	2100 J	3400 J	3400 J	5900 J	4700 J
C1 Fluorenes	NSL	NSL	µg/kg	960 J	1500 J	5300 J	3900 J	170 J	320 J	520 J	390 J	1300 J	840 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	12000 J	15000 J	50000 J	38000 J	5700 J	4800 J	7500 J	8300 J	14000 J	11000 J
C1-Naphthalenes	NSL	NSL	µg/kg	3100 J	5200 J	15000 J	22000 J	540 J	530 J	940 J	1100 J	4700 J	2100 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	15000 J	17000 J	58000 J	52000 J	3200 J	4100 J	6900 J	5900 J	14000 J	9600 J
C2 Chrysenes	NSL	NSL	µg/kg	7100 J	10000 J	21000 J	17000 J	2300 J	2400 J	3700 J	3700 J	5100 J	3300 J
C2 Fluorenes	NSL	NSL	µg/kg	1400 J	2400 J	7300 J	4300 J	210 J	690 J	1100 J	780 J	2000 J	1300 J
C2-Fluoranthenes/Pyrenes [b]	NSL	NSL	µg/kg	7400 J	11000 J	28000 J	19000 J	2400 J	2900 J	4300 J	3900 J	6700 J	5000 J
C2-Naphthalenes	NSL	NSL	µg/kg	10000 J	14000 J	42000 J	53000 J	1300 J	1400 J	2900 J	2200 J	9700 J	4600 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	10000 J	17000 J	46000 J	29000 J	1700 J	3800 J	6600 J	4900 J	10000 J	8000 J
C3 Chrysenes	NSL	NSL	µg/kg	2700 J	5400 J	9000 J	7200 J	780 J	950 J	1200 J	1200 J	1700 J	1200 J
C3 Fluorenes	NSL	NSL	µg/kg	3100 J	4500 J	8800 J	7000 J	320 J	1300 J	2300 J	1500 J	3500 J	2600 J
C3-Fluoranthenes/Pyrenes [b]	NSL	NSL	µg/kg	4900 J	7900 J	13000 J	11000 J	1100 J	1600 J	2400 J	2100 J	3800 J	2900 J
C3-Naphthalenes	NSL	NSL	µg/kg	9500 J	13000 J	39000 J	31000 J	1100 J	2900 J	6100 J	3700 J	14000 J	7400 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9700 J	19000 J	27000 J	25000 J	1100 J	4300 J	6600 J	5500 J	9800 J	7800 J
C4 Chrysenes	NSL	NSL	µg/kg	1500 J	2700 J	3000 J	3300 J	180 J	340 J	530 J	340 J	710 J	580 J
C4-Naphthalenes	NSL	NSL	µg/kg	5200 J	7800 J	18000 J	13000 J	500 J	2300 J	4500 J	3000 J	8600 J	5400 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	6100 J	13000 J	16000 J	16000 J	680 J	2600 J	4900 J	4100 J	6700 J	5400 J
Chrysene [a]	166	1290	µg/kg	**5900**	**8300**	**25000**	**16000**	**5200**	**3200**	**5500**	**7100**	**11000**	**8700**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**460 J**	**1400 J**	**3200 J**	**1400 J**	**570 J**	**350 J**	**520 J**	**690 J**	**1300 J**	**760 J**
Fluoranthene [a]	423	2230	µg/kg	**14000**	**12000**	**41000**	**39000**	**9000**	**5400**	**11000**	**17000**	**29000**	**18000**
Fluorene [a]	77.4	536	µg/kg	**3300**	**3700**	8200 U	**14000**	**740 J**	**630 J**	**1100 J**	**2200**	**5500**	**2900**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1300 J	3000	8200 U	4000 J	1800	1100	1600	2500	4000 J	2600
Naphthalene [a]	176	561	µg/kg	**4000**	**6000**	**14000**	**27000**	1200 U	**1600**	**3500**	**2400**	**30000**	**9000**
Perylene	NSL	NSL	µg/kg	1000 J	1400 J	4100 J	2800 J	1400	780	920 J	1300 J	2400 J	1700 J
Phenanthrene [a]	204	1170	µg/kg	**14000**	**12000**	**32000**	**51000**	**4500**	**3600**	**6600**	**12000**	**26000**	**13000**
Pyrene [a]	195	1520	µg/kg	**11000**	**15000**	**53000**	**34000**	**6300**	**4500**	**7300**	**11000**	**18000**	**13000**
Total PAH17 ND=1/2RL	1601	22800	µg/kg	**84340.0**	**102300**	**300000**	**292100**	**55460.0**	**34900.0**	**61520.0**	**89520.0**	**184210**	**106290**
Total PAH34 ND=1/2RL	1601	22800	µg/kg	**144100**	**193300**	**522500**	**456400**	**73050.0**	**59100.0**	**101160**	**125090**	**249310**	**157630**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-02	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-05	RREC13-05	RREC13-05	RREC13-06
			Sample Name:	RREC13-02-0911	RREC13-03-SURF	RREC13-03-0001	RREC13-03-0103	RREC13-03-0305	RREC13-03-0507	RREC13-05-SURF	RREC13-05-0001	RREC13-05-0103	RREC13-06-SURF
			Sample Depth (ft):	9-11	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	0-0.5
			Date Sampled:	11/2/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1700	1000 J	1300 J	1900	1600	29 J	680 J	380 J	360 J	120 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	2600	1800 J	2100	3200	2900	42	1000	630 J	550 J	210 J
Acenaphthene [a]	NSL	NSL	µg/kg	2100	1300 J	1200 J	1600 J	1400 J	30 J	360 J	680 J	540 J	180 J
Acenaphthylene [a]	NSL	NSL	µg/kg	1300 U	1600 J	770 J	1100 J	780 J	19 J	280 J	480 J	290 J	130 J
Anthracene [a]	57.2	845	µg/kg	**3800**	**7100**	**4000**	**4400**	**4500**	**81**	**1400**	**3200**	**1900**	**750**
Benzo(a)anthracene [a]	108	1050	µg/kg	**5600**	**16000**	**7200**	**8400**	**6600**	**130**	**3000**	**6200**	**4200**	**2300**
Benzo(a)pyrene [a]	150	1450	µg/kg	**4300**	**13000**	**4900**	**5700**	**4600**	93	**2300**	**5200**	**3400**	**2300**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	3800	9600	3900	4300	3500	73	1800	4500	3000	1900
Benzo(e)pyrene	NSL	NSL	µg/kg	3100	7500	3300	3800	2800	59	1600	3100	2200	1400
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2700	6000	2300	2800	2300	45	1200	2900	1900	1300
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	3700	13000	4000	4500	3800	74	1900	4300	3000	1900
C1 Chrysenes	NSL	NSL	µg/kg	4900 J	3200 U	7000 J	8000 J	5800 J	120 J	2800 J	2900 J	2400 J	1300
C1 Fluorenes	NSL	NSL	µg/kg	840 J	830 J	800 J	930 J	790 J	18 J	370 J	400 J	400 J	76 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	7200 J	18000 J	12000 J	14000 J	12000 J	210 J	4800 J	6400 J	5000 J	2600 J
C1-Naphthalenes	NSL	NSL	µg/kg	3200 J	2000 J	2300 J	3500 J	3000 J	49 J	1200 J	730 J	640 J	230 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9000 J	13000 J	13000 J	16000 J	12000 J	230 J	5900 J	4600 J	4300 J	1400 J
C2 Chrysenes	NSL	NSL	µg/kg	3100 J	3200 U	6300 J	6600 J	5600 J	95 J	2300 J	1600 J	1600 J	780 J
C2 Fluorenes	NSL	NSL	µg/kg	1400 J	880 J	1300 J	1500 J	1100 J	22 J	690 J	560 J	630 J	100 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4300 J	7800 J	8100 J	9000 J	6700 J	130 J	3200 J	2700 J	2600 J	1200 J
C2-Naphthalenes	NSL	NSL	µg/kg	7300 J	4800 J	7000 J	8000 J	7300 J	140 J	3800 J	1900 J	1900 J	520 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8300 J	7000 J	10000 J	12000 J	8400 J	140 J	4800 J	3300 J	3800 J	760 J
C3 Chrysenes	NSL	NSL	µg/kg	1400 J	3200 U	3000 J	3400 J	2800 J	43 J	1100 J	640 J	690 J	280 J
C3 Fluorenes	NSL	NSL	µg/kg	2800 J	1500 J	2700 J	3500 J	2400 J	40 J	1500 J	1100 J	1500 J	160 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2600 J	3600 J	5100 J	5600 J	4800 J	79 J	2300 J	1600 J	1600 J	530 J
C3-Naphthalenes	NSL	NSL	µg/kg	8700 J	4400 J	7200 J	8000 J	6900 J	200 J	4500 J	3000 J	3000 J	470 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	7500 J	5500 J	10000 J	14000 J	9400 J	160 J	4800 J	3700 J	4400 J	570 J
C4 Chrysenes	NSL	NSL	µg/kg	680 J	3200 U	1600 J	1700 J	1400 J	23 J	610 J	340 J	360 J	120 J
C4-Naphthalenes	NSL	NSL	µg/kg	6100 J	2500 J	4600 J	5500 J	4300 J	160 J	2900 J	2800 J	2900 J	240 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	5100 J	3500 J	7900 J	8800 J	6600 J	95 J	3200 J	2700 J	3000 J	340 J
Chrysene [a]	166	1290	µg/kg	**5600**	**13000**	**6400**	**7600**	**5700**	120	**2800**	**5700**	**4100**	**2200**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**960 J**	**1900 J**	**780 J**	**980 J**	**700 J**	13 J	**340 J**	**740 J**	**520 J**	**320 J**
Fluoranthene [a]	423	2230	µg/kg	**11000**	**26000**	**12000**	**12000**	**11000**	210	**4900**	**12000**	**7700**	**3300**
Fluorene [a]	77.4	536	µg/kg	**4300**	**3900**	**2300**	**2700**	**2600**	48	**780**	**1700 J**	**1100 J**	**250 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	2600	5800	2000	2400	2000	37 J	1100	2600	1700	1100
Naphthalene [a]	176	561	µg/kg	**8500**	**4400**	**5800**	**8100**	**8800**	110	**1600**	2100 U	**2100**	630 U
Perylene	NSL	NSL	µg/kg	1100 J	3200 J	1100 J	1300 J	1100 J	41 J	600 J	1400 J	900 J	550 J
Phenanthrene [a]	204	1170	µg/kg	**10000**	**21000**	**11000**	**12000**	**12000**	**240**	**3900**	**10000**	**6100**	**1700**
Pyrene [a]	195	1520	µg/kg	**10000**	**17000**	**9500**	**11000**	**9400**	190	**3800**	**9100**	**5800**	**2700**
Total PAH17 ND=1/2RL	1601.0	######	µg/kg	**82210.0**	**162400**	**80150.0**	**92780.0**	**82580.0**	1555.00	**32460.0**	**70980.0**	**47900.0**	**22855.0**
Total PAH34 ND=1/2RL	1601.0	######	µg/kg	**125950**	**221510**	**140150**	**165410**	**136270**	**2528.00**	**59720.0**	**97610**	**73480.0**	**30601.0**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-06	RREC13-06	RREC13-07	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09
			Sample Name:	RREC13-06-0001	RREC13-06-0103	RREC13-07-SURF	RREC13-09-SURF	RREC13-09-0001	RREC13-09-0001-FD	RREC13-09-0103	RREC13-09-0103-FD	RREC13-09-0305	RREC13-09-0305-FD
			Sample Depth (ft):	0-1	1-3	0-0.5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	170 J	550 J	76 J	250 J	770 J	550 J	970 J	970 J	1200 J	1200 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	490 U	800	140 J	1900 U	1700 U	1300 U	1600 U	1600 U	2200 U	2100
Acenaphthene [a]	NSL	NSL	µg/kg	230 J	570 J	99 J	840 J	1200 J	920 J	1300 J	1300 J	1700 J	1700
Acenaphthylene [a]	NSL	NSL	µg/kg	150 J	280 J	75 J	1900 U	370 J	260 J	450 J	450 J	370 J	350 J
Anthracene [a]	57.2	845	µg/kg	**580**	**1300**	**330**	**1400 J**	**2900**	**2400**	**2900**	**3200**	**4100**	**3700**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1700**	**2900**	**1000**	**4900**	**6000**	**4800**	**5300**	**4300**	**7000**	**6600**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1400**	**2600**	**1100**	**4100**	**4600**	**4000**	**4200**	**3000**	**5200**	**5000**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1700	2900	920	4300	5300	3400	4100	3500	4500	4800
Benzo(e)pyrene	NSL	NSL	µg/kg	1100	1800	660	2800	3300	2700	2800	2200	3400	3300
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	770	920	580	2100 J	2300 J	1800 J	1900 J	1400 J	3000	2600
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1400 J	2500 J	830	3900	4200	4200	3900	2900	4800	4200
C1 Chrysenes	NSL	NSL	µg/kg	940 J	1900 J	590 J	2000 J	3000 J	2400 J	3100 J	2800 J	3900 J	3800 J
C1 Fluorenes	NSL	NSL	µg/kg	77 J	300 J	35 J	1900 U	770 J	510 J	850 J	890 J	870 J	900 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2000 J	3900 J	990 J	3600 J	6100 J	4700 J	7000 J	6300 J	8900 J	8500 J
C1-Naphthalenes	NSL	NSL	µg/kg	300 J	920 J	150 J	470 J	1400 J	1000 J	1800 J	1700 J	2200 J	2200 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1200 J	4000 J	590 J	1900 J	6800 J	5100 J	7900 J	8200 J	8300 J	8200 J
C2 Chrysenes	NSL	NSL	µg/kg	840 J	2300 J	310 J	1000 J	1900 J	1800 J	2300 J	2500 J	2600 J	2800 J
C2 Fluorenes	NSL	NSL	µg/kg	140 J	580 J	37 J	1900 U	1100 J	740 J	1400 J	1300 J	1200 J	1200 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	980 J	2300 J	470 J	2000 J	3500 J	2700 J	3900 J	3600 J	4200 J	4300 J
C2-Naphthalenes	NSL	NSL	µg/kg	520 J	2700 J	310 J	470 J	5100 J	3500 J	5600 J	5700 J	6200 J	6100 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	880 J	3300 J	300 J	720 J	5300 J	3900 J	6800 J	7100 J	6400 J	6700 J
C3 Chrysenes	NSL	NSL	µg/kg	280 J	750 J	120 J	280 J	840 J	670 J	1100 J	1000 J	1100 J	1100 J
C3 Fluorenes	NSL	NSL	µg/kg	280 J	1100 J	69 J	1900 U	2100 J	1400 J	2700 J	2700 J	2300 J	2500 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	490 J	1300 J	230 J	790 J	2100 J	1400 J	2300 J	2400 J	2400 J	2700 J
C3-Naphthalenes	NSL	NSL	µg/kg	720 J	4200 J	270 J	400 J	8300 J	5300 J	9700 J	9800 J	8400 J	8400 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	880 J	3000 J	210 J	550 J	5400 J	3800 J	7600 J	7300 J	7200 J	7900 J
C4 Chrysenes	NSL	NSL	µg/kg	120 J	370 J	47 J	1900 U	420 J	370 J	560 J	550 J	600 J	660 J
C4-Naphthalenes	NSL	NSL	µg/kg	470 J	2500 J	130 J	210 J	5700 J	3800 J	6700 J	6400 J	5900 J	6200 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	630 J	2000 J	130 J	310 J	3400 J	2300 J	4500 J	5100 J	4900 J	4400 J
Chrysene [a]	166	1290	µg/kg	**1600**	**2900**	**930**	**5000**	**6000**	**4600**	**5400**	**4300**	**6400**	**5900**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**200 J**	**260 J**	**170 J**	**520 J**	**570 J**	**510 J**	**490 J**	**360 J**	**880 J**	**770 J**
Fluoranthene [a]	423	2230	µg/kg	**3400**	**6100**	**1600**	**12000**	**14000**	**11000**	**11000**	**11000**	**14000**	**12000**
Fluorene [a]	77.4	536	µg/kg	**380 J**	**810**	**170 J**	**730 J**	**1900**	**1600**	**2300**	**2600**	**2700**	**2700**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	680	830	540	1900 J	2100	1700	1700	1200 J	2600	2400
Naphthalene [a]	176	561	µg/kg	**1100**	**1900**	**380**	1900 U	**4900**	**3000**	**5800**	**5500**	**12000**	**12000**
Perylene	NSL	NSL	µg/kg	330 J	620 J	270	1400 J	1100 J	1400	1300 J	680 J	1200 J	1300 J
Phenanthrene [a]	204	1170	µg/kg	**2100**	**4300**	**970**	**6900**	**11000**	**8900**	**9800**	**11000**	**13000**	**12000**
Pyrene [a]	195	1520	µg/kg	**2500**	**4200**	**1200**	**8100**	**9500**	**7300**	**8100**	**7100**	**10000 J**	**9500 J**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**20135.0**	**36070.0**	**11034.0**	**59540.0**	**77690.0**	**61040.0**	**69440.0**	**63910.0**	**93350.0**	**88320.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**27407.0**	**55870.0**	**14185.0**	**72720.0**	**112210**	**86940**	**111490**	**104880**	**136920**	**131120**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-11	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-14	RREC13-14	RREC13-14	RREC13-14
			Sample Name:	RREC13-11-SURF	RREC13-13-SURF	RREC13-13-0001	RREC13-13-0103	RREC13-13-0305	RREC13-13-0507	RREC13-14-SURF	RREC13-14-SURF-FD	RREC13-14-0001	RREC13-14-0103
			Sample Depth (ft):	0-0.5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-0.5	0-1	1-3
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/5/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	95 J	46 J	1100	1300	2100	6700	330 J	300 J	930	800 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	920 U	170 U	1600	2100	3100	10000	870 U	870 U	1100	1300
Acenaphthene [a]	NSL	NSL	µg/kg	140 J	58 J	460 J	340 J	980 J	4100 J	400 J	420 J	720 J	460 J
Acenaphthylene [a]	NSL	NSL	µg/kg	150 J	60 J	260 J	180 J	880 J	1900 J	180 J	190 J	280 J	240 J
Anthracene [a]	57.2	845	µg/kg	**450 J**	**220**	**940**	**600**	**4000**	**15000**	**870**	**1100**	**1100**	**1100**
Benzo(a)anthracene [a]	108	1050	µg/kg	**2700**	**870**	**2400**	**1500**	**8400**	**17000**	**3400**	**3500**	**3200**	**3500**
Benzo(a)pyrene [a]	150	1450	µg/kg	**2400**	**890**	**2200**	**1400**	**6200**	**13000**	**3300**	**3500**	**2700**	**3100**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1800	840	2200	1400	5000	8500	3300	3400	2800	2700
Benzo(e)pyrene	NSL	NSL	µg/kg	1600	580	1400	1000	4200	7000	2300	2300	2000	2100
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1200 J	610	1300	800	3500	5500	1700 J	1700 J	1500	2200
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2400	640	1700	1100	4700	8400	3000	2800	2600	2600
C1 Chrysenes	NSL	NSL	µg/kg	1300 J	460 J	1600	1500	7800	14000	2100 J	2000 J	2100 J	2400 J
C1 Fluorenes	NSL	NSL	µg/kg	920 U	23 J	780 J	610 J	1100 J	3100 J	270 J	280 J	700 J	690 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2300 J	770 J	3300 J	3100 J	15000 J	32000 J	3500 J	3600 J	4000 J	4700 J
C1-Naphthalenes	NSL	NSL	µg/kg	180 J	97 J	1800 J	2300 J	3500 J	12000 J	570 J	540 J	1400 J	1400 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1200 J	380 J	5300 J	5600 J	18000 J	42000 J	3100 J	3000 J	5400 J	6600 J
C2 Chrysenes	NSL	NSL	µg/kg	750 J	270 J	1400 J	1900 J	7100 J	10000 J	1300 J	1400 J	1800 J	2000 J
C2 Fluorenes	NSL	NSL	µg/kg	920 U	37 J	1800 J	1300 J	1700 J	3000 J	590 J	620 J	1500 J	1800 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1100 J	410 J	2100 J	2800 J	9600 J	14000 J	2000 J	2000 J	2600 J	3300 J
C2-Naphthalenes	NSL	NSL	µg/kg	420 J	240 J	15000 J	13000 J	10000 J	28000 J	3500 J	3500 J	12000 J	9800 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	610 J	230 J	5000 J	5000 J	13000 J	18000 J	2400 J	2400 J	5200 J	6700 J
C3 Chrysenes	NSL	NSL	µg/kg	200 J	120 J	680 J	980 J	3500 J	4300 J	520 J	560 J	850 J	880 J
C3 Fluorenes	NSL	NSL	µg/kg	120 J	80 J	3200 J	2500 J	4100 J	3600 J	1100 J	1100 J	2900 J	3800 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	490 J	210 J	1400 J	1800 J	6100 J	7400 J	1100 J	1200 J	1800 J	2200 J
C3-Naphthalenes	NSL	NSL	µg/kg	400 J	210 J	22000 J	15000 J	12000 J	21000 J	5800 J	5800 J	20000 J	16000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	430 J	200 J	4500 J	4900 J	14000 J	13000 J	2100 J	2200 J	5300 J	7100 J
C4 Chrysenes	NSL	NSL	µg/kg	100 J	48 J	410 J	540 J	1800 J	2100 J	250 J	260 J	470 J	550 J
C4-Naphthalenes	NSL	NSL	µg/kg	190 J	130 J	13000 J	7800 J	7200 J	8200 J	3400 J	3400 J	11000 J	12000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	280 J	170 J	3100 J	3200 J	9600 J	8500 J	1500 J	1600 J	3500 J	4200 J
Chrysene [a]	166	1290	µg/kg	**2300**	**820**	**2300**	**1600**	**7700**	**15000**	**3400**	**3400**	**3300**	**3400**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**340 J**	**160 J**	**370 J**	**240 J**	**1100 J**	**1600 J**	**530 J**	**420 J**	**350 J**	**610 J**
Fluoranthene [a]	423	2230	µg/kg	**5000**	**1200**	**4600**	**2700**	**13000**	**27000**	**6000**	**5700**	**6400**	**6000**
Fluorene [a]	77.4	536	µg/kg	**170 J**	**81 J**	**850**	**750**	**2200**	**7100**	**610 J**	**550 J**	**1100**	**780 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1100	520	1200	690	2900	4400	1600	1500	1300	1900
Naphthalene [a]	176	561	µg/kg	920 U	**270**	**1600**	**1200**	**4200**	**5700**	870 U	870 U	830 U	**1500**
Perylene	NSL	NSL	µg/kg	750 J	240	550 J	460 J	1400 J	2300 J	910	1000	690 J	800 J
Phenanthrene [a]	204	1170	µg/kg	**1900**	**590**	**3600**	**3000**	**11000**	**39000**	**3500**	**3300**	**4900**	**4300**
Pyrene [a]	195	1520	µg/kg	**3500**	**990 J**	**3500**	**2600**	**11000**	**27000**	**4100**	**4200**	**4700**	**5300 J**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**26470.0**	**8904.00**	**31080.0**	**22200.0**	**89860.0**	**210200**	**36760.0**	**36550.0**	**38465.0**	**40990.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**34220.0**	**11529.0**	**58410**	**47770.0**	**168860**	**332700**	**54095.0**	**54215.0**	**68555**	**78180**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-14	RREC13-14	RREC13-14	RREC13-15	RREC13-15	RREC13-15	RREC13-16	RREC13-16	RREC13-16	RREC13-16
			Sample Name:	RREC13-14-0305	RREC13-14-0507	RREC13-14-0710	RREC13-15-SURF	RREC13-15-0001	RREC13-15-0103	RREC13-16-SURF	RREC13-16-0001	RREC13-16-0103	RREC13-16-0305
			Sample Depth (ft):	3-5	5-7	7-10	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/5/13	10/29/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1000 J	810 J	440 J	440 J	510 J	200 J	1100 J	100 J	30 J	7.5
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1700	1300	710 J	1000 U	950 U	420 U	1000 J	160 J	42 J	9.2
Acenaphthene [a]	NSL	NSL	µg/kg	600 J	540 J	700 J	580 J	860 J	310 J	740 J	320 J	56 J	2.1 J
Acenaphthylene [a]	NSL	NSL	µg/kg	310 J	240 J	270 J	240 J	200 J	74 J	3400 J	490 U	93 U	4 U
Anthracene [a]	57.2	845	µg/kg	**1700**	**1200**	**2000**	**1700**	**1600**	**620**	**6600**	**640**	**92 J**	5.2
Benzo(a)anthracene [a]	108	1050	µg/kg	**3900**	**3200**	**4700**	**3700**	**3800**	**1200**	**22000**	**1800**	**290**	18
Benzo(a)pyrene [a]	150	1450	µg/kg	**3500**	**2900**	**4000**	**3200**	**3000**	**800**	**22000**	**1800**	**210**	14
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	2900	2700	3700	3000	2900	950	22000	1700	240	17
Benzo(e)pyrene	NSL	NSL	µg/kg	2300	2100	2500	2100	2000	630	14000	1600	210	19
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2100	1900	2200	1400 J	1600	440	10000	1400	190	22
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2700	2100	3300	2800	2500	790	20000	1400	180	9.4
C1 Chrysenes	NSL	NSL	µg/kg	3300 J	2700 J	2800	2500 J	2400 J	770 J	14000 J	3300 J	650 J	60 J
C1 Fluorenes	NSL	NSL	µg/kg	940 J	810 J	510 J	450 J	580 J	180 J	1100 J	310 J	65 J	13 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	6200 J	5000 J	5700 J	4500 J	4700 J	1600 J	28000 J	3200 J	640 J	56 J
C1-Naphthalenes	NSL	NSL	µg/kg	1800 J	1400 J	800 J	840 J	970 J	360 J	1400 J	200 J	55 J	13 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	10000 J	8400 J	6100 J	5000 J	6000 J	1900 J	18000 J	3500 J	790 J	140 J
C2 Chrysenes	NSL	NSL	µg/kg	3400 J	2400 J	2300 J	1800 J	2100 J	630 J	16000 J	3300 J	790 J	91 J
C2 Fluorenes	NSL	NSL	µg/kg	2400 J	1800 J	1000 J	960 J	1200 J	340 J	1800 J	790 J	170 J	32 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4800 J	3700 J	3400 J	2900 J	3100 J	940 J	17000 J	4200 J	890 J	82 J
C2-Naphthalenes	NSL	NSL	µg/kg	12000 J	9900 J	3600 J	2900 J	4100 J	1200 J	8200 J	1700 J	470 J	80 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9800 J	7600 J	5600 J	4900 J	5900 J	1700 J	13000 J	4800 J	1200 J	160 J
C3 Chrysenes	NSL	NSL	µg/kg	1600 J	1200 J	880 J	840 J	990 J	260 J	7700 J	2000 J	450 J	57 J
C3 Fluorenes	NSL	NSL	µg/kg	4400 J	3400 J	2400 J	1900 J	2700 J	650 J	3000 J	2100 J	440 J	69 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3400 J	2600 J	2200 J	1900 J	2200 J	590 J	10000 J	3700 J	800 J	77 J
C3-Naphthalenes	NSL	NSL	µg/kg	20000 J	16000 J	7000 J	6200 J	7900 J	2400 J	10000 J	4600 J	1300 J	240 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9600 J	7300 J	5900 J	5100 J	7300 J	1900 J	12000 J	6900 J	1700 J	210 J
C4 Chrysenes	NSL	NSL	µg/kg	810 J	640 J	520 J	480 J	550 J	120 J	2900 J	1000 J	200 J	24 J
C4-Naphthalenes	NSL	NSL	µg/kg	13000 J	10000 J	6000 J	4800 J	6800 J	1600 J	5500 J	3400 J	1100 J	260 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	5500 J	4500 J	4400 J	3800 J	4900 J	1300 J	7200 J	5100 J	1200 J	150 J
Chrysene [a]	166	1290	µg/kg	**3800**	**3200**	**4400**	**3700**	**3500**	**1200**	**18000**	**2200**	**360**	37
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**550 J**	**440 J**	**600 J**	**410 J**	**450 J**	**110 J**	**2800 J**	**500**	**57 J**	5.4
Fluoranthene [a]	423	2230	µg/kg	**7200**	**5900**	**9200**	**7300**	**7200**	**2500**	**37000**	**2400**	370	20
Fluorene [a]	77.4	536	µg/kg	**1100 J**	**910 J**	**1200 J**	**1000**	**1400**	**550**	**3600 J**	**330 J**	76 J	6.2
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1700	1500	1900	1300	1500	380 J	9400	1200	150	11
Naphthalene [a]	176	561	µg/kg	1100 U	930 U	**1400**	**1700**	**2200**	**720**	4600 U	490 U	93 U	4 U
Perylene	NSL	NSL	µg/kg	960 J	900 J	1200 J	830 J	790 J	190 J	6400	500	76 J	11
Phenanthrene [a]	204	1170	µg/kg	**6300**	**5000**	**6800**	**5300**	**6500**	**2200**	**22000**	**1500**	**280**	25
Pyrene [a]	195	1520	µg/kg	**5900 J**	**5000**	**6600**	**4700**	**5000 J**	**1800**	**24000**	**3200**	**530**	34
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**46510.0**	**38495.0**	**53680.0**	**42530.0**	**44685.0**	**14854.0**	**226840**	**21040.0**	**3216.00**	239.500
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**96910**	**79005**	**88280**	**71570.0**	**80280**	**25034.0**	**330340**	**49680.0**	**9665.0**	1090.30

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-16	RREC13-16	RREC13-16	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17
			Sample Name:	RREC13-16-0507	RREC13-16-0709	RREC13-16-0911	RREC13-17-SURF	RREC13-17-0001	RREC13-17-0103	RREC13-17-0305	RREC13-17-0507	RREC13-17-0709	RREC13-17-0911
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/29/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	14	10	8	120 J	370 U	660 U	1500 U	3700	1100 U	1800 U
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	19	14	11	190 J	370 U	660 U	1600	4000	1000 J	2000
Acenaphthene [a]	NSL	NSL	µg/kg	4.3 J	3 U	4 U	76 J	160 J	370 J	1100 J	2000 J	440 J	580 J
Acenaphthylene [a]	NSL	NSL	µg/kg	8 U	3 U	1.6 J	47 J	370 U	660 U	1500 U	2300 U	1100 U	1800 U
Anthracene [a]	57.2	845	µg/kg	11	3 U	1.7 J	**230 J**	**430**	**920**	**3200**	**9200**	**1400**	**1800**
Benzo(a)anthracene [a]	108	1050	µg/kg	25	3 U	3.1 J	**1100**	**1400**	**2500**	**4700**	**6300**	**3600**	**4700**
Benzo(a)pyrene [a]	150	1450	µg/kg	19	2 J	1.8 J	**1200**	**1500**	**1900**	**3000**	**4100**	**2600**	**3000**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	25	5	5.7	1300	1500	1900	3300	4200	2300	2500
Benzo(e)pyrene	NSL	NSL	µg/kg	26	8.1	9.9	880	1200	1600	2500	3600	2300	3500
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	25	14	4.6	610	1000	1200	1800	2300 U	1400	1800 U
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	13	3 U	4 U	1100	1300	1800	2600	3800	2300	2100
C1 Chrysenes	NSL	NSL	µg/kg	83 J	34 J	28 J	820 J	1600 J	3600 J	6200 J	9100 J	6200 J	11000 J
C1 Fluorenes	NSL	NSL	µg/kg	21 J	18 J	15 J	54 J	120 J	480 J	1100 J	2300 J	610 J	1200 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	73 J	26 J	36 J	1300 J	1700 J	4200 J	7800 J	13000 J	7000 J	13000 J
C1-Naphthalenes	NSL	NSL	µg/kg	24 J	19 J	14 J	200 J	200 J	320 J	2100 J	5400 J	1300 J	2500 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	230 J	180 J	110 J	700 J	1200 J	4200 J	9900 J	18000 J	7600 J	16000 J
C2 Chrysenes	NSL	NSL	µg/kg	130 J	63 J	100 J	810 J	1700 J	4600 J	7400 J	10000 J	6500 J	12000 J
C2 Fluorenes	NSL	NSL	µg/kg	47 J	37 J	29 J	93 J	290 J	1400 J	2700 J	4200 J	1400 J	2800 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	110 J	47 J	59 J	890 J	1800 J	4900 J	8600 J	12000 J	7300 J	13000 J
C2-Naphthalenes	NSL	NSL	µg/kg	150 J	95 J	78 J	710 J	880 J	3100 J	13000 J	35000 J	6300 J	12000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	250 J	160 J	110 J	650 J	1900 J	7900 J	17000 J	21000 J	10000 J	17000 J
C3 Chrysenes	NSL	NSL	µg/kg	72 J	40 J	55 J	450 J	820 J	2400 J	4800 J	6400 J	3800 J	6400 J
C3 Fluorenes	NSL	NSL	µg/kg	100 J	69 J	47 J	240 J	810 J	3600 J	6900 J	8800 J	3700 J	5600 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	120 J	53 J	68 J	650 J	1400 J	4100 J	8000 J	9800 J	5300 J	9300 J
C3-Naphthalenes	NSL	NSL	µg/kg	430 J	280 J	270 J	830 J	1400 J	7800 J	19000 J	40000 J	7700 J	13000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	270 J	100 J	210 J	950 J	2500 J	11000 J	21000 J	22000 J	12000 J	16000 J
C4 Chrysenes	NSL	NSL	µg/kg	32 J	18 J	26 J	180 J	460 J	1500 J	2800 J	3500 J	2100 J	3400 J
C4-Naphthalenes	NSL	NSL	µg/kg	430 J	350 J	340 J	560 J	1400 J	8500 J	16000 J	25000 J	6400 J	9800 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	180 J	100 J	140 J	780 J	1800 J	8300 J	14000 J	16000 J	8200 J	11000 J
Chrysene [a]	166	1290	µg/kg	48	20	16	**1200**	**1600**	**2800**	**5000**	**6600**	**3900**	**4700**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	5.5 J	2.2 J	0.59 J	**160 J**	**350 J**	**440 J**	**610 J**	**910 J**	**540 J**	**660 J**
Fluoranthene [a]	423	2230	µg/kg	34	3 U	4 U	**1600**	**1800**	**3300**	**7300**	**9800**	**4100**	**4200**
Fluorene [a]	77.4	536	µg/kg	7.6 J	2.8 J	4.2	**130 J**	**270 J**	**770**	**2200**	**3800**	1100 U	1800 U
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	12	1.9 J	0.61 J	590	930	1100	1700	2300 U	1200	1800 U
Naphthalene [a]	176	561	µg/kg	8 U	3 U	4 U	290 U	370 U	660 U	**2000**	2300 U	1100 U	1800 U
Perylene	NSL	NSL	µg/kg	13	7.2	6.6	350	410	560 J	890 J	1100 J	610 J	610 J
Phenanthrene [a]	204	1170	µg/kg	48	27	26	**750**	**1200**	**2100**	**6400**	**11000**	**3000**	**5800**
Pyrene [a]	195	1520	µg/kg	50	8.2	7.2	**1500**	**2300**	**4800**	**9400**	**13000**	**6200**	**9900**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	354.400	107.600	92.1000	**11928.0**	**16295.0**	**26890.0**	**56660.0**	**83310.0**	**35630.0**	**46440.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	1545.40	798.90	794.60	**17735.0**	**28040.0**	**69800**	**138850**	**189310**	**88050**	**131150**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-19	RREC13-19	RREC13-20
			Sample Name:	RREC13-18-SURF	RREC13-18-0001	RREC13-18-0103	RREC13-18-0305	RREC13-18-0507	RREC13-18-0709	RREC13-18-0911	RREC13-19-SURF	RREC13-19-0001	RREC13-20-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	0-0.5
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/29/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	130 J	68 J	210 J	710	100 J	21 J	6.1 J	92 J	170 U	51 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	210 J	230 U	1000 U	860	340 U	56 U	23 U	130 J	84 J	82 J
Acenaphthene [a]	NSL	NSL	µg/kg	92 J	110 J	820 J	490 J	180 J	24 J	9.6 J	59 J	96 J	34 J
Acenaphthylene [a]	NSL	NSL	µg/kg	52 J	69 J	160 J	180 J	120 J	16 J	8.8 J	40 J	170 U	21 J
Anthracene [a]	57.2	845	µg/kg	**300 J**	**320**	**2400**	**1100**	**530**	**73**	43	**190**	**210**	**130**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1200**	**1200**	**2900**	**2900**	**1900**	**210**	93	**710**	**610**	**410**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1300**	**1300**	**2200**	**2000**	**1500**	150	73	**700**	**460**	**400**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1300	1400	2100	1800	1300	140	67	670	520	400
Benzo(e)pyrene	NSL	NSL	µg/kg	880	940	1600	1500	1000	110	52	480	420	270
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	590	770	1100	820	650	68	39	300	350	180
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1200	1000	1800	1700	1100	120	55	590	400	370
C1 Chrysenes	NSL	NSL	µg/kg	880 J	920 J	3100 J	4100 J	2700 J	250 J	98 J	600 J	770 J	270 J
C1 Fluorenes	NSL	NSL	µg/kg	60 J	56 J	490 J	430 J	210 J	24 J	12 J	53 J	100 J	30 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1400 J	1400 J	5400 J	6400 J	3900 J	430 J	170 J	970 J	940 J	520 J
C1-Naphthalenes	NSL	NSL	µg/kg	230 J	120 J	320 J	1000 J	170 J	31 J	9.4 J	150 J	100 J	87 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	850 J	860 J	5900 J	6900 J	3600 J	390 J	170 J	660 J	940 J	370 J
C2 Chrysenes	NSL	NSL	µg/kg	900 J	870 J	4000 J	4900 J	2900 J	320 J	140 J	670 J	830 J	250 J
C2 Fluorenes	NSL	NSL	µg/kg	100 J	130 J	1000 J	930 J	520 J	51 J	21 J	100 J	260 J	40 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	880 J	1000 J	4800 J	5600 J	3100 J	330 J	120 J	770 J	920 J	300 J
C2-Naphthalenes	NSL	NSL	µg/kg	760 J	490 J	4100 J	5300 J	1500 J	210 J	71 J	600 J	700 J	320 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	760 J	800 J	6400 J	7100 J	3900 J	390 J	160 J	630 J	1600 J	280 J
C3 Chrysenes	NSL	NSL	µg/kg	440 J	450 J	2100 J	2500 J	1300 J	160 J	67 J	400 J	500 J	120 J
C3 Fluorenes	NSL	NSL	µg/kg	270 J	330 J	2700 J	2500 J	1400 J	120 J	51 J	230 J	660 J	86 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	670 J	740 J	3900 J	4500 J	2400 J	250 J	94 J	580 J	730 J	190 J
C3-Naphthalenes	NSL	NSL	µg/kg	840 J	640 J	7500 J	6100 J	2500 J	310 J	160 J	860 J	1600 J	460 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	900 J	1000 J	9300 J	8000 J	4200 J	420 J	150 J	770 J	1900 J	310 J
C4 Chrysenes	NSL	NSL	µg/kg	160 J	150 J	1100 J	1200 J	640 J	71 J	31 J	160 J	270 J	47 J
C4-Naphthalenes	NSL	NSL	µg/kg	560 J	480 J	5600 J	4200 J	2500 J	250 J	160 J	660 J	1500 J	360 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	720 J	800 J	6000 J	6000 J	2800 J	300 J	130 J	540 J	1300 J	190 J
Chrysene [a]	166	1290	µg/kg	**1300**	**1200**	**2900**	**2700**	**1800**	**200**	89	**700**	**660**	**410**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**150 J**	**220 J**	**310 J**	**290 J**	**220 J**	19 J	10 J	**91 J**	**120 J**	**49 J**
Fluoranthene [a]	423	2230	µg/kg	**1900**	**2000**	**5600**	**4400**	**2600**	320	170	**890**	**800**	**630**
Fluorene [a]	77.4	536	µg/kg	**150 J**	**160 J**	**1100**	**720**	**210 J**	43 J	23 J	**110 J**	**170**	59 J
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	560	680	940 J	730	560	54 J	30	280	300	170
Naphthalene [a]	176	561	µg/kg	340 U	230 U	1000 U	640 U	340 U	56 U	23 U	170	170 U	120
Perylene	NSL	NSL	µg/kg	370	350	590 J	500 J	360	51 J	29	190	150 J	120
Phenanthrene [a]	204	1170	µg/kg	**850**	**930**	**4800**	**3000**	**1400**	180	78	**510**	**590**	**320**
Pyrene [a]	195	1520	µg/kg	**1500**	**1500**	**4800**	**4100**	**2300**	**300**	140	**790**	**1000**	**550**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**12824.0**	**13089.0**	**34930.0**	**28110.0**	**16710.0**	**1973.00**	951.400	**6930.00**	**6540.00**	**4335.00**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**18924.0**	**19640.0**	**73810**	**67510.0**	**38430.0**	**4231.00**	**1884.90**	**11423.0**	**14726.0**	**6469.00**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-20	RREC13-20	RREC13-20	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21
			Sample Name:	RREC13-20-0001	RREC13-20-0103	RREC13-20-0305	RREC13-21-SURF	RREC13-21-0001	RREC13-21-0001-FD	RREC13-21-0103	RREC13-21-0103-FD	RREC13-21-0305	RREC13-21-0305-FD
			Sample Depth (ft):	0-1	1-3	3-5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5
			Date Sampled:	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	9.9	11	8.6	86 J	99 J	83 J	250 J	370 J	920 J	1100 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	13	14	10	150 J	100 J	310 U	310 U	400 U	1200	1400 U
Acenaphthene [a]	NSL	NSL	µg/kg	3 J	1.4 J	1.7 J	79 J	130 J	100 J	140 J	240 J	640 J	770 J
Acenaphthylene [a]	NSL	NSL	µg/kg	2.2 J	4.1 U	4 U	45 J	310 U	61 J	62 J	77 J	170 J	210 J
Anthracene [a]	57.2	845	µg/kg	4.3	3.2 J	1.9 J	**190 J**	**310**	**150 J**	**230 J**	**300 J**	**770 J**	**900 J**
Benzo(a)anthracene [a]	108	1050	µg/kg	16	7.2	3 J	**880**	**1100**	**800**	**960**	**1200**	**2200**	**2900**
Benzo(a)pyrene [a]	150	1450	µg/kg	15	6.9	3.5 J	**1000**	**1100**	**840**	**830**	**1100**	**1800**	**2300**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	22	11	7.4	1500	1000	1000	900	1200	1900	2400
Benzo(e)pyrene	NSL	NSL	µg/kg	17	13	9.8	930	970	690	670	880	1400	1700
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	11	8.5	7	540	1200 J	390 J	330 J	450	860 J	1000 J
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	16	4.2	1.5 J	1000	920	850	690	1100	1600	2000
C1 Chrysenes	NSL	NSL	µg/kg	31 J	32 J	27 J	930 J	1200 J	860 J	1400 J	1600 J	2200 J	2500 J
C1 Fluorenes	NSL	NSL	µg/kg	15 J	17 J	14 J	77 J	140 J	120 J	290 J	420 J	1100 J	1200 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	42 J	39 J	32 J	1300 J	1500 J	1300 J	2100 J	2900 J	4000 J	5200 J
C1-Naphthalenes	NSL	NSL	µg/kg	17 J	17 J	13 J	160 J	150 J	120 J	290 J	430 J	1500 J	1600 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	150 J	170 J	150 J	880 J	1500 J	1200 J	3200 J	4300 J	9300 J	11000 J
C2 Chrysenes	NSL	NSL	µg/kg	110 J	100 J	95 J	1500 J	1300 J	1400 J	2900 J	3700 J	3800 J	5000 J
C2 Fluorenes	NSL	NSL	µg/kg	27 J	34 J	27 J	180 J	400 J	360 J	980 J	1400 J	2600 J	2900 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	57 J	61 J	55 J	1400 J	1500 J	1400 J	2600 J	3300 J	4300 J	5400 J
C2-Naphthalenes	NSL	NSL	µg/kg	91 J	92 J	83 J	650 J	1100 J	960 J	3300 J	5000 J	15000 J	17000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	120 J	150 J	130 J	1300 J	1900 J	1800 J	4600 J	6700 J	10000 J	13000 J
C3 Chrysenes	NSL	NSL	µg/kg	49 J	60 J	50 J	810 J	740 J	740 J	1500 J	1700 J	2500 J	3200 J
C3 Fluorenes	NSL	NSL	µg/kg	47 J	53 J	48 J	600 J	1100 J	1100 J	2600 J	3800 J	5900 J	6600 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	62 J	69 J	59 J	1300 J	1400 J	1200 J	3200 J	3300 J	4500 J	5600 J
C3-Naphthalenes	NSL	NSL	µg/kg	350 J	370 J	330 J	830 J	2500 J	2200 J	6400 J	9500 J	25000 J	27000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	150 J	120 J	160 J	1600 J	3000 J	2400 J	6900 J	8700 J	11000 J	14000 J
C4 Chrysenes	NSL	NSL	µg/kg	21 J	24 J	22 J	370 J	330 J	210 J	610 J	1000 J	1200 J	1700 J
C4-Naphthalenes	NSL	NSL	µg/kg	310 J	390 J	320 J	1000 J	2100 J	1900 J	5500 J	7800 J	17000 J	18000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	100 J	110 J	100 J	1600 J	2400 J	1700 J	5000 J	6500 J	7700 J	9600 J
Chrysene [a]	166	1290	µg/kg	29	23	20	**1000**	**1300**	**920**	**1200**	**1500**	**2300**	**2900**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	1.7 J	1.1 J	0.8 J	**130 J**	**370 J**	**100 J**	**79 J**	**110 J**	**210 J**	**250 J**
Fluoranthene [a]	423	2230	µg/kg	23	8.6	4.2	**1700**	**1500**	**1600**	**1700**	**2400**	**6600**	**9900**
Fluorene [a]	77.4	536	µg/kg	5.6	4.4	3.8 J	**98 J**	**180 J**	**150 J**	**270 J**	**320 J**	**1200**	**1400 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	4.9	2.3 J	1.2 J	480	1000	380	310	410	750 J	860 J
Naphthalene [a]	176	561	µg/kg	11	8	4 U	300 U	310 U	310 U	310 U	400 U	1200 U	1400 U
Perylene	NSL	NSL	µg/kg	10	9	7.9	370	340	320	380	510	690 J	840 J
Phenanthrene [a]	204	1170	µg/kg	32	36	33	**680**	**1000**	**760**	**1100**	**1400**	**5900**	**7200**
Pyrene [a]	195	1520	µg/kg	21	12	8.5	**1300**	**2200**	**1300**	**1800**	**2300**	**4900**	**6800**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	230.700	153.850	111.500	**10922.0**	**13720.0**	**9711.00**	**10911.0**	**14507.0**	**33600.0**	**43190.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	895.70	854.85	780.20	**19609.0**	**26870.0**	**20546.0**	**37476.0**	**50417.0**	**86090**	**108530**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
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Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-22	RREC13-22	RREC13-22	RREC13-22
			Sample Name:	RREC13-21-0507	RREC13-21-0507-FD	RREC13-21-0709	RREC13-21-0709-FD	RREC13-21-0911	RREC13-21-0911-FD	RREC13-22-SURF	RREC13-22-0001	RREC13-22-0103	RREC13-22-0305
			Sample Depth (ft):	5-7	5-7	7-9	7-9	9-11	9-11	0-0.5	0-1	1-3	3-5
			Date Sampled:	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	550 J	630 J	270 J	180 J	21	17	82 J	86 J	140 J	450 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1100 U	850 U	460 U	340 U	31	23	150 J	130 J	160 J	530 J
Acenaphthene [a]	NSL	NSL	µg/kg	440 J	480 J	190 J	120 J	4.4 J	5.6 J	100 J	150 J	280 J	370 J
Acenaphthylene [a]	NSL	NSL	µg/kg	150 J	130 J	59 J	39 J	6.9 U	2.1 J	67 J	65 J	110 J	130 J
Anthracene [a]	57.2	845	µg/kg	**700 J**	**700 J**	**480**	**320 J**	8.2	13 J	**360**	**430 J**	**570**	**560 J**
Benzo(a)anthracene [a]	108	1050	µg/kg	**2900**	**2700**	**1500**	**950**	24	35	**1400**	**1700**	**2300**	**1900**
Benzo(a)pyrene [a]	150	1450	µg/kg	**2400**	**2300**	**1100**	**710**	18	26	**1500**	**1700**	**2300**	**1500**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	2600	2300	1200	790	23	31	1500	1600	2100	1700
Benzo(e)pyrene	NSL	NSL	µg/kg	1800	1700	820	520	22	25	980	1200	1600	1200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1200 J	1100	470 J	330 J	15	19	660	940	1000	660
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2100	2100	990	650	16	24	1300	1600	2100	1300
C1 Chrysenes	NSL	NSL	µg/kg	2600 J	2700 J	1600 J	1100 J	47 J	57 J	900 J	1100 J	2000 J	2200 J
C1 Fluorenes	NSL	NSL	µg/kg	670 J	830 J	280 J	190 J	20 J	20 J	77 J	84 J	370 J	790 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5000 J	5300 J	2900 J	1800 J	69 J	88 J	1700 J	1800 J	3300 J	3800 J
C1-Naphthalenes	NSL	NSL	µg/kg	730 J	790 J	440 J	290 J	34 J	26 J	160 J	150 J	220 J	690 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	7100 J	8300 J	3300 J	2200 J	220 J	220 J	1000 J	1200 J	4300 J	9000 J
C2 Chrysenes	NSL	NSL	µg/kg	4100 J	4600 J	2500 J	1600 J	130 J	120 J	840 J	1100 J	2500 J	3700 J
C2 Fluorenes	NSL	NSL	µg/kg	1800 J	2000 J	650 J	430 J	41 J	41 J	160 J	190 J	1200 J	2600 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4700 J	5500 J	2600 J	1700 J	87 J	100 J	980 J	1200 J	2700 J	4100 J
C2-Naphthalenes	NSL	NSL	µg/kg	7400 J	9300 J	2700 J	1800 J	180 J	190 J	580 J	600 J	2500 J	7000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8300 J	10000 J	4100 J	2800 J	200 J	220 J	970 J	1100 J	5200 J	12000 J
C3 Chrysenes	NSL	NSL	µg/kg	2100 J	2400 J	1300 J	850 J	63 J	57 J	430 J	470 J	1200 J	2100 J
C3 Fluorenes	NSL	NSL	µg/kg	3900 J	5000 J	1500 J	1100 J	74 J	89 J	410 J	600 J	3100 J	6200 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3800 J	4500 J	2100 J	1400 J	92 J	97 J	730 J	830 J	2300 J	4000 J
C3-Naphthalenes	NSL	NSL	µg/kg	14000 J	17000 J	5600 J	3700 J	520 J	460 J	790 J	950 J	7000 J	17000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	10000 J	12000 J	5100 J	3100 J	230 J	250 J	1200 J	1400 J	5400 J	12000 J
C4 Chrysenes	NSL	NSL	µg/kg	1000 J	1100 J	530 J	390 J	27 J	28 J	150 J	190 J	630 J	1100 J
C4-Naphthalenes	NSL	NSL	µg/kg	11000 J	13000 J	4100 J	2900 J	450 J	450 J	820 J	980 J	6300 J	15000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	6700 J	7800 J	3200 J	1900 J	140 J	150 J	920 J	1000 J	3900 J	8100 J
Chrysene [a]	166	1290	µg/kg	**2800**	**2900**	**1500**	**950**	36	48	**1400**	**1700**	**2200**	**2100**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**300 J**	**270 J**	**140 J**	**100 J**	2.5 J	3.7 J	**170 J**	**240 J**	**310 J**	**180 J**
Fluoranthene [a]	423	2230	µg/kg	**6800**	**6500**	**2900**	**1900**	43	70	**2100**	**2600**	**3900**	**4000**
Fluorene [a]	77.4	536	µg/kg	**830 J**	**670 J**	**370 J**	**220 J**	13	10 J	**150 J**	**180 J**	**420 J**	**450 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1100 J	960	440 J	290 J	6 J	12 J	640	860	960	620 J
Naphthalene [a]	176	561	µg/kg	1100 U	850 U	460 U	340 U	11	13 U	320 U	450 U	510 U	650 U
Perylene	NSL	NSL	µg/kg	810 J	750 J	330 J	210 J	14	16	430	500	710	570 J
Phenanthrene [a]	204	1170	µg/kg	**4000**	**3900**	**1600**	**1000**	60	66	**970**	**1300**	**2000**	**2400**
Pyrene [a]	195	1520	µg/kg	**5400**	**5400**	**2300**	**1500**	37	60	**1800**	**2000**	**3000**	**3100**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**34820.0**	**33260.0**	**15699.0**	**10209.0**	351.550	454.900	**14427.0**	**17420.0**	**23965.0**	**21825.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**80350**	**86515**	**37649.0**	**24289.0**	1350.55	1550.90	**22124.0**	**26364.0**	**52885.0**	**77555**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-22	RREC13-22	RREC13-22	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23
			Sample Name:	RREC13-22-0507	RREC13-22-0709	RREC13-22-0911	RREC13-23-SURF	RREC13-23-0001	RREC13-23-0103	RREC13-23-0305	RREC13-23-0507	RREC13-23-0709	RREC13-23-0911
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	11/1/13	11/1/13	11/1/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	490 J	270 J	400 J	230 J	380	970	1000	1600	1400 U	1400 U
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	750	300 J	320 J	370 J	540	1500	1500	2600	1400 U	1400 U
Acenaphthene [a]	NSL	NSL	µg/kg	260 J	340 J	480 J	310 J	320 J	630 J	650 J	2200	590 J	760 J
Acenaphthylene [a]	NSL	NSL	µg/kg	120 J	100 J	110 J	160 J	370 U	790 U	970 U	1100 U	1400 U	1400 U
Anthracene [a]	57.2	845	µg/kg	**510 J**	**800 J**	**1600**	**1100**	**550**	**980**	**1300**	**1800**	**2000**	**2300**
Benzo(a)anthracene [a]	108	1050	µg/kg	**2000**	**2900**	**2500**	**3300**	**1900**	**2800**	**3000**	**3300**	**3800**	**4500**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1700**	**2300**	**1700**	**3000**	**1900**	**2200**	**2500**	**2500**	**3200**	**3800**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1600	2100	1200	2800	2100	2200	2200	2300	2700	3300
Benzo(e)pyrene	NSL	NSL	µg/kg	1300	1600	1100	2100	1600	1900	2100	2100	2400	2800
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	780	1000	700	1400	1700	2000	2100	1900	2200	2700
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1500	2300	1300	3000	1300	1700	1900	2400	2900	2800
C1 Chrysenes	NSL	NSL	µg/kg	2900 J	2400 J	2600 J	2200 J	2000 J	3500 J	4000 J	3800 J	3700 J	3800 J
C1 Fluorenes	NSL	NSL	µg/kg	910 J	450 J	450 J	220 J	390 J	1100 J	1100 J	1000 J	670 J	810 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4700 J	4700 J	5200 J	4100 J	2600 J	4400 J	4700 J	5200 J	4800 J	5500 J
C1-Naphthalenes	NSL	NSL	µg/kg	830 J	380 J	500 J	400 J	680 J	1800 J	1800 J	3100 J	1000 J	1300 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	11000 J	5400 J	6500 J	3200 J	3700 J	9500 J	10000 J	9700 J	7800 J	8400 J
C2 Chrysenes	NSL	NSL	µg/kg	4800 J	2800 J	2300 J	2100 J	1700 J	3500 J	4100 J	4000 J	3600 J	3700 J
C2 Fluorenes	NSL	NSL	µg/kg	2900 J	1100 J	620 J	520 J	960 J	3300 J	3100 J	2500 J	1800 J	1800 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5300 J	3700 J	2900 J	2500 J	2100 J	4800 J	5000 J	4700 J	4200 J	4200 J
C2-Naphthalenes	NSL	NSL	µg/kg	8900 J	3400 J	4400 J	1900 J	3900 J	12000 J	13000 J	11000 J	5900 J	6700 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14000 J	6400 J	4100 J	2900 J	4200 J	12000 J	12000 J	11000 J	10000 J	10000 J
C3 Chrysenes	NSL	NSL	µg/kg	2500 J	1300 J	1100 J	790 J	820 J	2100 J	2200 J	2000 J	1700 J	1700 J
C3 Fluorenes	NSL	NSL	µg/kg	6500 J	2800 J	1100 J	1200 J	2100 J	7800 J	7100 J	5100 J	4400 J	4400 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4900 J	2600 J	1800 J	1600 J	1600 J	4000 J	4000 J	3500 J	3700 J	3600 J
C3-Naphthalenes	NSL	NSL	µg/kg	20000 J	7300 J	4400 J	3000 J	6200 J	22000 J	22000 J	18000 J	12000 J	13000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14000 J	7300 J	4100 J	3200 J	3900 J	14000 J	12000 J	9900 J	10000 J	9900 J
C4 Chrysenes	NSL	NSL	µg/kg	1100 J	580 J	520 J	300 J	400 J	1200 J	1100 J	1000 J	950 J	950 J
C4-Naphthalenes	NSL	NSL	µg/kg	16000 J	6800 J	2500 J	2400 J	4800 J	18000 J	16000 J	13000 J	11000 J	11000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8000 J	5200 J	2600 J	2200 J	2700 J	8900 J	7800 J	6600 J	6900 J	6700 J
Chrysene [a]	166	1290	µg/kg	**2000**	**2900**	**2300**	**3100**	**2100**	**3100**	**3300**	**3700**	**4000**	**4600**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**230 J**	**310 J**	**210 J**	**380 J**	**590**	**630 J**	**680 J**	**570 J**	**620 J**	**780 J**
Fluoranthene [a]	423	2230	µg/kg	**3900**	**5300**	**3900**	**5400**	**2900**	**4300**	**4400**	**5200**	**6700**	**8200**
Fluorene [a]	77.4	536	µg/kg	**430 J**	**760 J**	**730**	**470 J**	**480**	**1000**	**980**	**2400**	**1600**	**2600**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	700	970	610 J	1200	1600	1700	1700	1600	2000	2400
Naphthalene [a]	176	561	µg/kg	640 U	940 U	680 U	660 U	**780**	**2000**	**1300**	**1400**	1400 U	1400 U
Perylene	NSL	NSL	µg/kg	560 J	690 J	390 J	830	530	720 J	730 J	750 J	970 J	1100 J
Phenanthrene [a]	204	1170	µg/kg	**2500**	**3100**	**4000**	**2700**	**2400**	**4300**	**4700**	**6200**	**6100**	**6700**
Pyrene [a]	195	1520	µg/kg	**3400**	**4300**	**4300**	**4100**	**3600**	**5800**	**5700**	**6200**	**7000**	**8300**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**22700.0**	**30250.0**	**26300.0**	**33120.0**	**24945.0**	**37235.0**	**38395.0**	**46820.0**	**47510.0**	**55840.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**85820**	**65590.0**	**52140.0**	**53220.0**	**47085.0**	**99355**	**97525**	**98070**	**96550**	**106550**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-24	RREC13-24	RREC13-24	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-26
			Sample Name:	RREC13-24-SURF	RREC13-24-0001	RREC13-24-0103	RREC13-25-SURF	RREC13-25-0001	RREC13-25-0103	RREC13-25-0305	RREC13-25-0507	RREC13-25-0710	RREC13-26-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5
			Date Sampled:	10/30/13	11/4/13	11/4/13	10/30/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1300 U	92 J	42 J	310 U	490 J	630 J	530 J	850	580 J	200 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1300 U	500 U	210 U	310 U	1300 U	1000 U	700	1400	930 U	1300 U
Acenaphthene [a]	NSL	NSL	µg/kg	940 J	1200	350	120 J	800 J	670 J	520 J	400 J	480 J	660 J
Acenaphthylene [a]	NSL	NSL	µg/kg	1300 U	41 J	27 J	310 U	450 J	470 J	230 J	250 J	250 J	120 J
Anthracene [a]	57.2	845	µg/kg	**2300**	**970**	**320**	**390**	**2100**	**1500**	**850**	**1100**	**4600**	**1100 J**
Benzo(a)anthracene [a]	108	1050	µg/kg	**3500**	**1300**	**480**	**1400**	**5700**	**5200**	**2600**	**2600**	**3900**	**4100**
Benzo(a)pyrene [a]	150	1450	µg/kg	**2600**	**870**	**290**	**1300**	**5100**	**4600**	**2300**	**2100**	**3000**	**3600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1900	860	320	1100	4000	3500	2000	1800	2300	3800
Benzo(e)pyrene	NSL	NSL	µg/kg	1600	550	220	910	3100	2900	1500	1500	1900	2500
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1300 U	360 J	150 J	630	2300	1900	910	780	1200	1900
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2400	770	320	1300	3800	3800	1700	1900	2500	3100
C1 Chrysenes	NSL	NSL	µg/kg	2100 J	670 J	280 J	780 J	3900 J	3500 J	2300 J	4000 J	3500 J	2300 J
C1 Fluorenes	NSL	NSL	µg/kg	320 J	140 J	50 J	57 J	740 J	970 J	770 J	1400 J	1000 J	250 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4700 J	1700 J	650 J	1500 J	7800 J	7700 J	4900 J	6000 J	7000 J	4100 J
C1-Naphthalenes	NSL	NSL	µg/kg	600 J	110 J	60 J	130 J	740 J	1100 J	870 J	1500 J	1000 J	320 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	4800 J	1800 J	630 J	910 J	9500 J	11000 J	8400 J	15000 J	12000 J	3300 J
C2 Chrysenes	NSL	NSL	µg/kg	1300 J	440 J	210 J	510 J	2500 J	3300 J	2100 J	5200 J	3600 J	1500 J
C2 Fluorenes	NSL	NSL	µg/kg	350 J	110 J	44 J	78 J	2000 J	2700 J	2100 J	4000 J	2700 J	520 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1900 J	640 J	290 J	750 J	4500 J	4900 J	3500 J	6700 J	5300 J	2700 J
C2-Naphthalenes	NSL	NSL	µg/kg	2200 J	670 J	320 J	360 J	5000 J	7800 J	6800 J	13000 J	9100 J	1400 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	2200 J	710 J	300 J	570 J	9000 J	11000 J	8000 J	16000 J	12000 J	2600 J
C3 Chrysenes	NSL	NSL	µg/kg	460 J	150 J	75 J	210 J	1000 J	1200 J	950 J	2600 J	1600 J	670 J
C3 Fluorenes	NSL	NSL	µg/kg	440 J	130 J	68 J	140 J	4200 J	5000 J	4000 J	7300 J	4900 J	1100 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	850 J	260 J	140 J	340 J	2700 J	3200 J	2300 J	5300 J	3500 J	1500 J
C3-Naphthalenes	NSL	NSL	µg/kg	2400 J	830 J	370 J	450 J	13000 J	19000 J	16000 J	30000 J	23000 J	3800 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1500 J	440 J	230 J	430 J	7700 J	9500 J	7500 J	14000 J	11000 J	2500 J
C4 Chrysenes	NSL	NSL	µg/kg	210 J	57 J	41 J	56 J	500 J	640 J	520 J	1000 J	710 J	280 J
C4-Naphthalenes	NSL	NSL	µg/kg	970 J	260 J	150 J	240 J	9200 J	13000 J	11000 J	19000 J	15000 J	2500 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	790 J	240 J	160 J	270 J	4700 J	6200 J	5100 J	8700 J	6000 J	1700 J
Chrysene [a]	166	1290	µg/kg	**3100**	**1100**	**450**	**1300**	**5400**	**4900**	**2700**	**3000**	**3600**	**4200**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**310 J**	**100 J**	**42 J**	**150 J**	**610 J**	**510 J**	**240 J**	**200 J**	**320 J**	**460 J**
Fluoranthene [a]	423	2230	µg/kg	**8000**	**3700**	**1200**	**2400**	**11000**	**8900**	**4700**	**4900**	**7600**	**8600**
Fluorene [a]	77.4	536	µg/kg	**1600**	**1300**	**230**	**170 J**	**1100 J**	**820 J**	**600 J**	**650**	**1200**	**660 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	970 J	340 J	140 J	540	1900	1700	770	700	1000	1600
Naphthalene [a]	176	561	µg/kg	1300 U	500 U	210 U	310 U	1300 U	**1400**	**1100**	**1500**	**1100**	1300 U
Perylene	NSL	NSL	µg/kg	630 J	280 J	110 J	310	1300	1300	610 J	490 J	800 J	1000 J
Phenanthrene [a]	204	1170	µg/kg	**7000**	**4300**	**1200**	**1100**	**6600**	**5600**	**3700**	**4400**	**6800**	**5200**
Pyrene [a]	195	1520	µg/kg	**5200**	**2300**	**820**	**1800**	**7900**	**7400**	**4200**	**3900**	**6400**	**6000**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**42420.0**	**20011.0**	**6549.00**	**14165.0**	**60060.0**	**53370.0**	**29820.0**	**31580.0**	**46715.0**	**46400.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**59100.0**	**25861.0**	**8906.0**	**19185.0**	**109450**	**111140**	**72000**	**104570**	**105550**	**65320.0**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-26	RREC13-26	RREC13-26	RREC13-26	RREC13-27	RREC13-27	RREC13-27	RREC13-27	RREC13-27	RREC13-27
			Sample Name:	RREC13-26-0001	RREC13-26-0103	RREC13-26-0305	RREC13-26-0507	RREC13-27-SURF	RREC13-27-0001	RREC13-27-0103	RREC13-27-0305	RREC13-27-0507	RREC13-27-0710
			Sample Depth (ft):	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	3-5	5-7	7-10
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	810 J	960	1100	680 J	110 J	2400	2300	4200	2200	2200
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1300 U	1300	1300	930	380 U	3000	2900	5800	2900	3200
Acenaphthene [a]	NSL	NSL	µg/kg	1100 J	740 J	480 J	400 J	140 J	430 J	490 J	1300 J	1200 J	1500
Acenaphthylene [a]	NSL	NSL	µg/kg	320 J	260 J	200 J	240 J	80 J	230 J	300 J	320 J	290 J	410 J
Anthracene [a]	57.2	845	µg/kg	**1400**	**1100**	**1300**	**1100**	**430**	**710**	**1000 J**	**2100**	**2400**	**2700**
Benzo(a)anthracene [a]	108	1050	µg/kg	**4600**	**4000**	**3400**	**2900**	**2000**	**2200**	**3000**	**4200**	**4600**	**5200**
Benzo(a)pyrene [a]	150	1450	µg/kg	**3700**	**3100**	**2600**	**2300**	**1900**	**1700**	**2300**	**2700**	**3000**	**3600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	3000	3400	2600	2200	2000	1700	2400	2700	2800	3900
Benzo(e)pyrene	NSL	NSL	µg/kg	2800	2400	1800	1600	1400	1300	1600	2100	2200	2400
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2600	1400	1500	1000 J	1100	800	1100	1200 J	1300 J	1400
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	3400	2800	2000	2000	1800	1600	1900	2700	2800	3000
C1 Chrysenes	NSL	NSL	µg/kg	3600 J	3900 J	2500 J	2100 J	1300 J	2600 J	2700 J	5100 J	4000 J	4100 J
C1 Fluorenes	NSL	NSL	µg/kg	640 J	990 J	640 J	510 J	82 J	1100 J	1100 J	1900 J	1200 J	1500 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	7000 J	7400 J	5500 J	4500 J	2200 J	5300 J	5800 J	10000 J	8300 J	8200 J
C1-Naphthalenes	NSL	NSL	µg/kg	1200 J	1600 J	1600 J	1100 J	200 J	3700 J	3600 J	6700 J	3400 J	3700 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8300 J	12000 J	6400 J	5700 J	1500 J	11000 J	11000 J	19000 J	13000 J	15000 J
C2 Chrysenes	NSL	NSL	µg/kg	2800 J	4600 J	2300 J	2000 J	860 J	3600 J	2900 J	6300 J	4000 J	3600 J
C2 Fluorenes	NSL	NSL	µg/kg	1500 J	2700 J	1400 J	1100 J	180 J	3600 J	3200 J	4900 J	3300 J	3600 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4500 J	5900 J	3800 J	3200 J	1500 J	5300 J	4900 J	9800 J	6400 J	5700 J
C2-Naphthalenes	NSL	NSL	µg/kg	5500 J	8500 J	6800 J	4500 J	670 J	16000 J	17000 J	32000 J	16000 J	14000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	7600 J	12000 J	6700 J	6200 J	1100 J	14000 J	12000 J	19000 J	14000 J	16000 J
C3 Chrysenes	NSL	NSL	µg/kg	1200 J	2000 J	960 J	900 J	280 J	1800 J	1700 J	3200 J	1800 J	1800 J
C3 Fluorenes	NSL	NSL	µg/kg	3100 J	5600 J	2900 J	2700 J	270 J	7500 J	6800 J	9700 J	6600 J	7200 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3100 J	4500 J	2700 J	2200 J	750 J	4100 J	4400 J	7100 J	4800 J	4500 J
C3-Naphthalenes	NSL	NSL	µg/kg	11000 J	21000 J	9800 J	8500 J	1000 J	23000 J	26000 J	42000 J	22000 J	23000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	7200 J	13000 J	8900 J	7200 J	970 J	14000 J	14000 J	22000 J	14000 J	15000 J
C4 Chrysenes	NSL	NSL	µg/kg	570 J	1000 J	560 J	500 J	130 J	930 J	880 J	1600 J	900 J	1100 J
C4-Naphthalenes	NSL	NSL	µg/kg	8200 J	15000 J	7600 J	6100 J	650 J	15000 J	16000 J	21000 J	13000 J	16000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	4700 J	7800 J	5800 J	4900 J	680 J	10000 J	9600 J	15000 J	9600 J	10000 J
Chrysene [a]	166	1290	µg/kg	**4400**	**4300**	**3200**	**3000**	**2300**	**2500**	**2900**	**4400**	**4700**	**5000**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**620 J**	**360 J**	**430 J**	**250 J**	**320 J**	**200 J**	**280 J**	**310 J**	**350 J**	**420 J**
Fluoranthene [a]	423	2230	µg/kg	**7800**	**6700**	**6000**	**5800**	**3800**	**4200**	**6100**	**8700**	**11000**	**12000**
Fluorene [a]	77.4	536	µg/kg	**940 J**	**840 J**	**1100**	**920**	**220 J**	**600**	**1000 J**	**2800**	**2100**	**3200**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	2100	1200	1300	880	930	700	970 J	1100 J	1100 J	1400
Naphthalene [a]	176	561	µg/kg	1300 U	**1700**	**1300**	**1200**	380 U	**670**	**1400**	1900 U	1900 U	**4200**
Perylene	NSL	NSL	µg/kg	970 J	710 J	700 J	720 J	470	670	800 J	650 J	800 J	1000 J
Phenanthrene [a]	204	1170	µg/kg	**5900**	**5600**	**5200**	**4600**	**2300**	**4300**	**5500**	**11000**	**10000**	**11000**
Pyrene [a]	195	1520	µg/kg	**6700 J**	**6000**	**5200 J**	**4400**	**2800**	**3400**	**4700**	**7600**	**7200**	**7200**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**49880.0**	**44800.0**	**39110.0**	**34120.0**	**22500.0**	**28940.0**	**38240.0**	**59880.0**	**58690.0**	**69330.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**93040**	**108100**	**78550**	**68320.0**	**31162.0**	**94410**	**101240**	**158330**	**128790**	**146030**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-29	RREC13-29	RREC13-29
			Sample Name:	RREC13-28-SURF	RREC13-28-0001	RREC13-28-0103	RREC13-28-0305	RREC13-28-0507	RREC13-28-0709	RREC13-28-0911	RREC13-29-SURF	RREC13-29-0001	RREC13-29-0103
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	76 J	2200	1400 U	1100 U	860 U	770 U	870 U	270 J	360	950
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	350 U	2200	1400 U	1100 U	860 U	770 U	870 U	320 U	350	1200
Acenaphthene [a]	NSL	NSL	µg/kg	110 J	600 U	1400 U	1100 U	860 U	770 U	420 J	160 J	120 J	480 J
Acenaphthylene [a]	NSL	NSL	µg/kg	87 J	600 U	1400 U	1100 U	860 U	770 U	870 U	86 J	150 U	860 U
Anthracene [a]	57.2	845	µg/kg	**470**	**630**	**2200**	**2100**	**1900**	**1700**	**1000**	**390**	**110 J**	**1600**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1500**	**1900**	**5000**	**4600**	**4400**	**4000**	**3300**	**1400**	**500**	**3800**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1500**	**1300**	**3900**	**3600**	**3400**	**2900**	**2500**	**1500**	**380**	**2900**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1400	1400	3500	3000	3100	2900	2400	1500	370	2900
Benzo(e)pyrene	NSL	NSL	µg/kg	1000	1300	2800	2600	2600	2300	2000	980	380	2400
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	770	1100	2500	2300	2200	1900	990	730	340	2300
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1400	1200	3200	3100	2900	2200	2100	1200	310	2300
C1 Chrysenes	NSL	NSL	µg/kg	860 J	3400 J	4900 J	4700 J	4800 J	5600 J	4300 J	1200 J	800 J	4100 J
C1 Fluorenes	NSL	NSL	µg/kg	61 J	1300 J	740 J	620 J	470 J	550 J	380 J	240 J	260 J	820 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1700 J	4700 J	6300 J	5900 J	5700 J	5900 J	6700 J	2100 J	1100 J	5700 J
C1-Naphthalenes	NSL	NSL	µg/kg	130 J	3200 J	1200 J	1200 J	830 J	950 J	750 J	330 J	520 J	1600 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1100 J	10000 J	7600 J	7500 J	6100 J	7600 J	7300 J	2900 J	2500 J	8600 J
C2 Chrysenes	NSL	NSL	µg/kg	790 J	3600 J	4500 J	4200 J	4400 J	5300 J	4800 J	1300 J	990 J	3700 J
C2 Fluorenes	NSL	NSL	µg/kg	130 J	3900 J	1600 J	1500 J	1100 J	1300 J	1000 J	730 J	800 J	2400 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	880 J	5500 J	4800 J	4800 J	4700 J	5900 J	5600 J	1600 J	1300 J	5300 J
C2-Naphthalenes	NSL	NSL	µg/kg	580 J	20000 J	6200 J	5500 J	3300 J	4000 J	2900 J	2900 J	3900 J	9400 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	910 J	16000 J	12000 J	11000 J	9000 J	12000 J	9100 J	3200 J	3500 J	11000 J
C3 Chrysenes	NSL	NSL	µg/kg	320 J	1800 J	2000 J	1900 J	2300 J	3000 J	2500 J	540 J	500 J	1900 J
C3 Fluorenes	NSL	NSL	µg/kg	320 J	9600 J	4300 J	4100 J	3400 J	4000 J	3200 J	1700 J	1800 J	5500 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	540 J	4800 J	3900 J	3900 J	3800 J	4900 J	5000 J	1100 J	1200 J	4000 J
C3-Naphthalenes	NSL	NSL	µg/kg	830 J	29000 J	9700 J	7900 J	4600 J	5500 J	5000 J	5100 J	6400 J	14000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	750 J	18000 J	12000 J	12000 J	11000 J	14000 J	12000 J	3000 J	4100 J	12000 J
C4 Chrysenes	NSL	NSL	µg/kg	88 J	1300 J	1200 J	1200 J	1200 J	1600 J	1500 J	240 J	270 J	930 J
C4-Naphthalenes	NSL	NSL	µg/kg	560 J	24000 J	8800 J	6900 J	4300 J	5100 J	3800 J	3700 J	4800 J	11000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	490 J	12000 J	8300 J	9000 J	7900 J	10000 J	8500 J	1800 J	2700 J	8300 J
Chrysene [a]	166	1290	µg/kg	**1400**	**2500**	**5000**	**4800**	**4500**	**4500**	**3300**	**1400**	**630**	**4000**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**220 J**	600 U	1400 U	1100 U	860 U	770 U	**280 J**	**220 J**	**120 J**	**800 J**
Fluoranthene [a]	423	2230	µg/kg	**2300**	**3000**	**8000**	**6900**	**6500**	**5700**	**5100**	**2500**	**640**	**5500**
Fluorene [a]	77.4	536	µg/kg	**170 J**	**980**	1400 U	**1700**	**1500**	**1300**	**720 J**	**180 J**	**190**	**1600**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	690	880	2300	2100	2100	1800	880	670	280	2100
Naphthalene [a]	176	561	µg/kg	350 U	600 U	1400 U	**1500**	**1600**	**1600**	**1200**	320 U	150 U	**1100**
Perylene	NSL	NSL	µg/kg	380	600 U	1400 U	1100 U	890	770 U	570 J	420	140 J	850 J
Phenanthrene [a]	204	1170	µg/kg	**1100**	**3200**	**5800**	**5700**	**4700**	**4200**	**3400**	**1400**	**730**	**4900**
Pyrene [a]	195	1520	µg/kg	**1700**	**4000**	**8500**	**7600**	**7000**	**6500**	**4100**	**1700**	**1000**	**6300**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**15167.0**	**25490.0**	**54100.0**	**51200.0**	**47520.0**	**42740.0**	**32560.0**	**15356.0**	**6220.00**	**44210.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**21833.0**	**100390**	**109740**	**105420**	**95250**	**100390**	**82875**	**32266.0**	**23150.0**	**100580**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-29	RREC13-29	RREC13-29	RREC13-29	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-30
			Sample Name:	RREC13-29-0305	RREC13-29-0507	RREC13-29-0709	RREC13-29-0911	RREC13-30-SURF	RREC13-30-0001	RREC13-30-0001-FD	RREC13-30-0103	RREC13-30-0103-FD	RREC13-30-0305
			Sample Depth (ft):	3-5	5-7	7-9	9-11	0-0.5	0-1	0-1	1-3	1-3	3-5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1100 U	820 U	1800 U	2600 U	410 J	1400	1400	2400	1400	1400
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1200	820 U	1800 U	2900	670 U	2100	2000	3200	2000	1900
Acenaphthene [a]	NSL	NSL	µg/kg	640 J	440 J	1100 J	1500 J	330 J	910 U	830 U	1800	1100	880 J
Acenaphthylene [a]	NSL	NSL	µg/kg	1100 U	820 U	1800 U	2600 U	320 J	910 U	830 U	1400 U	1100 U	1300 U
Anthracene [a]	57.2	845	µg/kg	**2100**	**1400**	**4300**	**7100**	**1200**	910 U	**930**	**2500**	**1300**	**1400**
Benzo(a)anthracene [a]	108	1050	µg/kg	**4600**	**3200**	**9400**	**11000**	**4200**	**2900**	**2900**	**4900**	**3300**	**4100**
Benzo(a)pyrene [a]	150	1450	µg/kg	**3700**	**2500**	**7300**	**8900**	**4000**	**2300**	**2400**	**4100**	**2900**	**3600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	3700	2500	6200	6800	3300	2200	2300	3400	2300	3200
Benzo(e)pyrene	NSL	NSL	µg/kg	2800	1900	5200	6200	2500	2100	2200	3200	2100	2500
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2500	1700	4700	6100	1600 J	1800	2000	3000	1200	1400
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2900	2000	5900	6800	3600	1800	1800	2800	2400	2800
C1 Chrysenes	NSL	NSL	µg/kg	4400 J	3400 J	8200 J	10000 J	3100 J	5500 J	5900 J	6100 J	3100 J	4600 J
C1 Fluorenes	NSL	NSL	µg/kg	940 J	520 J	960 J	1600 J	550 J	2000 J	1900 J	2100 J	1000 J	1300 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	6300 J	4500 J	12000 J	15000 J	5900 J	6200 J	6700 J	8600 J	6400 J	8600 J
C1-Naphthalenes	NSL	NSL	µg/kg	1500 J	940 J	1800 J	3600 J	680 J	2500 J	2400 J	3900 J	2300 J	2300 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9800 J	6800 J	13000 J	19000 J	7500 J	17000 J	17000 J	18000 J	11000 J	15000 J
C2 Chrysenes	NSL	NSL	µg/kg	3900 J	3000 J	6100 J	7200 J	3300 J	6800 J	7500 J	6400 J	3200 J	4700 J
C2 Fluorenes	NSL	NSL	µg/kg	2100 J	1500 J	2000 J	2800 J	1500 J	5600 J	5200 J	4900 J	2500 J	3400 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5400 J	3800 J	7700 J	9200 J	4000 J	8000 J	8700 J	8400 J	5000 J	7300 J
C2-Naphthalenes	NSL	NSL	µg/kg	7400 J	4600 J	8500 J	14000 J	5700 J	22000 J	21000 J	25000 J	12000 J	13000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	13000 J	9500 J	14000 J	19000 J	7400 J	23000 J	23000 J	21000 J	11000 J	16000 J
C3 Chrysenes	NSL	NSL	µg/kg	1800 J	1300 J	3100 J	3000 J	1100 J	3500 J	4100 J	3100 J	1700 J	2700 J
C3 Fluorenes	NSL	NSL	µg/kg	5400 J	3700 J	4500 J	6700 J	3000 J	11000 J	10000 J	9700 J	4500 J	6700 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4000 J	3000 J	4800 J	6700 J	2400 J	6800 J	7000 J	6300 J	3600 J	5700 J
C3-Naphthalenes	NSL	NSL	µg/kg	13000 J	8400 J	13000 J	19000 J	11000 J	39000 J	38000 J	38000 J	22000 J	28000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	13000 J	9900 J	15000 J	20000 J	6800 J	21000 J	22000 J	18000 J	9400 J	15000 J
C4 Chrysenes	NSL	NSL	µg/kg	1100 J	820 J	1400 J	1500 J	490 J	1700 J	2400 J	1700 J	760 J	1100 J
C4-Naphthalenes	NSL	NSL	µg/kg	11000 J	7800 J	9200 J	13000 J	7500 J	30000 J	29000 J	27000 J	13000 J	18000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8900 J	6400 J	10000 J	14000 J	3700 J	12000 J	12000 J	11000 J	5800 J	9600 J
Chrysene [a]	166	1290	µg/kg	**4700**	**3400**	**9300**	**11000**	**3900**	**3600**	**3600**	**5200**	**3400**	**4300**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**880 J**	**600 J**	**1600 J**	**1700 J**	**480 J**	910 U	830 U	1400 U	**280 J**	**360 J**
Fluoranthene [a]	423	2230	µg/kg	**7100**	**4600**	**13000**	**17000**	**6300**	**3700**	**3900**	**7200**	**5800**	**6700**
Fluorene [a]	77.4	536	µg/kg	**3200**	**1500**	**2800**	**4600**	**610 J**	**1200**	**1200**	**2200**	**1000 J**	**930 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	2300	1500	4300	4900	1500	1500	1600	2400	990 J	1200 J
Naphthalene [a]	176	561	µg/kg	**2100**	**1200**	**2000**	**4400**	**780**	**2900**	**2500**	**2500**	**1200**	**1300**
Perylene	NSL	NSL	µg/kg	950 J	630 J	1800 J	2000 J	1000	910 U	830 U	1400 U	780 J	1000 J
Phenanthrene [a]	204	1170	µg/kg	**5900**	**3400**	**11000**	**19000**	**3600**	**5100**	**5100**	**9800**	**6200**	**6000**
Pyrene [a]	195	1520	µg/kg	**7500**	**5100**	**16000**	**22000**	**5300**	**5300**	**5700**	**10000**	**5400**	**6100**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**55570.0**	**35860.0**	**100700**	**137000**	**41355.0**	**38220.0**	**39175.0**	**66400.0**	**41320.0**	**46820.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**117560**	**80800**	**178260**	**240400**	**80870**	**136475**	**137590**	**160400**	**93800**	**124020**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-30	RREC13-30	RREC13-30	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-32	RREC13-32
			Sample Name:	RREC13-30-0305-FD	RREC13-30-0507	RREC13-30-0507-FD	RREC13-31-SURF	RREC13-31-0001	RREC13-31-0103	RREC13-31-0305	RREC13-31-0507	RREC13-32-SURF	RREC13-32-0001
			Sample Depth (ft):	3-5	5-7	5-7	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/31/13	10/31/13	10/31/13	10/31/13	10/30/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1000	1500 U	1900 U	610 U	9.4 U	4.7 U	4.7 U	4.5 U	1100 U	520 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1300	1500 U	1900 U	160 J	4.7 J	1.9 J	2.1 J	1.9 J	300 J	340 J
Acenaphthene [a]	NSL	NSL	µg/kg	970 U	1700	1900 U	210 J	2.8 J	0.9 J	1 J	0.82 J	370 J	840 J
Acenaphthylene [a]	NSL	NSL	µg/kg	970 U	1500 U	1900 U	610 U	9.4 U	4.7 U	4.7 U	4.5 U	1100 U	1900 U
Anthracene [a]	57.2	845	µg/kg	**1700**	**3600**	**3900**	**1000**	11	4.7 U	4.7 U	4.5 U	**1400**	**2900**
Benzo(a)anthracene [a]	108	1050	µg/kg	**3600**	**5600**	**6400**	**2700**	37	4.7 U	4.7	4.5 U	**4000**	**5700**
Benzo(a)pyrene [a]	150	1450	µg/kg	**3100**	**4400**	**5300**	**2400**	33	4.7 U	4.7 U	4.5 U	**3800**	**4700**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	2800	3900	4800	2000	34	4.7	6.5	4.5 U	3600	4600
Benzo(e)pyrene	NSL	NSL	µg/kg	2300	3000	3600	1700	25	4.7 U	6.2	4.5 U	2600	3400
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2100	2900	3700	1700	24	6.1	7.2	5.6	1900	2900
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2000	3300	4000	2000	25	4.7 U	4.7 U	4.5 U	2900	3700
C1 Chrysenes	NSL	NSL	µg/kg	4400 J	4600 J	5300 J	1900 J	39 J	14 J	17 J	14 J	2900 J	4400 J
C1 Fluorenes	NSL	NSL	µg/kg	1100 J	630 J	690 J	120 J	3.9 J	2.3 J	2.4 J	2.2 J	150 J	650 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5800 J	6900 J	7600 J	2800 J	49 J	11 J	14 J	11 J	3800 J	7000 J
C1-Naphthalenes	NSL	NSL	µg/kg	1700 J	1600 J	1600 J	200 J	6.4 J	3.3 J	3.6 J	3.3 J	350 J	620 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	11000 J	7200 J	7800 J	2100 J	45 J	18 J	20 J	18 J	2300 J	8400 J
C2 Chrysenes	NSL	NSL	µg/kg	3600 J	3000 J	3900 J	940 J	41 J	20 J	23 J	18 J	1800 J	3000 J
C2 Fluorenes	NSL	NSL	µg/kg	3100 J	1200 J	1200 J	160 J	6.1 J	4 J	3.8 J	3.5 J	220 J	1500 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5400 J	4200 J	4600 J	1400 J	34 J	14 J	15 J	12 J	2000 J	4100 J
C2-Naphthalenes	NSL	NSL	µg/kg	12000 J	4700 J	5100 J	660 J	22 J	12 J	13 J	13 J	1100 U	3700 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14000 J	8100 J	8900 J	1100 J	43 J	23 J	26 J	23 J	1900 J	7400 J
C3 Chrysenes	NSL	NSL	µg/kg	1700 J	1300 J	1500 J	400 J	13 J	9.5 J	13 J	11 J	500 J	1300 J
C3 Fluorenes	NSL	NSL	µg/kg	6500 J	2900 J	3000 J	160 J	12 J	7 J	7 J	6.5 J	430 J	2900 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3800 J	2900 J	3200 J	610 J	23 J	14 J	16 J	14 J	930 J	2500 J
C3-Naphthalenes	NSL	NSL	µg/kg	22000 J	6400 J	6800 J	610 U	32 J	25 J	36 J	28 J	1100 U	8600 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	11000 J	8200 J	8900 J	770 J	47 J	29 J	24 J	32 J	1300 J	5900 J
C4 Chrysenes	NSL	NSL	µg/kg	840 J	770 J	780 J	610 U	5.9 J	5.1 J	5.8 J	4.1 J	1100 U	1900 U
C4-Naphthalenes	NSL	NSL	µg/kg	17000 J	5100 J	5600 J	300 J	34 J	29 J	33 J	33 J	610 J	6000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	7600 J	5600 J	6600 J	420 J	36 J	23 J	23 J	24 J	630 J	3600 J
Chrysene [a]	166	1290	µg/kg	**3700**	**5300**	**6300**	**2400**	37	7.1	10	6.8	**3700**	**5500**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	970 U	1500 U	1900 U	**610**	7 J	0.79 J	1.2 J	0.71 J	**610 J**	**940 J**
Fluoranthene [a]	423	2230	µg/kg	**5100**	**11000**	**12000**	**4300**	47	4.7 U	6	4.5 U	**5700**	**9600**
Fluorene [a]	77.4	536	µg/kg	**1300**	**2900**	**3200**	610 U	9.4 U	4.7 U	4.7 U	4.5 U	1100 U	**1400 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1800	2600	3200	1500	19	4.7 U	4.7 U	4.5 U	1700	2500
Naphthalene [a]	176	561	µg/kg	**980**	**2800**	**3000**	610 U	15	4.7 U	4.7 U	4.5 U	1100 U	1900 U
Perylene	NSL	NSL	µg/kg	970 U	1500 U	1900 U	640	33	29	28	27	960 J	1300 J
Phenanthrene [a]	204	1170	µg/kg	**5500**	**9900**	**11000**	**2600**	25	4.7 U	5.1	4.8	**3100**	**6600**
Pyrene [a]	195	1520	µg/kg	**6500**	**11000**	**11000**	**4300**	51	4.9	8.2	5	**6100**	**9700**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**42935.0**	**73150.0**	**81600.0**	**28795.0**	381.900	49.8900	68.4500	48.1300	**40830.0**	**63820.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	104520	116880	129890	38605.0	677.200	196.640	220.750	195.680	54820.0	105530

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-32	RREC13-32	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-34
			Sample Name:	RREC13-32-0103	RREC13-32-0305	RREC13-33-SURF	RREC13-33-0001	RREC13-33-0103	RREC13-33-0305	RREC13-33-0507	RREC13-33-0709	RREC13-33-0911	RREC13-34-SURF
			Sample Depth (ft):	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5
			Date Sampled:	11/1/13	11/1/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	140 J	33 J	170 U	150 J	940	2200	2300 J	1000	24 J	670
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	42 J	24 J	83 J	360 U	860 U	2700	3300	1300	92 U	700
Acenaphthene [a]	NSL	NSL	µg/kg	350	57 J	49 J	200 J	470 J	1400 J	1800 J	1200	37 J	390 J
Acenaphthylene [a]	NSL	NSL	µg/kg	330 U	110 U	170 U	75 J	330 J	540 J	610 J	200 J	18 J	600 U
Anthracene [a]	57.2	845	µg/kg	**650**	**200**	170 U	**240 J**	**1300**	**4500**	**6900**	**2400**	**100**	**600**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1100**	**380**	**530**	**1500**	**3800**	**6800**	**13000**	**4600**	**350**	**2200**
Benzo(a)pyrene [a]	150	1450	µg/kg	**820**	**360**	**620**	**1600**	**2700**	**4700**	**10000**	**3500**	**310**	**1800**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	510	270	800	1700	3000	3500	8700	2100	300	2000
Benzo(e)pyrene	NSL	NSL	µg/kg	540	230	530	1200	2100	3100	6100	2200	240	1700
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	400	230	470	710	970	1800 J	3600	1500	130	1800
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	570	260	530	1300	2500	3900	8400	3200	300	1200
C1 Chrysenes	NSL	NSL	µg/kg	1100 J	340 J	640 J	2000 J	4800 J	7400 J	9600 J	4100 J	280 J	3100 J
C1 Fluorenes	NSL	NSL	µg/kg	180 J	34 J	38 J	390 J	1300 J	2000 J	1200 J	600 J	33 J	1300 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1900 J	500 J	670 J	3600 J	9200 J	16000 J	21000 J	9500 J	550 J	4400 J
C1-Naphthalenes	NSL	NSL	µg/kg	130 J	44 J	92 J	200 J	880 J	3500 J	3800 J	1600 J	39 J	1000 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	2300 J	490 J	470 J	4500 J	17000 J	25000 J	21000 J	9100 J	450 J	14000 J
C2 Chrysenes	NSL	NSL	µg/kg	670 J	190 J	780 J	3000 J	8100 J	7100 J	8700 J	3700 J	260 J	3000 J
C2 Fluorenes	NSL	NSL	µg/kg	230 J	57 J	110 J	1700 J	4600 J	5000 J	1500 J	860 J	52 J	4400 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1100 J	290 J	680 J	3500 J	8200 J	11000 J	9600 J	5400 J	290 J	4900 J
C2-Naphthalenes	NSL	NSL	µg/kg	1000 J	210 J	350 J	1500 J	8200 J	17000 J	9000 J	5000 J	160 J	11000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	350 J	790 J	6800 J	21000 J	23000 J	11000 J	5000 J	300 J	19000 J
C3 Chrysenes	NSL	NSL	µg/kg	240 J	60 J	420 J	1400 J	3400 J	3700 J	2500 J	1200 J	81 J	1700 J
C3 Fluorenes	NSL	NSL	µg/kg	290 J	100 J	380 J	3800 J	10000 J	11000 J	1900 J	930 J	94 J	9600 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	490 J	130 J	510 J	2700 J	6700 J	7300 J	4800 J	2500 J	140 J	4000 J
C3-Naphthalenes	NSL	NSL	µg/kg	1200 J	330 J	440 J	6900 J	24000 J	32000 J	8600 J	4900 J	270 J	24000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	830 J	250 J	1000 J	12000 J	22000 J	24000 J	7600 J	4100 J	250 J	17000 J
C4 Chrysenes	NSL	NSL	µg/kg	76 J	12 J	190 J	660 J	1900 J	2000 J	1100 J	360 J	31 J	1100 J
C4-Naphthalenes	NSL	NSL	µg/kg	510 J	200 J	460 J	7300 J	20000 J	22000 J	3800 J	1800 J	170 J	24000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	420 J	160 J	860 J	7500 J	16000 J	16000 J	5200 J	2100 J	170 J	10000 J
Chrysene [a]	166	1290	µg/kg	**950**	**370**	**650**	**1800**	**3900**	**6100**	**12000**	**4100**	**340**	**2700**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**130 J**	**74 J**	**150 J**	**180 J**	**280 J**	**430 J**	**1100 J**	**430 J**	**34 J**	**600 J**
Fluoranthene [a]	423	2230	µg/kg	**1300**	**550**	**750**	**2100**	**6800**	**10000**	**20000**	**6400**	**550**	**3700**
Fluorene [a]	77.4	536	µg/kg	**330 J**	**100 J**	170 U	**170 J**	**900**	**2200**	**3300**	**1500**	62 J	**500 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	310 J	200	410	650	950	1500 J	3200	1300	110	1600
Naphthalene [a]	176	561	µg/kg	330 U	110 U	170 U	360 U	860 U	2100 U	3100 U	940 U	92 U	600 U
Perylene	NSL	NSL	µg/kg	230 J	320	190	520	980	880 J	1900 J	740 J	120	580 J
Phenanthrene [a]	204	1170	µg/kg	**1400**	**420**	**400**	**1300**	**4800**	**13000**	**19000**	**6700**	**380**	**3000**
Pyrene [a]	195	1520	µg/kg	**1900**	**560**	**920**	**2500**	**5600**	**11000**	**19000**	**6800**	**510**	**4700**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**11092.0**	**4165.00**	**6702.00**	**16385.0**	**39160.0**	**75120.0**	**135460**	**47700.0**	**3623.00**	**28090.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**19370.0**	**6632.00**	**11657.0**	**58215.0**	**142910**	**198400**	**210560**	**81530**	**5836.00**	**109370**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-35	RREC13-35	RREC13-35	RREC13-35
			Sample Name:	RREC13-34-0001	RREC13-34-0103	RREC13-34-0305	RREC13-34-0507	RREC13-34-0709	RREC13-34-0911	RREC13-35-SURF	RREC13-35-0001	RREC13-35-0103	RREC13-35-0305
			Sample Depth (ft):	0-1	1-3	0-0.5	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5
			Date Sampled:	11/4/13	11/4/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1300	2200 U	2600 U	1600 U	1600 U	1700 U	930 U	2400 U	410 U	4 U
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1800	2200 U	2600 U	1600 U	1600 U	1900	340 J	2400 U	410 U	4 U
Acenaphthene [a]	NSL	NSL	µg/kg	1000 J	1000 J	2600 U	1600 U	1600 U	1700 U	360 J	1700 J	420	4.4
Acenaphthylene [a]	NSL	NSL	µg/kg	1100 U	2200 U	2600 U	1600 U	1600 U	1700 U	930 U	2400 U	410 U	4 U
Anthracene [a]	57.2	845	µg/kg	**1300**	**3100**	**3500**	**2100**	**2600**	**2600**	**1000**	**5600**	**950**	13
Benzo(a)anthracene [a]	108	1050	µg/kg	**3600**	**8100**	**6800**	**5900**	**6700**	**6600**	**3000**	**7000**	**1300**	21
Benzo(a)pyrene [a]	150	1450	µg/kg	**2800**	**6200**	**4600**	**4200**	**4600**	**4300**	**2500**	**5000**	**1000**	16
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	2900	6100	4600	4100	4200	3900	2800	3800	610	12
Benzo(e)pyrene	NSL	NSL	µg/kg	2500	4900	4000	3600	3700	3600	2000	3400	640	12
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2600	5000	3300	2900	3300	3300	1400	3000	590	11
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2200	5900	4200	3800	4100	3600	2400	3200	730	9.6
C1 Chrysenes	NSL	NSL	µg/kg	4000 J	6300 J	5900 J	6500 J	7900 J	9800 J	2900 J	7000 J	1200 J	21 J
C1 Fluorenes	NSL	NSL	µg/kg	1600 J	1300 J	1600 J	1200 J	1200 J	1400 J	200 J	1200 J	240 J	3.1 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5600 J	8500 J	9300 J	8300 J	9100 J	11000 J	3000 J	12000 J	2100 J	30 J
C1-Naphthalenes	NSL	NSL	µg/kg	2200 J	1900 J	2400 J	2000 J	1500 J	2600 J	440 J	1400 J	210 J	3.7 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	15000 J	15000 J	15000 J	13000 J	15000 J	18000 J	2800 J	17000 J	2900 J	40 J
C2 Chrysenes	NSL	NSL	µg/kg	4400 J	6400 J	6400 J	6200 J	6900 J	12000 J	2200 J	3800 J	660 J	12 J
C2 Fluorenes	NSL	NSL	µg/kg	5400 J	4100 J	4300 J	3200 J	3200 J	4200 J	370 J	1100 J	210 J	2.8 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	6500 J	7700 J	8700 J	7800 J	8500 J	13000 J	2600 J	6100 J	1000 J	16 J
C2-Naphthalenes	NSL	NSL	µg/kg	19000 J	14000 J	15000 J	12000 J	8200 J	14000 J	1700 J	7300 J	1000 J	15 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	22000 J	18000 J	21000 J	19000 J	25000 J	33000 J	3200 J	9100 J	1500 J	24 J
C3 Chrysenes	NSL	NSL	µg/kg	2400 J	2800 J	3400 J	2800 J	3600 J	6400 J	1100 J	1800 J	280 J	5.6 J
C3 Fluorenes	NSL	NSL	µg/kg	12000 J	9300 J	10000 J	7700 J	8800 J	12000 J	620 J	1500 J	260 J	4.4 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5200 J	5800 J	6900 J	6300 J	7000 J	13000 J	1500 J	2600 J	470 J	8.7 J
C3-Naphthalenes	NSL	NSL	µg/kg	35000 J	25000 J	27000 J	20000 J	14000 J	24000 J	2100 J	6100 J	1100 J	16 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	21000 J	17000 J	23000 J	22000 J	25000 J	44000 J	3100 J	4800 J	840 J	15 J
C4 Chrysenes	NSL	NSL	µg/kg	1400 J	1600 J	1900 J	1700 J	1800 J	3600 J	420 J	750 J	120 J	2.4 J
C4-Naphthalenes	NSL	NSL	µg/kg	29000 J	18000 J	25000 J	18000 J	17000 J	24000 J	1500 J	2300 J	420 J	7.9 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	15000 J	12000 J	15000 J	13000 J	18000 J	33000 J	2400 J	4600 J	580 J	10 J
Chrysene [a]	166	1290	µg/kg	**4200**	**8400**	**6600**	**6100**	**7300**	**7900**	**3100**	**6400**	**1200**	17
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**870 J**	**1500 J**	2600 U	1600 U	1600 U	1700 U	**580 J**	**940 J**	**190 J**	3.5 J
Fluoranthene [a]	423	2230	µg/kg	**6300**	**14000**	**17000**	**10000**	**11000**	**9700**	**5000**	**11000**	**2100**	28
Fluorene [a]	77.4	536	µg/kg	**1100**	**1900 J**	**4000**	**3200**	**2400**	**2300**	930 U	**2700**	**660**	7.6
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	2200	4500	2800	2600	2900	2700	1300	2400 J	460	8.3
Naphthalene [a]	176	561	µg/kg	1100 U	2200 U	2600 U	1600 U	1600 U	1700 U	**1100**	2400 U	410 U	4 U
Perylene	NSL	NSL	µg/kg	910 J	2000 J	2600 U	1600 U	1600 U	1700 U	650 J	1000 J	220 J	33
Phenanthrene [a]	204	1170	µg/kg	**6500**	**12000**	**18000**	**8100**	**7100**	**8500**	**3100**	**16000**	**2700**	37
Pyrene [a]	195	1520	µg/kg	**7300**	**15000**	**18000**	**12000**	**12000**	**13000**	**4800**	**15000**	**2800**	40
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**47770.0**	**96000.0**	**99900.0**	**69000.0**	**72200.0**	**73700.0**	**33710.0**	**87340.0**	**16325.0**	234.400
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**146980**	**187000**	**203100**	**160000**	**181200**	**232850**	**51710.0**	**141840**	**25610.0**	406.700

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-36	RREC13-36	RREC13-36	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37
			Sample Name:	RREC13-36-SURF	RREC13-36-0001	RREC13-36-0103	RREC13-37-SURF	RREC13-37-0001	RREC13-37-0103	RREC13-37-0305	RREC13-37-0507	RREC13-37-0709	RREC13-37-0911
			Sample Depth (ft):	0-0.5	0-1	1-3	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	10/28/13	10/31/13	10/31/13	10/28/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	2400 UJ	1500 U	570 U	90 J	570 J	750	49	7.7	2.9 J	3.6 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	81 J	140 J	240 J	140 J	270 J	140 J	13 J	2.8 J	2 J	2.5 J
Acenaphthene [a]	NSL	NSL	µg/kg	200 J	270 J	460 J	360 J	1700 J	2100	89	11	0.78 J	1.6 J
Acenaphthylene [a]	NSL	NSL	µg/kg	2400 UJ	1500 U	570 U	370 J	1800 U	660 U	43 U	5 U	5 U	5 U
Anthracene [a]	57.2	845	µg/kg	**620 J**	1500 U	**600**	**1600**	**3300**	**1600**	**150**	12	0.58 J	1.6 J
Benzo(a)anthracene [a]	108	1050	µg/kg	**4400 J**	**3300**	**1900**	**6500**	**7500**	**2300**	**190**	21	5 U	5 U
Benzo(a)pyrene [a]	150	1450	µg/kg	**5000 J**	**3300**	**1400**	**6500**	**6700**	**2100**	**170**	15	1.4 J	3.2 J
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	8300 J	4800	1800	5800	5200	1300	100	14	5 U	6.6
Benzo(e)pyrene	NSL	NSL	µg/kg	5300 J	3300	1400	3900	4400	1300	110	13	4.4 J	5.9
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	3500 J	2500	1200	2700	3400	940	98	16	6.4	9
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	6900 J	3700	1300	5500	4200	1400	100	11	1.5 J	2.8 J
C1 Chrysenes	NSL	NSL	µg/kg	2700 J	2700 J	2400 J	3400 J	8600 J	2400 J	250 J	35 J	12 J	16 J
C1 Fluorenes	NSL	NSL	µg/kg	2400 UJ	240 J	600 J	1600 U	810 J	490 J	42 J	6.4 J	2.3 J	3.1 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5000 J	3400 J	3100 J	6000 J	12000 J	3900 J	380 J	44 J	11 J	15 J
C1-Naphthalenes	NSL	NSL	µg/kg	2400 UJ	170 J	320 J	1600 U	600 J	640 J	44 J	7.7 J	3.6 J	4.5 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1600 J	2400 J	4500 J	2900 J	12000 J	5200 J	500 J	72 J	24 J	31 J
C2 Chrysenes	NSL	NSL	µg/kg	3100 J	2300 J	2800 J	2400 J	5300 J	1400 J	150 J	34 J	20 J	24 J
C2 Fluorenes	NSL	NSL	µg/kg	2400 UJ	620 J	1500 J	1600 U	1100 J	520 J	47 J	7.7 J	4 J	4.2 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3300 J	2700 J	3200 J	2400 J	7400 J	2200 J	230 J	33 J	13 J	17 J
C2-Naphthalenes	NSL	NSL	µg/kg	340 J	1600 J	4200 J	560 J	5300 J	4500 J	280 J	40 J	14 J	19 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1000 J	3200 J	7100 J	1700 J	7700 J	3000 J	280 J	48 J	24 J	29 J
C3 Chrysenes	NSL	NSL	µg/kg	1700 J	940 J	1400 J	990 J	2100 J	520 J	63 J	15 J	11 J	13 J
C3 Fluorenes	NSL	NSL	µg/kg	270 J	1600 J	3400 J	320 J	1400 J	560 J	52 J	13 J	7.2 J	9.3 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2300 J	1700 J	2500 J	1200 J	3500 J	990 J	130 J	27 J	14 J	18 J
C3-Naphthalenes	NSL	NSL	µg/kg	440 J	3400 J	10000 J	630 J	5500 J	3400 J	290 J	59 J	33 J	46 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1000 J	3100 J	7400 J	1500 J	5800 J	1700 J	180 J	47 J	33 J	40 J
C4 Chrysenes	NSL	NSL	µg/kg	560 J	520 J	850 J	180 J	990 J	140 J	23 J	5.7 J	4.2 J	5.4 J
C4-Naphthalenes	NSL	NSL	µg/kg	360 J	3000 J	8900 J	400 J	2200 J	1100 J	120 J	45 J	32 J	46 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	650 J	2200 J	5000 J	780 J	3800 J	870 J	100 J	27 J	20 J	23 J
Chrysene [a]	166	1290	µg/kg	**7100 J**	**4500**	**2300**	**5400**	**7000**	**2100**	**180**	23	7.6	11
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**690 J**	**820 J**	**430 J**	**680 J**	**1200 J**	**310 J**	32 J	4.2 J	0.75 J	1.3 J
Fluoranthene [a]	423	2230	µg/kg	**15000 J**	**8000**	**3300**	**11000**	**8200**	**2900**	240	26	5 U	7.1
Fluorene [a]	77.4	536	µg/kg	**300 J**	1500 U	**920**	**650 J**	**1500 J**	**1200**	77	9.6	2.4 J	3.6 J
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	2900 J	2400	1100	2400	2900	760	80	10	2 J	3.2 J
Naphthalene [a]	176	561	µg/kg	2400 UJ	1500 U	570 U	1600 U	1800 U	660 U	43 U	5 U	5 U	5 U
Perylene	NSL	NSL	µg/kg	1400 J	910 J	500 J	1700	1300 J	430 J	77	31	24	34
Phenanthrene [a]	204	1170	µg/kg	**4200 J**	**3300**	**3100**	**5400**	**6700**	**3900**	**300**	37	6.7	11
Pyrene [a]	195	1520	µg/kg	**9600 J**	**7900**	**3800**	**6900**	**12000**	**4400**	**380**	39	5	8.9
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**71191.0**	**47930.0**	**24420.0**	**62700.0**	**73570.0**	**28110.0**	**2242.00**	256.600	49.6100	80.9000
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**89730.0**	**68760.0**	**58680.0**	**82960.0**	**123610**	**45940.0**	**3997.00**	562.900	201.510	272.900

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-39	RREC13-39	RREC13-39	RREC13-39
			Sample Name:	RREC13-38-SURF	RREC13-38-SURF-FD	RREC13-38-0001	RREC13-38-0103	RREC13-38-0305	RREC13-38-0507	RREC13-39-SURF	RREC13-39-0001	RREC13-39-0103	RREC13-39-0305
			Sample Depth (ft):	0-0.5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3	3-5
			Date Sampled:	10/30/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	270 U	330 U	15 U	4.7 U	4.4 U	4.4 U	1300 U	650 J	71 J	1.1 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	67 J	65 J	15 U	4.7 U	4.4 U	4.4 U	240 J	2500 U	330 U	4.3 U
Acenaphthene [a]	NSL	NSL	µg/kg	68 J	83 J	28	1.4 J	1.4 J	1.2 J	350 J	1100 J	280 J	1.4 J
Acenaphthylene [a]	NSL	NSL	µg/kg	270 U	330 U	15 U	4.7 U	4.4 U	4.4 U	1300 U	640 J	62 J	0.3 J
Anthracene [a]	57.2	845	µg/kg	**340**	**530**	22	1.2 J	1.7 J	1.6 J	**1700**	**5600**	**710**	2 J
Benzo(a)anthracene [a]	108	1050	µg/kg	**1200**	**1800**	65	5.1	9.3	4.4 U	**5800**	**12000**	**1800**	6
Benzo(a)pyrene [a]	150	1450	µg/kg	**1300**	**1700**	64	4.7 U	9.8	4.4 U	**6300**	**11000**	**1500**	3.7 J
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1100	1400	60	6.1	11	5.1	5500	9600	800	4.9
Benzo(e)pyrene	NSL	NSL	µg/kg	850	1200	48	5.7	10	4.6	4100	6100	880	4.8
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	760	1200	51	8.3	14	6.5	3500	4100	500	3.4 J
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	950	1400	45	4.7 U	7.8	4.4 U	4600	10000	1100	4.3 U
C1 Chrysenes	NSL	NSL	µg/kg	910 J	1200 J	67 J	14 J	21 J	13 J	4600 J	6000 J	1400 J	9.1 J
C1 Fluorenes	NSL	NSL	µg/kg	38 J	59 J	6.6 J	2.3 J	2.4 J	1.9 J	210 J	690 J	150 J	1.4 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1100 J	1700 J	86 J	15 J	17 J	11 J	5700 J	16000 J	3300 J	17 J
C1-Naphthalenes	NSL	NSL	µg/kg	76 J	77 J	7.1 J	3.3 J	3.4 J	2.4 J	290 J	720 J	77 J	1.5 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	620 J	1000 J	71 J	21 J	21 J	16 J	3300 J	11000 J	2400 J	17 J
C2 Chrysenes	NSL	NSL	µg/kg	550 J	630 J	49 J	20 J	24 J	19 J	2700 J	5500 J	830 J	14 J
C2 Fluorenes	NSL	NSL	µg/kg	67 J	80 J	9 J	4.1 J	4.5 J	3.8 J	330 J	1300 J	230 J	2.9 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	580 J	750 J	53 J	17 J	19 J	13 J	3200 J	6800 J	1500 J	14 J
C2-Naphthalenes	NSL	NSL	µg/kg	270 U	330 U	26 J	11 J	12 J	9.7 J	1300 U	3800 J	600 J	7 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	530 J	640 J	62 J	27 J	28 J	22 J	2900 J	7700 J	1300 J	27 J
C3 Chrysenes	NSL	NSL	µg/kg	260 J	240 J	19 J	10 J	10 J	11 J	960 J	1400 J	250 J	7 J
C3 Fluorenes	NSL	NSL	µg/kg	120 J	130 J	17 J	7.9 J	8.1 J	7.6 J	610 J	2200 J	180 J	4.6 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	290 J	330 J	29 J	16 J	17 J	13 J	1500 J	2900 J	630 J	11 J
C3-Naphthalenes	NSL	NSL	µg/kg	270 U	330 U	44 J	24 J	26 J	22 J	1300 U	9300 J	900 J	19 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	350 J	440 J	51 J	30 J	32 J	27 J	1700 J	6700 J	1000 J	19 J
C4 Chrysenes	NSL	NSL	µg/kg	270 U	330 U	15 U	4.6 J	4.2 J	3.9 J	1300 U	2500 U	35 J	2.9 J
C4-Naphthalenes	NSL	NSL	µg/kg	150 J	160 J	37 J	30 J	31 J	29 J	840 J	5500 J	390 J	19 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	140 J	280 J	39 J	23 J	21 J	19 J	910 J	4000 J	400 J	15 J
Chrysene [a]	166	1290	µg/kg	**1100**	**1600**	67	9.2	14	8.9	**5700**	**11000**	**1400**	7.5
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**260 J**	**430**	17	1.2 J	3.7 J	0.92 J	**1200 J**	**1300 J**	**140 J**	0.75 J
Fluoranthene [a]	423	2230	µg/kg	**1300**	**2300**	83	7.9	10	5.2	**6900**	**20000**	**1800**	9.4
Fluorene [a]	77.4	536	µg/kg	270 U	330 U	11 J	2.4 J	2.2 J	1.4 J	1300 U	**1500 J**	**210 J**	1.7 J
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	660	1100	44	3.2 J	8.7	2.3 J	3100	3900	420	2 J
Naphthalene [a]	176	561	µg/kg	270 U	330 U	15 U	4.7 U	4.4 U	4.4 U	1300 U	2500 U	330 U	4.3 U
Perylene	NSL	NSL	µg/kg	320	460	39	35	37	31	1600	2400 J	300 J	32
Phenanthrene [a]	204	1170	µg/kg	**610**	**930**	41	6.6	7	4.4 U	**3500**	**11000**	**1400**	7.4
Pyrene [a]	195	1520	µg/kg	**1400**	**2200**	95	9.3	11	6.3	**7100**	**16000**	**2700**	11
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**11520.0**	**17233.0**	715.500	73.6500	118.200	54.8200	**57440.0**	**121240**	**15152.0**	67.9000
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**15588.0**	**23157.0**	1136.60	242.300	297.000	196.520	**78560.0**	**178080**	**25127.0**	206.450

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-39	RREC13-39	RREC13-39	RREC13-40	RREC13-40	RREC13-40	RREC13-40	RREC13-40	RREC13-41	RREC13-41
			Sample Name:	RREC13-39-0507	RREC13-39-0709	RREC13-39-0911	RREC13-40-SURF	RREC13-40-0001	RREC13-40-0103	RREC13-40-0305	RREC13-40-0507	RREC13-41-SURF	RREC13-41-0001
			Sample Depth (ft):	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/28/13	11/1/13	11/1/13	11/1/13	11/1/13	10/30/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	1 J	1.3 J	2 J	44 J	3.7 J	2.5 J	3.1 J	3.5 J	1100 U	5800
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	4.3 U	4.3 U	4.6 U	85 J	4.3 J	2.1 J	2.2 J	2.5 J	900 J	8300
Acenaphthene [a]	NSL	NSL	µg/kg	0.22 J	0.26 J	0.42 J	83 J	11 J	1.1 J	0.68 J	0.75 J	590 J	1700 J
Acenaphthylene [a]	NSL	NSL	µg/kg	4.3 U	4.3 U	0.18 J	110 J	33 U	4 U	5 U	5 U	1100 U	2600
Anthracene [a]	57.2	845	µg/kg	0.26 J	0.36 J	0.66 J	**400**	24 J	1.6 J	0.43 J	0.76 J	**1600**	**5400**
Benzo(a)anthracene [a]	108	1050	µg/kg	4.3 U	4.3 U	4.6 U	**1900**	**110**	7	5 U	5 U	**3500**	**7600**
Benzo(a)pyrene [a]	150	1450	µg/kg	0.59 J	0.84 J	2 J	**2000**	95	5.2	2.2 J	1.9 J	**2400**	**5100**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	4.3 U	4.3 U	5.1	1800	69	8.3	5.1	5.2	2600	3900
Benzo(e)pyrene	NSL	NSL	µg/kg	2.4 J	2.7 J	4.3 J	1300	75	6.8	4.9 J	5.1 J	2100	3700
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	2.3 J	2.6 J	4.1 J	750	64	9	7.5	7.8	1400	3000
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	4.3 U	4.3 U	4.6 U	1800	75	5	2.1 J	2.3 J	1800	3700
C1 Chrysenes	NSL	NSL	µg/kg	6.7 J	7.9 J	11 J	1200 J	130 J	23 J	16 J	16 J	5800 J	10000 J
C1 Fluorenes	NSL	NSL	µg/kg	1.1 J	1.4 J	1.7 J	44 J	9.1 J	2.4 J	2.6 J	2.6 J	710 J	2100 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	8.7 J	10 J	15 J	2100 J	180 J	18 J	12 J	12 J	6300 J	14000 J
C1-Naphthalenes	NSL	NSL	µg/kg	1.3 J	1.7 J	2.5 J	90 J	5.8 J	3.5 J	3.8 J	4.4 J	1100 J	10000 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	12 J	14 J	21 J	940 J	140 J	29 J	27 J	26 J	10000 J	23000 J
C2 Chrysenes	NSL	NSL	µg/kg	12 J	14 J	21 J	1100 J	81 J	25 J	22 J	26 J	6700 J	8100 J
C2 Fluorenes	NSL	NSL	µg/kg	2.6 J	2.6 J	3.7 J	77 J	19 J	4.5 J	4.6 J	4.4 J	2100 J	2800 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	10 J	11 J	16 J	970 J	110 J	17 J	14 J	14 J	7000 J	10000 J
C2-Naphthalenes	NSL	NSL	µg/kg	5.1 J	5.8 J	8.9 J	240 J	29 J	13 J	14 J	17 J	6300 J	21000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14 J	15 J	22 J	660 J	120 J	28 J	26 J	27 J	18000 J	19000 J
C3 Chrysenes	NSL	NSL	µg/kg	5.7 J	6.6 J	9.1 J	350 J	30 J	12 J	11 J	13 J	3200 J	4400 J
C3 Fluorenes	NSL	NSL	µg/kg	4.1 J	4.3 J	6.3 J	160 J	29 J	8.8 J	9.1 J	8.3 J	5700 J	5200 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	9.5 J	11 J	16 J	440 J	62 J	18 J	15 J	17 J	6400 J	6600 J
C3-Naphthalenes	NSL	NSL	µg/kg	16 J	18 J	30 J	300 J	69 J	35 J	36 J	39 J	10000 J	15000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	22 J	26 J	36 J	590 J	91 J	36 J	38 J	37 J	22000 J	15000 J
C4 Chrysenes	NSL	NSL	µg/kg	3.3 J	3.2 J	5 J	64 J	7.9 J	5.2 J	5.8 J	5.8 J	1900 J	2100 J
C4-Naphthalenes	NSL	NSL	µg/kg	18 J	23 J	32 J	190 J	52 J	37 J	36 J	38 J	9000 J	9300 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14 J	17 J	22 J	270 J	45 J	21 J	20 J	20 J	15000 J	10000 J
Chrysene [a]	166	1290	µg/kg	4.4	5.4	8.2	**1700**	110	11	8.7	8.7	**4300**	**7200**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	0.26 J	0.35 J	0.52 J	**220 J**	18 J	1.8 J	0.93 J	1 J	**480 J**	**1100 J**
Fluoranthene [a]	423	2230	µg/kg	4.3 U	4.3 U	5.3	**2200**	140	9.7	5.6	5 U	**4800**	**12000**
Fluorene [a]	77.4	536	µg/kg	0.89 J	1.3 J	1.5 J	**110 J**	8.6 J	2.1 J	2.6 J	2.8 J	**1500**	**3100**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	0.64 J	0.79 J	1.3 J	680	45	4.7 J	2.5 J	2.6 J	1300	2400
Naphthalene [a]	176	561	µg/kg	4.3 U	4.3 U	4.6 U	340 U	33 U	4 U	5 U	5 U	1100 U	**5400**
Perylene	NSL	NSL	µg/kg	32	27	37	490	42	43	45	36	620 J	1100 J
Phenanthrene [a]	204	1170	µg/kg	4.3 U	4.3 U	4.8	**850**	40	7	6.5	7.8	**5100**	**14000**
Pyrene [a]	195	1520	µg/kg	4.3 U	4.3 U	6.5	**1800**	190	13	6.3	5.4	**6100**	**14000**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	28.9100	31.2500	49.7800	**16658.0**	1036.90	92.6000	60.8400	59.5100	**39470.0**	**100500**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	139.660	149.100	216.480	**23204.0**	**1782.70**	288.000	247.840	235.410	**121100**	**188100**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41
			Sample Name:	RREC13-41-0103	RREC13-41-0103-FD	RREC13-41-0305	RREC13-41-0305-FD	RREC13-41-0507	RREC13-41-0507-FD	RREC13-41-0709	RREC13-41-0709-FD	RREC13-41-0911	RREC13-41-0911-FD
			Sample Depth (ft):	1-3	1-3	3-5	3-5	5-7	5-7	7-9	7-9	9-11	9-11
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	5900	3700	920 U	830	2400	2500	9400	8400	10000	10000
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	8600	5300	1200	1200	3400	3600	14000	12000	15000	15000
Acenaphthene [a]	NSL	NSL	µg/kg	1800 J	1200 J	690 J	620 J	800 J	940 J	2400 J	2100 J	4300 J	4400 J
Acenaphthylene [a]	NSL	NSL	µg/kg	3500	2100 U	920 U	820 U	1400	1500	5100	4200	6100 U	5200 U
Anthracene [a]	57.2	845	µg/kg	**8000**	**4900**	**1600**	**1600**	**2900**	**3500**	**10000**	**8800**	**15000**	**14000**
Benzo(a)anthracene [a]	108	1050	µg/kg	**9800**	**7100**	**3600**	**3900**	**5100**	**6300**	**10000**	**9100**	**16000**	**16000**
Benzo(a)pyrene [a]	150	1450	µg/kg	**6800**	**4600**	**2600**	**2900**	**3800**	**4200**	**7300**	**6300**	**11000**	**12000**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	5100	3600	2500	2500	2900	3200	5100	4400	7700	8300
Benzo(e)pyrene	NSL	NSL	µg/kg	4400	3300	2100	2200	2900	3200	4700	4000	6700	7200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	3800	2800	1700	1600	2300	2600	4100	3000 J	4800 J	4800 J
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	4400	3100	2100	2500	2800	3000	4600	4500	7600	8400
C1 Chrysenes	NSL	NSL	µg/kg	12000 J	8600 J	5200 J	5500 J	7100 J	8200 J	13000 J	10000 J	19000 J	19000 J
C1 Fluorenes	NSL	NSL	µg/kg	2500 J	1500 J	690 J	560 J	970 J	1000 J	3100 J	2800 J	4700 J	4500 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	19000 J	12000 J	5700 J	5900 J	8500 J	9900 J	19000 J	18000 J	31000 J	31000 J
C1-Naphthalenes	NSL	NSL	µg/kg	10000 J	6400 J	1400 J	1400 J	4100 J	4300 J	16000 J	15000 J	18000 J	18000 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	26000 J	17000 J	9800 J	7400 J	12000 J	14000 J	30000 J	24000 J	43000 J	42000 J
C2 Chrysenes	NSL	NSL	µg/kg	8200 J	6600 J	5100 J	5600 J	6000 J	6800 J	9600 J	9300 J	13000 J	14000 J
C2 Fluorenes	NSL	NSL	µg/kg	2700 J	1800 J	1800 J	1400 J	1500 J	1800 J	3000 J	2700 J	4300 J	4700 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	11000 J	7700 J	5600 J	5500 J	7000 J	8300 J	12000 J	11000 J	17000 J	17000 J
C2-Naphthalenes	NSL	NSL	µg/kg	24000 J	14000 J	5100 J	5000 J	10000 J	11000 J	34000 J	31000 J	45000 J	42000 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	17000 J	13000 J	14000 J	11000 J	11000 J	13000 J	19000 J	17000 J	28000 J	29000 J
C3 Chrysenes	NSL	NSL	µg/kg	4000 J	3300 J	2900 J	2400 J	3200 J	3400 J	4800 J	4600 J	5300 J	5700 J
C3 Fluorenes	NSL	NSL	µg/kg	4100 J	3000 J	4700 J	4100 J	3500 J	4000 J	4600 J	4000 J	5400 J	5700 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	6400 J	5000 J	4700 J	4600 J	5100 J	5900 J	7000 J	5800 J	8700 J	8700 J
C3-Naphthalenes	NSL	NSL	µg/kg	16000 J	10000 J	6500 J	6200 J	8500 J	9700 J	21000 J	19000 J	26000 J	25000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	14000 J	11000 J	13000 J	14000 J	12000 J	13000 J	14000 J	14000 J	18000 J	19000 J
C4 Chrysenes	NSL	NSL	µg/kg	1800 J	1600 J	1400 J	1600 J	1600 J	1900 J	2100 J	2100 J	2400 J	2700 J
C4-Naphthalenes	NSL	NSL	µg/kg	7100 J	5300 J	6100 J	5500 J	5600 J	6200 J	9300 J	8600 J	11000 J	11000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9000 J	7400 J	8800 J	9900 J	7900 J	9100 J	9500 J	9100 J	11000 J	12000 J
Chrysene [a]	166	1290	µg/kg	**9100**	**6300**	**3800**	**4100**	**4700**	**5700**	**9200**	**8200**	**14000**	**15000**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**1300 J**	**1000 J**	**630 J**	**640 J**	**900 J**	**1000 J**	**1500 J**	**1200 J**	**1800 J**	**2000 J**
Fluoranthene [a]	423	2230	µg/kg	**13000**	**9000**	**6600**	**5200**	**6900**	**7800**	**15000**	**12000**	**21000**	**22000**
Fluorene [a]	77.4	536	µg/kg	**4600**	**2600**	**1400**	**1500**	**1500**	**1600**	**8200**	**6000**	**8400**	**8000**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	3000 J	2400	1500	1500	1900	2300	3400 J	2700 J	4400 J	4400 J
Naphthalene [a]	176	561	µg/kg	**4700**	**3500**	**2300**	**2400**	**3200**	**3400**	**8100**	**6900**	**7900**	**8700**
Perylene	NSL	NSL	µg/kg	1400 J	990 J	630 J	690 J	840 J	930 J	1400 J	1200 J	2100 J	2300 J
Phenanthrene [a]	204	1170	µg/kg	**20000**	**12000**	**5100**	**4500**	**7400**	**8300**	**25000**	**22000**	**36000**	**35000**
Pyrene [a]	195	1520	µg/kg	**18000**	**12000**	**5700**	**6200**	**8000**	**9500**	**20000**	**18000**	**33000**	**33000**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**125500**	**82450.0**	**43480.0**	**43270.0**	**59900.0**	**68440.0**	**153000**	**131400**	**210950**	**213600**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**217000**	**148140**	**103500**	**99220**	**117610**	**134770**	**247300**	**216200**	**350150**	**356000**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-42	RREC13-42	RREC13-42	RREC13-42	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-45
			Sample Name:	RREC13-42-SURF	RREC13-42-0001	RREC13-42-0103	RREC13-42-0305	RREC13-44-SURF	RREC13-44-0001	RREC13-44-0103	RREC13-44-0305	RREC13-44-0507	RREC13-45-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	0-0.5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	10/30/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	99 J	5.6 J	1.7 J	0.44 J	69 J	77 J	100 J	310 J	410 J	200 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	250 U	11 U	4.2 U	4.6 U	130 J	380 U	350 U	420	610 J	350 J
Acenaphthene [a]	NSL	NSL	µg/kg	150 J	12	1.2 J	0.44 J	82 J	140 J	120 J	220 J	320 J	230 J
Acenaphthylene [a]	NSL	NSL	µg/kg	92 J	2.4 J	0.43 J	0.16 J	72 J	89 J	64 J	100 J	100 J	170 J
Anthracene [a]	57.2	845	µg/kg	**420**	20	1.8 J	0.57 J	**400**	**430**	**220 J**	**230 J**	**410 J**	**1000**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1300**	22	5	1.3 J	**1100**	**1600**	**980**	**1000**	**1800**	**3400**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1100**	17	3.1 J	1.2 J	**1200**	**1700**	**930**	**890**	**1500**	**3600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	920	11 J	5.6	5.5	1100	1900	1100	1100	1500	3000
Benzo(e)pyrene	NSL	NSL	µg/kg	730	13	5.7	3.4 J	920	1200	730	760	1200	2200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	540	9.5 J	4.9	0.83 J	810	700	350	360	670 J	1500
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	990	15	3.5 J	2.5 J	1200	1600	780	770	1500	2700
C1 Chrysenes	NSL	NSL	µg/kg	700 J	16 J	12 J	2.1 J	820 J	1100 J	1200 J	1500 J	2500 J	2100
C1 Fluorenes	NSL	NSL	µg/kg	69 J	5.6 J	1.1 J	4.6 U	49 J	92 J	170 J	440 J	720 J	130
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1400 J	35 J	14 J	2.5 J	1300 J	1800 J	1800 J	2700 J	4300 J	3900
C1-Naphthalenes	NSL	NSL	µg/kg	170 J	9.6 J	2.5 J	0.69 J	130 J	160 J	160 J	490 J	690 J	370
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	990 J	52 J	13 J	3.1 J	750 J	1300 J	2400 J	4600 J	8500 J	2100
C2 Chrysenes	NSL	NSL	µg/kg	420 J	7.8 J	21 J	2.3 J	780 J	1500 J	2800 J	3400 J	4800 J	1400
C2 Fluorenes	NSL	NSL	µg/kg	85 J	7.2 J	2.1 J	0.5 J	100 J	250 J	680 J	1600 J	2500 J	170
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	640 J	16 J	14 J	2.1 J	930 J	1300 J	2200 J	3400 J	4800 J	1700
C2-Naphthalenes	NSL	NSL	µg/kg	500 J	55 J	9.8 J	2.9 J	410 J	480 J	1000 J	3500 J	6100 J	1100
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	540 J	26 J	14 J	3.1 J	670 J	1300 J	3600 J	7100 J	13000 J	1300
C3 Chrysenes	NSL	NSL	µg/kg	130 J	2.6 J	9.6 J	1.2 J	410 J	750 J	1300 J	1900 J	2700 J	530
C3 Fluorenes	NSL	NSL	µg/kg	80 J	8.5 J	5 J	4.6 U	280 J	620 J	2000 J	3800 J	6800 J	300
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	280 J	7.3 J	14 J	1.7 J	720 J	1100 J	2400 J	3400 J	5300 J	950
C3-Naphthalenes	NSL	NSL	µg/kg	650 J	64 J	20 J	4.7 J	480 J	840 J	3300 J	9600 J	14000 J	1000
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	400 J	18 J	22 J	2.8 J	840 J	1300 J	4600 J	10000 J	13000 J	1100
C4 Chrysenes	NSL	NSL	µg/kg	54 J	1.4 J	3.1 J	4.6 U	180 J	330 J	550 J	1000 J	1600 J	130
C4-Naphthalenes	NSL	NSL	µg/kg	310 J	29 J	15 J	3.1 J	350 J	850 J	3300 J	7900 J	14000 J	650
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	200 J	10 J	15 J	2.3 J	740 J	1100 J	3600 J	7600 J	9000 J	610
Chrysene [a]	166	1290	µg/kg	**1100**	21	8.8	2.2 J	**1200**	**1600**	**1100**	**1100**	**2000**	**3200**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**150 J**	2 J	0.58 J	0.19 J	**210 J**	**220 J**	**85 J**	**85 J**	**170 J**	**400 J**
Fluoranthene [a]	423	2230	µg/kg	**2100**	47	8.2	4.6 U	**1800**	**3200**	**1800**	**2000**	**5100**	**4300**
Fluorene [a]	77.4	536	µg/kg	**190 J**	16	1.8 J	0.74 J	**130 J**	**180 J**	**120 J**	**340**	**390 J**	**370 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	470	6.8 J	1.7 J	0.49 J	690	670	330 J	300 J	580 J	1400
Naphthalene [a]	176	561	µg/kg	**330**	11 U	4.2 U	4.6 U	290 U	380 U	350 U	320 U	800 U	**690**
Perylene	NSL	NSL	µg/kg	310	72	3.9 J	5.8	370	500	380	480	580 J	910
Phenanthrene [a]	204	1170	µg/kg	**1100**	65	6.2	4.6 U	**780**	**1000**	**770**	**1300**	**2400**	**2200**
Pyrene [a]	195	1520	µg/kg	**1600**	39	10	4.6 U	**1400**	**1800**	**1500**	**2000**	**3700**	**3800**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**12677.0**	316.700	67.0100	27.6200	**12449.0**	**17209.0**	**10599.0**	**12375.0**	**23150.0**	**32310.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**17356.0**	558.500	160.710	53.4200	**18338.0**	**26481.0**	**30384.0**	**51035.0**	**82140**	**44680.0**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-45	RREC13-45	RREC13-45	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-47
			Sample Name:	RREC13-45-0001	RREC13-45-0103	RREC13-45-0305	RREC13-46-SURF	RREC13-46-0001	RREC13-46-0103	RREC13-46-0305	RREC13-46-0507	RREC13-46-0710	RREC13-47-SURF
			Sample Depth (ft):	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5
			Date Sampled:	11/1/13	11/1/13	11/1/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	190 J	91 J	21	440 J	280 J	46 J	5.6 J	4.6 J	3.9 J	150 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	510 U	210 U	24	2400 U	2700 U	360 U	11 U	21 U	4 U	280 J
Acenaphthene [a]	NSL	NSL	µg/kg	220 J	180 J	13	1400 J	1500 J	82 J	7.6 J	6.9 J	2.4 J	120 J
Acenaphthylene [a]	NSL	NSL	µg/kg	110 J	33 J	4.2 J	610 J	430 J	54 J	2.3 J	2 J	0.67 J	86 J
Anthracene [a]	57.2	845	µg/kg	**650**	**400**	18	**4500**	**3500**	**420**	11 U	21 U	4 U	**360**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1700**	**520**	49	**10000**	**15000**	**1300**	50	64	15	**1500**
Benzo(a)pyrene [a]	150	1450	µg/kg	**1600**	**380**	35	**8600**	**13000**	**890**	40	50	15	**1600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1800	410	34	8600	12000	900	53	60	17	1800
Benzo(e)pyrene	NSL	NSL	µg/kg	1100	250	33	5400	8100	670	38	42	16	1200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	700	150 J	25	5500	8000	640	39	44	14	880
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1300	340	29	7200	11000	1100	39	44	13	1300
C1 Chrysenes	NSL	NSL	µg/kg	1000 J	370 J	71 J	4200 J	6600	520 J	42 J	42 J	25 J	1100 J
C1 Fluorenes	NSL	NSL	µg/kg	130 J	110 J	23 J	300 J	450 J	44 J	3.7 J	3.8 J	2.5 J	84 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2300 J	840 J	110 J	9100 J	12000 J	1200 J	72 J	72 J	32 J	1800 J
C1-Naphthalenes	NSL	NSL	µg/kg	280 J	110 J	32 J	780 J	550 J	74 J	8.1 J	6.7 J	5 J	290 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1800 J	1100 J	240 J	4800 J	3400 J	470 J	42 J	46 J	35 J	1100 J
C2 Chrysenes	NSL	NSL	µg/kg	1100 J	510 J	98 J	2200 J	3700 J	320 J	51 J	50 J	46 J	1200 J
C2 Fluorenes	NSL	NSL	µg/kg	200 J	170 J	51 J	250 J	1000 J	76 J	11 J	11 J	6.4 J	200 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1200 J	510 J	110 J	3100 J	5500 J	450 J	56 J	55 J	41 J	1300 J
C2-Naphthalenes	NSL	NSL	µg/kg	1200 J	830 J	180 J	2400 U	2700 U	360 U	24 J	22 J	19 J	920 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	1000 J	200 J	2400 U	2700 U	360 U	52 J	54 J	44 J	1100 J
C3 Chrysenes	NSL	NSL	µg/kg	440 J	240 J	53 J	680 J	1400 J	120 J	31 J	26 J	26 J	520 J
C3 Fluorenes	NSL	NSL	µg/kg	460 J	370 J	73 J	2400 U	2300 J	180 J	29 J	27 J	16 J	530 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	660 J	370 J	110 J	1200 J	3100 J	230 J	49 J	45 J	40 J	930 J
C3-Naphthalenes	NSL	NSL	µg/kg	1600 J	1500 J	570 J	2400 U	2700 U	360 U	48 J	47 J	46 J	1300 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	1100 J	300 J	2400 U	2700 U	360 U	93 J	96 J	78 J	1400 J
C4 Chrysenes	NSL	NSL	µg/kg	180 J	110 J	28 J	2400 U	550 J	48 J	9.6 J	9.5 J	14 J	220 J
C4-Naphthalenes	NSL	NSL	µg/kg	1000 J	1200 J	420 J	2400 U	3800 J	360 U	69 J	68 J	61 J	1100 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	860 J	670 J	200 J	2400 U	3200 J	360 U	67 J	69 J	54 J	1100 J
Chrysene [a]	166	1290	µg/kg	**1600**	**480**	64	**8900**	**14000**	**1100**	52	62	24	**1600**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**220 J**	**49 J**	4.9 J	**1600 J**	**2500 J**	**180 J**	8.8 J	11 J	2.4 J	**230 J**
Fluoranthene [a]	423	2230	µg/kg	**3000**	**1300**	75	**20000**	**21000**	**2600**	83	110	19	**2400**
Fluorene [a]	77.4	536	µg/kg	**350 J**	**280**	22	**2000 J**	**1100 J**	**260 J**	7.4 J	6.9 J	3 J	**180 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	670	140 J	14	5000	7100	580	29	34	7.4	800
Naphthalene [a]	176	561	µg/kg	510 U	210 U	15	**2600**	2700 U	360 U	12	21 U	4 U	**390**
Perylene	NSL	NSL	µg/kg	430 J	120 J	19	2600	3200	360 U	27	29	15	460
Phenanthrene [a]	204	1170	µg/kg	**1700**	**1000**	110	**14000**	**7100**	**1700**	34	36	12	**1100**
Pyrene [a]	195	1520	µg/kg	**2400**	**870**	75	**14000**	**15000**	**1800**	72	91	23	**1900**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**18530.0**	**6742.00**	611.100	**115710**	**134930**	**13966.0**	540.100	653.300	173.870	**16526.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**28355.0**	**12367.0**	**1836.10**	**141760**	**169930**	**17146.0**	969.30	1092.60	470.770	**25220.0**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-48
			Sample Name:	RREC13-47-SURF-FD	RREC13-47-0001	RREC13-47-0103	RREC13-47-0103-FD	RREC13-47-0305	RREC13-47-0305-FD	RREC13-47-0507	RREC13-47-0709	RREC13-47-0911	RREC13-48-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	1-3	3-5	3-5	5-7	7-9	9-11	0-0.5
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	150 J	150 J	99 J	90 J	250 J	150 J	610	590 U	930 J	240 J
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	280 J	290 U	450 U	430 U	620 U	520 U	450	590 U	1200	420 J
Acenaphthene [a]	NSL	NSL	µg/kg	140 J	140 J	210 J	200 J	270 J	250 J	340 J	490 J	550 J	310 J
Acenaphthylene [a]	NSL	NSL	µg/kg	100 J	84 J	100 J	100 J	130 J	120 J	440 U	590 U	210 J	230 J
Anthracene [a]	57.2	845	µg/kg	**490**	**310**	**430 J**	**490**	**490 J**	**560**	**580**	**680**	**900 J**	**900**
Benzo(a)anthracene [a]	108	1050	µg/kg	**1900**	**1400**	**1900**	**2000**	**2000**	**2300**	**1800**	**2100**	**3100**	**3500**
Benzo(a)pyrene [a]	150	1450	µg/kg	**2000**	**1500**	**2000**	**2000**	**2000**	**2400**	**1600**	**2100**	**2800**	**3600**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	1800	1500	2000	1900	2000	2400	1800	1900	2700	3000
Benzo(e)pyrene	NSL	NSL	µg/kg	1400	1100	1400	1400	1400	1700	1300	1600	2000	2200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1000	850	1000	1100	940	1300	1300	1400	1100	2200
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	1900	1500	1900	1800	2000	2200	1200	1500	2600	3000
C1 Chrysenes	NSL	NSL	µg/kg	1200 J	960 J	1400 J	1300 J	1500 J	1600 J	1800 J	2300 J	2800 J	2100 J
C1 Fluorenes	NSL	NSL	µg/kg	86 J	78 J	120 J	130 J	230 J	170 J	320 J	620 J	900 J	170 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2100 J	1600 J	2200 J	2200 J	2800 J	2900 J	2300 J	2900 J	6200 J	3700 J
C1-Naphthalenes	NSL	NSL	µg/kg	290 J	260 J	190 J	170 J	310 J	220 J	750 J	740 J	1500 J	470 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1300 J	1100 J	1700 J	1700 J	2900 J	2300 J	2800 J	4700 J	10000 J	2400 J
C2 Chrysenes	NSL	NSL	µg/kg	1200 J	930 J	1500 J	1300 J	2200 J	1800 J	2200 J	2400 J	4400 J	1400 J
C2 Fluorenes	NSL	NSL	µg/kg	210 J	190 J	340 J	320 J	740 J	520 J	1100 J	1800 J	2400 J	300 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1200 J	1100 J	1600 J	1500 J	2200 J	2100 J	2300 J	2900 J	5500 J	2000 J
C2-Naphthalenes	NSL	NSL	µg/kg	960 J	1000 J	840 J	770 J	2000 J	1200 J	5200 J	7300 J	14000 J	1600 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1200 J	1100 J	1900 J	1800 J	3500 J	2700 J	4700 J	7200 J	11000 J	1700 J
C3 Chrysenes	NSL	NSL	µg/kg	510 J	490 J	690 J	590 J	990 J	830 J	1300 J	1200 J	1800 J	640 J
C3 Fluorenes	NSL	NSL	µg/kg	600 J	580 J	950 J	900 J	2100 J	1600 J	2700 J	4000 J	4900 J	640 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	900 J	750 J	1100 J	1000 J	1700 J	1600 J	2100 J	2300 J	3800 J	1100 J
C3-Naphthalenes	NSL	NSL	µg/kg	1300 J	1400 J	1700 J	1400 J	4100 J	2400 J	7400 J	13000 J	21000 J	2200 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	1400 J	2200 J	2000 J	4200 J	3300 J	6000 J	7700 J	11000 J	1600 J
C4 Chrysenes	NSL	NSL	µg/kg	180 J	160 J	270 J	250 J	460 J	390 J	760 J	720 J	890 J	250 J
C4-Naphthalenes	NSL	NSL	µg/kg	1100 J	1100 J	1800 J	1700 J	3700 J	2500 J	6600 J	12000 J	15000 J	1500 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1000 J	890 J	1700 J	1600 J	3000 J	2400 J	4200 J	5100 J	6600 J	1300 J
Chrysene [a]	166	1290	µg/kg	**1900**	**1500**	**1900**	**2000**	**1900**	**2300**	**1900**	**2200**	**3000**	**3400**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**290 J**	**260 J**	**310 J**	**330 J**	**240 J**	**390 J**	**420 J**	**470 J**	**360 J**	**650 J**
Fluoranthene [a]	423	2230	µg/kg	**3100**	**2200**	**3200**	**3500**	**3700**	**4400**	**2400**	**3100**	**5900**	**4800**
Fluorene [a]	77.4	536	µg/kg	**200 J**	**140 J**	**250 J**	**170 J**	**240 J**	**260 J**	**490**	**420 J**	**670 J**	**380 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	940	810	970	1000	890	1200	1100	1300	1100	2000
Naphthalene [a]	176	561	µg/kg	440 U	290 U	450 U	430 U	620 U	520 U	**450**	590 U	980 U	**780**
Perylene	NSL	NSL	µg/kg	550	450	580	590	640	730	520	590	840 J	930
Phenanthrene [a]	204	1170	µg/kg	**1300**	**1100**	**1200**	**1400**	**1800**	**1700**	**2000**	**2700**	**4600**	**2600**
Pyrene [a]	195	1520	µg/kg	**2300**	**1800**	**2300**	**2300**	**2900**	**3200**	**3300**	**4200**	**5400**	**3900**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**19860.0**	**15384.0**	**20120.0**	**20720.0**	**22120.0**	**25500.0**	**21350.0**	**25445.0**	**36680.0**	**35670.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**29426.0**	**23727.0**	**32985.0**	**33145.0**	**43320.0**	**43560.0**	**46840.0**	**61360**	**91320**	**50190.0**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-49	RREC13-49	RREC13-49	RREC13-49
			Sample Name:	RREC13-48-SURF-FD	RREC13-48-0001	RREC13-48-0103	RREC13-48-0305	RREC13-48-0507	RREC13-48-0710	RREC13-49-SURF	RREC13-49-SURF-FD	RREC13-49-0001	RREC13-49-0103
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5	0-0.5	0-1	1-3
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**										
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	180 J	100 J	630	880	820	620	220 J	250 J	300 J	850
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	320 J	190 J	1100	1500	1300	980	400 J	440 J	560 U	1300
Acenaphthene [a]	NSL	NSL	µg/kg	270 J	170 J	310 J	700 J	420 J	420 J	320 J	400 J	310 J	570 J
Acenaphthylene [a]	NSL	NSL	µg/kg	170 J	100 J	170 J	220 J	220 J	180 J	270 J	300 J	160 J	290 J
Anthracene [a]	57.2	845	µg/kg	**620 J**	**540**	**610**	**970**	**780**	**690**	**1100**	**1400**	**670**	**1000**
Benzo(a)anthracene [a]	108	1050	µg/kg	**2400**	**2000**	**2300**	**2700**	**2400**	**2000**	**4600**	**5100**	**2600**	**3400**
Benzo(a)pyrene [a]	150	1450	µg/kg	**2800**	**2000**	**2400**	**2400**	**2400**	**2000**	**4700**	**5600**	**2400**	**3300**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	2200	1800	2500	2200	2600	1900	4400	4600	2300	3200
Benzo(e)pyrene	NSL	NSL	µg/kg	1700	1300	1800	1700	1700	1300	3000	3400	1600	2200
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1900	1300	910	1100	840	720	3100	3500	1300	1100
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	2100	1600	2600 J	2200	2300 J	1800 J	3700	4200	2000	3300 J
C1 Chrysenes	NSL	NSL	µg/kg	1600 J	1300 J	1600 J	2100 J	2000 J	1900 J	2700 J	3100 J	1800 J	2700 J
C1 Fluorenes	NSL	NSL	µg/kg	130 J	79 J	360 J	660 J	910 J	620 J	140 J	150 J	390 J	770 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	2600 J	2100 J	3100 J	3800 J	4100 J	3600 J	4800 J	5000 J	3400 J	5700 J
C1-Naphthalenes	NSL	NSL	µg/kg	350 J	210 J	1200 J	1600 J	1500 J	1100 J	430 J	480 J	400 J	1500 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1800 J	1100 J	3700 J	6000 J	8900 J	7300 J	2300 J	2500 J	4100 J	8200 J
C2 Chrysenes	NSL	NSL	µg/kg	1000 J	800 J	2500 J	1800 J	3200 J	3300 J	1500 J	1700 J	1500 J	4000 J
C2 Fluorenes	NSL	NSL	µg/kg	260 J	130 J	990 J	1800 J	2500 J	1700 J	210 J	210 J	1000 J	2000 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	1500 J	1100 J	2200 J	3000 J	3100 J	3000 J	2300 J	2600 J	2200 J	4000 J
C2-Naphthalenes	NSL	NSL	µg/kg	1300 J	590 J	5000 J	10000 J	10000 J	7100 J	1100 J	1200 J	3500 J	8900 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	750 J	3900 J	6400 J	8800 J	7400 J	1300 J	1500 J	3900 J	8700 J
C3 Chrysenes	NSL	NSL	µg/kg	410 J	330 J	1100 J	1100 J	1300 J	1300 J	600 J	620 J	640 J	1600 J
C3 Fluorenes	NSL	NSL	µg/kg	570 J	260 J	2100 J	3700 J	4500 J	3200 J	350 J	400 J	2200 J	3800 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	880 J	600 J	1500 J	2300 J	2300 J	2300 J	1100 J	1300 J	1500 J	2800 J
C3-Naphthalenes	NSL	NSL	µg/kg	1900 J	670 J	8200 J	17000 J	19000 J	14000 J	1100 J	1200 J	8400 J	17000 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1400 J	790 J	3800 J	6600 J	7100 J	5900 J	1200 J	1300 J	4200 J	8000 J
C4 Chrysenes	NSL	NSL	µg/kg	190 J	130 J	530 J	610 J	660 J	660 J	270 J	280 J	360 J	800 J
C4-Naphthalenes	NSL	NSL	µg/kg	1400 J	470 J	5400 J	10000 J	13000 J	9300 J	660 J	670 J	5900 J	11000 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	1100 J	680 J	2900 J	4700 J	4800 J	4000 J	830 J	850 J	3000 J	5000 J
Chrysene [a]	166	1290	µg/kg	**2400**	**1900**	**2400**	**2900**	**2500**	**2100**	**4400**	**4800**	**2700**	**3600**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**460 J**	**390 J**	**240 J**	**290 J**	**220 J**	**190 J**	**750 J**	**980 J**	**290 J**	**300 J**
Fluoranthene [a]	423	2230	µg/kg	**3200**	**2800**	**4400**	**5700**	**5200**	**4300**	**5700**	**6600**	**4200**	**6700**
Fluorene [a]	77.4	536	µg/kg	**270 J**	**220 J**	**400 J**	**960**	**600 J**	**490 J**	**420 J**	**460 J**	**480 J**	**800 J**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1600	1100	850	1000	780	650	2600	3000	1100	1000
Naphthalene [a]	176	561	µg/kg	620 U	460 U	510 U	800 U	610 U	550 U	1000 U	1100 U	560 U	830 U
Perylene	NSL	NSL	µg/kg	700	530	690	750 J	690	600	1000 J	1300	680	930
Phenanthrene [a]	204	1170	µg/kg	**1700**	**1500**	**2500**	**4400**	**3700**	**3300**	**3100**	**3400**	**2700**	**4600**
Pyrene [a]	195	1520	µg/kg	**2700**	**2400**	**3100**	**4300**	**3500**	**2900**	**5300**	**5600**	**3700**	**5100**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**25420.0**	**20240.0**	**27045.0**	**33940.0**	**30065.0**	**24895.0**	**45360.0**	**50930.0**	**27470.0**	**39975.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**36760.0**	**27769.0**	**49285.0**	**68550.0**	**72765**	**59535.0**	**60090.0**	**67100.0**	**51660.0**	**83975**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-4 SEDIMENT RESULTS FOR PAHs
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-49	RREC13-49	RREC13-49	RREC13-50	RREC13-50	RREC13-50	RREC13-50	RREC13-50
			Sample Name:	RREC13-49-0305	RREC13-49-0507	RREC13-49-0710	RREC13-50-SURF	RREC13-50-0001	RREC13-50-0103	RREC13-50-0305	RREC13-50-0507
			Sample Depth (ft):	3-5	5-7	7-10	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**								
1-Methylnaphthalene [b]	NSL	NSL	µg/kg	860	340 J	460 J	120 J	2000 J	2700 J	1200 J	1200
2-Methylnaphthalene [a] [b]	NSL	NSL	µg/kg	1400	560	850 U	220 U	5400 U	5200	2400 U	1900
Acenaphthene [a]	NSL	NSL	µg/kg	650 J	360 J	550 J	160 J	3900 J	5200	2300 J	1300
Acenaphthylene [a]	NSL	NSL	µg/kg	280 J	150 J	230 J	92 J	1500 J	2100 J	900 J	590 J
Anthracene [a]	57.2	845	µg/kg	**1000**	**860**	**960**	**300**	**13000**	**9900**	**5900**	**3000**
Benzo(a)anthracene [a]	108	1050	µg/kg	**3600**	**2600**	**2900**	**1100**	**24000**	**18000**	**12000**	**5900**
Benzo(a)pyrene [a]	150	1450	µg/kg	**3400**	**2500**	**2600**	**620**	**16000**	**12000**	**8600**	**3700**
Benzo(b)fluoranthene [a]	NSL	NSL	µg/kg	3200	2700	2700	980	14000	10000	8700	3700
Benzo(e)pyrene	NSL	NSL	µg/kg	2400	1700	1800	620	10000	8100	5600	2700
Benzo(g,h,i)perylene [a]	NSL	NSL	µg/kg	1200	1000	870	560	7500	6500	4600	2200
Benzo(k)fluoranthene [a]	NSL	NSL	µg/kg	3100 J	2200 J	2700 J	850	17000	13000	7300	3300
C1 Chrysenes	NSL	NSL	µg/kg	3100 J	1900 J	1900 J	500	12000	11000 J	6900 J	4800 J
C1 Fluorenes	NSL	NSL	µg/kg	820 J	310 J	480 J	52 J	1800 J	1500 J	720 J	610 J
C1-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	5800 J	4400 J	4000 J	1100 J	26000 J	23000 J	14000 J	8800 J
C1-Naphthalenes	NSL	NSL	µg/kg	1500 J	620 J	880 J	220 J	3400 J	5400 J	2200 J	2100 J
C1-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	10000 J	4200 J	5200 J	650 J	20000 J	19000 J	10000 J	9900 J
C2 Chrysenes	NSL	NSL	µg/kg	4300 J	2500 J	2700 J	300 J	7400 J	8200 J	4600 J	4500 J
C2 Fluorenes	NSL	NSL	µg/kg	2200 J	790 J	1100 J	55 J	1500 J	1700 J	900 J	1100 J
C2-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	4500 J	2800 J	2800 J	460 J	11000 J	12000 J	6700 J	5800 J
C2-Naphthalenes	NSL	NSL	µg/kg	9500 J	2400 J	3500 J	530 J	7500 J	12000 J	4300 J	5500 J
C2-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	9800 J	4600 J	5900 J	330 J	13000 J	13000 J	7300 J	8100 J
C3 Chrysenes	NSL	NSL	µg/kg	1800 J	930 J	1100 J	82 J	3100 J	3300 J	1800 J	2300 J
C3 Fluorenes	NSL	NSL	µg/kg	4000 J	1800 J	2300 J	57 J	3300 J	4000 J	2000 J	2500 J
C3-Fluoranthenes/Pyrenes	NSL	NSL	µg/kg	3100 J	1700 J	1900 J	210 J	5900 J	6500 J	3700 J	4400 J
C3-Naphthalenes	NSL	NSL	µg/kg	19000 J	5300 J	8100 J	460 J	7800 J	9800 J	4500 J	6400 J
C3-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	8600 J	4800 J	6100 J	270 J	13000 J	15000 J	7400 J	8600 J
C4 Chrysenes	NSL	NSL	µg/kg	910 J	470 J	510 J	39 J	1200 J	1800 J	800 J	1200 J
C4-Naphthalenes	NSL	NSL	µg/kg	12000 J	3900 J	5900 J	240 J	6200 J	6200 J	3200 J	4200 J
C4-Phenanthrenes/Anthracenes	NSL	NSL	µg/kg	5000 J	3300 J	4000 J	120 J	8400 J	10000 J	4800 J	6400 J
Chrysene [a]	166	1290	µg/kg	**3700**	**2700**	**3000**	**1100**	**21000**	**17000**	**11000**	**5400**
Dibenzo(a,h)anthracene [a]	33	NSL	µg/kg	**320 J**	**300 J**	**240 J**	**180 J**	**2600 J**	**2200 J**	**1500 J**	**670 J**
Fluoranthene [a]	423	2230	µg/kg	**6800**	**4800**	**6600**	**1800**	**47000**	**32000**	**21000**	**12000**
Fluorene [a]	77.4	536	µg/kg	**800 J**	**490 J**	**1100**	**230**	**8200**	**9800**	**3900**	**2500**
Indeno(1,2,3-cd)pyrene [a]	NSL	NSL	µg/kg	1100	890	830 J	540	7600	6100	4200	1900
Naphthalene [a]	176	561	µg/kg	**980**	**620**	**2600**	**320**	**14000**	**12000**	**6700**	**6300**
Perylene	NSL	NSL	µg/kg	990	680	750 J	230	5400 U	3800 U	2400 U	1200 U
Phenanthrene [a]	204	1170	µg/kg	**5400**	**2900**	**4200**	**1300**	**41000**	**32000**	**17000**	**9900**
Pyrene [a]	195	1520	µg/kg	**5300**	**3900**	**4300**	**1300**	**29000**	**23000**	**14000**	**8300**
Total PAH17 ND=1/2RL	1601.0	22800.0	µg/kg	**42230.0**	**29530.0**	**36805.0**	**11542.0**	**270000**	**216000**	**130800**	**72560.0**
Total PAH34 ND=1/2RL	1601.0	22800.0	µg/kg	**90440**	**55550.0**	**68010.0**	**14916.0**	**367000**	**308000**	**183520**	**119970**

NOTES:
Presented results are not normalized to organic carbon.
[a] Included in calculation of total 17PAH
[b] Excluded from calculation of total 34PAH
B = Method Blank Contamination.
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
µg/kg = Micrograms per kilogram.
NSL= No screening level
TEC = Threshold effect concentration.
Development and Evaluation of Consensus-Based Sediment
Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
PEC = Probable effect concentration.
Development and Evaluation of Consensus-Based Sediment
Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).
Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-01	RREC13-01	RREC13-01	RREC13-01	RREC13-02	RREC13-02	RREC13-02	RREC13-02	RREC13-02
			Sample Name:	RREC13-01-SURF	RREC13-01-0001	RREC13-01-0103	RREC13-01-0305	RREC13-02-SURF	RREC13-02-0001	RREC13-02-0103	RREC13-02-0305	RREC13-02-0507
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	10/31/13	10/30/13	10/31/13	10/31/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**									
Arsenic	9.79	33	mg/kg	**13.5**	**10.5**	**10.2**	**15.2**	**10.6**	**12.3**	**18.8**	**14.9**	**17.3**
Barium	NSL	NSL	mg/kg	142	158 J	180 J	230 J	50	70.4 J	111 J	114 J	152 J
Cadmium	0.99	4.98	mg/kg	**8.7**	**16.2**	**4.4**	**4 J**	0.71	**1.9 J**	**3 J**	**3.7 J**	**4.5 J**
Chromium	43.4	111	mg/kg	**66.2**	**97 J**	43 J	40.9	30.2	**51.9 J**	**91.2 J**	**84.9 J**	**135 J**
Copper	31.6	149	mg/kg	**209 J**	**250**	**300**	**332**	**52.4 J**	**70.3**	**115**	**108**	**155**
Iron	20000	40000	mg/kg	**30500**	**32800 J**	**23000 J**	**26400**	**37000**	**81900**	**102000**	**59200**	**89100**
Lead	35.8	128	mg/kg	**229 J**	**301**	**401**	**451**	**49.2 J**	**161**	**276**	**218**	**305**
Mercury	0.18	1.06	mg/kg	**1.2**	**1.5**	**2.1**	**2.2**	0.13 J	**0.37 J**	**0.5 J**	0.18 UJ	**0.66 J**
Nickel	22.7	48.6	mg/kg	**38.9**	**46.8 J**	**43.4 J**	**40.1 J**	22.1	**42.2**	**66.6**	**62.8**	**71.7**
Selenium	NSL	NSL	mg/kg	2.4 J	4.5 J	3.3 J	4.6 J	2.5 J	7.9	11.2	24.2	11.5
Silver	NSL	NSL	mg/kg	1.6	2	1.9	2	0.77 J	1.3	1.9	1.9	2.5
Zinc	121	459	mg/kg	**577**	**648 J**	**907 J**	**997**	**219**	**740**	**1040**	**748**	**938**
Total Organic Carbon	NSL	NSL	%	9.87	11.6	10.9	8.42 J	9.04	10.2 J	9.17 J	10.7 J	9.1 J

			Sample Location:	RREC13-02	RREC13-02	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-03	RREC13-05	RREC13-05
			Sample Name:	RREC13-02-0709	RREC13-02-0911	RREC13-03-SURF	RREC13-03-0001	RREC13-03-0103	RREC13-03-0305	RREC13-03-0507	RREC13-05-SURF	RREC13-05-0001
			Sample Depth (ft):	7-9	0-0.5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	11/2/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**									
Arsenic	9.79	33	mg/kg	**17.6**	**18.1**	7.2	9	7.6	7.6	3.3	4.1	5.9
Barium	NSL	NSL	mg/kg	137 J	112	90.1 J	167 J	162 J	164 J	49.7 J	158 J	135 J
Cadmium	0.99	4.98	mg/kg	**5.9 J**	**4.2**	**6.3 J**	**17.1 J**	**21.2 J**	**18.1 J**	0.24 J	**1 J**	**3.1 J**
Chromium	43.4	111	mg/kg	**112 J**	**85.7**	**62.2 J**	**124 J**	**112 J**	**75.4 J**	13.4 J	**68.2 J**	**96 J**
Copper	31.6	149	mg/kg	**172**	**144**	**109 J**	**222 J**	**225 J**	**148 J**	12.8 J	**57.3 J**	**92.4 J**
Iron	20000	40000	mg/kg	**89600**	**80000**	**58800**	**43400**	**34100**	**31900**	14300	**47700**	**61200**
Lead	35.8	128	mg/kg	**283**	**240**	**132**	**222**	**218**	**150**	9.1	**97.7**	**218**
Mercury	0.18	1.06	mg/kg	0.11 J	**0.48**	**0.46 J**	**1.1 J**	**1.4 J**	**0.9 J**	0.015 J	0.11 J	**0.43 J**
Nickel	22.7	48.6	mg/kg	**47.9**	**37.3 J**	**35 J**	**60.2 J**	**61.1 J**	**37.7 J**	16 J	17.6 J	**49.9 J**
Selenium	NSL	NSL	mg/kg	6.6	6	3.4 J	2.6 J	2.4 J	2.3 J	0.74 J	2.8 J	4.4 J
Silver	NSL	NSL	mg/kg	2.6	1.9 J	1.1 J	2 J	2 J	1.3 J	1 UJ	0.38 J	1.6 J
Zinc	121	459	mg/kg	**1140**	**1030 J**	**483 J**	**792 J**	**717 J**	**430 J**	34 J	**178 J**	**746 J**
Total Organic Carbon	NSL	NSL	%	14.2 J	16.4 J	11.6	6.06	6.97	4.76	0.68	7.01	5.49

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-05	RREC13-06	RREC13-06	RREC13-06	RREC13-07	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-09	RREC13-11
			Sample Name:	RREC13-05-0103	RREC13-06-SURF	RREC13-06-0001	RREC13-06-0103	RREC13-07-SURF	RREC13-09-SURF	RREC13-09-0001	RREC13-09-0001-FD	RREC13-09-0103	RREC13-09-0103-FD	RREC13-09-0305	RREC13-09-0305-FD	RREC13-11-SURF
			Sample Depth (ft):	1-3	0-0.5	0-1	1-3	0-0.5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5	0-0.5
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**													
Arsenic	9.79	33	mg/kg	9	7.9	**13.8**	**13**	5	3.9	8.7	7.1	**14.2**	**14.3**	**15.6**	**13.2**	7.9
Barium	NSL	NSL	mg/kg	145 J	197 J	106	116	86.9 J	59.4	150	150	169	457	278	202	67.5
Cadmium	0.99	4.98	mg/kg	**4.1 J**	**1.6 J**	**2.1**	**3**	0.89 J	0.95	**4.7**	**3.9**	**7.5**	**7.9**	**10.2**	**7.3**	**7.6**
Chromium	43.4	111	mg/kg	**110 J**	**109 J**	**637**	**119**	**242 J**	**212**	**183**	**254**	**167**	**252**	**203**	**139**	**157**
Copper	31.6	149	mg/kg	**139 J**	**114 J**	**84.2**	**94.6**	**37 J**	**110 J**	**169 J**	**164 J**	**179 J**	**182 J**	**202 J**	**163 J**	**180 J**
Iron	20000	40000	mg/kg	**135000**	**69500**	**73600**	**76600**	**67500**	**235000**	**190000**	**196000**	**145000**	**138000**	**102000**	**110000**	**263000**
Lead	35.8	128	mg/kg	**362**	**76.2**	**128 J**	**228 J**	**44.2**	**67.1 J**	**257 J**	**236 J**	**448 J**	**831 J**	**513 J**	**386 J**	**577 J**
Mercury	0.18	1.06	mg/kg	**0.6 J**	0.17 J	**0.37**	**0.82**	0.055 J	0.17	**0.51**	**0.46**	**0.62**	**0.56**	**0.86**	**0.81**	**0.21**
Nickel	22.7	48.6	mg/kg	**53.7 J**	**25.7 J**	**44.6**	**60.5**	19.4 J	**110 J**	**134 J**	**139 J**	**90.6 J**	**89.3 J**	**99.9 J**	**65.8 J**	**91.6 J**
Selenium	NSL	NSL	mg/kg	7	4.4 J	3.2 J	3.3 J	4.2	9.3	7.7	8.8	7.3	6.8	9.4	10.7	8.8
Silver	NSL	NSL	mg/kg	2 J	0.41 J	1.7 J	3.6 J	0.72 J	1.2	2.3	2.2	2.8	2.9	3.6	2.7	4.2
Zinc	121	459	mg/kg	**1540 J**	**189 J**	**533**	**863**	**184 J**	**223**	**957**	**863**	**1520**	**1510**	**1570**	**1510**	**3630**
Total Organic Carbon	NSL	NSL	%	7.42	5.5	8.6	7.81	4.34	3.53 J	4.56 J	9.24 J	9.08 J	7.18 J	10.2 J	9.35 J	2.05 J

			Sample Location:	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-13	RREC13-14	RREC13-14	RREC13-14	RREC13-14	RREC13-14	RREC13-14	RREC13-14	RREC13-15
			Sample Name:	RREC13-13-SURF	RREC13-13-0001	RREC13-13-0103	RREC13-13-0305	RREC13-13-0507	RREC13-14-SURF	RREC13-14-SURF-FD	RREC13-14-0001	RREC13-14-0103	RREC13-14-0305	RREC13-14-0507	RREC13-14-0710	RREC13-15-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5
			Date Sampled:	11/4/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13	11/4/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**													
Arsenic	9.79	33	mg/kg	**10.4**	4.6	7.3	**10.5**	**13.2**	5.6	4.2	**19.8 J**	**10.9**	**12.5**	**10.5**	**10.2**	**10.7**
Barium	NSL	NSL	mg/kg	52.1	86.7 J	132 J	191 J	129 J	96.9	75.3	168 J	189	177	160	181 J	201
Cadmium	0.99	4.98	mg/kg	**6.3**	**24.6 J**	**31 J**	**20 J**	**4.7 J**	**5.4**	**4.6**	**6.8**	**9.2**	**8.4**	**8.1**	**6.1 J**	**7.9**
Chromium	43.4	111	mg/kg	**170**	**220 J**	**272 J**	**161 J**	**57.2 J**	**137**	**107**	**273 J**	**282**	**231**	**224**	**194 J**	**232**
Copper	31.6	149	mg/kg	**142 J**	**241 J**	**260 J**	**263 J**	**271 J**	**145 J**	**117 J**	**256 J**	**205 J**	**187 J**	**188 J**	**161 J**	**175 J**
Iron	20000	40000	mg/kg	**409000**	**370000**	**373000**	**82000**	**30300**	**152000**	**132000**	**181000 J**	**112000**	**129000**	**125000**	**125000**	**76300**
Lead	35.8	128	mg/kg	**488 J**	**1230**	**1490**	**363**	**266**	**254 J**	**205 J**	**295 J**	**403 J**	**369 J**	**383 J**	**266**	**360 J**
Mercury	0.18	1.06	mg/kg	0.13	**0.25 J**	**0.49 J**	**1.5 J**	**1.9 J**	**0.65**	**0.53**	**0.54 J**	**0.75**	**1.1**	**0.66**	**0.73 J**	**0.77**
Nickel	22.7	48.6	mg/kg	**132 J**	**154 J**	**178 J**	**98.1 J**	**36.1 J**	**113 J**	**84.4 J**	**217 J**	**183 J**	**157 J**	**156 J**	**144 J**	**123 J**
Selenium	NSL	NSL	mg/kg	8.3	12.3	11.9	4.2 J	2.2 J	5.8	5.4	3.7 U	5.5	6.6	6	6.4	4.1
Silver	NSL	NSL	mg/kg	5.1	8.5 J	10.3 J	3.1 J	1.8 J	2.8	2.2	3.7	4.1	4.1	3.8	2.9 J	3.5
Zinc	121	459	mg/kg	**3610**	**9410 J**	**11800 J**	**1710 J**	**689 J**	**1270**	**1120**	**1040 J**	**1290**	**1310**	**1460**	**1080 J**	**1260**
Total Organic Carbon	NSL	NSL	%	3.44 J	7.8	5.0	8.71	6.69	9.91 J	8.79 J	8.8	7.76 J	10.2 J	9.73 J	8.1	8.79 J

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-15	RREC13-15	RREC13-16	RREC13-16	RREC13-16	RREC13-16	RREC13-16	RREC13-16	RREC13-16
			Sample Name:	RREC13-15-0001	RREC13-15-0103	RREC13-16-SURF	RREC13-16-0001	RREC13-16-0103	RREC13-16-0305	RREC13-16-0507	RREC13-16-0709	RREC13-16-0911
			Sample Depth (ft):	0-1	1-3	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	11/5/13	11/5/13	10/31/13	10/29/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**									
Arsenic	9.79	33	mg/kg	**10.2**	**11.5 J**	**9.9**	**11.1**	**11.1**	5.2	5.4	4.8	5.4
Barium	NSL	NSL	mg/kg	213	129 J	115	150 J	89.4 J	71.8 J	70.7 J	45 J	56.7 J
Cadmium	0.99	4.98	mg/kg	**9.1**	**4.2**	**3.2**	**6**	0.66	0.31 J	0.26 J	0.18 J	0.25 J
Chromium	43.4	111	mg/kg	**267**	**106 J**	**95.7**	**166 J**	25.4 J	19.4 J	15.7 J	11 J	15.2 J
Copper	31.6	149	mg/kg	**177 J**	**98.2 J**	**102 J**	**134 J**	31 J	18.6 J	15.7 J	13.9 J	15 J
Iron	20000	40000	mg/kg	**66100**	**46700 J**	**43400**	**52300 J**	**24800 J**	19000 J	16100 J	12300 J	16400 J
Lead	35.8	128	mg/kg	**281 J**	**172 J**	**140 J**	**282 J**	29.7 J	13.2 J	10.2 J	8.2 J	9 J
Mercury	0.18	1.06	mg/kg	**0.84**	0.18 J	**0.4**	**0.54**	**0.22**	0.021 J	0.021 J	0.015 J	0.02 J
Nickel	22.7	48.6	mg/kg	**114 J**	**59.5 J**	**57.4**	**75 J**	**36 J**	**25.8 J**	21.3 J	15.9 J	21.4 J
Selenium	NSL	NSL	mg/kg	3.7	7.2	2.8 J	6.8	2.8 J	2 J	1.8 J	1.3 J	1.8 J
Silver	NSL	NSL	mg/kg	3.5	1.3	1.8 J	2.6	0.46 J	0.3 J	0.24 J	0.19 J	0.21 J
Zinc	121	459	mg/kg	**922**	**713 J**	**455**	**716 J**	98.8 J	52.5 J	50.1 J	30.2 J	42 J
Total Organic Carbon	NSL	NSL	%	7.51 J	5.0	6.7	6.83	7.42	2.4	2.89	2.6	2.96

			Sample Location:	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-17	RREC13-18	RREC13-18
			Sample Name:	RREC13-17-SURF	RREC13-17-0001	RREC13-17-0103	RREC13-17-0305	RREC13-17-0507	RREC13-17-0709	RREC13-17-0911	RREC13-18-SURF	RREC13-18-0001
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1
			Date Sampled:	10/31/13	10/29/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**									
Arsenic	9.79	33	mg/kg	7.8	7.6	**17.2**	**18.7**	**15.9**	**12.3**	**12.4**	8	9
Barium	NSL	NSL	mg/kg	89	93.8 J	162 J	118 J	133 J	109 J	104 J	81.2	84.6 J
Cadmium	0.99	4.98	mg/kg	**2**	**4**	**9.2**	**9.4**	**12.5**	**14.2**	**10.2**	**1.9**	**2.7 J**
Chromium	43.4	111	mg/kg	**63**	**93**	**253**	**183**	**159 J**	**128 J**	**112 J**	**57.6**	**64.2**
Copper	31.6	149	mg/kg	**78.9 J**	**96.6**	**247**	**231**	**211**	**197**	**182**	**71.2 J**	**75.2**
Iron	20000	40000	mg/kg	**35800**	**104000**	**82400**	**99400**	**91700 J**	**59300 J**	**65700 J**	**33900**	**36600**
Lead	35.8	128	mg/kg	**97.4 J**	**139 J**	**475 J**	**359 J**	**461**	**226**	**234**	**114 J**	**102**
Mercury	0.18	1.06	mg/kg	**0.33**	**0.49 J**	**0.93 J**	**0.95 J**	**1.1**	**0.99**	**1**	**0.36**	**0.36**
Nickel	22.7	48.6	mg/kg	**45.1**	**88.3 J**	**109 J**	**49.1 J**	**44.3 J**	**48 J**	**49.5 J**	**42.6**	**46.5 J**
Selenium	NSL	NSL	mg/kg	2.5 J	4.6 J	4.9	5.3 J	9.3	6.9	6.7	2.7 J	6.1 J
Silver	NSL	NSL	mg/kg	0.97 J	2.2	3.5	2.4	2.1	1.8	1.7	0.93 J	1.4 J
Zinc	121	459	mg/kg	**305**	**424 J**	**997 J**	**612 J**	**659 J**	**535 J**	**488 J**	**285**	**323**
Total Organic Carbon	NSL	NSL	%	6.23	6.6	9.2	10.10	21.00	6.26 J	5.91 J	5.7	5.07 J

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-18	RREC13-19	RREC13-19	RREC13-20	RREC13-20	RREC13-20
			Sample Name:	RREC13-18-0103	RREC13-18-0305	RREC13-18-0507	RREC13-18-0709	RREC13-18-0911	RREC13-19-SURF	RREC13-19-0001	RREC13-20-SURF	RREC13-20-0001	RREC13-20-0103
			Sample Depth (ft):	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	0-0.5	0-1	1-3
			Date Sampled:	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	11/1/13	10/29/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Arsenic	9.79	33	mg/kg	**14**	**12.2**	9.7	6.8	6.6	5.8	**35.4**	6.4	5.7	6.1
Barium	NSL	NSL	mg/kg	124 J	96.5 J	93.5 J	58.7 J	69 J	73.5	77 J	34.3	51.3	53.5
Cadmium	0.99	4.98	mg/kg	**6.6 J**	**8.2 J**	**3.2 J**	0.6 J	0 UJ	0.84	**1.9**	0.58	0.25 J	0.26 J
Chromium	43.4	111	mg/kg	**118**	**86.4**	**45.5**	18.9	17.9	27	**64.8 J**	19.8	14.1 J	14.5 J
Copper	31.6	149	mg/kg	**146**	**138**	**86.2**	21.3	18.4	**37.3 J**	**92**	23.2 J	15.1	16.3
Iron	20000	40000	mg/kg	**64700**	**53200**	**27300**	18500	18400	19500	**54800 J**	17000	16300	17200
Lead	35.8	128	mg/kg	**227**	**189**	**121**	31.9	20.5	**67.8 J**	**112**	23.6 J	9.8	10
Mercury	0.18	1.06	mg/kg	**0.6**	**0.76**	**0.41**	0.088 J	0.046 J	0.16	**0.26**	0.11 J	0.013 J	0.011 J
Nickel	22.7	48.6	mg/kg	**54.2 J**	**39 J**	**32.2 J**	**23.8 J**	**23.6 J**	**23.9**	**52.7 J**	21.3	21.3	**22.8**
Selenium	NSL	NSL	mg/kg	8.7	6.5	4.2 J	2.8 J	2.8 J	1.2 J	6.5	1.1 J	1.3 J	1.4 J
Silver	NSL	NSL	mg/kg	2	1.4	0.87 J	0.24 J	0.19 J	0.34 J	1.1	0.33 J	0.061 J	0.096 J
Zinc	121	459	mg/kg	**494**	**397**	**242**	70.2	57	**169**	**289 J**	89.7	44.1	43.4
Total Organic Carbon	NSL	NSL	%	5.86 J	5.36 J	4.46 J	2.65 J	3.77 J	4.4	3.62 J	5.1	6.07	4.1

			Sample Location:	RREC13-20	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-21
			Sample Name:	RREC13-20-0305	RREC13-21-SURF	RREC13-21-0001	RREC13-21-0001-FD	RREC13-21-0103	RREC13-21-0103-FD	RREC13-21-0305	RREC13-21-0305-FD	RREC13-21-0507	RREC13-21-0507-FD
			Sample Depth (ft):	3-5	0-0.5	0-1	0-1	1-3	1-3	3-5	3-5	5-7	5-7
			Date Sampled:	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**										
Arsenic	9.79	33	mg/kg	6.3	**11.2**	**15.5**	**17.6**	**34.6**	**33.1**	**54.9**	**53**	**20.5**	**25.9**
Barium	NSL	NSL	mg/kg	55.4	106	98.3 J	100	150	138	189	205	213	199
Cadmium	0.99	4.98	mg/kg	0.4 J	**3.6**	**4.6**	**4.6**	**10.1**	**8.9**	**10.2**	**11.1**	**11.8**	**11.8**
Chromium	43.4	111	mg/kg	15.1 J	**125**	**121 J**	**134 J**	**321 J**	**286 J**	**401 J**	**439 J**	**360 J**	**362 J**
Copper	31.6	149	mg/kg	15.7	**140 J**	**218 J**	**231**	**446**	**424**	**612**	**609**	**294**	**339**
Iron	20000	40000	mg/kg	17300	**59900**	**100000 J**	**107000**	**183000**	**177000**	**299000**	**301000**	**100000**	**139000**
Lead	35.8	128	mg/kg	9.2	**153 J**	**159 J**	**181**	**328**	**312**	**519**	**503**	**441**	**450**
Mercury	0.18	1.06	mg/kg	0.12 UJ	**0.36**	**0.37**	**0.37 J**	**0.49 J**	**0.57 J**	**0.52 J**	**0.6 J**	**0.96 J**	**0.93 J**
Nickel	22.7	48.6	mg/kg	**23.7**	**74.9**	**94.2 J**	**101**	**237**	**212**	**268**	**289**	**158**	**170**
Selenium	NSL	NSL	mg/kg	1.3 J	4.2 J	9.3	7.4 J	10.7	10.9	16.7	15	6.7	7.9
Silver	NSL	NSL	mg/kg	0.12 J	2 J	3	2.8	5.9	5.4	6.8	7.3	4.7	4.9
Zinc	121	459	mg/kg	51.5	**482**	**647 J**	**682**	**896**	**836**	**813**	**845**	**1340**	**1330**
Total Organic Carbon	NSL	NSL	%	3.26	6.9	7.1	7.36 J	10.2 J	10.6 J	9.13 J	9.49 J	10.4 J	11.5 J

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N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

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Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-21	RREC13-21	RREC13-21	RREC13-21	RREC13-22	RREC13-22	RREC13-22	RREC13-22	RREC13-22	RREC13-22	RREC13-22
			Sample Name:	RREC13-21-0709	RREC13-21-0709-FD	RREC13-21-0911	RREC13-21-0911-FD	RREC13-22-SURF	RREC13-22-0001	RREC13-22-0103	RREC13-22-0305	RREC13-22-0507	RREC13-22-0709	RREC13-22-0911
			Sample Depth (ft):	7-9	7-9	9-11	9-11	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11
			Date Sampled:	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**											
Arsenic	9.79	33	mg/kg	**11.8**	**10.8**	7	7.2	9.2	9.1	**19.6**	**27.6**	**27.6**	**14.1**	8.3
Barium	NSL	NSL	mg/kg	142	134	61.2	62	111	103 J	161 J	355 J	334 J	195 J	81.4 J
Cadmium	0.99	4.98	mg/kg	**7.4**	**6.5**	0.41 J	0.33 J	**3**	**3.4 J**	**9.2 J**	**17.2 J**	**18.4 J**	**7.7 J**	**1.6 J**
Chromium	43.4	111	mg/kg	**159 J**	**142 J**	18.1 J	16.2 J	**102**	**95.4**	**266**	**843**	**542**	**202**	28
Copper	31.6	149	mg/kg	**182**	**161**	18.4	17.3	**92.8 J**	**92.9**	**255**	**414**	**350**	**202**	**98.6**
Iron	20000	40000	mg/kg	**39100**	**42300**	18200	18500	**43000**	**41000**	**121000**	**131000**	**131000**	**66800**	**20500**
Lead	35.8	128	mg/kg	**286**	**257**	14.8	10.5	**123 J**	**156**	**261**	**476**	**492**	**330**	**116**
Mercury	0.18	1.06	mg/kg	**0.37 J**	**0.35 J**	0.017 J	0.019 J	**0.42**	**0.42**	**0.64**	**0.81**	**1.7**	**1**	**0.65**
Nickel	22.7	48.6	mg/kg	**64.6**	**60.7**	**25.7**	**24.7**	**69**	**65 J**	**188 J**	**343 J**	**268 J**	**102 J**	**30.2 J**
Selenium	NSL	NSL	mg/kg	3.7 J	3.4 J	1.5 J	1.5 J	2.9 J	6.6 J	14.6	16.1	16.2	8.2	3.2 J
Silver	NSL	NSL	mg/kg	2.3	2	0.14 J	0.13 J	2.4	1.8 J	5.4	9.7	9.9	3.9	0.85 J
Zinc	121	459	mg/kg	**721**	**657**	55.9	57.5	**388**	**367**	**707**	**1080**	**1140**	**893**	**271**
Total Organic Carbon	NSL	NSL	%	11.3 J	7.88 J	3.42 J	3.62 J	5.89	7.18 J	8.53 J	9.59 J	9.55 J	8.3 J	4.36 J

			Sample Location:	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-23	RREC13-24	RREC13-24	RREC13-24	RREC13-25
			Sample Name:	RREC13-23-SURF	RREC13-23-0001	RREC13-23-0103	RREC13-23-0305	RREC13-23-0507	RREC13-23-0709	RREC13-23-0911	RREC13-24-SURF	RREC13-24-0001	RREC13-24-0103	RREC13-25-SURF
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3	0-0.5
			Date Sampled:	11/2/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**											
Arsenic	9.79	33	mg/kg	**11.2**	**11.1**	**17.9**	**16.7**	**12.6**	**11.2**	**13.1**	6.1	4.7 J	4.6 J	**13.5**
Barium	NSL	NSL	mg/kg	118	142	320	315	210	235	260	28.4 J	93.2 J	85.2 J	43.3 J
Cadmium	0.99	4.98	mg/kg	**4.4**	**7.2**	**12:00 AM**	**20**	**10.1**	**8.4**	**9**	0.43 J	0.47 U	0.43 U	0.82
Chromium	43.4	111	mg/kg	**115**	**132**	**646**	**613**	**298**	**289**	**333**	**44.4 J**	11.8 J	12.9 J	**63 J**
Copper	31.6	149	mg/kg	**122 J**	**121**	**309**	**289**	**183**	**172**	**207**	27.8	16.2 J	13.6 J	**45.9**
Iron	20000	40000	mg/kg	**40000**	**33200**	**70900**	**67900**	**53500**	**48000**	**51400**	**44500**	12400 J	15200 J	**103000**
Lead	35.8	128	mg/kg	**204 J**	**206**	**394**	**390**	**333**	**308**	**338**	32.7 J	26.3 J	21.5 J	**61.6 J**
Mercury	0.18	1.06	mg/kg	**0.81**	**0.62**	**1.3**	**1.1**	**0.98**	**0.86**	**1**	**0.2**	0.13 J	0.064 J	0.096 J
Nickel	22.7	48.6	mg/kg	**86.2**	**71.2 J**	**380 J**	**388 J**	**191 J**	**144 J**	**147 J**	19 J	14.2 J	15.2 J	**41.1 J**
Selenium	NSL	NSL	mg/kg	3.2 J	3.2 J	4.9	4.9	3.7 J	3.3 J	3.7 J	2.5 J	0.89 J	0.76 J	4.2
Silver	NSL	NSL	mg/kg	3	2.7 J	10.5 J	9.3 J	4.7 J	4.5 J	4.6 J	0.52 J	0.11 J	0.097 J	0.74 J
Zinc	121	459	mg/kg	**501**	**481 J**	**1160 J**	**1170 J**	**956 J**	**772 J**	**874 J**	**181**	59.9 J	52.2 J	**436**
Total Organic Carbon	NSL	NSL	%	7.40	13.2 J	11.7 J	1.57 J	2.58 J	9.56 J	10.3 J	2.6	2.30	3.0	3.09

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-25	RREC13-26	RREC13-26	RREC13-26	RREC13-26	RREC13-26	RREC13-27	RREC13-27
			Sample Name:	RREC13-25-0001	RREC13-25-0103	RREC13-25-0305	RREC13-25-0507	RREC13-25-0710	RREC13-26-SURF	RREC13-26-0001	RREC13-26-0103	RREC13-26-0305	RREC13-26-0507	RREC13-27-SURF	RREC13-27-0001
			Sample Depth (ft):	0-1	1-3	3-5	5-7	7-10	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	**10.5 J**	**10.6 J**	**12.8 J**	**12.3 J**	**16.5 J**	**13.2 J**	**10**	9	**12.3**	**12.3**	**10.1 J**	**15.3 J**
Barium	NSL	NSL	mg/kg	148 J	221 J	320 J	335 J	355 J	89.5 J	172	229	182	151	88.2 J	144 J
Cadmium	0.99	4.98	mg/kg	**7.5**	**8.9**	**11.8**	**16.4**	**24.9**	**3.1**	**7.6**	**10**	**6.7**	**9.9**	**3.8**	**6.6**
Chromium	43.4	111	mg/kg	**212 J**	**312 J**	**503 J**	**532 J**	**994 J**	**161 J**	**250**	**326**	**294**	**171**	**178 J**	**232 J**
Copper	31.6	149	mg/kg	**134 J**	**162 J**	**209 J**	**227 J**	**432 J**	**110 J**	**218 J**	**261 J**	**291 J**	**229 J**	**190 J**	**200 J**
Iron	20000	40000	mg/kg	**86300 J**	**71600 J**	**52900 J**	**37200 J**	**58500 J**	**132000 J**	**152000**	**172000**	**195000**	**110000**	**118000 J**	**128000 J**
Lead	35.8	128	mg/kg	**189 J**	**274 J**	**304 J**	**397 J**	**396 J**	**136 J**	**321 J**	**359 J**	**272 J**	**198 J**	**145 J**	**260 J**
Mercury	0.18	1.06	mg/kg	**0.77 J**	**0.83 J**	**1.1 J**	**1.3 J**	**1.2 J**	**0.4 J**	**0.89**	**0.95**	**0.74**	**0.73**	**0.65 J**	**1 J**
Nickel	22.7	48.6	mg/kg	**129 J**	**190 J**	**247 J**	**239 J**	**306 J**	**79.2 J**	**143 J**	**202 J**	**177 J**	**105 J**	**62.9 J**	**145 J**
Selenium	NSL	NSL	mg/kg	4.2	3.8 J	3.8 J	3.5 J	4.4	5.3	6.3	7.5	7.7	4.2	5.3	5.4
Silver	NSL	NSL	mg/kg	3.6	4.6	6.8	9	13.1	1.9	4.9	5.3	3.5	2.3	1.6	3.2
Zinc	121	459	mg/kg	**611 J**	**684 J**	**843 J**	**911 J**	**1220 J**	**520 J**	**1020**	**1080**	**925**	**684**	**1120 J**	**845 J**
Total Organic Carbon	NSL	NSL	%	8.81	13.5	7.2	7.65	8.73	6.1	11.6 J	9.12 J	7 J	8.98 J	4.76	10.0

			Sample Location:	RREC13-27	RREC13-27	RREC13-27	RREC13-27	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-28	RREC13-29
			Sample Name:	RREC13-27-0103	RREC13-27-0305	RREC13-27-0507	RREC13-27-0710	RREC13-28-SURF	RREC13-28-0001	RREC13-28-0103	RREC13-28-0305	RREC13-28-0507	RREC13-28-0709	RREC13-28-0911	RREC13-29-SURF
			Sample Depth (ft):	1-3	3-5	5-7	7-10	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	**17 J**	**20.6 J**	**27.8 J**	**29.5 J**	8.5	**18.1**	**23**	**29.7**	**19.9**	**22.6**	**14**	9.3
Barium	NSL	NSL	mg/kg	246 J	223 J	165 J	285 J	83.1 J	213 J	168 J	173 J	149 J	211 J	162 J	78.9 J
Cadmium	0.99	4.98	mg/kg	**8.3**	**11.1**	**9.7**	**11.6**	**2.4 J**	**8.2**	**8.6**	**12**	**11.8**	**19.8**	**19.3**	**2.8 J**
Chromium	43.4	111	mg/kg	**389 J**	**346 J**	**280 J**	**329 J**	**84.3 J**	**331 J**	**281 J**	**294 J**	**163 J**	**189 J**	**123 J**	**107 J**
Copper	31.6	149	mg/kg	**248 J**	**261 J**	**274 J**	**328 J**	**67.9**	**238**	**365**	**323**	**225**	**292**	**224**	**82.1**
Iron	20000	40000	mg/kg	**140000 J**	**121000 J**	**167000 J**	**148000 J**	**67700**	**150000**	**143000**	**163000**	**101000**	**109000**	**52000**	**61000**
Lead	35.8	128	mg/kg	**278 J**	**374 J**	**349 J**	**362 J**	**74.2**	**265 J**	**234 J**	**240 J**	**212 J**	**262 J**	**229 J**	**96.7**
Mercury	0.18	1.06	mg/kg	**1.7 J**	**1.2 J**	**1.1 J**	**1.2 J**	**0.26 J**	**1.1**	**0.65**	**0.7**	**0.61**	**1**	**1.1**	**0.91 J**
Nickel	22.7	48.6	mg/kg	**190 J**	**153 J**	**150 J**	**173 J**	**41**	**198 J**	**146 J**	**189 J**	**118 J**	**145 J**	**87.2 J**	**57.4**
Selenium	NSL	NSL	mg/kg	5.8	5.9	6.5	6.6	3.2 J	6.8	6.3	7	5.2	5.8	3.5 J	3.7 J
Silver	NSL	NSL	mg/kg	4.6	4.7	3.6	4.4	0.93 J	4.6 J	4 J	4 J	2.6 J	3.1 J	2.6 J	1.3 J
Zinc	121	459	mg/kg	**827 J**	**1030 J**	**1190 J**	**1000 J**	**440**	**878**	**679**	**662**	**790**	**931**	**658**	**423**
Total Organic Carbon	NSL	NSL	%	9.52	7.3	7.5	8.50	8.74 J	10.1	4.52	7.6	6.71	5.9	5.11	10.6 J

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-29	RREC13-29	RREC13-29	RREC13-29	RREC13-29	RREC13-29	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-30
			Sample Name:	RREC13-29-0001	RREC13-29-0103	RREC13-29-0305	RREC13-29-0507	RREC13-29-0709	RREC13-29-0911	RREC13-30-SURF	RREC13-30-0001	RREC13-30-0001-FD	RREC13-30-0103	RREC13-30-0103-FD
			Sample Depth (ft):	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	0-1	1-3	1-3
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**											
Arsenic	9.79	33	mg/kg	**17.6**	**18.1**	**21.1**	**16.8**	**28**	**18.2**	**12.6**	**19.6**	**16.7**	**17.3**	**10.3**
Barium	NSL	NSL	mg/kg	195	199	228	166	159	255	188 J	428 J	360 J	325 J	99.7 J
Cadmium	0.99	4.98	mg/kg	**8.9**	**8.2**	**10**	**9.6**	**7.5**	**21.3**	**5.3 J**	**27**	**21.1**	**23.6 J**	**5.7 J**
Chromium	43.4	111	mg/kg	**337**	**274**	**299**	**239**	**274**	**343**	**206 J**	**830 J**	**564 J**	**621 J**	**164 J**
Copper	31.6	149	mg/kg	**225**	**207**	**342**	**303**	**386**	**378**	**128**	**374**	**306**	**242**	**86.4**
Iron	20000	40000	mg/kg	**117000**	**120000**	**105000**	**77400**	**173000**	**50100**	**79700**	**64500**	**56600**	**63800**	**29600**
Lead	35.8	128	mg/kg	**278**	**271**	**281**	**240**	**225**	**345**	**181**	**576 J**	**480 J**	**373 J**	**186 J**
Mercury	0.18	1.06	mg/kg	**1**	**0.84**	**0.78**	**0.8**	**0.71**	**0.85**	**1 J**	**2**	**1.9**	**1.6**	**1.5**
Nickel	22.7	48.6	mg/kg	**198 J**	**139 J**	**151 J**	**108 J**	**160 J**	**171 J**	**99.6**	**337 J**	**300 J**	**215 J**	**169 J**
Selenium	NSL	NSL	mg/kg	5.9	5.9	4.9	4.3 J	5.3	4.7 J	4.5 J	5.6	5.2 J	5.2 J	2.4 J
Silver	NSL	NSL	mg/kg	4.7 J	3.8 J	3.9 J	3.8 J	3.3 J	6.1 J	3	10.6 J	9 J	7.4 J	2.2 J
Zinc	121	459	mg/kg	**829 J**	**835 J**	**932 J**	**663 J**	**634 J**	**786 J**	**638**	**1440**	**1190**	**1060**	**395**
Total Organic Carbon	NSL	NSL	%	7.53 J	8.09 J	9.58 J	8.39 J	8.5 J	9.38 J	7.06 J	11.1	10.80	10.4	9.82

			Sample Location:	RREC13-30	RREC13-30	RREC13-30	RREC13-30	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-31	RREC13-32	RREC13-32
			Sample Name:	RREC13-30-0305	RREC13-30-0305-FD	RREC13-30-0507	RREC13-30-0507-FD	RREC13-31-SURF	RREC13-31-0001	RREC13-31-0103	RREC13-31-0305	RREC13-31-0507	RREC13-32-SURF	RREC13-32-0001
			Sample Depth (ft):	3-5	3-5	5-7	5-7	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	10/31/13	10/30/13	10/31/13	10/31/13	10/31/13	10/30/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**											
Arsenic	9.79	33	mg/kg	**14.3**	**12.1**	**12.4**	**12**	6.4	3.9	3.6	3.1	2.8	5.6	**9.9**
Barium	NSL	NSL	mg/kg	230 J	171 J	121 J	112 J	68.5 J	25.9 J	34.8 J	36.1 J	31.2 J	39.6 J	147 J
Cadmium	0.99	4.98	mg/kg	**10.8**	**7.6**	**6.8**	**6.6**	**1.5**	0.19 J	0.24 J	0.25 J	0.22 J	**1.1**	**4.7**
Chromium	43.4	111	mg/kg	**354 J**	**251 J**	**151 J**	**141 J**	40.3 J	13 J	14.2 J	14.7 J	12.5 J	**47.7 J**	**160 J**
Copper	31.6	149	mg/kg	**205**	**159**	**155**	**157**	**48.2**	9.6	10.4	11.2	10.5	**53.9**	**123 J**
Iron	20000	40000	mg/kg	**77500**	**74200**	**136000**	**104000**	**32300 J**	10500 J	12800 J	13700 J	13600 J	**64300 J**	**86700 J**
Lead	35.8	128	mg/kg	**355 J**	**250 J**	**158 J**	**153 J**	**41.2**	7.6	8.5	8.6	8.1	**49.5**	**168 J**
Mercury	0.18	1.06	mg/kg	**1.2**	**1.1**	**0.42**	**0.45**	**0.2 J**	0.016 J	0.023 J	0.022 J	0.022 J	0.15	**0.63**
Nickel	22.7	48.6	mg/kg	**200 J**	**153 J**	**84.5 J**	**82.5 J**	**32.4 J**	15.1 J	15.9 J	16.8 J	15.6 J	**35.1 J**	**109 J**
Selenium	NSL	NSL	mg/kg	5.2	5	5.8	4.7	4.3 J	0.98 J	1.5 J	1.6 J	1.7 J	6.2	7.8
Silver	NSL	NSL	mg/kg	5.2 J	3.7 J	2.6 J	2.1 J	0.82 J	1.1 U	0.99 U	1.1 U	0.18 J	0.82 J	2.6
Zinc	121	459	mg/kg	**1060**	**796**	**642**	**528**	**207 J**	35 J	36.9 J	37.4 J	35.4 J	**273 J**	**724 J**
Total Organic Carbon	NSL	NSL	%	8.76	9.9	7.3	7.38	6.19 J	3.9	3.21	4.2	3.32	5.95 J	9.14

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-32	RREC13-32	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-33	RREC13-34	RREC13-34	RREC13-34
			Sample Name:	RREC13-32-0103	RREC13-32-0305	RREC13-33-SURF	RREC13-33-0001	RREC13-33-0103	RREC13-33-0305	RREC13-33-0507	RREC13-33-0709	RREC13-33-0911	RREC13-34-SURF	RREC13-34-0001	RREC13-34-0103
			Sample Depth (ft):	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3
			Date Sampled:	11/1/13	11/1/13	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/4/13	11/1/13	11/4/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	3.3	3.1	6.3	**11.6**	**12.9**	**14.2**	**12.7**	**10.1**	4.1	**14.5**	**20.3**	**14.9**
Barium	NSL	NSL	mg/kg	46.1 J	136 J	101 J	205 J	241 J	295 J	95 J	87 J	54.7 J	315	333	261
Cadmium	0.99	4.98	mg/kg	0.49 J	0.48 J	**2.1**	**9.2 J**	**12.9 J**	**15.4 J**	**1.5 J**	0.82 J	0.53 J	**18**	**18.4**	**12.5**
Chromium	43.4	111	mg/kg	20.4 J	29.9 J	**87.5 J**	**272 J**	**279 J**	**485 J**	42.3 J	27.2 J	22.2 J	**810**	**656**	**403**
Copper	31.6	149	mg/kg	19.2 J	19.5 J	**65.1**	**176**	**286**	**293**	**201**	**118**	23.8	**261**	**359**	**259**
Iron	20000	40000	mg/kg	16800 J	**26100 J**	**33600 J**	**56200**	**46800**	**46600**	**21100**	16500	17400	**43700**	**89800**	**64900**
Lead	35.8	128	mg/kg	17.2 J	19.4 J	**68.6**	**246**	**312**	**357**	**201**	**143**	**37.6**	**376**	**436**	**369**
Mercury	0.18	1.06	mg/kg	0.089 J	0.061 J	**0.33**	**0.69 J**	**0.96 J**	**1.2 J**	**1.3 J**	**1.5 J**	**0.38 J**	**1.5**	**1.5**	**2.1**
Nickel	22.7	48.6	mg/kg	22.2 J	**34.2 J**	**41 J**	**151**	**142**	**239**	**27.3**	21.2	**22.9**	**314 J**	**275 J**	**205 J**
Selenium	NSL	NSL	mg/kg	2 J	3.2 J	4.7 J	4.1 J	3.7 J	3.5 J	1.7 J	1.2 J	1.2 J	4.1 J	5.8 J	4.7 J
Silver	NSL	NSL	mg/kg	0.28 J	0.32 J	1.2 J	4.6	4.7	7.3	1.1 J	0.9 J	0.22 J	11.3 J	8.5 J	6.9 J
Zinc	121	459	mg/kg	82.4 J	109 J	**380 J**	**778**	**924**	**1090**	**369**	**198**	81.1	**1210 J**	**1680 J**	**1040 J**
Total Organic Carbon	NSL	NSL	%	2.97	2.4	7.83 J	3.55 J	3.19 J	4.1 J	7.73 J	6.5 J	9.63 J	5.74 J	11.4 J	13.3 J

			Sample Location:	RREC13-34	RREC13-34	RREC13-34	RREC13-34	RREC13-35	RREC13-35	RREC13-35	RREC13-35	RREC13-36	RREC13-36	RREC13-36	RREC13-37
			Sample Name:	RREC13-34-0305	RREC13-34-0507	RREC13-34-0709	RREC13-34-0911	RREC13-35-SURF	RREC13-35-0001	RREC13-35-0103	RREC13-35-0305	RREC13-36-SURF	RREC13-36-0001	RREC13-36-0103	RREC13-37-SURF
			Sample Depth (ft):	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	0-0.5
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	10/31/13	10/30/13	10/31/13	10/31/13	10/31/13	10/28/13	10/31/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	**14.6**	**14.6**	**16.4**	**18.2**	5.2	7.4	1.2	2.9	9.6	**10.9**	**14.1**	5.5
Barium	NSL	NSL	mg/kg	264 J	332 J	219 J	253 J	169 J	131 J	14.4 J	49.4 J	145	166 J	246 J	50.3
Cadmium	0.99	4.98	mg/kg	**11.1**	**8.4**	**10.4**	**19.4**	**4.5**	**2.7**	0.35 J	0.19 J	**2.2**	**4.7**	**7.8**	**2.8**
Chromium	43.4	111	mg/kg	**324 J**	**242 J**	**239 J**	**319 J**	**45.7 J**	29.5	5.3	14.6	**74.9**	**147 J**	**287 J**	**45.8**
Copper	31.6	149	mg/kg	**221**	**360**	**309**	**345**	**70.3**	**161**	12.4	10.5	**81.1 J**	**119**	**169**	**61.4 J**
Iron	20000	40000	mg/kg	**79200**	**70400**	**73200**	**65900**	17200 J	17800	3490	14200	**28700**	**33500 J**	**52100 J**	**38900**
Lead	35.8	128	mg/kg	**319 J**	**497 J**	**286 J**	**260 J**	**140**	**196 J**	13.1 J	7.2 J	**177 J**	**302**	**383**	**46.5 J**
Mercury	0.18	1.06	mg/kg	**1.2**	**1.9**	**0.89**	**1.4**	**0.63**	**1.3 J**	0.16 J	0.016 J	**0.99**	**1.1**	**1.1**	**0.31**
Nickel	22.7	48.6	mg/kg	**145 J**	**90.2 J**	**97.1 J**	**120 J**	**27.5 J**	**24.3 J**	4.7 J	17.6 J	**28.8**	**56.3 J**	**106 J**	**29.3**
Selenium	NSL	NSL	mg/kg	5.1	4.5	4.5	4.6	2.4 J	1.6 J	3 U	0.66 J	2.6 J	5 J	6.1	2.2 J
Silver	NSL	NSL	mg/kg	4.7 J	4.8 J	5.1 J	6.3 J	1.7	1.1 J	0.069 J	0.097 J	0.65 J	1.9	3.8	0.62 J
Zinc	121	459	mg/kg	**773**	**715**	**675**	**685**	**392 J**	**442 J**	35.8 J	34.5 J	**508**	**665 J**	**698 J**	**256**
Total Organic Carbon	NSL	NSL	%	9.72	12.1	9.0	9.72	5.03	4.9	0.78	0.1	13.90	8.08 J	6.74 J	6.0

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-37	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38	RREC13-38
			Sample Name:	RREC13-37-0001	RREC13-37-0103	RREC13-37-0305	RREC13-37-0507	RREC13-37-0709	RREC13-37-0911	RREC13-38-SURF	RREC13-38-SURF-FD	RREC13-38-0001	RREC13-38-0103	RREC13-38-0305	RREC13-38-0507
			Sample Depth (ft):	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	10/28/13	11/1/13	11/1/13	11/1/13	11/1/13	11/1/13	11/2/13	11/2/13	10/30/13	10/30/13	11/2/13	11/2/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	6.3	3.4	3.5	3.2	3.4	3.1	3.9	4	2.1	2.9	2.7	2.9
Barium	NSL	NSL	mg/kg	59.9 J	45.5 J	45.6 J	40.1 J	40 J	39.7 J	34.4 J	36.8 J	25.2	25.2	24.2	31
Cadmium	0.99	4.98	mg/kg	**1.3**	0.31 J	0.34 J	0.28 J	0.25 J	0.24 J	**1.2**	0.96	0.22 J	0.24 J	0.23 J	0.23 J
Chromium	43.4	111	mg/kg	29.2 J	17.9 J	19.3 J	17.3 J	16.6 J	16.6 J	37.5 J	35.6 J	11.8	11.7	10.4	12
Copper	31.6	149	mg/kg	**71.2 J**	16.8 J	17.9 J	11.5 J	10.7 J	11.3 J	**47.6**	**44.6**	8.6	8.8	8.1	9.9
Iron	20000	40000	mg/kg	**20600 J**	14300 J	16400 J	16200 J	15600 J	15100 J	**40900 J**	**38700 J**	10300	11300	10500	13100
Lead	35.8	128	mg/kg	**72.8 J**	16.1 J	13.5 J	9.8 J	8.5 J	8.7 J	31.7	27.8	7.4	7.3	7.1	7.8
Mercury	0.18	1.06	mg/kg	**0.78**	**0.36**	0.071 J	0.033 J	0.015 J	0.03 J	0.17	0.18	0.022 J	0.013 J	0.015 J	0.01 J
Nickel	22.7	48.6	mg/kg	21.9 J	18.4 J	20.4 J	18.6 J	18.7 J	19 J	**25.7 J**	22.2 J	14.2 J	14.1 J	14.1 J	14.8 J
Selenium	NSL	NSL	mg/kg	2.8 J	1.6 J	1.6 J	1.9 J	1.7 J	1.7 J	4.1	4.2	1.1 J	0.87 J	1 J	0.98 J
Silver	NSL	NSL	mg/kg	0.67 J	0.21 J	0.22 J	0.16 J	0.16 J	0.13 J	0.51 J	0.44 J	1.2 UJ	0.95 UJ	0.081 J	0.07 J
Zinc	121	459	mg/kg	**174 J**	50.7 J	55 J	45 J	45.2 J	47 J	**191 J**	**174 J**	33.1 J	33.8 J	30.2 J	34 J
Total Organic Carbon	NSL	NSL	%	5.73	3.6	4.2	4.31	3.40	3.7	2.33	2.7	2.27 J	3.57 J	4.15 J	3.37 J

			Sample Location:	RREC13-39	RREC13-39	RREC13-39	RREC13-39	RREC13-39	RREC13-39	RREC13-39	RREC13-40	RREC13-40	RREC13-40	RREC13-40	RREC13-40
			Sample Name:	RREC13-39-SURF	RREC13-39-0001	RREC13-39-0103	RREC13-39-0305	RREC13-39-0507	RREC13-39-0709	RREC13-39-0911	RREC13-40-SURF	RREC13-40-0001	RREC13-40-0103	RREC13-40-0305	RREC13-40-0507
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	5-7	7-9	9-11	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	10/30/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/2/13	11/1/13	10/28/13	11/1/13	11/1/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	7.5	7.9	2.3	2.1	3	2.7	3	3.5	2.6	2.9	2.8	2.8
Barium	NSL	NSL	mg/kg	57.4 J	108 J	14.7 J	20.5 J	20.3 J	20.5 J	25.8 J	31.9	26.1 J	36.7 J	40.7 J	41.8 J
Cadmium	0.99	4.98	mg/kg	**1.7**	**3.6 J**	0.23 J	0.22 J	0.22 J	0.23 J	0.23 J	0.97	0.27 J	0.26 J	0.25 J	0.24 J
Chromium	43.4	111	mg/kg	**53.9 J**	**109 J**	7.1 J	9.9 J	9.5 J	9.8 J	11.9 J	32	13.3 J	15.6 J	16 J	17.1 J
Copper	31.6	149	mg/kg	**65.3**	**112**	9.5	7	6.7	6.2	9.5	**41.3 J**	9.6 J	11.2 J	10.6 J	11.7 J
Iron	20000	40000	mg/kg	**47800 J**	**54100**	6430	10100	9580	9320	11900	**34400**	11600 J	13400 J	14800 J	16000 J
Lead	35.8	128	mg/kg	**74.2**	**147**	18.4	6	5.8	5.8	7.6	34.9 J	11.3 J	8.5 J	8.4 J	9.1 J
Mercury	0.18	1.06	mg/kg	**0.26**	**0.61 J**	0.11 UJ	0.12 UJ	0.12 UJ	0.11 UJ	0.12 UJ	**0.19**	0.063 J	0.023 J	0.022 J	0.02 J
Nickel	22.7	48.6	mg/kg	**40.8 J**	**83.5**	7.3	11.8	11.2	11.2	14.7	22.3	12.5 J	16.5 J	17.7 J	20 J
Selenium	NSL	NSL	mg/kg	5	3.1 J	0.49 J	0.71 J	0.54 J	0.73 J	0.82 J	1.8 J	1.2 J	1.4 J	1.7 J	1.8 J
Silver	NSL	NSL	mg/kg	0.79 J	1.4	0.89 U	0.93 U	0.91 U	1.1 U	0.074 J	0.54 J	0.12 J	0.17 J	0.13 J	0.21 J
Zinc	121	459	mg/kg	**347 J**	**571**	31.8	28.1	27.5	27.3	34.4	**169**	40 J	41.3 J	44.1 J	47.4 J
Total Organic Carbon	NSL	NSL	%	7.93	7.32 J	7.23 J	8.84 J	7.18 J	6.8 J	2.53 J	4.7	2.48	3.1	3.26	3.3

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41	RREC13-41
			Sample Name:	RREC13-41-SURF	RREC13-41-0001	RREC13-41-0103	RREC13-41-0103-FD	RREC13-41-0305	RREC13-41-0305-FD	RREC13-41-0507	RREC13-41-0507-FD	RREC13-41-0709	RREC13-41-0709-FD	RREC13-41-0911	RREC13-41-0911-FD
			Sample Depth (ft):	0-0.5	0-1	1-3	1-3	3-5	3-5	5-7	5-7	7-9	7-9	9-11	9-11
			Date Sampled:	10/31/13	10/30/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13	10/31/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	**10.2**	**11.2**	**10.2**	**11.4**	**15.4**	**19.7**	**10.9**	**12.7**	**9.9**	**10.2**	**11**	**11.5**
Barium	NSL	NSL	mg/kg	187 J	177 J	151 J	147 J	164 J	167 J	147 J	163 J	153 J	148 J	168 J	162 J
Cadmium	0.99	4.98	mg/kg	**7.3**	**27.3**	**10.6**	**14.8**	**28.3**	**19.4**	**12.9**	**18.5**	**8.8**	**7.4**	**3.7**	**3.3**
Chromium	43.4	111	mg/kg	**159 J**	**109**	**76.1**	**97.6**	**171**	**192**	**94**	**117**	**77.2**	**61.7**	41.6	41.2
Copper	31.6	149	mg/kg	**186**	**718**	**419**	**564**	**798**	**512**	**326**	**466**	**328**	**293**	**437**	**370**
Iron	20000	40000	mg/kg	**27700 J**	**32400**	**27100**	**33900**	**52600**	**88600**	**32000**	**38600**	**23300**	**23500**	**25100**	**23500**
Lead	35.8	128	mg/kg	**162**	**450 J**	**276 J**	**308 J**	**410 J**	**297 J**	**242 J**	**299 J**	**298 J**	**307 J**	**388 J**	**368 J**
Mercury	0.18	1.06	mg/kg	**0.65**	**1.6 J**	**1.3 J**	**1.4 J**	**0.98 J**	**1.2 J**	**1.4 J**	**1.5 J**	**1.7 J**	**1.7 J**	**3 J**	**3.3 J**
Nickel	22.7	48.6	mg/kg	**48.2 J**	**62.2 J**	**51 J**	**62.8 J**	**70.6 J**	**107 J**	**58.8 J**	**71.8 J**	**53.5 J**	**47.2 J**	**38.3 J**	**39.9 J**
Selenium	NSL	NSL	mg/kg	4 J	2.5 J	1.8 J	2.3 J	4.1 J	4.2 J	2.5 J	2.6 J	2 J	1.5 J	2 J	0.82 J
Silver	NSL	NSL	mg/kg	2.6	2.9	1.5	1.7	2.7	2.8	2.2	2.2	2	1.9	2.8	2.2
Zinc	121	459	mg/kg	**422 J**	**1220 J**	**873 J**	**1080 J**	**1340 J**	**1050 J**	**744 J**	**946 J**	**832 J**	**793 J**	**983 J**	**896 J**
Total Organic Carbon	NSL	NSL	%	12.10	8.2	8.2	8.34	8.45	10.3	7.95	8.7	8.47	8.3	7.48	7.5

			Sample Location:	RREC13-42	RREC13-42	RREC13-42	RREC13-42	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-44	RREC13-45	RREC13-45	RREC13-45
			Sample Name:	RREC13-42-SURF	RREC13-42-0001	RREC13-42-0103	RREC13-42-0305	RREC13-44-SURF	RREC13-44-0001	RREC13-44-0103	RREC13-44-0305	RREC13-44-0507	RREC13-45-SURF	RREC13-45-0001	RREC13-45-0103
			Sample Depth (ft):	0-0.5	0-1	1-3	3-5	0-0.5	0-1	1-3	3-5	5-7	0-0.5	0-1	1-3
			Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13	11/1/13	10/30/13	11/1/13	11/1/13	11/1/13	11/1/13	10/29/13	11/1/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	7 J	4.2 J	5.2 J	3.9 J	8.9	**12.1**	**25.1**	**51.1**	**44.4**	7.8	**13**	5.3
Barium	NSL	NSL	mg/kg	30.8 J	72.2 J	56.2 J	86.3 J	90.3	87.1	91.9	155	204 J	66.2	146	62.4
Cadmium	0.99	4.98	mg/kg	0.46 U	0.48 U	0.47 U	0.49 U	**2.9**	**4.4**	**5.3**	**9.6**	**11.4 J**	**1.4**	**5**	0.39 J
Chromium	43.4	111	mg/kg	18.9 J	16.7 J	16.4 J	21.8 J	**100**	**121 J**	**229 J**	**378 J**	**431**	39.9	**136 J**	16.3 J
Copper	31.6	149	mg/kg	**68 J**	9.8 J	15.1 J	21.1 J	**105 J**	**164**	**355**	**663**	**470**	**53 J**	**131**	16.2
Iron	20000	40000	mg/kg	**38000 J**	12800 J	17800 J	16100 J	**59700**	**98700**	**248000**	**358000**	**300000**	**31100**	**44900**	14800
Lead	35.8	128	mg/kg	30.7 J	10.4 J	10.3 J	12.8 J	**119 J**	**157**	**180**	**472**	**462**	**64.1 J**	**209**	19.5
Mercury	0.18	1.06	mg/kg	**0.19 J**	0.023 J	0.025 J	0.045 J	**0.42**	**0.36 J**	**0.38 J**	**0.47 J**	**0.74**	**0.36**	**0.59 J**	0.017 J
Nickel	22.7	48.6	mg/kg	17 J	21.2 J	20.2 J	**23.4 J**	**61.5**	**81.2**	**155**	**287**	**246 J**	**33.6**	**67.7**	19.5
Selenium	NSL	NSL	mg/kg	2.3 J	0.99 J	0.98 J	1.2 J	3.7 J	5.8	11.8	16.7	33.3	2.2 J	6.7	1.3 J
Silver	NSL	NSL	mg/kg	0.29 J	0.96 U	0.089 J	0.06 J	1.8	2.7	4.2	6.7	8	0.92 J	1.9	0.17 J
Zinc	121	459	mg/kg	**200 J**	48.8 J	44.8 J	46.8 J	**410**	**547**	**589**	**734**	**797**	**282**	**669**	56.7
Total Organic Carbon	NSL	NSL	%	3.29	1.4	0.9	2.48	6.98	6.0	7.00	8.5	8.56 J	7.0	7.56	3.4

NOTES:
E = Value exceeds the highest standard in the initial calibration range.
Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-45	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-46	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47
			Sample Name:	RREC13-45-0305	RREC13-46-SURF	RREC13-46-0001	RREC13-46-0103	RREC13-46-0305	RREC13-46-0507	RREC13-46-0710	RREC13-47-SURF	RREC13-47-SURF-FD	RREC13-47-0001	RREC13-47-0103	RREC13-47-0103-FD
			Sample Depth (ft):	3-5	0-0.5	0-1	1-3	3-5	5-7	7-10	0-0.5	0-0.5	0-1	1-3	1-3
			Date Sampled:	11/1/13	11/5/13	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	6.3	5.4	8.8	5	6.3	6.1	4.5	7.7	8.5	**9.9**	**10.5**	**11.4**
Barium	NSL	NSL	mg/kg	52.4	81.9 J	112 J	34.7 J	54.7 J	52.3 J	56.8 J	80.6	83.7	101 J	101 J	109 J
Cadmium	0.99	4.98	mg/kg	0.3 J	0.58	**5.1**	0.79	0 U	0 U	0 U	**2.4**	**2.6**	**3.5 J**	**4.5 J**	**5.5 J**
Chromium	43.4	111	mg/kg	15.4 J	30 J	**111 J**	22.8 J	13.3 J	12.9 J	13.8 J	**79**	**87.6**	**97.2**	**105**	**141**
Copper	31.6	149	mg/kg	16.6	**43.6**	**128**	27.6	14.5	14.6	14.3	**76.4 J**	**82.3 J**	**94.1**	**99.5**	**124**
Iron	20000	40000	mg/kg	16600	13700 J	**24500 J**	14300 J	14900 J	15200 J	16100 J	**45600**	**49300**	**51200**	**66100**	**84100**
Lead	35.8	128	mg/kg	13.2	**54.2**	**209**	**42.3**	10.6	11.1	10.1	**128 J**	**123 J**	**149**	**196**	**240**
Mercury	0.18	1.06	mg/kg	0.013 J	**0.53 J**	**0.48 J**	0.028 J	0.011 J	0 UJ	0.014 J	**0.41**	**0.35**	**0.38**	**0.51**	**0.82**
Nickel	22.7	48.6	mg/kg	22.7	17.4 J	**60.9 J**	19.5 J	18.1 J	17.7 J	19.3 J	**56.9**	**66.7**	**74.1 J**	**68.3 J**	**86 J**
Selenium	NSL	NSL	mg/kg	1.4 J	0.97 J	1.2 J	0.64 J	3 U	3 U	3 U	3.3 J	2.8 J	8.3	8.5	9.7
Silver	NSL	NSL	mg/kg	0.14 J	1 U	2	0 U	0 U	0 U	0 U	1.2 J	1.4 J	1.8 J	2.5	3.1
Zinc	121	459	mg/kg	46.4	**125 J**	**433 J**	111 J	44.4 J	44.9 J	45.9 J	**373**	**418**	**457**	**550**	**684**
Total Organic Carbon	NSL	NSL	%	2.97	8.2	5.8	5.59	2.34	1.8	3.23	8.3	6.30	6.08 J	7.06 J	7.89 J

			Sample Location:	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-47	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48	RREC13-48
			Sample Name:	RREC13-47-0305	RREC13-47-0305-FD	RREC13-47-0507	RREC13-47-0709	RREC13-47-0911	RREC13-48-SURF	RREC13-48-SURF-FD	RREC13-48-0001	RREC13-48-0103	RREC13-48-0305	RREC13-48-0507	RREC13-48-0710
			Sample Depth (ft):	3-5	3-5	5-7	7-9	9-11	0-0.5	0-0.5	0-1	1-3	3-5	5-7	7-10
			Date Sampled:	10/30/13	10/30/13	10/30/13	10/30/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**												
Arsenic	9.79	33	mg/kg	**13.6**	**13.3**	**12.5**	**14.2**	**19.9**	4.7	5.7	5	**13.1**	**15.4**	**14.9**	**14.9**
Barium	NSL	NSL	mg/kg	123 J	114 J	140 J	176 J	213 J	82.1 J	83 J	70.3 J	168	251	240	204
Cadmium	0.99	4.98	mg/kg	**7.6 J**	**7.1 J**	**7.8**	**8.3**	**10.4 J**	**1.9 J**	**2 J**	**2.6 J**	**7.4**	**9.1**	**10.5**	**9.7**
Chromium	43.4	111	mg/kg	**159**	**151**	**218**	**266**	**300**	**67.2 J**	**69.3 J**	**49.4 J**	**204**	**276**	**304**	**285**
Copper	31.6	149	mg/kg	**155**	**146**	**162**	**191**	**221**	**68.9 J**	**69.8 J**	**56.7 J**	**158**	**197**	**196**	**196**
Iron	20000	40000	mg/kg	**84100**	**88800**	**86400**	**99300**	**123000**	**46600**	**58600**	**44900**	**79500**	**87800**	**100000**	**92200**
Lead	35.8	128	mg/kg	**307**	**304**	**267 J**	**401 J**	**447**	**107**	**99.5**	**94.7**	**232 J**	**337 J**	**402 J**	**356 J**
Mercury	0.18	1.06	mg/kg	**0.68**	**0.61**	**0.69 J**	**0.74 J**	**1.2**	**0.26 J**	**0.29 J**	**0.22 J**	**0.51**	**0.73**	**0.96**	**1.2**
Nickel	22.7	48.6	mg/kg	**108 J**	**106 J**	**180 J**	**162 J**	**182 J**	**50.2 J**	**53.5 J**	**40.6 J**	**174**	**220**	**181**	**186**
Selenium	NSL	NSL	mg/kg	9.6	10.3	3.7 J	4.5 J	14.7	2.9 J	3.1 J	2.7 J	2.3 J	2.3 J	2.1 J	3 J
Silver	NSL	NSL	mg/kg	3.5	3.3	4.1	4.1	5.4	0.9 J	0.94 J	0.74 J	4 J	5.3 J	5.6 J	4.9 J
Zinc	121	459	mg/kg	**911**	**937**	**802 J**	**970 J**	**1270**	**338 J**	**376 J**	**392 J**	**767**	**966**	**1270**	**1220**
Total Organic Carbon	NSL	NSL	%	7.79 J	7.1 J	8.6	8.72	9.81 J	5.9	6.31	6.0	7.55	6.4	7.92	16.9

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.

N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-5 SEDIMENT RESULTS FOR METALS AND TOTAL ORGANIC CARBON
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

			Sample Location:	RREC13-49	RREC13-49	RREC13-49	RREC13-49	RREC13-49	RREC13-49
			Sample Name:	RREC13-49-SURF	RREC13-49-SURF-FD	RREC13-49-0001	RREC13-49-0103	RREC13-49-0305	RREC13-49-0507
			Sample Depth (ft):	0-0.5	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**TEC**	**PEC**	**Units**						
Arsenic	9.79	33	mg/kg	4.6	4.7	**12.9**	**15.3**	**16.4**	**16.6**
Barium	NSL	NSL	mg/kg	74.9 J	80 J	7/20/00	7/23/00	8/1/00	6/17/00
Cadmium	0.99	4.98	mg/kg	**2.5 J**	**2.8 J**	**8.6**	**8.3**	**9.6**	**6**
Chromium	43.4	111	mg/kg	**73.5 J**	**75.5 J**	**255**	**254**	**287**	**168**
Copper	31.6	149	mg/kg	**100 J**	**102 J**	**170**	**183**	**203**	**162**
Iron	20000	40000	mg/kg	**94900**	**107000**	**92400**	**101000**	**113000**	**106000**
Lead	35.8	128	mg/kg	**142**	**155**	**308 J**	**339 J**	**367 J**	**291 J**
Mercury	0.18	1.06	mg/kg	**0.35 J**	**0.46 J**	**0.8**	**0.85**	**1.3**	**0.84**
Nickel	22.7	48.6	mg/kg	**48.8 J**	**54.3 J**	**147**	**178**	**194**	**145**
Selenium	NSL	NSL	mg/kg	4.4 J	4.6 J	2.5 J	2.3 J	2.5 J	1.8 J
Silver	NSL	NSL	mg/kg	1.4 J	1.6 J	4.9 J	4.6 J	5.1 J	3.6 J
Zinc	121	459	mg/kg	**727 J**	**764 J**	**1140**	**1260**	**1380**	**1040**
Total Organic	NSL	NSL	%	9.04	6.9	12.4	7.47	7.44	8.1

			Sample Location:	RREC13-49	RREC13-50	RREC13-50	RREC13-50	RREC13-50	RREC13-50
			Sample Name:	RREC13-49-0710	RREC13-50-SURF	RREC13-50-0001	RREC13-50-0103	RREC13-50-0305	RREC13-50-0507
			Sample Depth (ft):	7-10	0-0.5	0-1	1-3	3-5	5-7
			Date Sampled:	11/5/13	11/5/13	11/6/13	11/6/13	11/6/13	11/6/13
Analyte	**TEC**	**PEC**	**Units**						
Arsenic	9.79	33	mg/kg	**15**	**15.9**	**18.4**	**17.3**	**13.6**	**11.2**
Barium	NSL	NSL	mg/kg	211	75 J	172 J	174 J	108 J	103 J
Cadmium	0.99	4.98	mg/kg	**7**	0.45 J	**11.7**	**14.2**	**8.5**	**5**
Chromium	43.4	111	mg/kg	**253**	21.3 J	**111 J**	**112 J**	**64.7 J**	**62.6 J**
Copper	31.6	149	mg/kg	**175**	22.9	**237**	**231**	**124**	**92.8**
Iron	20000	40000	mg/kg	**91600**	**52000 J**	**100000 J**	**95600 J**	**82600 J**	**52100 J**
Lead	35.8	128	mg/kg	**306 J**	25	**259**	**245**	**146**	**118**
Mercury	0.18	1.06	mg/kg	**0.81**	0.042 J	**0.74 J**	**1.4 J**	**0.46 J**	**0.5 J**
Nickel	22.7	48.6	mg/kg	**150**	18.9 J	**41.6 J**	**51.6 J**	**37.8 J**	**35.9 J**
Selenium	NSL	NSL	mg/kg	2.5 J	0.75 J	2.2 J	2.3 J	1.1 J	1.1 J
Silver	NSL	NSL	mg/kg	3.7 J	0 U	2.4	2.5	1.7	0.99 J
Zinc	121	459	mg/kg	**1090**	**172 J**	**1420 J**	**1280 J**	**746 J**	**453 J**
Total Organic	NSL	NSL	%	7.75	1.5	8.4	8.05	6.35	10.4

NOTES:
E = Value exceeds the highest standard in the initial calibration range. Value is estimated.
J = Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit and the concentration is an approximate value.
N = Spiked sample recovery not within control limits.
U = Indicates the analyte was analyzed for but not detected.
mg/kg = Milligrams per kilogram.
NSL=No Screening Level
TEC = Threshold effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

PEC = Probable effect concentration. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems (MacDonald et al. 2000).

Bolded values exceed the TEC.
Bolded and gray shaded values exceed the PEC.

TABLE 3-6 SEDIMENT RESULTS FOR SEM/AVS RATIO
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-01	RREC13-02	RREC13-03	RREC13-05	RREC13-06	RREC13-07	RREC13-09	RREC13-11	RREC13-13
	Sample Name:	RREC13-01-SURF	RREC13-02-SURF	RREC13-03-SURF	RREC13-05-SURF	RREC13-06-SURF	RREC13-07-SURF	RREC13-09-SURF	RREC13-11-SURF	RREC13-13-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13	11/4/13	11/4/13
Analyte	**Units**									
Cadmium	µmol/g dry	0.059	0.0062 J	0.088	0.0092 J	0.011 J	0.0053 J	0.0055 J	0.034	0.046
Copper	µmol/g dry	2	0.46	1.8	0.6	0.45	0.35	1.6	1	0.88
Lead	µmol/g dry	0.77 J	0.17 J	0.75	0.3	0.47	0.19	0.36	1.8	1.9
Mercury	µmol/g dry	0.00018	0.00017	0.000069	0.000045	0.000034 J	0.000056	0.000099	0.00025	0.00016
Nickel	µmol/g dry	0.36	0.17 J	0.43	0.23	0.19 J	0.14 J	1	0.68	0.72
Zinc	µmol/g dry	6.1	2.3	7.7	2	2.1	1.5	2.2	23.4	31.2
Σ SEM	µmol/g dry	9.289	3.1062	10.768	3.1392	3.221	2.1853	5.1655	26.914	34.746
AVS	µmol/g dry	6.9	1.1	3.5	1.6	5.4	1.5	1.2	0.67 U	1.9
foc	fraction	0.0987	0.0904	0.116	0.0701	0.0553	0.0434	0.0353	0.0205	0.0344
SEM/AVS Ratio	none	**1.35 J**	**2.99 J**	**3.03**	**2**	0.593	**1.47**	**4.31**	---	**18.2**

	Sample Location:	RREC13-18	RREC13-19	RREC13-20	RREC13-21	RREC13-22	RREC13-23	RREC13-24	RREC13-25	RREC13-26
	Sample Name:	RREC13-18-SURF	RREC13-19-SURF	RREC13-20-SURF	RREC13-21-SURF	RREC13-22-SURF	RREC13-23-SURF	RREC13-24-SURF	RREC13-25-SURF	RREC13-26-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/29/13	10/29/13	10/29/13	10/29/13	10/30/13	11/4/13	11/4/13	11/04/13
Analyte	**Units**									
Cadmium	µmol/g dry	0.013 J	0.0071 J	0.0051 J	0.024 J	0.019 J	0.031	0.0078 J	0.0051 J	0.014 J
Copper	µmol/g dry	0.77	0.35	0.22	0.99	0.77	1.2	1.3	0.39	1.1
Lead	µmol/g dry	0.32 J	0.37 J	0.11 J	0.51 J	0.36 J	0.71 J	0.44	0.31	0.43
Mercury	µmol/g dry	0.000053 J	0.000062	0.00003 J	0.000046 J	0.00014	0.00017	0.00026	0.00015	0.00019
Nickel	µmol/g dry	0.31 J	0.19 J	0.12 J	0.54 J	0.45	0.86	0.21	0.3	0.58
Zinc	µmol/g dry	3.1	1.7	1.1	4.5	3.7	5.4	4.4	4.2	4.8
Σ SEM	µmol/g dry	4.513	2.6171	1.5551	6.564	5.299	8.201	6.3578	5.2051	6.924
AVS	µmol/g dry	8.5	14.9	2.4	23.8	4.3	11.8	7.1	0.8	2.9
foc	fraction	0.0573	0.0444	0.0513	0.0691	0.0589	0.074	0.0259	0.0309	0.0609
SEM/AVS Ratio	none	0.53 J	0.174 J	0.632 J	0.276 J	**1.24 J**	0.692 J	0.904	**6.53**	**2.37**

NOTES:
Bolded values exceed 1 SEM/AVS ratio
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
"--" SEM/AVS not calculated because AVS was not detected
AVS = Acid Volatile Sulfides
SEM = Simultaneously Extracted Metals
foc = fraction organic carbon
µmol/g dry = micromole per gram dry weight

TABLE 3-6 SEDIMENT RESULTS FOR SEM/AVS RATIO
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-14	RREC13-14	RREC13-15	RREC13-16	RREC13-17	RREC13-32	RREC13-33	RREC13-34	RREC13-35
	Sample Name:	RREC13-14-SURF	RREC13-14-SURF-FD	RREC13-15-SURF	RREC13-16-SURF	RREC13-17-SURF	RREC13-32-SURF	RREC13-33-SURF	RREC13-34-SURF	RREC13-35-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	11/4/13	10/29/13	10/29/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**Units**									
Cadmium	µmol/g dry	0.035	0.045	0.074	0.022 J	0.013 J	0.0079 J	0.02 J	0.12	0.037
Copper	µmol/g dry	1.2	1.5	2.1	0.96	0.62	0.4	0.7	2.8	0.68
Lead	µmol/g dry	1.1	1.4	2	0.47 J	0.33 J	0.19	0.31	1.6	1.2
Mercury	µmol/g dry	0.00005	0.000074	0.000037 J	0.00021	0.000048 J	0.00026	0.00017	0.00015 J	0.00019
Nickel	µmol/g dry	1.1	1.4	1.3	0.5	0.31 J	0.32	0.46	3.8	0.26
Zinc	µmol/g dry	12.7	16.5	17.5	4.8	3	3.1	5.5	15.5	5.4
Σ SEM	µmol/g dry	16.135	20.845	22.974	6.752	4.273	4.0179	6.99	23.82	7.577
AVS	µmol/g dry	4.2	3	8.3	14.7	11.4	31.7	16	18.8	24.2
foc	fraction	0.0991	0.0879	0.0879	0.0665	0.0623	0.0595	0.0783	0.0574	0.0503
SEM/AVS Ratio	none	**3.86**	**6.83**	**2.77**	0.461 J	0.376 J	0.127	0.438	**1.27 J**	0.315

	Sample Location:	RREC13-27	RREC13-28	RREC13-29	RREC13-30	RREC13-31	RREC13-42	RREC13-44	RREC13-45	RREC13-46
	Sample Name:	RREC13-27-SURF	RREC13-28-SURF	RREC13-29-SURF	RREC13-30-SURF	RREC13-31-SURF	RREC13-42-SURF	RREC13-44-SURF	RREC13-45-SURF	RREC13-46-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/04/13	11/1/13	11/1/13	11/1/13	10/30/13	11/04/13	10/30/13	10/29/13	11/5/13
Analyte	**Units**									
Cadmium	µmol/g dry	0.022	0.012 J	0.018 J	0.045	0.0057 J	0.0041 J	0.022 J	0.014 J	0.0035 J
Copper	µmol/g dry	1.6	0.64 J	0.82 J	1.3 J	0.38	0.47	1.1	0.57	0.21
Lead	µmol/g dry	0.59	0.29	0.35	0.7	0.12	0.23	0.42 J	0.28 J	0.089
Mercury	µmol/g dry	0.00021	0.000099	0.0002	0.00027	0.00016	0.00014	0.000074	0.000066	0.000035 U
Nickel	µmol/g dry	0.42	0.36	0.51	0.92	0.26 J	0.18 J	0.57	0.31 J	0.074 J
Zinc	µmol/g dry	9.3	4.4 J	4.9 J	6.7 J	1.8	1.7	4.4	3	0.78
Σ SEM	µmol/g dry	11.932	5.702	6.598	9.665	2.5657	2.5841	6.512	4.174	1.1565
AVS	µmol/g dry	3	5.1	4.3	4.1	14.8	0.85	5.6	4.3	4.4
foc	fraction	0.0476	0.0874	0.106	0.0706	0.0619	0.0329	0.0698	0.07	0.0822
SEM/AVS Ratio	none	**3.98**	**1.12**	**1.54**	**2.34**	0.17	**3.02**	**1.15 J**	0.962 J	0.264

NOTES:
Bolded values exceed 1 SEM/AVS ratio
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detecte
"--" SEM/AVS not calculated because AVS was not dete
AVS = Acid Volatile Sulfides
SEM = Simultaneously Extracted Metals
foc = fraction organic carbon
µmol/g dry = micromole per gram dry weight

TABLE 3-6 SEDIMENT RESULTS FOR SEM/AVS RATIO
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-36	RREC13-37	RREC13-38	RREC13-38	RREC13-39	RREC13-40	RREC13-41
	Sample Name:	RREC13-36-SURF	RREC13-37-SURF	RREC13-38-SURF	RREC13-38-SURF-FD	RREC13-39-SURF	RREC13-40-SURF	RREC13-41-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/28/13	10/28/13	10/30/13	10/30/13	10/30/13	10/28/13	10/30/13
Analyte	**Units**							
Cadmium	µmol/g dry	0.015 J	0.013 J	0.0086 J	0.012 J	0.014 J	0.009 J	0.06
Copper	µmol/g dry	0.57	0.43	0.37	0.53	0.66	0.36	2.3
Lead	µmol/g dry	0.48 J	0.17 J	0.12	0.16	0.32	0.15 J	0.7
Mercury	µmol/g dry	0.00012 U	0.000066	0.00023	0.00023	0.0002	0.00019	0.00011
Nickel	µmol/g dry	0.2 J	0.18 J	0.18 J	0.25	0.42	0.17 J	0.62
Zinc	µmol/g dry	5.1	2.5	1.9	2.6	4.3	2.1	5.4
Σ SEM	µmol/g dry	6.365	3.293	2.5786	3.552	5.714	2.789	9.08
AVS	µmol/g dry	55.6	3.6	2.4	3.3	1.9	4	2.3
foc	fraction	0.139	0.06	0.0233	0.0274	0.0793	0.0468	0.121
SEM/AVS Ratio	none	0.115 J	0.902 J	**1.08**	**1.08**	**3.02**	0.696 J	**3.99**

	Sample Location:	RREC13-47	RREC13-47	RREC13-48	RREC13-48	RREC13-49	RREC13-49	RREC13-50
	Sample Name:	RREC13-47-SURF	RREC13-47-SURF-FD	RREC13-48-SURF	RREC13-48-SURF-FD	RREC13-49-SURF	RREC13-49-SURF-FD	RREC13-50-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**Units**							
Cadmium	µmol/g dry	0.021 J	0.02 J	0.016 J	0.016 J	0.017 J	0.019 J	0.0029 J
Copper	µmol/g dry	0.97	1	0.7	0.68	0.85	0.77	0.23
Lead	µmol/g dry	0.49 J	0.54 J	0.44	0.42	0.56	0.58	0.13
Mercury	µmol/g dry	0.00021	0.00016	0.000033 J	0.000023 J	0.000074	0.000095	0.000049
Nickel	µmol/g dry	0.62	0.65	0.48	0.45	0.41	0.4	0.12 J
Zinc	µmol/g dry	4.8	4.9	4.1	4.1	7	6.9	1.8
Σ SEM	µmol/g dry	6.901	7.11	5.736	5.666	8.837	8.669	2.2829
AVS	µmol/g dry	6 J	1.3 J	6.1	16.6	2.3	3.3	0.96
foc	fraction	0.0833	0.063	0.0592	0.0631	0.0904	0.0691	0.0151
SEM/AVS Ratio	none	**1.15 J**	**5.53 J**	0.938	0.34	**3.81**	**2.59**	**2.35**

NOTES:
Bolded values exceed 1 SEM/AVS ratio
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detecte
"--" SEM/AVS not calculated because AVS was not dete
AVS = Acid Volatile Sulfides
SEM = Simultaneously Extracted Metals
foc = fraction organic carbon
µmol/g dry = micromole per gram dry weight

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-01	RREC13-02	RREC13-03	RREC13-05
	Sample Name:	RREC13-01-SURF	RREC13-02-SURF	RREC13-03-SURF	RREC13-05-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13	11/5/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	2700 J	290 UJ	1300 U	86 U
Diesel Range Organics (C10-C28)	mg/kg	8500 J	660 J	3,400	240
Mid Range Organics (C20-C36)	mg/kg	11000 J	1000 J	5,100	390
Σ TPH	mg/kg	13700	1290	6400	476

	Sample Location:	RREC13-11	RREC13-13	RREC13-14	RREC13-14
	Sample Name:	RREC13-11-SURF	RREC13-13-SURF	RREC13-14-SURF	RREC13-14-SURF-FD
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	11/4/13	11/4/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	180 UJ	170 UJ	1000 U	1100 U
Diesel Range Organics (C10-C28)	mg/kg	630 J	590 J	2,800	2,300
Mid Range Organics (C20-C36)	mg/kg	1100 J	1,100	4,000	3,400
Σ TPH	mg/kg	1280	1270	5000	4500

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-06	RREC13-07	RREC13-09
	Sample Name:	RREC13-06-SURF	RREC13-07-SURF	RREC13-09-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/5/13	11/5/13	11/4/13
Analyte	**Units**			
Diesel Range Organics (C10-C20)	mg/kg	170	48	470 UJ
Diesel Range Organics (C10-C28)	mg/kg	590	180	1200 J
Mid Range Organics (C20-C36)	mg/kg	1,000	320	2100 J
Σ TPH	mg/kg	1170	368	2570

	Sample Location:	RREC13-15	RREC13-16	RREC13-17
	Sample Name:	RREC13-15-SURF	RREC13-16-SURF	RREC13-17-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	10/29/13	10/29/13
Analyte	**Units**			
Diesel Range Organics (C10-C20)	mg/kg	2400 U	1900 UJ	540 UJ
Diesel Range Organics (C10-C28)	mg/kg	6,700	3800 J	1700 J
Mid Range Organics (C20-C36)	mg/kg	9,100	6100 J	3000 J
Σ TPH	mg/kg	11500	8000	3540

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-18	RREC13-19	RREC13-20	RREC13-21
	Sample Name:	RREC13-18-SURF	RREC13-19-SURF	RREC13-20-SURF	RREC13-21-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/29/13	10/29/13	10/29/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	680 UJ	240	200 U	2200 U
Diesel Range Organics (C10-C28)	mg/kg	1900 J	780	510	4,800
Mid Range Organics (C20-C36)	mg/kg	3200 J	1,200	860	8,700
Σ TPH	mg/kg	3880	1440	1060	10900

	Sample Location:	RREC13-26	RREC13-27	RREC13-28	RREC13-29
	Sample Name:	RREC13-26-SURF	RREC13-27-SURF	RREC13-28-SURF	RREC13-29-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/04/13	11/04/13	11/1/13	11/1/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	1400 J	440 J	550 U	1,900
Diesel Range Organics (C10-C28)	mg/kg	3700 J	1300 J	1,400	5,100
Mid Range Organics (C20-C36)	mg/kg	5,300	2,000	2,100	7,000
Σ TPH	mg/kg	6700	2440	2650	8900

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-22	RREC13-23	RREC13-24	RREC13-25
	Sample Name:	RREC13-22-SURF	RREC13-23-SURF	RREC13-24-SURF	RREC13-25-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/30/13	11/4/13	11/4/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	970	2000 J	310	170 U
Diesel Range Organics (C10-C28)	mg/kg	3,100	6300 J	790	250
Mid Range Organics (C20-C36)	mg/kg	5,000	10000 J	980	400
Σ TPH	mg/kg	5970	12000	1290	570

	Sample Location:	RREC13-30	RREC13-31	RREC13-32	RREC13-33
	Sample Name:	RREC13-30-SURF	RREC13-31-SURF	RREC13-32-SURF	RREC13-33-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/1/13	10/30/13	10/30/13	10/30/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	2,900	250 U	190	1,100
Diesel Range Organics (C10-C28)	mg/kg	7,800	530	530	3,400
Mid Range Organics (C20-C36)	mg/kg	10,000	910 J	800 J	5200 J
Σ TPH	mg/kg	12900	1160	990	6300

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-34
	Sample Name:	RREC13-34-SURF
	Sample Depth (ft):	0-0.5
	Date Sampled:	10/30/13
Analyte	**Units**	
Diesel Range Organics (C10-C20)	mg/kg	8,800
Diesel Range Organics (C10-C28)	mg/kg	23,000
Mid Range Organics (C20-C36)	mg/kg	29,000
Σ TPH	mg/kg	37800

	Sample Location:	RREC13-44
	Sample Name:	RREC13-44-SURF
	Sample Depth (ft):	0-0.5
	Date Sampled:	10/30/13
Analyte	**Units**	
Diesel Range Organics (C10-C20)	mg/kg	1800 UJ
Diesel Range Organics (C10-C28)	mg/kg	3000 J
Mid Range Organics (C20-C36)	mg/kg	5200 J
Σ TPH	mg/kg	7000

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-35	RREC13-36	RREC13-37	RREC13-38
	Sample Name:	RREC13-35-SURF	RREC13-36-SURF	RREC13-37-SURF	RREC13-38-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/28/13	10/28/13	10/30/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	530	1700 UJ	260 UJ	190 U
Diesel Range Organics (C10-C28)	mg/kg	1,800	3000 J	810 J	340
Mid Range Organics (C20-C36)	mg/kg	2500 J	7200 J	1300 J	550 J
Σ TPH	mg/kg	3030	8900	1560	740

	Sample Location:	RREC13-45	RREC13-46	RREC13-47	RREC13-47
	Sample Name:	RREC13-45-SURF	RREC13-46-SURF	RREC13-47-SURF	RREC13-47-SURF-FD
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	11/5/13	10/30/13	10/30/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	490 U	460	1,100	970
Diesel Range Organics (C10-C28)	mg/kg	1,400	1,400	3,600	3,000
Mid Range Organics (C20-C36)	mg/kg	2,600	2,100	5600 J	4800 J
Σ TPH	mg/kg	3090	2560	6700	5770

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-38	RREC13-39	RREC13-40	RREC13-41
	Sample Name:	RREC13-38-SURF-FD	RREC13-39-SURF	RREC13-40-SURF	RREC13-41-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	10/28/13	10/30/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	110	350	210 UJ	5600 UJ
Diesel Range Organics (C10-C28)	mg/kg	360	1,000	470 J	21000 J
Mid Range Organics (C20-C36)	mg/kg	610	1,600	780 J	29000 J
Σ TPH	mg/kg	720	1950	990	34600

	Sample Location:	RREC13-48	RREC13-48	RREC13-49	RREC13-49
	Sample Name:	RREC13-48-SURF	RREC13-48-SURF-FD	RREC13-49-SURF	RREC13-49-SURF-FD
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**Units**				
Diesel Range Organics (C10-C20)	mg/kg	550	560	330	410
Diesel Range Organics (C10-C28)	mg/kg	2,000	2,000	1,300	1,700
Mid Range Organics (C20-C36)	mg/kg	3,200	3,200	2,400	2,900
Σ TPH	mg/kg	3750	3760	2730	3310

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 3-7 SEDIMENT RESULTS FOR DIESEL RANGE ORGANICS AND MID-RANGE ORGANICS
River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-42
	Sample Name:	RREC13-42-SURF
	Sample Depth (ft):	0-0.5
	Date Sampled:	11/04/13
Analyte	**Units**	
Diesel Range Organics (C10-C20)	mg/kg	130 J
Diesel Range Organics (C10-C28)	mg/kg	320 J
Mid Range Organics (C20-C36)	mg/kg	430
Σ TPH	mg/kg	560

	Sample Location:	RREC13-50
	Sample Name:	RREC13-50-SURF
	Sample Depth (ft):	0-0.5
	Date Sampled:	11/5/13
Analyte	**Units**	
Diesel Range Organics (C10-C20)	mg/kg	73
Diesel Range Organics (C10-C28)	mg/kg	180
Mid Range Organics (C20-C36)	mg/kg	220
Σ TPH	mg/kg	293

NOTES:

U = Indicates the analyte was analyzed for but not detected.

Σ TPH = Total Petroleum Hydrocarbons

Σ TPH = DRO (C10-C28) + MRO (C20-C36)

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-01			
		Field Sample ID	RREC13-01-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.87	0.0987	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.00	20.26	446.00	0.05
2-Methylnaphthalene	447.00	154800	2.70	27.36	447.00	0.06
Acenaphthene [(a)]	491.00	33400	1.70	17.22	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.68	6.89	452.00	0.02
Anthracene [(a)]	594.00	1300	4.50	45.59	594.00	0.08
Benzo(a)anthracene [(a)]	841.00	4153	6.70	67.88	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	4.50	45.59	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.00	40.53	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	3.20	32.42	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.50	15.20	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	4.10	41.54	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	6.10	61.80	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.96	9.73	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	121.58	770.00	0.16
C1-Naphthalenes [(a)]	444.00	---	3.10	31.41	444.00	0.07
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	151.98	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	7.10	71.94	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	1.40	14.18	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	7.40	74.97	---	---
C2-Naphthalenes [(a)]	510.00	---	10.00	101.32	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	101.32	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	2.70	27.36	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.10	31.41	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	4.90	49.65	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	9.50	96.25	581.00	0.17
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.70	98.28	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	1.50	15.20	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.20	52.68	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.10	61.80	913.00	0.07
Chrysene [(a)]	844.00	826	5.90	59.78	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.46	4.66	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	14.00	141.84	707.00	0.20
Fluorene [(a)]	538.00	26,000.00	3.30	33.43	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	13.17	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	4.00	40.53	385.00	0.11
Perylene [(a)]	967.00	431.00	1.00	10.13	967.00	0.01
Phenanthrene [(a)]	596	34300	14.00	141.84	596.00	0.24
Pyrene [(a)]	697.00	9,090.00	11.00	111.45	697.00	0.16
	---	**ESBTU FCVi**	---	---	---	**2.03**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-01			
		Field Sample ID	RREC13-01-0001			
		Sample Depth	0-1			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.6	0.116	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	3.10	26.72	446.00	0.06
2-Methylnaphthalene	447.00	154800	4.20	36.21	447.00	0.08
Acenaphthene [(a)]	491.00	33400	1.70	14.66	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	1.30	11.21	452.00	0.02
Anthracene [(a)]	594.00	1300	4.90	42.24	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	9.00	77.59	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	6.00	51.72	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	5.70	49.14	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	4.40	37.93	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.60	31.03	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.50	38.79	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	11.00	94.83	929.00	0.10
C1 Fluorenes [(a)]	611.00	---	1.50	12.93	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	15.00	129.31	770.00	0.17
C1-Naphthalenes [(a)]	444.00	---	5.20	44.83	444.00	0.10
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	146.55	670.00	0.22
C2 Chrysenes [(a)]	1008.00	---	10.00	86.21	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	2.40	20.69	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	11.00	94.83	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	120.69	510.00	0.24
C2-Phenanthrenes/Anthracenes [(a)]	746	---	17.00	146.55	746.00	0.20
C3 Chrysenes [(a)]	1112.00	---	5.40	46.55	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	4.50	38.79	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	7.90	68.10	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	13.00	112.07	581.00	0.19
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	19.00	163.79	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	2.70	23.28	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	7.80	67.24	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	13.00	112.07	913.00	0.12
Chrysene [(a)]	844.00	826	8.30	71.55	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.40	12.07	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	103.45	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	3.70	31.90	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.00	25.86	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	6.00	51.72	385.00	0.13
Perylene [(a)]	967.00	431.00	1.40	12.07	967.00	0.01
Phenanthrene [(a)]	596	34300	12.00	103.45	596.00	0.17
Pyrene [(a)]	697.00	9,090.00	15.00	129.31	697.00	0.19
	---	**ESBTU FCVi**	---	---	---	**2.26**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-01			
		Field Sample ID	RREC13-01-0103			
		Sample Depth	1-3			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.9	0.109	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	8.50	77.98	446.00	0.17
2-Methylnaphthalene	447.00	154800	13.00	119.27	447.00	0.27
Acenaphthene [(a)]	491.00	33400	3.50	32.11	491.00	0.07
Acenaphthylene [(a)]	452.00	24000	4.10	37.61	452.00	0.08
Anthracene [(a)]	594.00	1300	18.00	165.14	594.00	0.28
Benzo(a)anthracene [(a)]	841.00	4153	27.00	247.71	841.00	0.29
Benzo(a)pyrene [(a)]	965.00	3840	20.00	183.49	965.00	0.19
Benzo(b)fluoranthene [(a)]	979.00	2169	14.00	128.44	979.00	0.13
Benzo(e)pyrene [(a)]	967.00	4300	13.00	119.27	967.00	0.12
Benzo(g,h,i)perylene [(a)]	1095.00	648	9.00	82.57	1095.00	0.08
Benzo(k)fluoranthene [(a)]	981.00	1220	15.00	137.61	981.00	0.14
C1 Chrysenes [(a)]	929.00	---	30.00	275.23	929.00	0.30
C1 Fluorenes [(a)]	611.00	---	5.30	48.62	611.00	0.08
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	50.00	458.72	770.00	0.60
C1-Naphthalenes [(a)]	444.00	---	15.00	137.61	444.00	0.31
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	58.00	532.11	670.00	0.79
C2 Chrysenes [(a)]	1008.00	---	21.00	192.66	1008.00	0.19
C2 Fluorenes [(a)]	686.00	---	7.30	66.97	686.00	0.10
C2-Fluoranthenes/Pyrenes	---	---	28.00	256.88	---	---
C2-Naphthalenes [(a)]	510.00	---	42.00	385.32	510.00	0.76
C2-Phenanthrenes/Anthracenes [(a)]	746	---	46.00	422.02	746.00	0.57
C3 Chrysenes [(a)]	1112.00	---	9.00	82.57	1112.00	0.07
C3 Fluorenes [(a)]	769.00	---	8.80	80.73	769.00	0.10
C3-Fluoranthenes/Pyrenes	949.00	---	13.00	119.27	949.00	0.13
C3-Naphthalenes [(a)]	581.00	---	39.00	357.80	581.00	0.62
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	27.00	247.71	829.00	0.30
C4 Chrysenes [(a)]	1214.00	---	3.00	27.52	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	18.00	165.14	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	16.00	146.79	913.00	0.16
Chrysene [(a)]	844.00	826	25.00	229.36	844.00	0.27
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	3.20	29.36	1123.00	0.03
Fluoranthene [(a)]	707.00	23,870.00	41.00	376.15	707.00	0.53
Fluorene [(a)]	538.00	26,000.00	4.10	37.61	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.10	37.61	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	14.00	128.44	385.00	0.33
Perylene [(a)]	967.00	431.00	4.10	37.61	967.00	0.04
Phenanthrene [(a)]	596	34300	32.00	293.58	596.00	0.49
Pyrene [(a)]	697.00	9,090.00	53.00	486.24	697.00	0.70
	---	**ESBTU FCVi**	---	---	---	**6.58**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-01			
		Field Sample ID	RREC13-01-0305			
		Sample Depth	3-5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.42	0.0842	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	13.00	154.39	446.00	0.35
2-Methylnaphthalene	447.00	154800	21.00	249.41	447.00	0.56
Acenaphthene [(a)]	491.00	33400	10.00	118.76	491.00	0.24
Acenaphthylene [(a)]	452.00	24000	2.60	30.88	452.00	0.07
Anthracene [(a)]	594.00	1300	18.00	213.78	594.00	0.36
Benzo(a)anthracene [(a)]	841.00	4153	19.00	225.65	841.00	0.27
Benzo(a)pyrene [(a)]	965.00	3840	12.00	142.52	965.00	0.15
Benzo(b)fluoranthene [(a)]	979.00	2169	8.60	102.14	979.00	0.10
Benzo(e)pyrene [(a)]	967.00	4300	7.30	86.70	967.00	0.09
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.50	53.44	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	10.00	118.76	981.00	0.12
C1 Chrysenes [(a)]	929.00	---	18.00	213.78	929.00	0.23
C1 Fluorenes [(a)]	611.00	---	3.90	46.32	611.00	0.08
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	38.00	451.31	770.00	0.59
C1-Naphthalenes [(a)]	444.00	---	22.00	261.28	444.00	0.59
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	52.00	617.58	670.00	0.92
C2 Chrysenes [(a)]	1008.00	---	17.00	201.90	1008.00	0.20
C2 Fluorenes [(a)]	686.00	---	4.30	51.07	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	19.00	225.65	---	---
C2-Naphthalenes [(a)]	510.00	---	53.00	629.45	510.00	1.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	29.00	344.42	746.00	0.46
C3 Chrysenes [(a)]	1112.00	---	7.20	85.51	1112.00	0.08
C3 Fluorenes [(a)]	769.00	---	7.00	83.14	769.00	0.11
C3-Fluoranthenes/Pyrenes	949.00	---	11.00	130.64	949.00	0.14
C3-Naphthalenes [(a)]	581.00	---	31.00	368.17	581.00	0.63
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	25.00	296.91	829.00	0.36
C4 Chrysenes [(a)]	1214.00	---	3.30	39.19	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	13.00	154.39	657.00	0.23
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	16.00	190.02	913.00	0.21
Chrysene [(a)]	844.00	826	16.00	190.02	844.00	0.23
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.40	16.63	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	39.00	463.18	707.00	0.66
Fluorene [(a)]	538.00	26,000.00	14.00	166.27	538.00	0.31
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.00	47.51	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	27.00	320.67	385.00	0.83
Perylene [(a)]	967.00	431.00	2.80	33.25	967.00	0.03
Phenanthrene [(a)]	596	34300	51.00	605.70	596.00	1.02
Pyrene [(a)]	697.00	9,090.00	34.00	403.80	697.00	0.58
	---	**ESBTU FCVi**	---	---	---	**7.95**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.04	0.0904	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.29	3.21	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.49	5.42	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.54	5.97	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.32	3.54	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	17.70	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	5.80	64.16	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	5.60	61.95	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	5.40	59.73	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	3.60	39.82	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.00	22.12	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	5.00	55.31	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	3.00	33.19	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.17	1.88	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	63.05	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.54	5.97	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.20	35.40	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	2.30	25.44	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.21	2.32	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	2.40	26.55	---	---
C2-Naphthalenes [(a)]	510.00	---	1.30	14.38	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.70	18.81	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.78	8.63	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.32	3.54	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	12.17	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.10	12.17	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.10	12.17	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.18	1.99	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.50	5.53	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.68	7.52	913.00	0.01
Chrysene [(a)]	844.00	826	5.20	57.52	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.57	6.31	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	9.00	99.56	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.74	8.19	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.80	19.91	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.60	6.64	385.00	0.02
Perylene [(a)]	967.00	431.00	1.40	15.49	967.00	0.02
Phenanthrene [(a)]	596	34300	4.50	49.78	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	6.30	69.69	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.03**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0001			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.2	0.102	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.32	3.14	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.39	3.82	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.44	4.31	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.20	1.96	452.00	0.00
Anthracene [(a)]	594.00	1300	0.89	8.73	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	3.10	30.39	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.70	26.47	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	28.43	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.90	18.63	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	11.76	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.70	26.47	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.10	20.59	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.32	3.14	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.80	47.06	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.53	5.20	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.10	40.20	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	2.40	23.53	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.69	6.76	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.90	28.43	---	---
C2-Naphthalenes [(a)]	510.00	---	1.40	13.73	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.80	37.25	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.95	9.31	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.30	12.75	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	15.69	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	2.90	28.43	581.00	0.05
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.30	42.16	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.34	3.33	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.30	22.55	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.60	25.49	913.00	0.03
Chrysene [(a)]	844.00	826	3.20	31.37	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.35	3.43	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.40	52.94	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.63	6.18	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	10.78	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.60	15.69	385.00	0.04
Perylene [(a)]	967.00	431.00	0.78	7.65	967.00	0.01
Phenanthrene [(a)]	596	34300	3.60	35.29	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	4.50	44.12	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.77

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.17	0.0917	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	6.00	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.70	7.63	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.89	9.71	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.31	3.38	452.00	0.01
Anthracene [(a)]	594.00	1300	2.20	23.99	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	5.30	57.80	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	4.00	43.62	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.80	52.34	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.00	32.72	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	19.63	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	4.40	47.98	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	3.40	37.08	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.52	5.67	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.50	81.79	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.94	10.25	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.90	75.25	670.00	0.11
C2 Chrysenes [(a)]	1008.00	---	3.70	40.35	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.10	12.00	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.30	46.89	---	---
C2-Naphthalenes [(a)]	510.00	---	2.90	31.62	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.60	71.97	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.20	13.09	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.30	25.08	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	26.17	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	6.10	66.52	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.60	71.97	829.00	0.09
C4 Chrysenes [(a)]	1214.00	---	0.53	5.78	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	4.50	49.07	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.90	53.44	913.00	0.06
Chrysene [(a)]	844.00	826	5.50	59.98	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.52	5.67	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	119.96	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	1.10	12.00	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	17.45	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	3.50	38.17	385.00	0.10
Perylene [(a)]	967.00	431.00	0.92	10.03	967.00	0.01
Phenanthrene [(a)]	596	34300	6.60	71.97	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	7.30	79.61	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.48**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0305			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.7	0.107	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.58	5.42	446.00	0.01
2-Methylnaphthalene	447.00	154800	1.00	9.35	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.70	15.89	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.43	4.02	452.00	0.01
Anthracene [(a)]	594.00	1300	3.70	34.58	594.00	0.06
Benzo(a)anthracene [(a)]	841.00	4153	7.40	69.16	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	5.40	50.47	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	6.40	59.81	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	3.90	36.45	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.60	24.30	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	6.00	56.07	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	3.40	31.78	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.39	3.64	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.30	77.57	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.10	10.28	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.90	55.14	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	3.70	34.58	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.78	7.29	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	3.90	36.45	---	---
C2-Naphthalenes [(a)]	510.00	---	2.20	20.56	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.90	45.79	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	1.20	11.21	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.50	14.02	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.10	19.63	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	3.70	34.58	581.00	0.06
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.50	51.40	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.34	3.18	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.00	28.04	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.10	38.32	913.00	0.04
Chrysene [(a)]	844.00	826	7.10	66.36	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.69	6.45	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	17.00	158.88	707.00	0.22
Fluorene [(a)]	538.00	26,000.00	2.20	20.56	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.50	23.36	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.40	22.43	385.00	0.06
Perylene [(a)]	967.00	431.00	1.30	12.15	967.00	0.01
Phenanthrene [(a)]	596	34300	12.00	112.15	596.00	0.19
Pyrene [(a)]	697.00	9,090.00	11.00	102.80	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**1.57**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0507			
		Sample Depth	5-7			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.1	0.091	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.50	27.47	446.00	0.06
2-Methylnaphthalene	447.00	154800	4.30	47.25	447.00	0.11
Acenaphthene [(a)]	491.00	33400	5.50	60.44	491.00	0.12
Acenaphthylene [(a)]	452.00	24000	0.71	7.80	452.00	0.02
Anthracene [(a)]	594.00	1300	7.10	78.02	594.00	0.13
Benzo(a)anthracene [(a)]	841.00	4153	11.00	120.88	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	9.00	98.90	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	7.60	83.52	979.00	0.09
Benzo(e)pyrene [(a)]	967.00	4300	5.70	62.64	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.30	47.25	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	9.90	108.79	981.00	0.11
C1 Chrysenes [(a)]	929.00	---	5.90	64.84	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	1.30	14.29	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	14.00	153.85	770.00	0.20
C1-Naphthalenes [(a)]	444.00	---	4.70	51.65	444.00	0.12
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	14.00	153.85	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	5.10	56.04	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	2.00	21.98	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	6.70	73.63	---	---
C2-Naphthalenes [(a)]	510.00	---	9.70	106.59	510.00	0.21
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	109.89	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.70	18.68	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.50	38.46	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.80	41.76	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	14.00	153.85	581.00	0.26
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.80	107.69	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.71	7.80	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	8.60	94.51	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.70	73.63	913.00	0.08
Chrysene [(a)]	844.00	826	11.00	120.88	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.30	14.29	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	29.00	318.68	707.00	0.45
Fluorene [(a)]	538.00	26,000.00	5.50	60.44	538.00	0.11
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.00	43.96	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	30.00	329.67	385.00	0.86
Perylene [(a)]	967.00	431.00	2.40	26.37	967.00	0.03
Phenanthrene [(a)]	596	34300	26.00	285.71	596.00	0.48
Pyrene [(a)]	697.00	9,090.00	18.00	197.80	697.00	0.28
	---	**ESBTU FCVi**	---	---	---	**4.12**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0709			
		Sample Depth	7-9			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	14.2	0.142	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.20	8.45	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.20	8.45	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.80	12.68	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.63	4.44	452.00	0.01
Anthracene [(a)]	594.00	1300	4.20	29.58	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	9.00	63.38	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	6.30	44.37	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	6.70	47.18	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	4.30	30.28	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.90	20.42	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	5.60	39.44	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.70	33.10	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.84	5.92	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	11.00	77.46	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	2.10	14.79	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.60	67.61	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	3.30	23.24	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.30	9.15	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	5.00	35.21	---	---
C2-Naphthalenes [(a)]	510.00	---	4.60	32.39	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.00	56.34	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	1.20	8.45	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.60	18.31	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.90	20.42	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	7.40	52.11	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.80	54.93	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.58	4.08	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	5.40	38.03	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.40	38.03	913.00	0.04
Chrysene [(a)]	844.00	826	8.70	61.27	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.76	5.35	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	18.00	126.76	707.00	0.18
Fluorene [(a)]	538.00	26,000.00	2.90	20.42	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	18.31	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	9.00	63.38	385.00	0.16
Perylene [(a)]	967.00	431.00	1.70	11.97	967.00	0.01
Phenanthrene [(a)]	596	34300	13.00	91.55	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	13.00	91.55	697.00	0.13
	---	**ESBTU FCVi**	---	---	---	**1.55**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-02			
		Field Sample ID	RREC13-02-0911			
		Sample Depth	9-11			
		Sample Date	11/02/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	16.4	0.164	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.70	10.37	446.00	0.02
2-Methylnaphthalene	447.00	154800	2.60	15.85	447.00	0.04
Acenaphthene [(a)]	491.00	33400	2.10	12.80	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.65	3.96	452.00	0.01
Anthracene [(a)]	594.00	1300	3.80	23.17	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	5.60	34.15	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	4.30	26.22	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	3.80	23.17	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	3.10	18.90	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.70	16.46	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.70	22.56	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	4.90	29.88	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.84	5.12	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.20	43.90	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	3.20	19.51	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.00	54.88	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	3.10	18.90	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.40	8.54	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	4.30	26.22	---	---
C2-Naphthalenes [(a)]	510.00	---	7.30	44.51	510.00	0.09
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.30	50.61	746.00	0.07
C3 Chrysenes [(a)]	1112.00	---	1.40	8.54	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.80	17.07	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.60	15.85	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	8.70	53.05	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.50	45.73	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.68	4.15	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	6.10	37.20	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.10	31.10	913.00	0.03
Chrysene [(a)]	844.00	826	5.60	34.15	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.96	5.85	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	67.07	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	4.30	26.22	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	15.85	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	8.50	51.83	385.00	0.13
Perylene [(a)]	967.00	431.00	1.10	6.71	967.00	0.01
Phenanthrene [(a)]	596	34300	10.00	60.98	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	10.00	60.98	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.10**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-03			
		Field Sample ID	RREC13-03-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.6	0.116	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.00	8.62	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.80	15.52	447.00	0.03
Acenaphthene [(a)]	491.00	33400	1.30	11.21	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	1.60	13.79	452.00	0.03
Anthracene [(a)]	594.00	1300	7.10	61.21	594.00	0.10
Benzo(a)anthracene [(a)]	841.00	4153	16.00	137.93	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	13.00	112.07	965.00	0.12
Benzo(b)fluoranthene [(a)]	979.00	2169	9.60	82.76	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	7.50	64.66	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	6.00	51.72	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	13.00	112.07	981.00	0.11
C1 Chrysenes [(a)]	929.00	---	1.60	13.79	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.83	7.16	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	18.00	155.17	770.00	0.20
C1-Naphthalenes [(a)]	444.00	---	2.00	17.24	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	13.00	112.07	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	1.60	13.79	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.88	7.59	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	7.80	67.24	---	---
C2-Naphthalenes [(a)]	510.00	---	4.80	41.38	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.00	60.34	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	1.60	13.79	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.50	12.93	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	3.60	31.03	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	4.40	37.93	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.50	47.41	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	1.60	13.79	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.50	21.55	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.50	30.17	913.00	0.03
Chrysene [(a)]	844.00	826	13.00	112.07	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.90	16.38	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	26.00	224.14	707.00	0.32
Fluorene [(a)]	538.00	26,000.00	3.90	33.62	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	5.80	50.00	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	4.40	37.93	385.00	0.10
Perylene [(a)]	967.00	431.00	3.20	27.59	967.00	0.03
Phenanthrene [(a)]	596	34300	21.00	181.03	596.00	0.30
Pyrene [(a)]	697.00	9,090.00	17.00	146.55	697.00	0.21
	---	**ESBTU FCVi**	---	---	---	**2.54**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-03			
		Field Sample ID	RREC13-03-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.06	0.0606	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.30	21.45	446.00	0.05
2-Methylnaphthalene	447.00	154800	2.10	34.65	447.00	0.08
Acenaphthene [(a)]	491.00	33400	1.20	19.80	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.77	12.71	452.00	0.03
Anthracene [(a)]	594.00	1300	4.00	66.01	594.00	0.11
Benzo(a)anthracene [(a)]	841.00	4153	7.20	118.81	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	4.90	80.86	965.00	0.08
Benzo(b)fluoranthene [(a)]	979.00	2169	3.90	64.36	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	3.30	54.46	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	37.95	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.00	66.01	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	7.00	115.51	929.00	0.12
C1 Fluorenes [(a)]	611.00	---	0.80	13.20	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	198.02	770.00	0.26
C1-Naphthalenes [(a)]	444.00	---	2.30	37.95	444.00	0.09
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	13.00	214.52	670.00	0.32
C2 Chrysenes [(a)]	1008.00	---	6.30	103.96	1008.00	0.10
C2 Fluorenes [(a)]	686.00	---	1.30	21.45	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	8.10	133.66	---	---
C2-Naphthalenes [(a)]	510.00	---	7.00	115.51	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	165.02	746.00	0.22
C3 Chrysenes [(a)]	1112.00	---	3.00	49.50	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	2.70	44.55	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	5.10	84.16	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	7.20	118.81	581.00	0.20
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	10.00	165.02	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	1.60	26.40	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	4.60	75.91	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.90	130.36	913.00	0.14
Chrysene [(a)]	844.00	826	6.40	105.61	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.78	12.87	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	198.02	707.00	0.28
Fluorene [(a)]	538.00	26,000.00	2.30	37.95	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.00	33.00	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	5.80	95.71	385.00	0.25
Perylene [(a)]	967.00	431.00	1.10	18.15	967.00	0.02
Phenanthrene [(a)]	596	34300	11.00	181.52	596.00	0.30
Pyrene [(a)]	697.00	9,090.00	9.50	156.77	697.00	0.22
	---	**ESBTU FCVi**	---	---	---	**3.19**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-03			
		Field Sample ID	RREC13-03-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.97	0.0697	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.90	27.26	446.00	0.06
2-Methylnaphthalene	447.00	154800	3.20	45.91	447.00	0.10
Acenaphthene [(a)]	491.00	33400	1.60	22.96	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	1.10	15.78	452.00	0.03
Anthracene [(a)]	594.00	1300	4.40	63.13	594.00	0.11
Benzo(a)anthracene [(a)]	841.00	4153	8.40	120.52	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	5.70	81.78	965.00	0.08
Benzo(b)fluoranthene [(a)]	979.00	2169	4.30	61.69	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	3.80	54.52	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.80	40.17	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	4.50	64.56	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	8.00	114.78	929.00	0.12
C1 Fluorenes [(a)]	611.00	---	0.93	13.34	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	14.00	200.86	770.00	0.26
C1-Naphthalenes [(a)]	444.00	---	3.50	50.22	444.00	0.11
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	16.00	229.56	670.00	0.34
C2 Chrysenes [(a)]	1008.00	---	6.60	94.69	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	1.50	21.52	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	9.00	129.12	---	---
C2-Naphthalenes [(a)]	510.00	---	8.00	114.78	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	172.17	746.00	0.23
C3 Chrysenes [(a)]	1112.00	---	3.40	48.78	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	3.50	50.22	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	5.60	80.34	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	8.00	114.78	581.00	0.20
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	200.86	829.00	0.24
C4 Chrysenes [(a)]	1214.00	---	1.70	24.39	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	5.50	78.91	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.80	126.26	913.00	0.14
Chrysene [(a)]	844.00	826	7.60	109.04	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.98	14.06	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	172.17	707.00	0.24
Fluorene [(a)]	538.00	26,000.00	2.70	38.74	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	34.43	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	8.10	116.21	385.00	0.30
Perylene [(a)]	967.00	431.00	1.30	18.65	967.00	0.02
Phenanthrene [(a)]	596	34300	12.00	172.17	596.00	0.29
Pyrene [(a)]	697.00	9,090.00	11.00	157.82	697.00	0.23
	---	**ESBTU FCVi**	---	---	---	**3.30**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-03			
		Field Sample ID	RREC13-03-0305			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.76	0.0476	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.60	33.61	446.00	0.08
2-Methylnaphthalene	447.00	154800	2.90	60.92	447.00	0.14
Acenaphthene [(a)]	491.00	33400	1.40	29.41	491.00	0.06
Acenaphthylene [(a)]	452.00	24000	0.78	16.39	452.00	0.04
Anthracene [(a)]	594.00	1300	4.50	94.54	594.00	0.16
Benzo(a)anthracene [(a)]	841.00	4153	6.60	138.66	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	4.60	96.64	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	3.50	73.53	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	2.80	58.82	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	48.32	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	3.80	79.83	981.00	0.08
C1 Chrysenes [(a)]	929.00	---	5.80	121.85	929.00	0.13
C1 Fluorenes [(a)]	611.00	---	0.79	16.60	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	252.10	770.00	0.33
C1-Naphthalenes [(a)]	444.00	---	3.00	63.03	444.00	0.14
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	12.00	252.10	670.00	0.38
C2 Chrysenes [(a)]	1008.00	---	5.60	117.65	1008.00	0.12
C2 Fluorenes [(a)]	686.00	---	1.10	23.11	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	6.70	140.76	---	---
C2-Naphthalenes [(a)]	510.00	---	7.30	153.36	510.00	0.30
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.40	176.47	746.00	0.24
C3 Chrysenes [(a)]	1112.00	---	2.80	58.82	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	2.40	50.42	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	4.80	100.84	949.00	0.11
C3-Naphthalenes [(a)]	581.00	---	6.90	144.96	581.00	0.25
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.40	197.48	829.00	0.24
C4 Chrysenes [(a)]	1214.00	---	1.40	29.41	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	4.30	90.34	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.60	138.66	913.00	0.15
Chrysene [(a)]	844.00	826	5.70	119.75	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.70	14.71	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	231.09	707.00	0.33
Fluorene [(a)]	538.00	26,000.00	2.60	54.62	538.00	0.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.00	42.02	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	8.80	184.87	385.00	0.48
Perylene [(a)]	967.00	431.00	1.10	23.11	967.00	0.02
Phenanthrene [(a)]	596	34300	12.00	252.10	596.00	0.42
Pyrene [(a)]	697.00	9,090.00	9.40	197.48	697.00	0.28
	---	**ESBTU FCVi**	---	---	---	**4.07**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-03			
		Field Sample ID	RREC13-03-0507			
		Sample Depth	5-7			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.68	0.0068	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.03	4.28	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.04	6.19	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.03	4.42	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.02	2.80	452.00	0.01
Anthracene [(a)]	594.00	1300	0.08	11.95	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	0.13	19.17	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.09	13.72	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.07	10.77	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.06	8.70	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.05	6.64	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.07	10.91	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.12	17.70	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.02	2.65	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.21	30.97	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.05	7.23	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.23	33.92	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.10	14.01	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.02	3.24	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.13	19.17	---	---
C2-Naphthalenes [(a)]	510.00	---	0.14	20.65	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.14	20.65	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.04	6.34	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.04	5.90	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.08	11.65	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.20	29.50	581.00	0.05
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.16	23.60	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.02	3.39	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.16	23.60	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.10	14.01	913.00	0.02
Chrysene [(a)]	844.00	826	0.12	17.70	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	1.92	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.21	30.97	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.05	7.08	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.04	5.46	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.11	16.22	385.00	0.04
Perylene [(a)]	967.00	431.00	0.04	6.05	967.00	0.01
Phenanthrene [(a)]	596	34300	0.24	35.40	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	0.19	28.02	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.52

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-05			
		Field Sample ID	RREC13-05-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.01	0.0701	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.68	9.70	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.00	14.27	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.36	5.14	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.28	3.99	452.00	0.01
Anthracene [(a)]	594.00	1300	1.40	19.97	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.00	42.80	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.30	32.81	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	25.68	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.60	22.82	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	17.12	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	27.10	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.80	39.94	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.37	5.28	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.80	68.47	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	1.20	17.12	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.90	84.17	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	2.30	32.81	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.69	9.84	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	3.20	45.65	---	---
C2-Naphthalenes [(a)]	510.00	---	3.80	54.21	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.80	68.47	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	1.10	15.69	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.50	21.40	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	32.81	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	4.50	64.19	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.80	68.47	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.61	8.70	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.90	41.37	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.20	45.65	913.00	0.05
Chrysene [(a)]	844.00	826	2.80	39.94	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.34	4.85	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.90	69.90	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.78	11.13	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	15.69	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.60	22.82	385.00	0.06
Perylene [(a)]	967.00	431.00	0.60	8.56	967.00	0.01
Phenanthrene [(a)]	596	34300	3.90	55.63	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	3.80	54.21	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.15**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-05			
		Field Sample ID	RREC13-05-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.49	0.0549	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.38	6.92	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.63	11.48	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.68	12.39	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.48	8.74	452.00	0.02
Anthracene [(a)]	594.00	1300	3.20	58.29	594.00	0.10
Benzo(a)anthracene [(a)]	841.00	4153	6.20	112.93	841.00	0.13
Benzo(a)pyrene [(a)]	965.00	3840	5.20	94.72	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	4.50	81.97	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	3.10	56.47	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.90	52.82	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	4.30	78.32	981.00	0.08
C1 Chrysenes [(a)]	929.00	---	2.90	52.82	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.40	7.29	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.40	116.58	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	0.73	13.30	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.60	83.79	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	1.60	29.14	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.56	10.20	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.70	49.18	---	---
C2-Naphthalenes [(a)]	510.00	---	1.90	34.61	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.30	60.11	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	0.64	11.66	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	20.04	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	29.14	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	3.00	54.64	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.70	67.40	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.34	6.19	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.80	51.00	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.70	49.18	913.00	0.05
Chrysene [(a)]	844.00	826	5.70	103.83	844.00	0.12
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.74	13.48	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	218.58	707.00	0.31
Fluorene [(a)]	538.00	26,000.00	1.70	30.97	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	47.36	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	1.05	19.13	385.00	0.05
Perylene [(a)]	967.00	431.00	1.40	25.50	967.00	0.03
Phenanthrene [(a)]	596	34300	10.00	182.15	596.00	0.31
Pyrene [(a)]	697.00	9,090.00	9.10	165.76	697.00	0.24
	---	**ESBTU FCVi**	---	---	---	**2.35**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-05			
		Field Sample ID	RREC13-05-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.42	0.0742	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.36	4.85	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.55	7.41	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.54	7.28	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.29	3.91	452.00	0.01
Anthracene [(a)]	594.00	1300	1.90	25.61	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.20	56.60	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.40	45.82	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	40.43	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.20	29.65	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	25.61	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	40.43	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.40	32.35	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.40	5.39	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.00	67.39	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.64	8.63	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.30	57.95	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	1.60	21.56	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.63	8.49	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.60	35.04	---	---
C2-Naphthalenes [(a)]	510.00	---	1.90	25.61	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.80	51.21	746.00	0.07
C3 Chrysenes [(a)]	1112.00	---	0.69	9.30	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.50	20.22	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	21.56	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	3.00	40.43	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.40	59.30	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.36	4.85	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.90	39.08	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.00	40.43	913.00	0.04
Chrysene [(a)]	844.00	826	4.10	55.26	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.52	7.01	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.70	103.77	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	1.10	14.82	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	22.91	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.10	28.30	385.00	0.07
Perylene [(a)]	967.00	431.00	0.90	12.13	967.00	0.01
Phenanthrene [(a)]	596	34300	6.10	82.21	596.00	0.14
Pyrene [(a)]	697.00	9,090.00	5.80	78.17	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.33**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-06			
		Field Sample ID	RREC13-06-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.53	0.0553	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.12	2.17	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.21	3.80	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.18	3.25	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.13	2.35	452.00	0.01
Anthracene [(a)]	594.00	1300	0.75	13.56	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.30	41.59	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.30	41.59	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	34.36	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.40	25.32	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	23.51	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	34.36	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	1.30	23.51	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.08	1.37	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.60	47.02	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.23	4.16	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.40	25.32	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	0.78	14.10	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.10	1.81	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.20	21.70	---	---
C2-Naphthalenes [(a)]	510.00	---	0.52	9.40	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.76	13.74	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.28	5.06	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.16	2.89	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.53	9.58	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.47	8.50	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.57	10.31	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.12	2.17	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.24	4.34	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.34	6.15	913.00	0.01
Chrysene [(a)]	844.00	826	2.20	39.78	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.32	5.79	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	3.30	59.67	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.25	4.52	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	19.89	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.32	5.70	385.00	0.01
Perylene [(a)]	967.00	431.00	0.55	9.95	967.00	0.01
Phenanthrene [(a)]	596	34300	1.70	30.74	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	2.70	48.82	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.70

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-06			
		Field Sample ID	RREC13-06-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.57	0.0857	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.17	1.98	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.25	2.86	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.23	2.68	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.15	1.75	452.00	0.00
Anthracene [(a)]	594.00	1300	0.58	6.77	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.70	19.84	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.40	16.34	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.70	19.84	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.10	12.84	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.77	8.98	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.40	16.34	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.94	10.97	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.08	0.90	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.00	23.34	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.30	3.50	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.20	14.00	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.84	9.80	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.14	1.63	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.98	11.44	---	---
C2-Naphthalenes [(a)]	510.00	---	0.52	6.07	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.88	10.27	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.28	3.27	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.28	3.27	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.49	5.72	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.72	8.40	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.88	10.27	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.12	1.40	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.47	5.48	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.63	7.35	913.00	0.01
Chrysene [(a)]	844.00	826	1.60	18.67	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.20	2.33	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.40	39.67	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.38	4.43	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.68	7.93	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.10	12.84	385.00	0.03
Perylene [(a)]	967.00	431.00	0.33	3.85	967.00	0.00
Phenanthrene [(a)]	596	34300	2.10	24.50	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	2.50	29.17	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.43

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-06			
		Field Sample ID	RREC13-06-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.81	0.0781	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	7.04	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.80	10.24	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.57	7.30	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.28	3.59	452.00	0.01
Anthracene [(a)]	594.00	1300	1.30	16.65	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	2.90	37.13	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.60	33.29	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	37.13	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.80	23.05	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.92	11.78	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.50	32.01	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.90	24.33	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.30	3.84	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.90	49.94	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.92	11.78	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.00	51.22	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	2.30	29.45	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.58	7.43	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.30	29.45	---	---
C2-Naphthalenes [(a)]	510.00	---	2.70	34.57	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.30	42.25	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.75	9.60	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	14.08	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.30	16.65	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	4.20	53.78	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.00	38.41	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.37	4.74	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.50	32.01	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.00	25.61	913.00	0.03
Chrysene [(a)]	844.00	826	2.90	37.13	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.26	3.33	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.10	78.10	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.81	10.37	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.83	10.63	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.90	24.33	385.00	0.06
Perylene [(a)]	967.00	431.00	0.62	7.94	967.00	0.01
Phenanthrene [(a)]	596	34300	4.30	55.06	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.20	53.78	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.97

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-07			
		Field Sample ID	RREC13-07-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.34	0.0434	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.08	1.75	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.14	3.23	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.10	2.28	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.08	1.73	452.00	0.00
Anthracene [(a)]	594.00	1300	0.33	7.60	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.00	23.04	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.10	25.35	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	0.92	21.20	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.66	15.21	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.58	13.36	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.83	19.12	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.59	13.59	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.04	0.81	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.99	22.81	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.15	3.46	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.59	13.59	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.31	7.14	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.04	0.85	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.47	10.83	---	---
C2-Naphthalenes [(a)]	510.00	---	0.31	7.14	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.30	6.91	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.12	2.76	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	1.59	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.23	5.30	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.27	6.22	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.21	4.84	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.05	1.08	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.13	3.00	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.13	3.00	913.00	0.00
Chrysene [(a)]	844.00	826	0.93	21.43	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.17	3.92	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.60	36.87	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.17	3.92	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.54	12.44	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.38	8.76	385.00	0.02
Perylene [(a)]	967.00	431.00	0.27	6.22	967.00	0.01
Phenanthrene [(a)]	596	34300	0.97	22.35	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	1.20	27.65	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.42

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.53	0.0353	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.25	7.08	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.95	26.91	447.00	0.06
Acenaphthene [(a)]	491.00	33400	0.84	23.80	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	0.95	26.91	452.00	0.06
Anthracene [(a)]	594.00	1300	1.40	39.66	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	4.90	138.81	841.00	0.17
Benzo(a)pyrene [(a)]	965.00	3840	4.10	116.15	965.00	0.12
Benzo(b)fluoranthene [(a)]	979.00	2169	4.30	121.81	979.00	0.12
Benzo(e)pyrene [(a)]	967.00	4300	2.80	79.32	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.10	59.49	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	3.90	110.48	981.00	0.11
C1 Chrysenes [(a)]	929.00	---	2.00	56.66	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.95	26.91	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.60	101.98	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	0.47	13.31	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.90	53.82	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	1.00	28.33	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.95	26.91	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	2.00	56.66	---	---
C2-Naphthalenes [(a)]	510.00	---	0.47	13.31	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.72	20.40	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.28	7.93	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.95	26.91	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	0.79	22.38	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.40	11.33	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.55	15.58	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.95	26.91	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	0.21	5.95	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.31	8.78	913.00	0.01
Chrysene [(a)]	844.00	826	5.00	141.64	844.00	0.17
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.52	14.73	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	339.94	707.00	0.48
Fluorene [(a)]	538.00	26,000.00	0.73	20.68	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.90	53.82	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	0.95	26.91	385.00	0.07
Perylene [(a)]	967.00	431.00	1.40	39.66	967.00	0.04
Phenanthrene [(a)]	596	34300	6.90	195.47	596.00	0.33
Pyrene [(a)]	697.00	9,090.00	8.10	229.46	697.00	0.33
	---	**ESBTU FCVi**	---	---	---	**2.74**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.56	0.0456	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.77	16.89	446.00	0.04
2-Methylnaphthalene	447.00	154800	0.85	18.64	447.00	0.04
Acenaphthene [(a)]	491.00	33400	1.20	26.32	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	0.37	8.11	452.00	0.02
Anthracene [(a)]	594.00	1300	2.90	63.60	594.00	0.11
Benzo(a)anthracene [(a)]	841.00	4153	6.00	131.58	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	4.60	100.88	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	5.30	116.23	979.00	0.12
Benzo(e)pyrene [(a)]	967.00	4300	3.30	72.37	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	50.44	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	92.11	981.00	0.09
C1 Chrysenes [(a)]	929.00	---	3.00	65.79	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.77	16.89	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.10	133.77	770.00	0.17
C1-Naphthalenes [(a)]	444.00	---	1.40	30.70	444.00	0.07
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.80	149.12	670.00	0.22
C2 Chrysenes [(a)]	1008.00	---	1.90	41.67	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.10	24.12	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	3.50	76.75	---	---
C2-Naphthalenes [(a)]	510.00	---	5.10	111.84	510.00	0.22
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.30	116.23	746.00	0.16
C3 Chrysenes [(a)]	1112.00	---	0.84	18.42	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	2.10	46.05	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	2.10	46.05	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	8.30	182.02	581.00	0.31
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.40	118.42	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	0.42	9.21	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.70	125.00	657.00	0.19
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.40	74.56	913.00	0.08
Chrysene [(a)]	844.00	826	6.00	131.58	844.00	0.16
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.57	12.50	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	14.00	307.02	707.00	0.43
Fluorene [(a)]	538.00	26,000.00	1.90	41.67	538.00	0.08
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.10	46.05	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	4.90	107.46	385.00	0.28
Perylene [(a)]	967.00	431.00	1.10	24.12	967.00	0.02
Phenanthrene [(a)]	596	34300	11.00	241.23	596.00	0.40
Pyrene [(a)]	697.00	9,090.00	9.50	208.33	697.00	0.30
	---	**ESBTU FCVi**	---	---	---	**3.40**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0001-FD			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.24	0.0924	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	5.95	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.65	7.03	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.92	9.96	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.26	2.81	452.00	0.01
Anthracene [(a)]	594.00	1300	2.40	25.97	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.80	51.95	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	4.00	43.29	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.40	36.80	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.70	29.22	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	19.48	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	45.45	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.40	25.97	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.51	5.52	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	50.87	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.00	10.82	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.10	55.19	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	1.80	19.48	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.74	8.01	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.70	29.22	---	---
C2-Naphthalenes [(a)]	510.00	---	3.50	37.88	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.90	42.21	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.67	7.25	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.40	15.15	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.40	15.15	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	5.30	57.36	581.00	0.10
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.80	41.13	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.37	4.00	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.80	41.13	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.30	24.89	913.00	0.03
Chrysene [(a)]	844.00	826	4.60	49.78	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.51	5.52	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	11.00	119.05	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	1.60	17.32	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	18.40	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	3.00	32.47	385.00	0.08
Perylene [(a)]	967.00	431.00	1.40	15.15	967.00	0.02
Phenanthrene [(a)]	596	34300	8.90	96.32	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	7.30	79.00	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.29**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.08	0.0908	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.97	10.68	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.80	8.81	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.30	14.32	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.45	4.96	452.00	0.01
Anthracene [(a)]	594.00	1300	2.90	31.94	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	5.30	58.37	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	4.20	46.26	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.10	45.15	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.80	30.84	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	20.93	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.90	42.95	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	3.10	34.14	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.85	9.36	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.00	77.09	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.80	19.82	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.90	87.00	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	2.30	25.33	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.40	15.42	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.90	42.95	---	---
C2-Naphthalenes [(a)]	510.00	---	5.60	61.67	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.80	74.89	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.10	12.11	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.70	29.74	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	25.33	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	9.70	106.83	581.00	0.18
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.60	83.70	829.00	0.10
C4 Chrysenes [(a)]	1214.00	---	0.56	6.17	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.70	73.79	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.50	49.56	913.00	0.05
Chrysene [(a)]	844.00	826	5.40	59.47	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.49	5.40	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	11.00	121.15	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	2.30	25.33	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	18.72	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	5.80	63.88	385.00	0.17
Perylene [(a)]	967.00	431.00	1.30	14.32	967.00	0.01
Phenanthrene [(a)]	596	34300	9.80	107.93	596.00	0.18
Pyrene [(a)]	697.00	9,090.00	8.10	89.21	697.00	0.13
	---	**ESBTU FCVi**	---	---	---	**1.71**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0103-FD			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.18	0.0718	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.97	13.51	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.80	11.14	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.30	18.11	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.45	6.27	452.00	0.01
Anthracene [(a)]	594.00	1300	3.20	44.57	594.00	0.08
Benzo(a)anthracene [(a)]	841.00	4153	4.30	59.89	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.00	41.78	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.50	48.75	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.20	30.64	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	19.50	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.90	40.39	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.80	39.00	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.89	12.40	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.30	87.74	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	1.70	23.68	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.20	114.21	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	2.50	34.82	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.30	18.11	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.60	50.14	---	---
C2-Naphthalenes [(a)]	510.00	---	5.70	79.39	510.00	0.16
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.10	98.89	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	1.00	13.93	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.70	37.60	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	33.43	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	9.80	136.49	581.00	0.23
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.30	101.67	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.55	7.66	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.40	89.14	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.10	71.03	913.00	0.08
Chrysene [(a)]	844.00	826	4.30	59.89	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.36	5.01	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	11.00	153.20	707.00	0.22
Fluorene [(a)]	538.00	26,000.00	2.60	36.21	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	16.71	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	5.50	76.60	385.00	0.20
Perylene [(a)]	967.00	431.00	0.68	9.47	967.00	0.01
Phenanthrene [(a)]	596	34300	11.00	153.20	596.00	0.26
Pyrene [(a)]	697.00	9,090.00	7.10	98.89	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**2.08**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0305			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.2	0.102	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.20	11.76	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.10	10.78	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.70	16.67	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.37	3.63	452.00	0.01
Anthracene [(a)]	594.00	1300	4.10	40.20	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	7.00	68.63	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	5.20	50.98	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.50	44.12	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.40	33.33	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.00	29.41	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.80	47.06	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	3.90	38.24	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.87	8.53	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.90	87.25	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	2.20	21.57	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.30	81.37	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	2.60	25.49	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.20	11.76	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.20	41.18	---	---
C2-Naphthalenes [(a)]	510.00	---	6.20	60.78	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.40	62.75	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	1.10	10.78	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.30	22.55	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	23.53	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	8.40	82.35	581.00	0.14
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.20	70.59	829.00	0.09
C4 Chrysenes [(a)]	1214.00	---	0.60	5.88	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	5.90	57.84	657.00	0.09
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.90	48.04	913.00	0.05
Chrysene [(a)]	844.00	826	6.40	62.75	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.88	8.63	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	14.00	137.25	707.00	0.19
Fluorene [(a)]	538.00	26,000.00	2.70	26.47	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	25.49	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	12.00	117.65	385.00	0.31
Perylene [(a)]	967.00	431.00	1.20	11.76	967.00	0.01
Phenanthrene [(a)]	596	34300	13.00	127.45	596.00	0.21
Pyrene [(a)]	697.00	9,090.00	10.00	98.04	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.94**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-09			
		Field Sample ID	RREC13-09-0305-FD			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.35	0.0935	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.20	12.83	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.10	22.46	447.00	0.05
Acenaphthene [(a)]	491.00	33400	1.70	18.18	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.35	3.74	452.00	0.01
Anthracene [(a)]	594.00	1300	3.70	39.57	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	6.60	70.59	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	5.00	53.48	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	4.80	51.34	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.30	35.29	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.60	27.81	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	44.92	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	3.80	40.64	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.90	9.63	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.50	90.91	770.00	0.12
C1-Naphthalenes [(a)]	444.00	---	2.20	23.53	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.20	87.70	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	2.80	29.95	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.20	12.83	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.30	45.99	---	---
C2-Naphthalenes [(a)]	510.00	---	6.10	65.24	510.00	0.13
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.70	71.66	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.10	11.76	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.50	26.74	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	2.70	28.88	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	8.40	89.84	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.90	84.49	829.00	0.10
C4 Chrysenes [(a)]	1214.00	---	0.66	7.06	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.20	66.31	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.40	47.06	913.00	0.05
Chrysene [(a)]	844.00	826	5.90	63.10	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.77	8.24	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	128.34	707.00	0.18
Fluorene [(a)]	538.00	26,000.00	2.70	28.88	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	25.67	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	12.00	128.34	385.00	0.33
Perylene [(a)]	967.00	431.00	1.30	13.90	967.00	0.01
Phenanthrene [(a)]	596	34300	12.00	128.34	596.00	0.22
Pyrene [(a)]	697.00	9,090.00	9.50	101.60	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**2.03**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-11			
		Field Sample ID	RREC13-11-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.05	0.0205	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	4.63	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.46	22.44	447.00	0.05
Acenaphthene [(a)]	491.00	33400	0.14	6.83	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.15	7.32	452.00	0.02
Anthracene [(a)]	594.00	1300	0.45	21.95	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	2.70	131.71	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	2.40	117.07	965.00	0.12
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	87.80	979.00	0.09
Benzo(e)pyrene [(a)]	967.00	4300	1.60	78.05	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	58.54	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	2.40	117.07	981.00	0.12
C1 Chrysenes [(a)]	929.00	---	1.30	63.41	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.46	22.44	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.30	112.20	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	0.18	8.78	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.20	58.54	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	0.75	36.59	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	0.46	22.44	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	1.10	53.66	---	---
C2-Naphthalenes [(a)]	510.00	---	0.42	20.49	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.61	29.76	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.20	9.76	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.12	5.85	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.49	23.90	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	0.40	19.51	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.43	20.98	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.10	4.88	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.19	9.27	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.28	13.66	913.00	0.02
Chrysene [(a)]	844.00	826	2.30	112.20	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.34	16.59	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.00	243.90	707.00	0.34
Fluorene [(a)]	538.00	26,000.00	0.17	8.29	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	53.66	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	0.46	22.44	385.00	0.06
Perylene [(a)]	967.00	431.00	0.75	36.59	967.00	0.04
Phenanthrene [(a)]	596	34300	1.90	92.68	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	3.50	170.73	697.00	0.24
	---	**ESBTU FCVi**	---	---	---	**2.13**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-13			
		Field Sample ID	RREC13-13-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.44	0.0344	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.05	1.34	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.09	2.47	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.06	1.69	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.06	1.74	452.00	0.00
Anthracene [(a)]	594.00	1300	0.22	6.40	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.87	25.29	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	0.89	25.87	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	0.84	24.42	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.58	16.86	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.61	17.73	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	0.64	18.60	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.46	13.37	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.02	0.67	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.77	22.38	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.10	2.82	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.38	11.05	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.27	7.85	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.04	1.08	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.41	11.92	---	---
C2-Naphthalenes [(a)]	510.00	---	0.24	6.98	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.23	6.69	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.12	3.49	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.08	2.33	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.21	6.10	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.21	6.10	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.20	5.81	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.05	1.40	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.13	3.78	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.17	4.94	913.00	0.01
Chrysene [(a)]	844.00	826	0.82	23.84	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.16	4.65	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.20	34.88	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.08	2.35	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.52	15.12	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.27	7.85	385.00	0.02
Perylene [(a)]	967.00	431.00	0.24	6.98	967.00	0.01
Phenanthrene [(a)]	596	34300	0.59	17.15	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	0.99	28.78	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.42

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-13			
		Field Sample ID	RREC13-13-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.76	0.0776	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.10	14.18	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.60	20.62	447.00	0.05
Acenaphthene [(a)]	491.00	33400	0.46	5.93	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.26	3.35	452.00	0.01
Anthracene [(a)]	594.00	1300	0.94	12.11	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.40	30.93	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.20	28.35	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	28.35	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.40	18.04	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	16.75	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.70	21.91	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.60	20.62	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.78	10.05	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.30	42.53	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	1.80	23.20	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.30	68.30	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	1.40	18.04	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.80	23.20	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	2.10	27.06	---	---
C2-Naphthalenes [(a)]	510.00	---	15.00	193.30	510.00	0.38
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.00	64.43	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	0.68	8.76	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.20	41.24	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	1.40	18.04	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	22.00	283.51	581.00	0.49
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.50	57.99	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.41	5.28	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	13.00	167.53	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.10	39.95	913.00	0.04
Chrysene [(a)]	844.00	826	2.30	29.64	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.37	4.77	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.60	59.28	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.85	10.95	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	15.46	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.60	20.62	385.00	0.05
Perylene [(a)]	967.00	431.00	0.55	7.09	967.00	0.01
Phenanthrene [(a)]	596	34300	3.60	46.39	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	3.50	45.10	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	**1.01**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-13				
		Field Sample ID	RREC13-13-0103				
		Sample Depth	1-3				
		Sample Date	10/30/2013				
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final		Conc
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt
Total Organic Carbon**	--	--	5	0.05	---	---	8.71
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)							
1-Methylnaphthalene	446.00	165700	1.30	26.00	446.00	0.06	2.10
2-Methylnaphthalene	447.00	154800	2.10	42.00	447.00	0.09	3.10
Acenaphthene [(a)]	491.00	33400	0.34	6.80	491.00	0.01	0.98
Acenaphthylene [(a)]	452.00	24000	0.18	3.60	452.00	0.01	0.88
Anthracene [(a)]	594.00	1300	0.60	12.00	594.00	0.02	4.00
Benzo(a)anthracene [(a)]	841.00	4153	1.50	30.00	841.00	0.04	8.40
Benzo(a)pyrene [(a)]	965.00	3840	1.40	28.00	965.00	0.03	6.20
Benzo(b)fluoranthene [(a)]	979.00	2169	1.40	28.00	979.00	0.03	5.00
Benzo(e)pyrene [(a)]	967.00	4300	1.00	20.00	967.00	0.02	4.20
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.80	16.00	1095.00	0.01	3.50
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	22.00	981.00	0.02	4.70
C1 Chrysenes [(a)]	929.00	---	1.50	30.00	929.00	0.03	7.80
C1 Fluorenes [(a)]	611.00	---	0.61	12.20	611.00	0.02	1.10
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.10	62.00	770.00	0.08	15.00
C1-Naphthalenes [(a)]	444.00	---	2.30	46.00	444.00	0.10	3.50
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.60	112.00	670.00	0.17	18.00
C2 Chrysenes [(a)]	1008.00	---	1.90	38.00	1008.00	0.04	7.10
C2 Fluorenes [(a)]	686.00	---	1.30	26.00	686.00	0.04	1.70
C2-Fluoranthenes/Pyrenes	---	---	2.80	56.00	---	---	9.60
C2-Naphthalenes [(a)]	510.00	---	13.00	260.00	510.00	0.51	10.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.00	100.00	746.00	0.13	13.00
C3 Chrysenes [(a)]	1112.00	---	0.98	19.60	1112.00	0.02	3.50
C3 Fluorenes [(a)]	769.00	---	2.50	50.00	769.00	0.07	4.10
C3-Fluoranthenes/Pyrenes	949.00	---	1.80	36.00	949.00	0.04	6.10
C3-Naphthalenes [(a)]	581.00	---	15.00	300.00	581.00	0.52	12.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.90	98.00	829.00	0.12	14.00
C4 Chrysenes [(a)]	1214.00	---	0.54	10.80	1214.00	0.01	1.80
C4-Naphthalenes [(a)]	657.00	---	7.80	156.00	657.00	0.24	7.20
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.20	64.00	913.00	0.07	9.60
Chrysene [(a)]	844.00	826	1.60	32.00	844.00	0.04	7.70
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	4.80	1123.00	0.00	1.10
Fluoranthene [(a)]	707.00	23,870.00	2.70	54.00	707.00	0.08	13.00
Fluorene [(a)]	538.00	26,000.00	0.75	15.00	538.00	0.03	2.20
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.69	13.80	1115.00	0.01	2.90
Naphthalene [(a)]	385.00	61,700.00	1.20	24.00	385.00	0.06	4.20
Perylene [(a)]	967.00	431.00	0.46	9.20	967.00	0.01	1.40
Phenanthrene [(a)]	596	34300	3.00	60.00	596.00	0.10	11.00
Pyrene [(a)]	697.00	9,090.00	2.60	52.00	697.00	0.07	11.00
	---	**ESBTU FCVi**	---	---	---	**1.29**	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-13			
		Field Sample ID	RREC13-13-0305			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Coc	Final		Conc
	µg/g oc	µg/g oc	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt
Total Organic Carbon**	--	--	0.0871	---	---	6.69
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	24.11	446.00	0.05	6.70
2-Methylnaphthalene	447.00	154800	35.59	447.00	0.08	10.00
Acenaphthene [(a)]	491.00	33400	11.25	491.00	0.02	4.10
Acenaphthylene [(a)]	452.00	24000	10.10	452.00	0.02	1.90
Anthracene [(a)]	594.00	1300	45.92	594.00	0.08	15.00
Benzo(a)anthracene [(a)]	841.00	4153	96.44	841.00	0.11	17.00
Benzo(a)pyrene [(a)]	965.00	3840	71.18	965.00	0.07	13.00
Benzo(b)fluoranthene [(a)]	979.00	2169	57.41	979.00	0.06	8.50
Benzo(e)pyrene [(a)]	967.00	4300	48.22	967.00	0.05	7.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	40.18	1095.00	0.04	5.50
Benzo(k)fluoranthene [(a)]	981.00	1220	53.96	981.00	0.06	8.40
C1 Chrysenes [(a)]	929.00	---	89.55	929.00	0.10	14.00
C1 Fluorenes [(a)]	611.00	---	12.63	611.00	0.02	3.10
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	172.22	770.00	0.22	32.00
C1-Naphthalenes [(a)]	444.00	---	40.18	444.00	0.09	12.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	206.66	670.00	0.31	42.00
C2 Chrysenes [(a)]	1008.00	---	81.52	1008.00	0.08	10.00
C2 Fluorenes [(a)]	686.00	---	19.52	686.00	0.03	3.00
C2-Fluoranthenes/Pyrenes	---	---	110.22	---	---	14.00
C2-Naphthalenes [(a)]	510.00	---	114.81	510.00	0.23	28.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	149.25	746.00	0.20	18.00
C3 Chrysenes [(a)]	1112.00	---	40.18	1112.00	0.04	4.30
C3 Fluorenes [(a)]	769.00	---	47.07	769.00	0.06	3.60
C3-Fluoranthenes/Pyrenes	949.00	---	70.03	949.00	0.07	7.40
C3-Naphthalenes [(a)]	581.00	---	137.77	581.00	0.24	21.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	160.73	829.00	0.19	13.00
C4 Chrysenes [(a)]	1214.00	---	20.67	1214.00	0.02	2.10
C4-Naphthalenes [(a)]	657.00	---	82.66	657.00	0.13	8.20
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	110.22	913.00	0.12	8.50
Chrysene [(a)]	844.00	826	88.40	844.00	0.10	15.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	12.63	1123.00	0.01	1.60
Fluoranthene [(a)]	707.00	23,870.00	149.25	707.00	0.21	27.00
Fluorene [(a)]	538.00	26,000.00	25.26	538.00	0.05	7.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	33.30	1115.00	0.03	4.40
Naphthalene [(a)]	385.00	61,700.00	48.22	385.00	0.13	5.70
Perylene [(a)]	967.00	431.00	16.07	967.00	0.02	2.30
Phenanthrene [(a)]	596	34300	126.29	596.00	0.21	39.00
Pyrene [(a)]	697.00	9,090.00	126.29	697.00	0.18	27.00
	---	**ESBTU FCVi**	---	---	**2.61**	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-13		
		Field Sample ID	RREC13-13-0507		
		Sample Depth	5-7		
		Sample Date	10/30/2013		
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Coc	Final	
	µg/g oc	µg/g oc	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.0669	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)					
1-Methylnaphthalene	446.00	165700	100.15	446.00	0.22
2-Methylnaphthalene	447.00	154800	149.48	447.00	0.33
Acenaphthene [(a)]	491.00	33400	61.29	491.00	0.12
Acenaphthylene [(a)]	452.00	24000	28.40	452.00	0.06
Anthracene [(a)]	594.00	1300	224.22	594.00	0.38
Benzo(a)anthracene [(a)]	841.00	4153	254.11	841.00	0.30
Benzo(a)pyrene [(a)]	965.00	3840	194.32	965.00	0.20
Benzo(b)fluoranthene [(a)]	979.00	2169	127.06	979.00	0.13
Benzo(e)pyrene [(a)]	967.00	4300	104.63	967.00	0.11
Benzo(g,h,i)perylene [(a)]	1095.00	648	82.21	1095.00	0.08
Benzo(k)fluoranthene [(a)]	981.00	1220	125.56	981.00	0.13
C1 Chrysenes [(a)]	929.00	---	209.27	929.00	0.23
C1 Fluorenes [(a)]	611.00	---	46.34	611.00	0.08
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	478.33	770.00	0.62
C1-Naphthalenes [(a)]	444.00	---	179.37	444.00	0.40
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	627.80	670.00	0.94
C2 Chrysenes [(a)]	1008.00	---	149.48	1008.00	0.15
C2 Fluorenes [(a)]	686.00	---	44.84	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	209.27	---	---
C2-Naphthalenes [(a)]	510.00	---	418.54	510.00	0.82
C2-Phenanthrenes/Anthracenes [(a)]	746	---	269.06	746.00	0.36
C3 Chrysenes [(a)]	1112.00	---	64.28	1112.00	0.06
C3 Fluorenes [(a)]	769.00	---	53.81	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	110.61	949.00	0.12
C3-Naphthalenes [(a)]	581.00	---	313.90	581.00	0.54
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	194.32	829.00	0.23
C4 Chrysenes [(a)]	1214.00	---	31.39	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	122.57	657.00	0.19
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	127.06	913.00	0.14
Chrysene [(a)]	844.00	826	224.22	844.00	0.27
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	23.92	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	403.59	707.00	0.57
Fluorene [(a)]	538.00	26,000.00	106.13	538.00	0.20
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	65.77	1115.00	0.06
Naphthalene [(a)]	385.00	61,700.00	85.20	385.00	0.22
Perylene [(a)]	967.00	431.00	34.38	967.00	0.04
Phenanthrene [(a)]	596	34300	582.96	596.00	0.98
Pyrene [(a)]	697.00	9,090.00	403.59	697.00	0.58
	---	**ESBTU FCVi**	---	---	**6.94**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.91	0.0991	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.33	3.33	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.44	4.39	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.40	4.04	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.18	1.82	452.00	0.00
Anthracene [(a)]	594.00	1300	0.87	8.78	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	3.40	34.31	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	3.30	33.30	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	3.30	33.30	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.30	23.21	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	17.15	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	30.27	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.10	21.19	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.27	2.72	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.50	35.32	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.57	5.75	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.10	31.28	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	1.30	13.12	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.59	5.95	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.00	20.18	---	---
C2-Naphthalenes [(a)]	510.00	---	3.50	35.32	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.40	24.22	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.52	5.25	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	1.10	11.10	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	11.10	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	5.80	58.53	581.00	0.10
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.10	21.19	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.25	2.52	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.40	34.31	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.50	15.14	913.00	0.02
Chrysene [(a)]	844.00	826	3.40	34.31	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.53	5.35	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.00	60.54	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.61	6.16	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	16.15	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.44	4.39	385.00	0.01
Perylene [(a)]	967.00	431.00	0.91	9.18	967.00	0.01
Phenanthrene [(a)]	596	34300	3.50	35.32	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	4.10	41.37	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.70

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-SURF-FD			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.79	0.0879	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.30	3.41	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.44	4.95	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.42	4.78	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.19	2.16	452.00	0.00
Anthracene [(a)]	594.00	1300	1.10	12.51	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.50	39.82	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.50	39.82	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.40	38.68	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.30	26.17	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	19.34	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	31.85	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.00	22.75	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.28	3.19	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.60	40.96	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.54	6.14	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.00	34.13	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	1.40	15.93	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.62	7.05	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.00	22.75	---	---
C2-Naphthalenes [(a)]	510.00	---	3.50	39.82	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.40	27.30	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.56	6.37	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	12.51	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.20	13.65	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	5.80	65.98	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.20	25.03	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.26	2.96	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.40	38.68	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.60	18.20	913.00	0.02
Chrysene [(a)]	844.00	826	3.40	38.68	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.42	4.78	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.70	64.85	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.55	6.26	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	17.06	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.44	4.95	385.00	0.01
Perylene [(a)]	967.00	431.00	1.00	11.38	967.00	0.01
Phenanthrene [(a)]	596	34300	3.30	37.54	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	4.20	47.78	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.79

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-0001			
		Sample Depth	0-1			
		Sample Date	11/05/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.77	0.0877	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.93	10.60	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.10	12.54	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.72	8.21	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.28	3.19	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	12.54	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.20	36.49	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.70	30.79	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.80	31.93	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.00	22.81	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.50	17.10	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.60	29.65	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.10	23.95	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.70	7.98	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.00	45.61	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	1.40	15.96	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.40	61.57	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	1.80	20.52	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.50	17.10	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.60	29.65	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	136.83	510.00	0.27
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.20	59.29	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	0.85	9.69	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.90	33.07	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	1.80	20.52	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	20.00	228.05	581.00	0.39
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.30	60.43	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.47	5.36	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	11.00	125.43	657.00	0.19
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.50	39.91	913.00	0.04
Chrysene [(a)]	844.00	826	3.30	37.63	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.35	3.99	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.40	72.98	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	1.10	12.54	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	14.82	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.42	4.73	385.00	0.01
Perylene [(a)]	967.00	431.00	0.69	7.87	967.00	0.01
Phenanthrene [(a)]	596	34300	4.90	55.87	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.70	53.59	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.03**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-0103			
		Sample Depth	1-3			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.76	0.0776	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.80	10.31	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.30	16.75	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.46	5.93	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.24	3.09	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	14.18	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.50	45.10	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.10	39.95	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	34.79	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.10	27.06	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.20	28.35	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.60	33.51	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.40	30.93	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.69	8.89	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	60.57	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.40	18.04	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.60	85.05	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	2.00	25.77	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.80	23.20	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.30	42.53	---	---
C2-Naphthalenes [(a)]	510.00	---	9.80	126.29	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.70	86.34	746.00	0.12
C3 Chrysenes [(a)]	1112.00	---	0.88	11.34	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.80	48.97	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	2.20	28.35	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	16.00	206.19	581.00	0.35
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.10	91.49	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.55	7.09	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	12.00	154.64	657.00	0.24
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.20	54.12	913.00	0.06
Chrysene [(a)]	844.00	826	3.40	43.81	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.61	7.86	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.00	77.32	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.78	10.05	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.90	24.48	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.50	19.33	385.00	0.05
Perylene [(a)]	967.00	431.00	0.80	10.31	967.00	0.01
Phenanthrene [(a)]	596	34300	4.30	55.41	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	5.30	68.30	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.33**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-0305			
		Sample Depth	3-5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.2	0.102	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.00	9.80	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.70	16.67	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.60	5.88	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.31	3.04	452.00	0.01
Anthracene [(a)]	594.00	1300	1.70	16.67	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.90	38.24	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.50	34.31	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	28.43	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.30	22.55	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.10	20.59	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.70	26.47	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.30	32.35	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.94	9.22	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.20	60.78	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.80	17.65	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	98.04	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	3.40	33.33	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	2.40	23.53	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.80	47.06	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	117.65	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.80	96.08	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	1.60	15.69	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.40	43.14	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.40	33.33	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	20.00	196.08	581.00	0.34
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.60	94.12	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.81	7.94	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	127.45	657.00	0.19
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.50	53.92	913.00	0.06
Chrysene [(a)]	844.00	826	3.80	37.25	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.55	5.39	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	7.20	70.59	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	1.10	10.78	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	16.67	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.55	5.39	385.00	0.01
Perylene [(a)]	967.00	431.00	0.96	9.41	967.00	0.01
Phenanthrene [(a)]	596	34300	6.30	61.76	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	5.90	57.84	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.25**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-0507			
		Sample Depth	5-7			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.73	0.0973	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.81	8.32	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.30	13.36	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.54	5.55	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.24	2.47	452.00	0.01
Anthracene [(a)]	594.00	1300	1.20	12.33	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.20	32.89	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.90	29.80	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	27.75	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.10	21.58	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	19.53	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	21.58	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.70	27.75	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.81	8.32	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.00	51.39	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.40	14.39	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.40	86.33	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	2.40	24.67	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.80	18.50	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.70	38.03	---	---
C2-Naphthalenes [(a)]	510.00	---	9.90	101.75	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.60	78.11	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.20	12.33	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.40	34.94	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.60	26.72	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	16.00	164.44	581.00	0.28
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.30	75.03	829.00	0.09
C4 Chrysenes [(a)]	1214.00	---	0.64	6.58	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	10.00	102.77	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.50	46.25	913.00	0.05
Chrysene [(a)]	844.00	826	3.20	32.89	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.44	4.52	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.90	60.64	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.91	9.35	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	15.42	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.47	4.78	385.00	0.01
Perylene [(a)]	967.00	431.00	0.90	9.25	967.00	0.01
Phenanthrene [(a)]	596	34300	5.00	51.39	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	5.00	51.39	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.07**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-14			
		Field Sample ID	RREC13-14-0710			
		Sample Depth	7-10			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.12	0.0812	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.44	5.42	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.71	8.74	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.70	8.62	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.27	3.33	452.00	0.01
Anthracene [(a)]	594.00	1300	2.00	24.63	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.70	57.88	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	4.00	49.26	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.70	45.57	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.50	30.79	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.20	27.09	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.30	40.64	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.80	34.48	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.51	6.28	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	70.20	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.80	9.85	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.10	75.12	670.00	0.11
C2 Chrysenes [(a)]	1008.00	---	2.30	28.33	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.00	12.32	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.40	41.87	---	---
C2-Naphthalenes [(a)]	510.00	---	3.60	44.33	510.00	0.09
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.60	68.97	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	0.88	10.84	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.40	29.56	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.20	27.09	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	7.00	86.21	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.90	72.66	829.00	0.09
C4 Chrysenes [(a)]	1214.00	---	0.52	6.40	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.00	73.89	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.40	54.19	913.00	0.06
Chrysene [(a)]	844.00	826	4.40	54.19	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.60	7.39	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	9.20	113.30	707.00	0.16
Fluorene [(a)]	538.00	26,000.00	1.20	14.78	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.90	23.40	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.40	17.24	385.00	0.04
Perylene [(a)]	967.00	431.00	1.20	14.78	967.00	0.02
Phenanthrene [(a)]	596	34300	6.80	83.74	596.00	0.14
Pyrene [(a)]	697.00	9,090.00	6.60	81.28	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.44**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-15			
		Field Sample ID	RREC13-15-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.79	0.0879	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.44	5.01	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.50	5.69	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.58	6.60	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.24	2.73	452.00	0.01
Anthracene [(a)]	594.00	1300	1.70	19.34	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.70	42.09	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.20	36.41	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	34.13	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.10	23.89	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	15.93	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	31.85	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.50	28.44	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.45	5.12	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.50	51.19	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.84	9.56	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.00	56.88	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	1.80	20.48	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.96	10.92	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.90	32.99	---	---
C2-Naphthalenes [(a)]	510.00	---	2.90	32.99	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.90	55.75	746.00	0.07
C3 Chrysenes [(a)]	1112.00	---	0.84	9.56	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.90	21.62	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.90	21.62	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	6.20	70.53	581.00	0.12
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.10	58.02	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.48	5.46	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	4.80	54.61	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.80	43.23	913.00	0.05
Chrysene [(a)]	844.00	826	3.70	42.09	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.41	4.66	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	7.30	83.05	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	1.00	11.38	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	14.79	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.70	19.34	385.00	0.05
Perylene [(a)]	967.00	431.00	0.83	9.44	967.00	0.01
Phenanthrene [(a)]	596	34300	5.30	60.30	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	4.70	53.47	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.09**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-15			
		Field Sample ID	RREC13-15-0001			
		Sample Depth	0-1			
		Sample Date	10/30/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.51	0.0751	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.51	6.79	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.48	6.32	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.86	11.45	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.20	2.66	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	21.30	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	3.80	50.60	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.00	39.95	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	38.62	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.00	26.63	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.60	21.30	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.50	33.29	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.40	31.96	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.58	7.72	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	62.58	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.97	12.92	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.00	79.89	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	2.10	27.96	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.20	15.98	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.10	41.28	---	---
C2-Naphthalenes [(a)]	510.00	---	4.10	54.59	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.90	78.56	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	0.99	13.18	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.70	35.95	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.20	29.29	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	7.90	105.19	581.00	0.18
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.30	97.20	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.55	7.32	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.80	90.55	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.90	65.25	913.00	0.07
Chrysene [(a)]	844.00	826	3.50	46.60	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.45	5.99	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.20	95.87	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	1.40	18.64	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	19.97	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.20	29.29	385.00	0.08
Perylene [(a)]	967.00	431.00	0.79	10.52	967.00	0.01
Phenanthrene [(a)]	596	34300	6.50	86.55	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	5.00	66.58	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.44**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-15			
		Field Sample ID	RREC13-15-0103			
		Sample Depth	1-3			
		Sample Date	11/05/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.97	0.0497	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.20	4.02	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.21	4.23	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.31	6.24	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.07	1.49	452.00	0.00
Anthracene [(a)]	594.00	1300	0.62	12.47	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.20	24.14	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	0.80	16.10	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	0.95	19.11	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.63	12.68	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.44	8.85	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.79	15.90	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.77	15.49	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.18	3.62	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.60	32.19	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.36	7.24	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.90	38.23	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	0.63	12.68	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.34	6.84	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	0.94	18.91	---	---
C2-Naphthalenes [(a)]	510.00	---	1.20	24.14	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.70	34.21	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.26	5.23	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.65	13.08	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	0.59	11.87	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	2.40	48.29	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.90	38.23	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.12	2.41	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.60	32.19	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.30	26.16	913.00	0.03
Chrysene [(a)]	844.00	826	1.20	24.14	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.11	2.21	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.50	50.30	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.55	11.07	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.38	7.65	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.72	14.49	385.00	0.04
Perylene [(a)]	967.00	431.00	0.19	3.82	967.00	0.00
Phenanthrene [(a)]	596	34300	2.20	44.27	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	1.80	36.22	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.69

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.65	0.0665	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.10	16.54	446.00	0.04
2-Methylnaphthalene	447.00	154800	1.00	15.04	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.74	11.13	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	3.40	51.13	452.00	0.11
Anthracene [(a)]	594.00	1300	6.60	99.25	594.00	0.17
Benzo(a)anthracene [(a)]	841.00	4153	22.00	330.83	841.00	0.39
Benzo(a)pyrene [(a)]	965.00	3840	22.00	330.83	965.00	0.34
Benzo(b)fluoranthene [(a)]	979.00	2169	22.00	330.83	979.00	0.34
Benzo(e)pyrene [(a)]	967.00	4300	14.00	210.53	967.00	0.22
Benzo(g,h,i)perylene [(a)]	1095.00	648	10.00	150.38	1095.00	0.14
Benzo(k)fluoranthene [(a)]	981.00	1220	20.00	300.75	981.00	0.31
C1 Chrysenes [(a)]	929.00	---	14.00	210.53	929.00	0.23
C1 Fluorenes [(a)]	611.00	---	1.10	16.54	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	28.00	421.05	770.00	0.55
C1-Naphthalenes [(a)]	444.00	---	1.40	21.05	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	18.00	270.68	670.00	0.40
C2 Chrysenes [(a)]	1008.00	---	16.00	240.60	1008.00	0.24
C2 Fluorenes [(a)]	686.00	---	1.80	27.07	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	17.00	255.64	---	---
C2-Naphthalenes [(a)]	510.00	---	8.20	123.31	510.00	0.24
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	195.49	746.00	0.26
C3 Chrysenes [(a)]	1112.00	---	7.70	115.79	1112.00	0.10
C3 Fluorenes [(a)]	769.00	---	3.00	45.11	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	10.00	150.38	949.00	0.16
C3-Naphthalenes [(a)]	581.00	---	10.00	150.38	581.00	0.26
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	180.45	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	2.90	43.61	1214.00	0.04
C4-Naphthalenes [(a)]	657.00	---	5.50	82.71	657.00	0.13
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.20	108.27	913.00	0.12
Chrysene [(a)]	844.00	826	18.00	270.68	844.00	0.32
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	2.80	42.11	1123.00	0.04
Fluoranthene [(a)]	707.00	23,870.00	37.00	556.39	707.00	0.79
Fluorene [(a)]	538.00	26,000.00	3.60	54.14	538.00	0.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	9.40	141.35	1115.00	0.13
Naphthalene [(a)]	385.00	61,700.00	2.30	34.59	385.00	0.09
Perylene [(a)]	967.00	431.00	6.40	96.24	967.00	0.10
Phenanthrene [(a)]	596	34300	22.00	330.83	596.00	0.56
Pyrene [(a)]	697.00	9,090.00	24.00	360.90	697.00	0.52
	---	**ESBTU FCVi**	---	---	---	**6.35**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0001			
		Sample Depth	0-1			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.83	0.0683	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	1.46	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.16	2.34	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.32	4.69	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.25	3.59	452.00	0.01
Anthracene [(a)]	594.00	1300	0.64	9.37	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.80	26.35	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.80	26.35	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.70	24.89	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.60	23.43	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	20.50	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.40	20.50	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	3.30	48.32	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.31	4.54	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.20	46.85	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.20	2.93	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.50	51.24	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	3.30	48.32	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	0.79	11.57	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.20	61.49	---	---
C2-Naphthalenes [(a)]	510.00	---	1.70	24.89	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.80	70.28	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	2.00	29.28	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	2.10	30.75	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	3.70	54.17	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	4.60	67.35	581.00	0.12
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.90	101.02	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	1.00	14.64	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	3.40	49.78	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.10	74.67	913.00	0.08
Chrysene [(a)]	844.00	826	2.20	32.21	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.50	7.32	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	2.40	35.14	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.33	4.83	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	17.57	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.25	3.59	385.00	0.01
Perylene [(a)]	967.00	431.00	0.50	7.32	967.00	0.01
Phenanthrene [(a)]	596	34300	1.50	21.96	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.20	46.85	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.92

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0103			
		Sample Depth	1-3			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.47	0.0747	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.03	0.40	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.04	0.56	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.06	0.75	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.05	0.62	452.00	0.00
Anthracene [(a)]	594.00	1300	0.09	1.23	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.29	3.88	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.21	2.81	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.24	3.21	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.21	2.81	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.19	2.54	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.18	2.41	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.65	8.70	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.07	0.87	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.64	8.57	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.06	0.74	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.79	10.58	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.79	10.58	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.17	2.28	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.89	11.91	---	---
C2-Naphthalenes [(a)]	510.00	---	0.47	6.29	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.20	16.06	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.45	6.02	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.44	5.89	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.80	10.71	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.30	17.40	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.70	22.76	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.20	2.68	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.10	14.73	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.20	16.06	913.00	0.02
Chrysene [(a)]	844.00	826	0.36	4.82	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.06	0.76	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.37	4.95	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.08	1.02	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.15	2.01	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.05	0.62	385.00	0.00
Perylene [(a)]	967.00	431.00	0.08	1.02	967.00	0.00
Phenanthrene [(a)]	596	34300	0.28	3.75	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.53	7.10	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.17

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0305			
		Sample Depth	3-5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.43	0.0243	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.31	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.38	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.09	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.08	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.21	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	0.74	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.01	0.58	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.02	0.70	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.02	0.78	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.02	0.91	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.39	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.06	2.47	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.53	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.06	2.30	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.53	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.14	5.76	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.09	3.74	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.03	1.32	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.08	3.37	---	---
C2-Naphthalenes [(a)]	510.00	---	0.08	3.29	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.16	6.58	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.06	2.35	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	2.84	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.08	3.17	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.24	9.88	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.21	8.64	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.02	0.99	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.26	10.70	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.15	6.17	913.00	0.01
Chrysene [(a)]	844.00	826	0.04	1.52	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.22	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.02	0.82	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.26	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.45	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.08	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.45	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	1.03	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.03	1.40	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.06

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0507			
		Sample Depth	5-7			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.89	0.0289	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.48	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.02	0.66	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.15	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.14	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.38	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.03	0.87	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	0.66	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.03	0.87	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.03	0.90	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.03	0.87	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.45	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.08	2.87	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.73	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.07	2.53	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.02	0.83	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.23	7.96	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.13	4.50	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.05	1.63	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.11	3.81	---	---
C2-Naphthalenes [(a)]	510.00	---	0.15	5.19	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.25	8.65	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.07	2.49	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.10	3.46	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.12	4.15	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.43	14.88	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.27	9.34	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.03	1.11	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.43	14.88	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.18	6.23	913.00	0.01
Chrysene [(a)]	844.00	826	0.05	1.66	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.19	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.03	1.18	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.26	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.42	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.14	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.45	967.00	0.00
Phenanthrene [(a)]	596	34300	0.05	1.66	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.05	1.73	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.07

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0709			
		Sample Depth	7-9			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.57	0.0257	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.39	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.54	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.06	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.06	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.06	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.08	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.19	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.32	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.54	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.06	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	1.32	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.70	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.03	1.01	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.02	0.74	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.18	7.00	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.06	2.45	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.04	1.44	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.05	1.83	---	---
C2-Naphthalenes [(a)]	510.00	---	0.10	3.70	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.16	6.23	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.04	1.56	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	2.68	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.05	2.06	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.28	10.89	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.10	3.89	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.02	0.70	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.35	13.62	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.10	3.89	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	0.78	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.09	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.06	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.11	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.07	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.28	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	1.05	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.32	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.04

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-16			
		Field Sample ID	RREC13-16-0911			
		Sample Depth	9-11			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.96	0.0296	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.27	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.37	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.07	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.05	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.06	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.10	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.06	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.19	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.33	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.16	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	0.95	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.51	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.04	1.22	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.47	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.11	3.72	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.10	3.38	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.03	0.98	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	1.99	---	---
C2-Naphthalenes [(a)]	510.00	---	0.08	2.64	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.11	3.72	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.06	1.86	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	1.59	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.07	2.30	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.27	9.12	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.21	7.09	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.03	0.88	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.34	11.49	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.14	4.73	913.00	0.01
Chrysene [(a)]	844.00	826	0.02	0.54	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.07	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.14	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.02	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.22	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	0.88	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.24	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.03

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.23	0.0623	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.12	1.93	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.19	3.05	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.08	1.22	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.05	0.75	452.00	0.00
Anthracene [(a)]	594.00	1300	0.23	3.69	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.10	17.66	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.20	19.26	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.30	20.87	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.88	14.13	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.61	9.79	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	17.66	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.82	13.16	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.05	0.87	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.30	20.87	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.20	3.21	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.70	11.24	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.81	13.00	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.09	1.49	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.89	14.29	---	---
C2-Naphthalenes [(a)]	510.00	---	0.71	11.40	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.65	10.43	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.45	7.22	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.24	3.85	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.65	10.43	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.83	13.32	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.95	15.25	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.18	2.89	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.56	8.99	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.78	12.52	913.00	0.01
Chrysene [(a)]	844.00	826	1.20	19.26	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.16	2.57	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.60	25.68	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.13	2.09	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.59	9.47	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.15	2.33	385.00	0.01
Perylene [(a)]	967.00	431.00	0.35	5.62	967.00	0.01
Phenanthrene [(a)]	596	34300	0.75	12.04	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.50	24.08	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.35

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0001			
		Sample Depth	0-1			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.61	0.0661	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.19	2.80	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.19	2.80	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.16	2.42	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.19	2.80	452.00	0.01
Anthracene [(a)]	594.00	1300	0.43	6.51	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.40	21.18	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.50	22.69	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	22.69	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.20	18.15	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	15.13	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	19.67	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.60	24.21	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.12	1.82	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.70	25.72	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.20	3.03	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.20	18.15	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.70	25.72	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.29	4.39	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.80	27.23	---	---
C2-Naphthalenes [(a)]	510.00	---	0.88	13.31	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.90	28.74	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.82	12.41	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.81	12.25	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.40	21.18	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.40	21.18	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.50	37.82	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.46	6.96	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	1.40	21.18	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.80	27.23	913.00	0.03
Chrysene [(a)]	844.00	826	1.60	24.21	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.35	5.30	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.80	27.23	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.27	4.08	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.93	14.07	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.19	2.80	385.00	0.01
Perylene [(a)]	967.00	431.00	0.41	6.20	967.00	0.01
Phenanthrene [(a)]	596	34300	1.20	18.15	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.30	34.80	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.53

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0103			
		Sample Depth	1-3			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.24	0.0924	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.33	3.57	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.33	3.57	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.37	4.00	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.33	3.57	452.00	0.01
Anthracene [(a)]	594.00	1300	0.92	9.96	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.50	27.06	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.90	20.56	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	20.56	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.60	17.32	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	12.99	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	19.48	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	3.60	38.96	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.48	5.19	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.20	45.45	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.32	3.46	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.20	45.45	670.00	0.07
C2 Chrysenes [(a)]	1008.00	---	4.60	49.78	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	1.40	15.15	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.90	53.03	---	---
C2-Naphthalenes [(a)]	510.00	---	3.10	33.55	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.90	85.50	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	2.40	25.97	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.60	38.96	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	4.10	44.37	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	7.80	84.42	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	119.05	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	1.50	16.23	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	8.50	91.99	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.30	89.83	913.00	0.10
Chrysene [(a)]	844.00	826	2.80	30.30	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.44	4.76	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.30	35.71	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.77	8.33	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	11.90	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.33	3.57	385.00	0.01
Perylene [(a)]	967.00	431.00	0.56	6.06	967.00	0.01
Phenanthrene [(a)]	596	34300	2.10	22.73	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	4.80	51.95	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.97

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0305			
		Sample Depth	3-5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.1	0.101	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.75	7.43	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.60	15.84	447.00	0.04
Acenaphthene [(a)]	491.00	33400	1.10	10.89	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.75	7.43	452.00	0.02
Anthracene [(a)]	594.00	1300	3.20	31.68	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.70	46.53	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.00	29.70	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	3.30	32.67	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.50	24.75	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	17.82	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.60	25.74	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	6.20	61.39	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	1.10	10.89	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.80	77.23	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	2.10	20.79	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.90	98.02	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	7.40	73.27	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	2.70	26.73	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	8.60	85.15	---	---
C2-Naphthalenes [(a)]	510.00	---	13.00	128.71	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	17.00	168.32	746.00	0.23
C3 Chrysenes [(a)]	1112.00	---	4.80	47.52	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	6.90	68.32	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	8.00	79.21	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	19.00	188.12	581.00	0.32
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	21.00	207.92	829.00	0.25
C4 Chrysenes [(a)]	1214.00	---	2.80	27.72	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	16.00	158.42	657.00	0.24
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	14.00	138.61	913.00	0.15
Chrysene [(a)]	844.00	826	5.00	49.50	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.61	6.04	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.30	72.28	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	2.20	21.78	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	16.83	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.00	19.80	385.00	0.05
Perylene [(a)]	967.00	431.00	0.89	8.81	967.00	0.01
Phenanthrene [(a)]	596	34300	6.40	63.37	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	9.40	93.07	697.00	0.13
	---	**ESBTU FCVi**	---	---	---	**1.82**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0507			
		Sample Depth	5-7			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	21	0.21	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	3.70	17.62	446.00	0.04
2-Methylnaphthalene	447.00	154800	4.00	19.05	447.00	0.04
Acenaphthene [(a)]	491.00	33400	2.00	9.52	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	1.15	5.48	452.00	0.01
Anthracene [(a)]	594.00	1300	9.20	43.81	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	6.30	30.00	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	4.10	19.52	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	4.20	20.00	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	3.60	17.14	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.15	5.48	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	3.80	18.10	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	9.10	43.33	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	2.30	10.95	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	13.00	61.90	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	5.40	25.71	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	18.00	85.71	670.00	0.13
C2 Chrysenes [(a)]	1008.00	---	10.00	47.62	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	4.20	20.00	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	12.00	57.14	---	---
C2-Naphthalenes [(a)]	510.00	---	35.00	166.67	510.00	0.33
C2-Phenanthrenes/Anthracenes [(a)]	746	---	21.00	100.00	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	6.40	30.48	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	8.80	41.90	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	9.80	46.67	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	40.00	190.48	581.00	0.33
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	104.76	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	3.50	16.67	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	25.00	119.05	657.00	0.18
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	16.00	76.19	913.00	0.08
Chrysene [(a)]	844.00	826	6.60	31.43	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.91	4.33	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	9.80	46.67	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	3.80	18.10	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.15	5.48	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	1.15	5.48	385.00	0.01
Perylene [(a)]	967.00	431.00	1.10	5.24	967.00	0.01
Phenanthrene [(a)]	596	34300	11.00	52.38	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	13.00	61.90	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.22**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0709			
		Sample Depth	7-9			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.26	0.0626	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	8.79	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.00	15.97	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.44	7.03	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.55	8.79	452.00	0.02
Anthracene [(a)]	594.00	1300	1.40	22.36	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	3.60	57.51	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	2.60	41.53	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	36.74	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.30	36.74	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	22.36	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.30	36.74	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	6.20	99.04	929.00	0.11
C1 Fluorenes [(a)]	611.00	---	0.61	9.74	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.00	111.82	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	1.30	20.77	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.60	121.41	670.00	0.18
C2 Chrysenes [(a)]	1008.00	---	6.50	103.83	1008.00	0.10
C2 Fluorenes [(a)]	686.00	---	1.40	22.36	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.30	116.61	---	---
C2-Naphthalenes [(a)]	510.00	---	6.30	100.64	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	159.74	746.00	0.21
C3 Chrysenes [(a)]	1112.00	---	3.80	60.70	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	3.70	59.11	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	5.30	84.66	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	7.70	123.00	581.00	0.21
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	191.69	829.00	0.23
C4 Chrysenes [(a)]	1214.00	---	2.10	33.55	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	6.40	102.24	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.20	130.99	913.00	0.14
Chrysene [(a)]	844.00	826	3.90	62.30	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.54	8.63	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.10	65.50	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.55	8.79	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	19.17	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.55	8.79	385.00	0.02
Perylene [(a)]	967.00	431.00	0.61	9.74	967.00	0.01
Phenanthrene [(a)]	596	34300	3.00	47.92	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	6.20	99.04	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.82**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-17			
		Field Sample ID	RREC13-17-0911			
		Sample Depth	9-11			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.91	0.0591	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.90	15.23	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.00	33.84	447.00	0.08
Acenaphthene [(a)]	491.00	33400	0.58	9.81	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.90	15.23	452.00	0.03
Anthracene [(a)]	594.00	1300	1.80	30.46	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.70	79.53	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	3.00	50.76	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.50	42.30	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	3.50	59.22	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.90	15.23	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	35.53	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	11.00	186.13	929.00	0.20
C1 Fluorenes [(a)]	611.00	---	1.20	20.30	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	13.00	219.97	770.00	0.29
C1-Naphthalenes [(a)]	444.00	---	2.50	42.30	444.00	0.10
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	16.00	270.73	670.00	0.40
C2 Chrysenes [(a)]	1008.00	---	12.00	203.05	1008.00	0.20
C2 Fluorenes [(a)]	686.00	---	2.80	47.38	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	13.00	219.97	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	203.05	510.00	0.40
C2-Phenanthrenes/Anthracenes [(a)]	746	---	17.00	287.65	746.00	0.39
C3 Chrysenes [(a)]	1112.00	---	6.40	108.29	1112.00	0.10
C3 Fluorenes [(a)]	769.00	---	5.60	94.75	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	9.30	157.36	949.00	0.17
C3-Naphthalenes [(a)]	581.00	---	13.00	219.97	581.00	0.38
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	16.00	270.73	829.00	0.33
C4 Chrysenes [(a)]	1214.00	---	3.40	57.53	1214.00	0.05
C4-Naphthalenes [(a)]	657.00	---	9.80	165.82	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	11.00	186.13	913.00	0.20
Chrysene [(a)]	844.00	826	4.70	79.53	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.66	11.17	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.20	71.07	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.90	15.23	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.90	15.23	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.90	15.23	385.00	0.04
Perylene [(a)]	967.00	431.00	0.61	10.32	967.00	0.01
Phenanthrene [(a)]	596	34300	5.80	98.14	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	9.90	167.51	697.00	0.24
	---	**ESBTU FCVi**	---	---	---	**2.94**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.73	0.0573	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.13	2.27	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.21	3.66	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.09	1.61	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.05	0.91	452.00	0.00
Anthracene [(a)]	594.00	1300	0.30	5.24	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.20	20.94	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.30	22.69	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.30	22.69	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.88	15.36	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.59	10.30	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	20.94	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.88	15.36	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.06	1.05	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.40	24.43	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.23	4.01	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.85	14.83	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.90	15.71	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.10	1.75	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.88	15.36	---	---
C2-Naphthalenes [(a)]	510.00	---	0.76	13.26	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.76	13.26	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.44	7.68	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.27	4.71	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.67	11.69	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.84	14.66	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.90	15.71	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.16	2.79	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.56	9.77	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.72	12.57	913.00	0.01
Chrysene [(a)]	844.00	826	1.30	22.69	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.15	2.62	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.90	33.16	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.15	2.62	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.56	9.77	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	2.97	385.00	0.01
Perylene [(a)]	967.00	431.00	0.37	6.46	967.00	0.01
Phenanthrene [(a)]	596	34300	0.85	14.83	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.50	26.18	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.41

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0001			
		Sample Depth	0-1			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.07	0.0507	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.07	1.34	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.12	2.27	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.11	2.17	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.07	1.36	452.00	0.00
Anthracene [(a)]	594.00	1300	0.32	6.31	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.20	23.67	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.30	25.64	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.40	27.61	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	0.94	18.54	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.77	15.19	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.00	19.72	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.92	18.15	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.06	1.10	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.40	27.61	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.12	2.37	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.86	16.96	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.87	17.16	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.13	2.56	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.00	19.72	---	---
C2-Naphthalenes [(a)]	510.00	---	0.49	9.66	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.80	15.78	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.45	8.88	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.33	6.51	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.74	14.60	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.64	12.62	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.00	19.72	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.15	2.96	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.48	9.47	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.80	15.78	913.00	0.02
Chrysene [(a)]	844.00	826	1.20	23.67	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	4.34	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.00	39.45	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.16	3.16	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.68	13.41	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.12	2.27	385.00	0.01
Perylene [(a)]	967.00	431.00	0.35	6.90	967.00	0.01
Phenanthrene [(a)]	596	34300	0.93	18.34	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.50	29.59	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.48

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0103			
		Sample Depth	1-3			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.86	0.0586	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.21	3.58	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.50	8.53	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.82	13.99	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.16	2.73	452.00	0.01
Anthracene [(a)]	594.00	1300	2.40	40.96	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	2.90	49.49	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	2.20	37.54	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.10	35.84	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.60	27.30	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	18.77	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	30.72	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.10	52.90	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.49	8.36	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.40	92.15	770.00	0.12
C1-Naphthalenes [(a)]	444.00	---	0.32	5.46	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.90	100.68	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	4.00	68.26	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	1.00	17.06	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.80	81.91	---	---
C2-Naphthalenes [(a)]	510.00	---	4.10	69.97	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.40	109.22	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	2.10	35.84	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	2.70	46.08	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.90	66.55	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	7.50	127.99	581.00	0.22
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.30	158.70	829.00	0.19
C4 Chrysenes [(a)]	1214.00	---	1.10	18.77	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	5.60	95.56	657.00	0.15
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.00	102.39	913.00	0.11
Chrysene [(a)]	844.00	826	2.90	49.49	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	5.29	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.60	95.56	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	1.10	18.77	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.94	16.04	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.50	8.53	385.00	0.02
Perylene [(a)]	967.00	431.00	0.59	10.07	967.00	0.01
Phenanthrene [(a)]	596	34300	4.80	81.91	596.00	0.14
Pyrene [(a)]	697.00	9,090.00	4.80	81.91	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.67**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0305			
		Sample Depth	3-5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.36	0.0536	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.71	13.25	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.86	16.04	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.49	9.14	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.18	3.36	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	20.52	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	2.90	54.10	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	2.00	37.31	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	33.58	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.50	27.99	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.82	15.30	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.70	31.72	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	4.10	76.49	929.00	0.08
C1 Fluorenes [(a)]	611.00	---	0.43	8.02	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.40	119.40	770.00	0.16
C1-Naphthalenes [(a)]	444.00	---	1.00	18.66	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.90	128.73	670.00	0.19
C2 Chrysenes [(a)]	1008.00	---	4.90	91.42	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	0.93	17.35	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.60	104.48	---	---
C2-Naphthalenes [(a)]	510.00	---	5.30	98.88	510.00	0.19
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.10	132.46	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	2.50	46.64	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	2.50	46.64	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	4.50	83.96	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	6.10	113.81	581.00	0.20
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.00	149.25	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.20	22.39	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	4.20	78.36	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.00	111.94	913.00	0.12
Chrysene [(a)]	844.00	826	2.70	50.37	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.29	5.41	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.40	82.09	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	0.72	13.43	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.73	13.62	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.32	5.97	385.00	0.02
Perylene [(a)]	967.00	431.00	0.50	9.33	967.00	0.01
Phenanthrene [(a)]	596	34300	3.00	55.97	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.10	76.49	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.65**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0507			
		Sample Depth	5-7			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.46	0.0446	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	2.24	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.17	3.81	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.18	4.04	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.12	2.69	452.00	0.01
Anthracene [(a)]	594.00	1300	0.53	11.88	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.90	42.60	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.50	33.63	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.30	29.15	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.00	22.42	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.65	14.57	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	24.66	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.70	60.54	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.21	4.71	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.90	87.44	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.17	3.81	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.60	80.72	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	2.90	65.02	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	0.52	11.66	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.10	69.51	---	---
C2-Naphthalenes [(a)]	510.00	---	1.50	33.63	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.90	87.44	746.00	0.12
C3 Chrysenes [(a)]	1112.00	---	1.30	29.15	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	1.40	31.39	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	53.81	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	2.50	56.05	581.00	0.10
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.20	94.17	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.64	14.35	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.50	56.05	657.00	0.09
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.80	62.78	913.00	0.07
Chrysene [(a)]	844.00	826	1.80	40.36	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	4.93	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.60	58.30	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.21	4.71	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.56	12.56	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	3.81	385.00	0.01
Perylene [(a)]	967.00	431.00	0.36	8.07	967.00	0.01
Phenanthrene [(a)]	596	34300	1.40	31.39	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	2.30	51.57	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.11**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0709			
		Sample Depth	7-9			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.65	0.0265	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.02	0.79	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.03	1.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.02	0.91	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.02	0.60	452.00	0.00
Anthracene [(a)]	594.00	1300	0.07	2.75	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.21	7.92	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.15	5.66	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.14	5.28	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.11	4.15	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.07	2.57	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.12	4.53	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.25	9.43	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.02	0.91	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.43	16.23	770.00	0.02
C1-Naphthalenes [(a)]	444.00	---	0.03	1.17	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.39	14.72	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.32	12.08	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.05	1.92	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.33	12.45	---	---
C2-Naphthalenes [(a)]	510.00	---	0.21	7.92	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.39	14.72	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.16	6.04	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.12	4.53	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.25	9.43	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.31	11.70	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.42	15.85	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.07	2.68	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.25	9.43	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.30	11.32	913.00	0.01
Chrysene [(a)]	844.00	826	0.20	7.55	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.02	0.72	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.32	12.08	707.00	0.02
Fluorene [(a)]	538.00	26,000.00	0.04	1.62	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.05	2.04	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.03	1.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.05	1.92	967.00	0.00
Phenanthrene [(a)]	596	34300	0.18	6.79	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.30	11.32	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.21

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-18			
		Field Sample ID	RREC13-18-0911			
		Sample Depth	9-11			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.77	0.0377	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.16	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.31	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.25	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.01	0.23	452.00	0.00
Anthracene [(a)]	594.00	1300	0.04	1.14	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.09	2.47	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.07	1.94	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.07	1.78	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.05	1.38	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.04	1.03	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.06	1.46	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.10	2.60	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.32	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.17	4.51	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.01	0.25	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.17	4.51	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.14	3.71	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.02	0.56	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.12	3.18	---	---
C2-Naphthalenes [(a)]	510.00	---	0.07	1.88	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.16	4.24	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.07	1.78	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	1.35	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.09	2.49	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.16	4.24	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.15	3.98	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.03	0.82	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.16	4.24	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.13	3.45	913.00	0.00
Chrysene [(a)]	844.00	826	0.09	2.36	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.27	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.17	4.51	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.02	0.61	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.03	0.80	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.31	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.77	967.00	0.00
Phenanthrene [(a)]	596	34300	0.08	2.07	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.14	3.71	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.07

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-19			
		Field Sample ID	RREC13-19-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.44	0.0444	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	2.07	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.13	2.93	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.06	1.33	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.04	0.90	452.00	0.00
Anthracene [(a)]	594.00	1300	0.19	4.28	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.71	15.99	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.70	15.77	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	0.67	15.09	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.48	10.81	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.30	6.76	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.59	13.29	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.60	13.51	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.05	1.19	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.97	21.85	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.15	3.38	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.66	14.86	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.67	15.09	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.10	2.25	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.77	17.34	---	---
C2-Naphthalenes [(a)]	510.00	---	0.60	13.51	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.63	14.19	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.40	9.01	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.23	5.18	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.58	13.06	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.86	19.37	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.77	17.34	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.16	3.60	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.66	14.86	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.54	12.16	913.00	0.01
Chrysene [(a)]	844.00	826	0.70	15.77	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.09	2.05	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.89	20.05	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.11	2.48	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.28	6.31	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	3.83	385.00	0.01
Perylene [(a)]	967.00	431.00	0.19	4.28	967.00	0.00
Phenanthrene [(a)]	596	34300	0.51	11.49	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	0.79	17.79	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.33

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-19			
		Field Sample ID	RREC13-19-0001			
		Sample Depth	0-1			
		Sample Date	10/31/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.62	0.0362	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	2.35	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.08	2.32	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.10	2.65	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.09	2.35	452.00	0.01
Anthracene [(a)]	594.00	1300	0.21	5.80	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.61	16.85	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.46	12.71	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.52	14.36	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.42	11.60	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.35	9.67	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.40	11.05	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.77	21.27	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.10	2.76	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.94	25.97	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.10	2.76	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.94	25.97	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	0.83	22.93	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.26	7.18	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	0.92	25.41	---	---
C2-Naphthalenes [(a)]	510.00	---	0.70	19.34	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.60	44.20	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.50	13.81	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.66	18.23	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	0.73	20.17	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.60	44.20	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.90	52.49	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.27	7.46	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	1.50	41.44	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.30	35.91	913.00	0.04
Chrysene [(a)]	844.00	826	0.66	18.23	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.12	3.31	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.80	22.10	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.17	4.70	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.30	8.29	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.09	2.35	385.00	0.01
Perylene [(a)]	967.00	431.00	0.15	4.14	967.00	0.00
Phenanthrene [(a)]	596	34300	0.59	16.30	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.00	27.62	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.52

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-20			
		Field Sample ID	RREC13-20-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.13	0.0513	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.05	0.99	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.08	1.60	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.03	0.66	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.02	0.41	452.00	0.00
Anthracene [(a)]	594.00	1300	0.13	2.53	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.41	7.99	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.40	7.80	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.40	7.80	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.27	5.26	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.18	3.51	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.37	7.21	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.27	5.26	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.03	0.58	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.52	10.14	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.09	1.70	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.37	7.21	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.25	4.87	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.04	0.78	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.30	5.85	---	---
C2-Naphthalenes [(a)]	510.00	---	0.32	6.24	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.28	5.46	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.12	2.34	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.09	1.68	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.19	3.70	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.46	8.97	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.31	6.04	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.05	0.92	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.36	7.02	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.19	3.70	913.00	0.00
Chrysene [(a)]	844.00	826	0.41	7.99	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.05	0.96	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.63	12.28	707.00	0.02
Fluorene [(a)]	538.00	26,000.00	0.06	1.15	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.17	3.31	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.12	2.34	385.00	0.01
Perylene [(a)]	967.00	431.00	0.12	2.34	967.00	0.00
Phenanthrene [(a)]	596	34300	0.32	6.24	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.55	10.72	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.16

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-20			
		Field Sample ID	RREC13-20-0001			
		Sample Depth	0-1			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.07	0.0607	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.16	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.21	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.05	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.04	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.07	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	0.26	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	0.25	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.02	0.36	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.02	0.28	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.18	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.02	0.26	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	0.51	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.25	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.04	0.69	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.02	0.28	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.15	2.47	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.11	1.81	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.03	0.44	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	0.94	---	---
C2-Naphthalenes [(a)]	510.00	---	0.09	1.50	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.12	1.98	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.05	0.81	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	0.77	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.06	1.02	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.35	5.77	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.15	2.47	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.02	0.35	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.31	5.11	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.10	1.65	913.00	0.00
Chrysene [(a)]	844.00	826	0.03	0.48	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.02	0.38	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.09	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.08	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.18	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.16	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	0.53	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.02	0.35	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.02

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-20			
		Field Sample ID	RREC13-20-0103			
		Sample Depth	1-3			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.1	0.041	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.27	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.34	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.03	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.05	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.08	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.18	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.01	0.17	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.27	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.32	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.21	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.10	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	0.78	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.41	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.04	0.95	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.02	0.41	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.17	4.15	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.10	2.44	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.03	0.83	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	1.49	---	---
C2-Naphthalenes [(a)]	510.00	---	0.09	2.24	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.15	3.66	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.06	1.46	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	1.29	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.07	1.68	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.37	9.02	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.12	2.93	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.02	0.59	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.39	9.51	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.11	2.68	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	0.56	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.21	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.11	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.06	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.20	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.22	967.00	0.00
Phenanthrene [(a)]	596	34300	0.04	0.88	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.29	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.03

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-20			
		Field Sample ID	RREC13-20-0305			
		Sample Depth	3-5			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.26	0.0326	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.26	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.31	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.05	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.06	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.09	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.11	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.23	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.30	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.21	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.05	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	0.83	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.43	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.03	0.98	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.40	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.15	4.60	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.10	2.91	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.03	0.83	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	1.69	---	---
C2-Naphthalenes [(a)]	510.00	---	0.08	2.55	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.13	3.99	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.05	1.53	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	1.47	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.06	1.81	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.33	10.12	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.16	4.91	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.02	0.67	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.32	9.82	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.10	3.07	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	0.61	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.13	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.12	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.04	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.24	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	1.01	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.26	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.03

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.91	0.0691	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	1.24	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.15	2.17	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.08	1.14	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.05	0.65	452.00	0.00
Anthracene [(a)]	594.00	1300	0.19	2.75	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.88	12.74	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.00	14.47	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	21.71	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.93	13.46	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.54	7.81	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.00	14.47	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.93	13.46	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.08	1.11	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.30	18.81	770.00	0.02
C1-Naphthalenes [(a)]	444.00	---	0.16	2.32	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.88	12.74	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	1.50	21.71	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.18	2.60	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.40	20.26	---	---
C2-Naphthalenes [(a)]	510.00	---	0.65	9.41	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.30	18.81	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.81	11.72	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.60	8.68	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.30	18.81	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.83	12.01	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.60	23.15	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.37	5.35	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.00	14.47	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.60	23.15	913.00	0.03
Chrysene [(a)]	844.00	826	1.00	14.47	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.13	1.88	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.70	24.60	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.10	1.42	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.48	6.95	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.15	2.17	385.00	0.01
Perylene [(a)]	967.00	431.00	0.37	5.35	967.00	0.01
Phenanthrene [(a)]	596	34300	0.68	9.84	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.30	18.81	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.35

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0001			
		Sample Depth	0-1			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.07	0.0707	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	1.40	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.10	1.41	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.13	1.84	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.16	2.19	452.00	0.00
Anthracene [(a)]	594.00	1300	0.31	4.38	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.10	15.56	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.10	15.56	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.00	14.14	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.97	13.72	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	16.97	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	0.92	13.01	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.20	16.97	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.14	1.98	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.50	21.22	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.15	2.12	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.50	21.22	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.30	18.39	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.40	5.66	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.50	21.22	---	---
C2-Naphthalenes [(a)]	510.00	---	1.10	15.56	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.90	26.87	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.74	10.47	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	15.56	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.40	19.80	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	2.50	35.36	581.00	0.06
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.00	42.43	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.33	4.67	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.10	29.70	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.40	33.95	913.00	0.04
Chrysene [(a)]	844.00	826	1.30	18.39	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.37	5.23	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.50	21.22	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.18	2.55	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.00	14.14	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.16	2.19	385.00	0.01
Perylene [(a)]	967.00	431.00	0.34	4.81	967.00	0.00
Phenanthrene [(a)]	596	34300	1.00	14.14	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	2.20	31.12	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.48

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0001-FD			
		Sample Depth	0-1			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.36	0.0736	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.08	1.13	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.16	2.11	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.10	1.36	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.06	0.83	452.00	0.00
Anthracene [(a)]	594.00	1300	0.15	2.04	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.80	10.87	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.84	11.41	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.00	13.59	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.69	9.38	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.39	5.30	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.85	11.55	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.86	11.68	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.12	1.63	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.30	17.66	770.00	0.02
C1-Naphthalenes [(a)]	444.00	---	0.12	1.63	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.20	16.30	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	1.40	19.02	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.36	4.89	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.40	19.02	---	---
C2-Naphthalenes [(a)]	510.00	---	0.96	13.04	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.80	24.46	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.74	10.05	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	14.95	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.20	16.30	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	2.20	29.89	581.00	0.05
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.40	32.61	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.21	2.85	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.90	25.82	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.70	23.10	913.00	0.03
Chrysene [(a)]	844.00	826	0.92	12.50	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.10	1.36	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.60	21.74	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.15	2.04	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.38	5.16	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.16	2.11	385.00	0.01
Perylene [(a)]	967.00	431.00	0.32	4.35	967.00	0.00
Phenanthrene [(a)]	596	34300	0.76	10.33	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.30	17.66	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.35

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0103			
		Sample Depth	1-3			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.2	0.102	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.25	2.45	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.16	1.52	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.14	1.37	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.06	0.61	452.00	0.00
Anthracene [(a)]	594.00	1300	0.23	2.25	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.96	9.41	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.83	8.14	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.90	8.82	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.67	6.57	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.33	3.24	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.69	6.76	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.40	13.73	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.29	2.84	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	20.59	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.29	2.84	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.20	31.37	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	2.90	28.43	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.98	9.61	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.60	25.49	---	---
C2-Naphthalenes [(a)]	510.00	---	3.30	32.35	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.60	45.10	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	1.50	14.71	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.60	25.49	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	3.20	31.37	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	6.40	62.75	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.90	67.65	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.61	5.98	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	5.50	53.92	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.00	49.02	913.00	0.05
Chrysene [(a)]	844.00	826	1.20	11.76	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.08	0.77	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.70	16.67	707.00	0.02
Fluorene [(a)]	538.00	26,000.00	0.27	2.65	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.31	3.04	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.16	1.52	385.00	0.00
Perylene [(a)]	967.00	431.00	0.38	3.73	967.00	0.00
Phenanthrene [(a)]	596	34300	1.10	10.78	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.80	17.65	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.47

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0103-FD			
		Sample Depth	1-3			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.6	0.106	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.37	3.49	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.20	1.89	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.24	2.26	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.08	0.73	452.00	0.00
Anthracene [(a)]	594.00	1300	0.30	2.83	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	1.20	11.32	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	1.10	10.38	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.20	11.32	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.88	8.30	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.45	4.25	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	10.38	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.60	15.09	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.42	3.96	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.90	27.36	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.43	4.06	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.30	40.57	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	3.70	34.91	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.40	13.21	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.30	31.13	---	---
C2-Naphthalenes [(a)]	510.00	---	5.00	47.17	510.00	0.09
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.70	63.21	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	1.70	16.04	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.80	35.85	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.30	31.13	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	9.50	89.62	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.70	82.08	829.00	0.10
C4 Chrysenes [(a)]	1214.00	---	1.00	9.43	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	7.80	73.58	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.50	61.32	913.00	0.07
Chrysene [(a)]	844.00	826	1.50	14.15	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.11	1.04	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.40	22.64	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.32	3.02	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.41	3.87	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.20	1.89	385.00	0.00
Perylene [(a)]	967.00	431.00	0.51	4.81	967.00	0.00
Phenanthrene [(a)]	596	34300	1.40	13.21	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	2.30	21.70	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.61

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0305			
		Sample Depth	3-5			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.13	0.0913	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.92	10.08	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.20	13.14	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.64	7.01	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.17	1.86	452.00	0.00
Anthracene [(a)]	594.00	1300	0.77	8.43	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.20	24.10	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.80	19.72	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	20.81	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.40	15.33	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.86	9.42	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.60	17.52	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.20	24.10	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	1.10	12.05	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.00	43.81	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	1.50	16.43	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.30	101.86	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	3.80	41.62	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.60	28.48	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.30	47.10	---	---
C2-Naphthalenes [(a)]	510.00	---	15.00	164.29	510.00	0.32
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	109.53	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	2.50	27.38	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.90	64.62	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	4.50	49.29	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	25.00	273.82	581.00	0.47
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	120.48	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	1.20	13.14	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	17.00	186.20	657.00	0.28
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.70	84.34	913.00	0.09
Chrysene [(a)]	844.00	826	2.30	25.19	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.21	2.30	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.60	72.29	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	1.20	13.14	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.75	8.21	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.60	6.57	385.00	0.02
Perylene [(a)]	967.00	431.00	0.69	7.56	967.00	0.01
Phenanthrene [(a)]	596	34300	5.90	64.62	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	4.90	53.67	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.26**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0305-FD			
		Sample Depth	3-5			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.49	0.0949	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.10	11.59	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.70	7.38	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.77	8.11	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.21	2.21	452.00	0.00
Anthracene [(a)]	594.00	1300	0.90	9.48	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.90	30.56	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.30	24.24	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.40	25.29	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.70	17.91	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	10.54	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	21.07	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.50	26.34	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	1.20	12.64	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.20	54.79	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.60	16.86	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	115.91	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	5.00	52.69	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.90	30.56	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.40	56.90	---	---
C2-Naphthalenes [(a)]	510.00	---	17.00	179.14	510.00	0.35
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	136.99	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	3.20	33.72	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	6.60	69.55	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	5.60	59.01	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	27.00	284.51	581.00	0.49
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	147.52	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.70	17.91	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	18.00	189.67	657.00	0.29
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.60	101.16	913.00	0.11
Chrysene [(a)]	844.00	826	2.90	30.56	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.25	2.63	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	9.90	104.32	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	1.40	14.75	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.86	9.06	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.70	7.38	385.00	0.02
Perylene [(a)]	967.00	431.00	0.84	8.85	967.00	0.01
Phenanthrene [(a)]	596	34300	7.20	75.87	596.00	0.13
Pyrene [(a)]	697.00	9,090.00	6.80	71.65	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.53**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0507			
		Sample Depth	5-7			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.4	0.104	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	5.29	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.55	5.29	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.44	4.23	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.15	1.44	452.00	0.00
Anthracene [(a)]	594.00	1300	0.70	6.73	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.90	27.88	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.40	23.08	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.60	25.00	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.80	17.31	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	11.54	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	20.19	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.60	25.00	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.67	6.44	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.00	48.08	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.73	7.02	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.10	68.27	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	4.10	39.42	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.80	17.31	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.70	45.19	---	---
C2-Naphthalenes [(a)]	510.00	---	7.40	71.15	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.30	79.81	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	2.10	20.19	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.90	37.50	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.80	36.54	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	14.00	134.62	581.00	0.23
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	10.00	96.15	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	1.00	9.62	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	105.77	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.70	64.42	913.00	0.07
Chrysene [(a)]	844.00	826	2.80	26.92	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.30	2.88	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.80	65.38	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.83	7.98	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	10.58	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.55	5.29	385.00	0.01
Perylene [(a)]	967.00	431.00	0.81	7.79	967.00	0.01
Phenanthrene [(a)]	596	34300	4.00	38.46	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	5.40	51.92	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	1.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0507-FD			
		Sample Depth	5-7			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.5	0.115	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.63	5.48	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.43	3.70	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.48	4.17	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.13	1.13	452.00	0.00
Anthracene [(a)]	594.00	1300	0.70	6.09	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.70	23.48	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.30	20.00	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	20.00	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.70	14.78	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	9.57	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	18.26	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.70	23.48	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.83	7.22	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.30	46.09	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.79	6.87	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.30	72.17	670.00	0.11
C2 Chrysenes [(a)]	1008.00	---	4.60	40.00	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.00	17.39	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.50	47.83	---	---
C2-Naphthalenes [(a)]	510.00	---	9.30	80.87	510.00	0.16
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	86.96	746.00	0.12
C3 Chrysenes [(a)]	1112.00	---	2.40	20.87	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.00	43.48	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	4.50	39.13	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	17.00	147.83	581.00	0.25
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	104.35	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	1.10	9.57	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	113.04	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.80	67.83	913.00	0.07
Chrysene [(a)]	844.00	826	2.90	25.22	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.27	2.35	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.50	56.52	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.67	5.83	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.96	8.35	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.43	3.70	385.00	0.01
Perylene [(a)]	967.00	431.00	0.75	6.52	967.00	0.01
Phenanthrene [(a)]	596	34300	3.90	33.91	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	5.40	46.96	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.98

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0709			
		Sample Depth	7-9			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.3	0.113	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.27	2.39	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.23	2.04	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.19	1.68	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.06	0.52	452.00	0.00
Anthracene [(a)]	594.00	1300	0.48	4.25	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.50	13.27	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.10	9.73	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.20	10.62	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.82	7.26	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.47	4.16	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.99	8.76	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.60	14.16	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.28	2.48	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.90	25.66	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.44	3.89	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.30	29.20	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	2.50	22.12	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.65	5.75	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.60	23.01	---	---
C2-Naphthalenes [(a)]	510.00	---	2.70	23.89	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.10	36.28	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	1.30	11.50	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.50	13.27	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.10	18.58	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	5.60	49.56	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.10	45.13	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.53	4.69	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	4.10	36.28	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.20	28.32	913.00	0.03
Chrysene [(a)]	844.00	826	1.50	13.27	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.14	1.24	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.90	25.66	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.37	3.27	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.44	3.89	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.23	2.04	385.00	0.01
Perylene [(a)]	967.00	431.00	0.33	2.92	967.00	0.00
Phenanthrene [(a)]	596	34300	1.60	14.16	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	2.30	20.35	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.43

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0709-FD			
		Sample Depth	7-9			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.88	0.0788	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.18	2.28	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.17	2.16	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.12	1.52	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.04	0.49	452.00	0.00
Anthracene [(a)]	594.00	1300	0.32	4.06	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.95	12.06	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.71	9.01	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.79	10.03	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.52	6.60	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.33	4.19	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.65	8.25	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.10	13.96	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.19	2.41	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.80	22.84	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.29	3.68	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.20	27.92	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.60	20.30	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.43	5.46	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.70	21.57	---	---
C2-Naphthalenes [(a)]	510.00	---	1.80	22.84	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.80	35.53	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.85	10.79	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	13.96	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.40	17.77	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	3.70	46.95	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.10	39.34	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.39	4.95	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.90	36.80	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.90	24.11	913.00	0.03
Chrysene [(a)]	844.00	826	0.95	12.06	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.10	1.27	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.90	24.11	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.22	2.79	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.29	3.68	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.17	2.16	385.00	0.01
Perylene [(a)]	967.00	431.00	0.21	2.66	967.00	0.00
Phenanthrene [(a)]	596	34300	1.00	12.69	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.50	19.04	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.40

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0911			
		Sample Depth	9-11			
		Sample Date	11/01/2013			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.42	0.0342	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.02	0.61	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.03	0.91	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.13	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.10	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.24	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	0.70	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	0.53	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.02	0.67	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.02	0.64	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.02	0.44	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.02	0.47	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.05	1.37	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.58	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.07	2.02	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.03	0.99	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.22	6.43	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.13	3.80	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.04	1.20	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.09	2.54	---	---
C2-Naphthalenes [(a)]	510.00	---	0.18	5.26	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.20	5.85	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.06	1.84	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	2.16	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.09	2.69	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.52	15.20	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.23	6.73	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.03	0.79	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.45	13.16	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.14	4.09	913.00	0.00
Chrysene [(a)]	844.00	826	0.04	1.05	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.07	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.04	1.26	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.38	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.18	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.32	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.41	967.00	0.00
Phenanthrene [(a)]	596	34300	0.06	1.75	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.04	1.08	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.05

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-21			
		Field Sample ID	RREC13-21-0911-FD			
		Sample Depth	9-11			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.62	0.0362	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.02	0.47	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.02	0.64	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.15	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.36	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.04	0.97	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.03	0.72	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.03	0.86	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.03	0.69	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.02	0.52	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.02	0.66	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.06	1.57	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.55	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.09	2.43	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.03	0.72	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.22	6.08	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.12	3.31	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.04	1.13	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.10	2.76	---	---
C2-Naphthalenes [(a)]	510.00	---	0.19	5.25	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.22	6.08	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.06	1.57	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.09	2.46	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.10	2.68	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.46	12.71	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.25	6.91	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.03	0.77	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.45	12.43	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.15	4.14	913.00	0.00
Chrysene [(a)]	844.00	826	0.05	1.33	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.10	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.07	1.93	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.28	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.33	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.18	385.00	0.00
Perylene [(a)]	967.00	431.00	0.02	0.44	967.00	0.00
Phenanthrene [(a)]	596	34300	0.07	1.82	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.06	1.66	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.06

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.89	0.0589	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.08	1.39	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.15	2.55	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.10	1.70	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.07	1.14	452.00	0.00
Anthracene [(a)]	594.00	1300	0.36	6.11	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.40	23.77	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.50	25.47	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	25.47	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	0.98	16.64	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.66	11.21	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	22.07	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.90	15.28	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.08	1.31	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.70	28.86	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.16	2.72	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.00	16.98	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.84	14.26	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.16	2.72	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.98	16.64	---	---
C2-Naphthalenes [(a)]	510.00	---	0.58	9.85	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.97	16.47	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.43	7.30	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.41	6.96	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.73	12.39	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.79	13.41	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.20	20.37	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.15	2.55	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.82	13.92	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.92	15.62	913.00	0.02
Chrysene [(a)]	844.00	826	1.40	23.77	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.17	2.89	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.10	35.65	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.15	2.55	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.64	10.87	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.16	2.72	385.00	0.01
Perylene [(a)]	967.00	431.00	0.43	7.30	967.00	0.01
Phenanthrene [(a)]	596	34300	0.97	16.47	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.80	30.56	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.47

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.18	0.0718	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	1.20	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.13	1.81	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.15	2.09	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.07	0.91	452.00	0.00
Anthracene [(a)]	594.00	1300	0.43	5.99	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.70	23.68	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.70	23.68	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.60	22.28	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.20	16.71	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.94	13.09	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.60	22.28	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.10	15.32	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.08	1.17	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.80	25.07	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.15	2.09	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.20	16.71	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	1.10	15.32	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.19	2.65	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.20	16.71	---	---
C2-Naphthalenes [(a)]	510.00	---	0.60	8.36	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.10	15.32	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.47	6.55	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.60	8.36	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.83	11.56	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.95	13.23	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	19.50	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.19	2.65	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.98	13.65	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.00	13.93	913.00	0.02
Chrysene [(a)]	844.00	826	1.70	23.68	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	3.34	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.60	36.21	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.18	2.51	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.86	11.98	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.23	3.13	385.00	0.01
Perylene [(a)]	967.00	431.00	0.50	6.96	967.00	0.01
Phenanthrene [(a)]	596	34300	1.30	18.11	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.00	27.86	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.46

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0103			
		Sample Depth	1-3			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.53	0.0853	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.14	1.64	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.16	1.88	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.28	3.28	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.11	1.29	452.00	0.00
Anthracene [(a)]	594.00	1300	0.57	6.68	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.30	26.96	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.30	26.96	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.10	24.62	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.60	18.76	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	11.72	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	24.62	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.00	23.45	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.37	4.34	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.30	38.69	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.22	2.58	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.30	50.41	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	2.50	29.31	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.20	14.07	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.70	31.65	---	---
C2-Naphthalenes [(a)]	510.00	---	2.50	29.31	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.20	60.96	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	1.20	14.07	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.10	36.34	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	26.96	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	7.00	82.06	581.00	0.14
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.40	63.31	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.63	7.39	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.30	73.86	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.90	45.72	913.00	0.05
Chrysene [(a)]	844.00	826	2.20	25.79	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	3.63	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.90	45.72	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.42	4.92	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.96	11.25	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.26	2.99	385.00	0.01
Perylene [(a)]	967.00	431.00	0.71	8.32	967.00	0.01
Phenanthrene [(a)]	596	34300	2.00	23.45	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.00	35.17	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.79

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0305			
		Sample Depth	3-5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.59	0.0959	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.45	4.69	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.53	5.53	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.37	3.86	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.13	1.36	452.00	0.00
Anthracene [(a)]	594.00	1300	0.56	5.84	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	19.81	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.50	15.64	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.70	17.73	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.20	12.51	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.66	6.88	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	13.56	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	2.20	22.94	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.79	8.24	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.80	39.62	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.69	7.19	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.00	93.85	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	3.70	38.58	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.60	27.11	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.10	42.75	---	---
C2-Naphthalenes [(a)]	510.00	---	7.00	72.99	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	125.13	746.00	0.17
C3 Chrysenes [(a)]	1112.00	---	2.10	21.90	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	6.20	64.65	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	41.71	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	17.00	177.27	581.00	0.31
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	125.13	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	1.10	11.47	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	15.00	156.41	657.00	0.24
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.10	84.46	913.00	0.09
Chrysene [(a)]	844.00	826	2.10	21.90	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.18	1.88	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.00	41.71	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.45	4.69	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.62	6.47	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.33	3.39	385.00	0.01
Perylene [(a)]	967.00	431.00	0.57	5.94	967.00	0.01
Phenanthrene [(a)]	596	34300	2.40	25.03	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.10	32.33	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	**1.06**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0507			
		Sample Depth	5-7			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.55	0.0955	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.49	5.13	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.75	7.85	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.26	2.72	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.12	1.26	452.00	0.00
Anthracene [(a)]	594.00	1300	0.51	5.34	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.00	20.94	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.70	17.80	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.60	16.75	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.30	13.61	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.78	8.17	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.50	15.71	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.90	30.37	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.91	9.53	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	49.21	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.83	8.69	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	115.18	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	4.80	50.26	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.90	30.37	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.30	55.50	---	---
C2-Naphthalenes [(a)]	510.00	---	8.90	93.19	510.00	0.18
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	146.60	746.00	0.20
C3 Chrysenes [(a)]	1112.00	---	2.50	26.18	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	6.50	68.06	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	4.90	51.31	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	20.00	209.42	581.00	0.36
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	146.60	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.10	11.52	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	16.00	167.54	657.00	0.26
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.00	83.77	913.00	0.09
Chrysene [(a)]	844.00	826	2.00	20.94	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.23	2.41	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.90	40.84	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.43	4.50	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.70	7.33	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.32	3.35	385.00	0.01
Perylene [(a)]	967.00	431.00	0.56	5.86	967.00	0.01
Phenanthrene [(a)]	596	34300	2.50	26.18	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.40	35.60	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	**1.17**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0709			
		Sample Depth	7-9			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.3	0.083	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.27	3.25	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.30	3.61	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.34	4.10	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.10	1.20	452.00	0.00
Anthracene [(a)]	594.00	1300	0.80	9.64	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.90	34.94	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.30	27.71	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.10	25.30	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.60	19.28	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	12.05	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.30	27.71	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.40	28.92	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.45	5.42	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	56.63	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.38	4.58	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.40	65.06	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	2.80	33.73	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.10	13.25	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.70	44.58	---	---
C2-Naphthalenes [(a)]	510.00	---	3.40	40.96	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.40	77.11	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.30	15.66	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.80	33.73	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.60	31.33	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	7.30	87.95	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.30	87.95	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.58	6.99	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.80	81.93	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.20	62.65	913.00	0.07
Chrysene [(a)]	844.00	826	2.90	34.94	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	3.73	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.30	63.86	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.76	9.16	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.97	11.69	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.47	5.66	385.00	0.01
Perylene [(a)]	967.00	431.00	0.69	8.31	967.00	0.01
Phenanthrene [(a)]	596	34300	3.10	37.35	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	4.30	51.81	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.03**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-22			
		Field Sample ID	RREC13-22-0911			
		Sample Depth	9-11			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.36	0.0436	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.40	9.17	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.32	7.34	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.48	11.01	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.11	2.52	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	36.70	594.00	0.06
Benzo(a)anthracene [(a)]	841.00	4153	2.50	57.34	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	1.70	38.99	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	1.20	27.52	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.10	25.23	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.70	16.06	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	29.82	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.60	59.63	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.45	10.32	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.20	119.27	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	0.50	11.47	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.50	149.08	670.00	0.22
C2 Chrysenes [(a)]	1008.00	---	2.30	52.75	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	0.62	14.22	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.90	66.51	---	---
C2-Naphthalenes [(a)]	510.00	---	4.40	100.92	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.10	94.04	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	1.10	25.23	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	1.10	25.23	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.80	41.28	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	4.40	100.92	581.00	0.17
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.10	94.04	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.52	11.93	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.50	57.34	657.00	0.09
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.60	59.63	913.00	0.07
Chrysene [(a)]	844.00	826	2.30	52.75	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.21	4.82	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.90	89.45	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	0.73	16.74	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.61	13.99	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.34	7.80	385.00	0.02
Perylene [(a)]	967.00	431.00	0.39	8.94	967.00	0.01
Phenanthrene [(a)]	596	34300	4.00	91.74	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	4.30	98.62	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.61**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.4	0.074	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.23	3.11	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.37	5.00	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.31	4.19	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.16	2.16	452.00	0.00
Anthracene [(a)]	594.00	1300	1.10	14.86	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.30	44.59	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.00	40.54	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.80	37.84	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.10	28.38	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	18.92	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	40.54	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.20	29.73	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.22	2.97	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.10	55.41	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.40	5.41	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.20	43.24	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	2.10	28.38	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.52	7.03	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.50	33.78	---	---
C2-Naphthalenes [(a)]	510.00	---	1.90	25.68	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.90	39.19	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.79	10.68	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.20	16.22	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	21.62	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	3.00	40.54	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.20	43.24	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.30	4.05	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.40	32.43	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.20	29.73	913.00	0.03
Chrysene [(a)]	844.00	826	3.10	41.89	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.38	5.14	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.40	72.97	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.47	6.35	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	16.22	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.33	4.46	385.00	0.01
Perylene [(a)]	967.00	431.00	0.83	11.22	967.00	0.01
Phenanthrene [(a)]	596	34300	2.70	36.49	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	4.10	55.41	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.92

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0001			
		Sample Depth	0-1			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	13.2	0.132	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.38	2.88	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.54	4.09	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.32	2.42	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.19	1.40	452.00	0.00
Anthracene [(a)]	594.00	1300	0.55	4.17	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	14.39	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.90	14.39	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	2.10	15.91	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.60	12.12	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	12.88	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	9.85	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	2.00	15.15	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.39	2.95	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.60	19.70	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.68	5.15	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.70	28.03	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.70	12.88	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.96	7.27	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.10	15.91	---	---
C2-Naphthalenes [(a)]	510.00	---	3.90	29.55	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.20	31.82	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.82	6.21	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.10	15.91	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	12.12	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	6.20	46.97	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.90	29.55	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.40	3.03	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	4.80	36.36	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.70	20.45	913.00	0.02
Chrysene [(a)]	844.00	826	2.10	15.91	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.59	4.47	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.90	21.97	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.48	3.64	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	12.12	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.78	5.91	385.00	0.02
Perylene [(a)]	967.00	431.00	0.53	4.02	967.00	0.00
Phenanthrene [(a)]	596	34300	2.40	18.18	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	3.60	27.27	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.46

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0103			
		Sample Depth	1-3			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.7	0.117	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.97	8.29	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.50	12.82	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.63	5.38	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.40	3.38	452.00	0.01
Anthracene [(a)]	594.00	1300	0.98	8.38	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.80	23.93	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.20	18.80	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	18.80	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.90	16.24	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.00	17.09	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.70	14.53	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	3.50	29.91	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	1.10	9.40	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.40	37.61	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	1.80	15.38	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.50	81.20	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	3.50	29.91	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	3.30	28.21	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.80	41.03	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	102.56	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	102.56	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	2.10	17.95	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	7.80	66.67	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	34.19	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	22.00	188.03	581.00	0.32
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	119.66	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	1.20	10.26	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	18.00	153.85	657.00	0.23
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.90	76.07	913.00	0.08
Chrysene [(a)]	844.00	826	3.10	26.50	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.63	5.38	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.30	36.75	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	1.00	8.55	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	14.53	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	2.00	17.09	385.00	0.04
Perylene [(a)]	967.00	431.00	0.72	6.15	967.00	0.01
Phenanthrene [(a)]	596	34300	4.30	36.75	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	5.80	49.57	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.13**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0305			
		Sample Depth	3-5			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	1.57	0.0157	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.00	63.69	446.00	0.14
2-Methylnaphthalene	447.00	154800	1.50	95.54	447.00	0.21
Acenaphthene [(a)]	491.00	33400	0.65	41.40	491.00	0.08
Acenaphthylene [(a)]	452.00	24000	0.49	30.89	452.00	0.07
Anthracene [(a)]	594.00	1300	1.30	82.80	594.00	0.14
Benzo(a)anthracene [(a)]	841.00	4153	3.00	191.08	841.00	0.23
Benzo(a)pyrene [(a)]	965.00	3840	2.50	159.24	965.00	0.17
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	140.13	979.00	0.14
Benzo(e)pyrene [(a)]	967.00	4300	2.10	133.76	967.00	0.14
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.10	133.76	1095.00	0.12
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	121.02	981.00	0.12
C1 Chrysenes [(a)]	929.00	---	4.00	254.78	929.00	0.27
C1 Fluorenes [(a)]	611.00	---	1.10	70.06	611.00	0.11
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	299.36	770.00	0.39
C1-Naphthalenes [(a)]	444.00	---	1.80	114.65	444.00	0.26
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	636.94	670.00	0.95
C2 Chrysenes [(a)]	1008.00	---	4.10	261.15	1008.00	0.26
C2 Fluorenes [(a)]	686.00	---	3.10	197.45	686.00	0.29
C2-Fluoranthenes/Pyrenes	---	---	5.00	318.47	---	---
C2-Naphthalenes [(a)]	510.00	---	13.00	828.03	510.00	1.62
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	764.33	746.00	1.02
C3 Chrysenes [(a)]	1112.00	---	2.20	140.13	1112.00	0.13
C3 Fluorenes [(a)]	769.00	---	7.10	452.23	769.00	0.59
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	254.78	949.00	0.27
C3-Naphthalenes [(a)]	581.00	---	22.00	1401.27	581.00	2.41
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	764.33	829.00	0.92
C4 Chrysenes [(a)]	1214.00	---	1.10	70.06	1214.00	0.06
C4-Naphthalenes [(a)]	657.00	---	16.00	1019.11	657.00	1.55
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.80	496.82	913.00	0.54
Chrysene [(a)]	844.00	826	3.30	210.19	844.00	0.25
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.68	43.31	1123.00	0.04
Fluoranthene [(a)]	707.00	23,870.00	4.40	280.25	707.00	0.40
Fluorene [(a)]	538.00	26,000.00	0.98	62.42	538.00	0.12
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	108.28	1115.00	0.10
Naphthalene [(a)]	385.00	61,700.00	1.30	82.80	385.00	0.22
Perylene [(a)]	967.00	431.00	0.73	46.50	967.00	0.05
Phenanthrene [(a)]	596	34300	4.70	299.36	596.00	0.50
Pyrene [(a)]	697.00	9,090.00	5.70	363.06	697.00	0.52
	---	**ESBTU FCVi**	---	---	---	**8.22**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0507			
		Sample Depth	5-7			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.58	0.0258	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.60	62.02	446.00	0.14
2-Methylnaphthalene	447.00	154800	2.60	100.78	447.00	0.23
Acenaphthene [(a)]	491.00	33400	2.20	85.27	491.00	0.17
Acenaphthylene [(a)]	452.00	24000	0.55	21.32	452.00	0.05
Anthracene [(a)]	594.00	1300	1.80	69.77	594.00	0.12
Benzo(a)anthracene [(a)]	841.00	4153	3.30	127.91	841.00	0.15
Benzo(a)pyrene [(a)]	965.00	3840	2.50	96.90	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	89.15	979.00	0.09
Benzo(e)pyrene [(a)]	967.00	4300	2.10	81.40	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	73.64	1095.00	0.07
Benzo(k)fluoranthene [(a)]	981.00	1220	2.40	93.02	981.00	0.09
C1 Chrysenes [(a)]	929.00	---	3.80	147.29	929.00	0.16
C1 Fluorenes [(a)]	611.00	---	1.00	38.76	611.00	0.06
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.20	201.55	770.00	0.26
C1-Naphthalenes [(a)]	444.00	---	3.10	120.16	444.00	0.27
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.70	375.97	670.00	0.56
C2 Chrysenes [(a)]	1008.00	---	4.00	155.04	1008.00	0.15
C2 Fluorenes [(a)]	686.00	---	2.50	96.90	686.00	0.14
C2-Fluoranthenes/Pyrenes	---	---	4.70	182.17	---	---
C2-Naphthalenes [(a)]	510.00	---	11.00	426.36	510.00	0.84
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	426.36	746.00	0.57
C3 Chrysenes [(a)]	1112.00	---	2.00	77.52	1112.00	0.07
C3 Fluorenes [(a)]	769.00	---	5.10	197.67	769.00	0.26
C3-Fluoranthenes/Pyrenes	949.00	---	3.50	135.66	949.00	0.14
C3-Naphthalenes [(a)]	581.00	---	18.00	697.67	581.00	1.20
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.90	383.72	829.00	0.46
C4 Chrysenes [(a)]	1214.00	---	1.00	38.76	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	13.00	503.88	657.00	0.77
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.60	255.81	913.00	0.28
Chrysene [(a)]	844.00	826	3.70	143.41	844.00	0.17
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.57	22.09	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	5.20	201.55	707.00	0.29
Fluorene [(a)]	538.00	26,000.00	2.40	93.02	538.00	0.17
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	62.02	1115.00	0.06
Naphthalene [(a)]	385.00	61,700.00	1.40	54.26	385.00	0.14
Perylene [(a)]	967.00	431.00	0.75	29.07	967.00	0.03
Phenanthrene [(a)]	596	34300	6.20	240.31	596.00	0.40
Pyrene [(a)]	697.00	9,090.00	6.20	240.31	697.00	0.34
	---	**ESBTU FCVi**	---	---	---	**5.15**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0709			
		Sample Depth	7-9			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.86	0.0986	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.70	7.10	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.70	7.10	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.59	5.98	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.70	7.10	452.00	0.02
Anthracene [(a)]	594.00	1300	2.00	20.28	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.80	38.54	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.20	32.45	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	27.38	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.40	24.34	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.20	22.31	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.90	29.41	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.70	37.53	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.67	6.80	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.80	48.68	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	1.00	10.14	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.80	79.11	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	3.60	36.51	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.80	18.26	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.20	42.60	---	---
C2-Naphthalenes [(a)]	510.00	---	5.90	59.84	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	101.42	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	1.70	17.24	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.40	44.62	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.70	37.53	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	12.00	121.70	581.00	0.21
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	10.00	101.42	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.95	9.63	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	111.56	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.90	69.98	913.00	0.08
Chrysene [(a)]	844.00	826	4.00	40.57	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.62	6.29	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.70	67.95	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	1.60	16.23	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.00	20.28	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.70	7.10	385.00	0.02
Perylene [(a)]	967.00	431.00	0.97	9.84	967.00	0.01
Phenanthrene [(a)]	596	34300	6.10	61.87	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	7.00	70.99	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.29**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-23			
		Field Sample ID	RREC13-23-0911			
		Sample Depth	9-11			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.3	0.103	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.70	6.80	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.70	6.80	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.76	7.38	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.70	6.80	452.00	0.02
Anthracene [(a)]	594.00	1300	2.30	22.33	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.50	43.69	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.80	36.89	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.30	32.04	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.80	27.18	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.70	26.21	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	27.18	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.80	36.89	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.81	7.86	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.50	53.40	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.30	12.62	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.40	81.55	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	3.70	35.92	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.80	17.48	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.20	40.78	---	---
C2-Naphthalenes [(a)]	510.00	---	6.70	65.05	510.00	0.13
C2-Phenanthrenes/Anthracenes [(a)]	746	---	10.00	97.09	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	1.70	16.50	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.40	42.72	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.60	34.95	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	13.00	126.21	581.00	0.22
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.90	96.12	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.95	9.22	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	106.80	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.70	65.05	913.00	0.07
Chrysene [(a)]	844.00	826	4.60	44.66	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.78	7.57	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	8.20	79.61	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	2.60	25.24	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	23.30	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.70	6.80	385.00	0.02
Perylene [(a)]	967.00	431.00	1.10	10.68	967.00	0.01
Phenanthrene [(a)]	596	34300	6.70	65.05	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	8.30	80.58	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.37**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-24			
		Field Sample ID	RREC13-24-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.59	0.0259	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.65	25.10	446.00	0.06
2-Methylnaphthalene	447.00	154800	0.65	25.10	447.00	0.06
Acenaphthene [(a)]	491.00	33400	0.94	36.29	491.00	0.07
Acenaphthylene [(a)]	452.00	24000	0.65	25.10	452.00	0.06
Anthracene [(a)]	594.00	1300	2.30	88.80	594.00	0.15
Benzo(a)anthracene [(a)]	841.00	4153	3.50	135.14	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	2.60	100.39	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	73.36	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	1.60	61.78	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.65	25.10	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.40	92.66	981.00	0.09
C1 Chrysenes [(a)]	929.00	---	2.10	81.08	929.00	0.09
C1 Fluorenes [(a)]	611.00	---	0.32	12.36	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	181.47	770.00	0.24
C1-Naphthalenes [(a)]	444.00	---	0.60	23.17	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.80	185.33	670.00	0.28
C2 Chrysenes [(a)]	1008.00	---	1.30	50.19	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	0.35	13.51	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	1.90	73.36	---	---
C2-Naphthalenes [(a)]	510.00	---	2.20	84.94	510.00	0.17
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.20	84.94	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	0.46	17.76	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	0.44	16.99	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	0.85	32.82	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	2.40	92.66	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.50	57.92	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.21	8.11	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	0.97	37.45	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.79	30.50	913.00	0.03
Chrysene [(a)]	844.00	826	3.10	119.69	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	11.97	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	8.00	308.88	707.00	0.44
Fluorene [(a)]	538.00	26,000.00	1.60	61.78	538.00	0.11
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.97	37.45	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.65	25.10	385.00	0.07
Perylene [(a)]	967.00	431.00	0.63	24.32	967.00	0.03
Phenanthrene [(a)]	596	34300	7.00	270.27	596.00	0.45
Pyrene [(a)]	697.00	9,090.00	5.20	200.77	697.00	0.29
	---	**ESBTU FCVi**	---	---	---	**3.16**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-24			
		Field Sample ID	RREC13-24-0001			
		Sample Depth	0-1			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.3	0.023	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	4.00	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.25	10.87	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.20	52.17	491.00	0.11
Acenaphthylene [(a)]	452.00	24000	0.04	1.78	452.00	0.00
Anthracene [(a)]	594.00	1300	0.97	42.17	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	1.30	56.52	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	0.87	37.83	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	0.86	37.39	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	0.55	23.91	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.36	15.65	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.77	33.48	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	0.67	29.13	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.14	6.09	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.70	73.91	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	0.11	4.78	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.80	78.26	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	0.44	19.13	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.11	4.78	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	0.64	27.83	---	---
C2-Naphthalenes [(a)]	510.00	---	0.67	29.13	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.71	30.87	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.15	6.52	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.13	5.65	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.26	11.30	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.83	36.09	581.00	0.06
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.44	19.13	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.06	2.48	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.26	11.30	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.24	10.43	913.00	0.01
Chrysene [(a)]	844.00	826	1.10	47.83	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.10	4.35	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.70	160.87	707.00	0.23
Fluorene [(a)]	538.00	26,000.00	1.30	56.52	538.00	0.11
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.34	14.78	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.25	10.87	385.00	0.03
Perylene [(a)]	967.00	431.00	0.28	12.17	967.00	0.01
Phenanthrene [(a)]	596	34300	4.30	186.96	596.00	0.31
Pyrene [(a)]	697.00	9,090.00	2.30	100.00	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.62**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-24			
		Field Sample ID	RREC13-24-0103			
		Sample Depth	1-3			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.02	0.0302	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.04	1.39	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.11	3.48	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.35	11.59	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.03	0.89	452.00	0.00
Anthracene [(a)]	594.00	1300	0.32	10.60	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	0.48	15.89	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.29	9.60	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.32	10.60	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.22	7.28	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.15	4.97	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.32	10.60	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.28	9.27	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.05	1.66	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.65	21.52	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.06	1.99	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.63	20.86	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.21	6.95	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.04	1.46	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.29	9.60	---	---
C2-Naphthalenes [(a)]	510.00	---	0.32	10.60	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.30	9.93	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.08	2.48	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	2.25	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.14	4.64	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.37	12.25	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.23	7.62	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.04	1.36	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.15	4.97	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.16	5.30	913.00	0.01
Chrysene [(a)]	844.00	826	0.45	14.90	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.04	1.39	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.20	39.74	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.23	7.62	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.14	4.64	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.11	3.48	385.00	0.01
Perylene [(a)]	967.00	431.00	0.11	3.64	967.00	0.00
Phenanthrene [(a)]	596	34300	1.20	39.74	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	0.82	27.15	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.41

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.09	0.0309	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.16	5.02	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.16	5.02	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.12	3.88	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.16	5.02	452.00	0.01
Anthracene [(a)]	594.00	1300	0.39	12.62	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.40	45.31	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.30	42.07	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	1.10	35.60	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	0.91	29.45	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.63	20.39	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	42.07	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	0.78	25.24	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.06	1.84	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.50	48.54	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.13	4.21	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.91	29.45	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	0.51	16.50	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.08	2.52	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.75	24.27	---	---
C2-Naphthalenes [(a)]	510.00	---	0.36	11.65	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.57	18.45	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.21	6.80	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.14	4.53	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.34	11.00	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.45	14.56	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.43	13.92	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.06	1.81	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.24	7.77	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.27	8.74	913.00	0.01
Chrysene [(a)]	844.00	826	1.30	42.07	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.15	4.85	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.40	77.67	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.17	5.50	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.54	17.48	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.16	5.02	385.00	0.01
Perylene [(a)]	967.00	431.00	0.31	10.03	967.00	0.01
Phenanthrene [(a)]	596	34300	1.10	35.60	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	1.80	58.25	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.79

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-0001			
		Sample Depth	0-1			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.81	0.0881	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.49	5.56	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.65	7.38	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.80	9.08	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.45	5.11	452.00	0.01
Anthracene [(a)]	594.00	1300	2.10	23.84	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	5.70	64.70	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	5.10	57.89	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	4.00	45.40	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.10	35.19	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	26.11	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.80	43.13	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	3.90	44.27	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.74	8.40	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.80	88.54	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.74	8.40	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.50	107.83	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	2.50	28.38	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	2.00	22.70	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.50	51.08	---	---
C2-Naphthalenes [(a)]	510.00	---	5.00	56.75	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.00	102.16	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	1.00	11.35	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.20	47.67	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	2.70	30.65	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	13.00	147.56	581.00	0.25
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.70	87.40	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.50	5.68	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	9.20	104.43	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.70	53.35	913.00	0.06
Chrysene [(a)]	844.00	826	5.40	61.29	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.61	6.92	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	124.86	707.00	0.18
Fluorene [(a)]	538.00	26,000.00	1.10	12.49	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.90	21.57	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.65	7.38	385.00	0.02
Perylene [(a)]	967.00	431.00	1.30	14.76	967.00	0.02
Phenanthrene [(a)]	596	34300	6.60	74.91	596.00	0.13
Pyrene [(a)]	697.00	9,090.00	7.90	89.67	697.00	0.13
	---	**ESBTU FCVi**	---	---	---	**1.63**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-0103			
		Sample Depth	1-3			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	13.5	0.135	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.63	4.67	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.50	3.70	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.67	4.96	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.47	3.48	452.00	0.01
Anthracene [(a)]	594.00	1300	1.50	11.11	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	5.20	38.52	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	4.60	34.07	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.50	25.93	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.90	21.48	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	14.07	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	3.80	28.15	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.50	25.93	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.97	7.19	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.70	57.04	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.10	8.15	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	81.48	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	3.30	24.44	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	2.70	20.00	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.90	36.30	---	---
C2-Naphthalenes [(a)]	510.00	---	7.80	57.78	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	81.48	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	1.20	8.89	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	5.00	37.04	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.20	23.70	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	19.00	140.74	581.00	0.24
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.50	70.37	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.64	4.74	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	13.00	96.30	657.00	0.15
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.20	45.93	913.00	0.05
Chrysene [(a)]	844.00	826	4.90	36.30	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.51	3.78	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	8.90	65.93	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.82	6.07	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	12.59	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.40	10.37	385.00	0.03
Perylene [(a)]	967.00	431.00	1.30	9.63	967.00	0.01
Phenanthrene [(a)]	596	34300	5.60	41.48	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	7.40	54.81	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.08**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-0305			
		Sample Depth	3-5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.18	0.0718	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.53	7.38	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.70	9.75	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.52	7.24	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.23	3.20	452.00	0.01
Anthracene [(a)]	594.00	1300	0.85	11.84	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.60	36.21	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.30	32.03	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	27.86	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.50	20.89	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.91	12.67	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.70	23.68	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.30	32.03	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.77	10.72	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.90	68.25	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.87	12.12	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.40	116.99	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	2.10	29.25	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	2.10	29.25	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	3.50	48.75	---	---
C2-Naphthalenes [(a)]	510.00	---	6.80	94.71	510.00	0.19
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.00	111.42	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	0.95	13.23	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.00	55.71	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	32.03	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	16.00	222.84	581.00	0.38
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.50	104.46	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.52	7.24	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	153.20	657.00	0.23
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.10	71.03	913.00	0.08
Chrysene [(a)]	844.00	826	2.70	37.60	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	3.34	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.70	65.46	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.60	8.36	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.77	10.72	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.10	15.32	385.00	0.04
Perylene [(a)]	967.00	431.00	0.61	8.50	967.00	0.01
Phenanthrene [(a)]	596	34300	3.70	51.53	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.20	58.50	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.34**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-0507			
		Sample Depth	5-7			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.65	0.0765	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.85	11.11	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.40	18.30	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.40	5.23	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.25	3.27	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	14.38	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.60	33.99	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.10	27.45	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	23.53	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.50	19.61	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.78	10.20	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	24.84	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	4.00	52.29	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.40	18.30	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.00	78.43	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.50	19.61	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	196.08	670.00	0.29
C2 Chrysenes [(a)]	1008.00	---	5.20	67.97	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	4.00	52.29	686.00	0.08
C2-Fluoranthenes/Pyrenes	---	---	6.70	87.58	---	---
C2-Naphthalenes [(a)]	510.00	---	13.00	169.93	510.00	0.33
C2-Phenanthrenes/Anthracenes [(a)]	746	---	16.00	209.15	746.00	0.28
C3 Chrysenes [(a)]	1112.00	---	2.60	33.99	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	7.30	95.42	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	5.30	69.28	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	30.00	392.16	581.00	0.67
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	183.01	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	1.00	13.07	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	19.00	248.37	657.00	0.38
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.70	113.73	913.00	0.12
Chrysene [(a)]	844.00	826	3.00	39.22	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.20	2.61	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.90	64.05	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.65	8.50	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.70	9.15	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.50	19.61	385.00	0.05
Perylene [(a)]	967.00	431.00	0.49	6.41	967.00	0.01
Phenanthrene [(a)]	596	34300	4.40	57.52	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	3.90	50.98	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.83**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-25			
		Field Sample ID	RREC13-25-0710			
		Sample Depth	7-10			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.73	0.0873	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.58	6.64	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.47	5.33	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.48	5.50	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.25	2.86	452.00	0.01
Anthracene [(a)]	594.00	1300	4.60	52.69	594.00	0.09
Benzo(a)anthracene [(a)]	841.00	4153	3.90	44.67	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.00	34.36	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	26.35	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.90	21.76	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	13.75	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.50	28.64	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.50	40.09	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	1.00	11.45	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.00	80.18	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.00	11.45	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	12.00	137.46	670.00	0.21
C2 Chrysenes [(a)]	1008.00	---	3.60	41.24	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.70	30.93	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	5.30	60.71	---	---
C2-Naphthalenes [(a)]	510.00	---	9.10	104.24	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	137.46	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	1.60	18.33	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.90	56.13	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	3.50	40.09	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	23.00	263.46	581.00	0.45
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	126.00	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	0.71	8.13	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	15.00	171.82	657.00	0.26
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.00	68.73	913.00	0.08
Chrysene [(a)]	844.00	826	3.60	41.24	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.32	3.67	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	7.60	87.06	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	1.20	13.75	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.00	11.45	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.10	12.60	385.00	0.03
Perylene [(a)]	967.00	431.00	0.80	9.16	967.00	0.01
Phenanthrene [(a)]	596	34300	6.80	77.89	596.00	0.13
Pyrene [(a)]	697.00	9,090.00	6.40	73.31	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.63**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-26			
		Field Sample ID	RREC13-26-SURF			
		Sample Depth	0-0.5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.09	0.0609	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.20	3.28	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.65	10.67	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.66	10.84	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.12	1.97	452.00	0.00
Anthracene [(a)]	594.00	1300	1.10	18.06	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	4.10	67.32	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	3.60	59.11	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.80	62.40	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	2.50	41.05	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	31.20	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.10	50.90	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.30	37.77	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.25	4.11	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.10	67.32	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.32	5.25	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.30	54.19	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	1.50	24.63	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.52	8.54	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.70	44.33	---	---
C2-Naphthalenes [(a)]	510.00	---	1.40	22.99	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.60	42.69	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.67	11.00	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.10	18.06	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.50	24.63	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	3.80	62.40	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.50	41.05	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.28	4.60	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.50	41.05	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.70	27.91	913.00	0.03
Chrysene [(a)]	844.00	826	4.20	68.97	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.46	7.55	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	8.60	141.22	707.00	0.20
Fluorene [(a)]	538.00	26,000.00	0.66	10.84	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	26.27	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.65	10.67	385.00	0.03
Perylene [(a)]	967.00	431.00	1.00	16.42	967.00	0.02
Phenanthrene [(a)]	596	34300	5.20	85.39	596.00	0.14
Pyrene [(a)]	697.00	9,090.00	6.00	98.52	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.39**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-26			
		Field Sample ID	RREC13-26-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.6	0.116	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.81	6.98	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.65	5.60	447.00	0.01
Acenaphthene [(a)]	491.00	33400	1.10	9.48	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.32	2.76	452.00	0.01
Anthracene [(a)]	594.00	1300	1.40	12.07	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	4.60	39.66	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.70	31.90	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	25.86	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.80	24.14	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.60	22.41	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.40	29.31	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.60	31.03	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.64	5.52	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.00	60.34	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.20	10.34	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.30	71.55	670.00	0.11
C2 Chrysenes [(a)]	1008.00	---	2.80	24.14	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.50	12.93	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.50	38.79	---	---
C2-Naphthalenes [(a)]	510.00	---	5.50	47.41	510.00	0.09
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.60	65.52	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	1.20	10.34	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.10	26.72	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	3.10	26.72	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	11.00	94.83	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.20	62.07	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.57	4.91	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	8.20	70.69	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.70	40.52	913.00	0.04
Chrysene [(a)]	844.00	826	4.40	37.93	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.62	5.34	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	7.80	67.24	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.94	8.10	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.10	18.10	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.65	5.60	385.00	0.01
Perylene [(a)]	967.00	431.00	0.97	8.36	967.00	0.01
Phenanthrene [(a)]	596	34300	5.90	50.86	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	6.70	57.76	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.05**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-26			
		Field Sample ID	RREC13-26-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.12	0.0912	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.96	10.53	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.30	14.25	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.74	8.11	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.26	2.85	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	12.06	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	4.00	43.86	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.10	33.99	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.40	37.28	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.40	26.32	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	15.35	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	30.70	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	3.90	42.76	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.99	10.86	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.40	81.14	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	1.60	17.54	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	12.00	131.58	670.00	0.20
C2 Chrysenes [(a)]	1008.00	---	4.60	50.44	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.70	29.61	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.90	64.69	---	---
C2-Naphthalenes [(a)]	510.00	---	8.50	93.20	510.00	0.18
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	131.58	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	2.00	21.93	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.60	61.40	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	4.50	49.34	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	21.00	230.26	581.00	0.40
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	142.54	829.00	0.17
C4 Chrysenes [(a)]	1214.00	---	1.00	10.96	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	15.00	164.47	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.80	85.53	913.00	0.09
Chrysene [(a)]	844.00	826	4.30	47.15	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.36	3.95	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.70	73.46	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.84	9.21	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	13.16	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.70	18.64	385.00	0.05
Perylene [(a)]	967.00	431.00	0.71	7.79	967.00	0.01
Phenanthrene [(a)]	596	34300	5.60	61.40	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	6.00	65.79	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.57**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-26			
		Field Sample ID	RREC13-26-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7	0.07	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.10	15.71	446.00	0.04
2-Methylnaphthalene	447.00	154800	1.30	18.57	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.48	6.86	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.20	2.86	452.00	0.01
Anthracene [(a)]	594.00	1300	1.30	18.57	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.40	48.57	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	2.60	37.14	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.60	37.14	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.80	25.71	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.50	21.43	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	28.57	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.50	35.71	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.64	9.14	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.50	78.57	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.60	22.86	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.40	91.43	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	2.30	32.86	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.40	20.00	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.80	54.29	---	---
C2-Naphthalenes [(a)]	510.00	---	6.80	97.14	510.00	0.19
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.70	95.71	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	0.96	13.71	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.90	41.43	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.70	38.57	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	9.80	140.00	581.00	0.24
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.90	127.14	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	0.56	8.00	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	7.60	108.57	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.80	82.86	913.00	0.09
Chrysene [(a)]	844.00	826	3.20	45.71	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	6.14	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.00	85.71	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	1.10	15.71	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	18.57	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.30	18.57	385.00	0.05
Perylene [(a)]	967.00	431.00	0.70	10.00	967.00	0.01
Phenanthrene [(a)]	596	34300	5.20	74.29	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	5.20	74.29	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.49**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-26			
		Field Sample ID	RREC13-26-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.98	0.0898	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.68	7.57	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.93	10.36	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.40	4.45	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.24	2.67	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	12.25	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.90	32.29	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.30	25.61	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	24.50	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.60	17.82	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	11.14	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	22.27	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.10	23.39	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.51	5.68	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.50	50.11	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.10	12.25	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.70	63.47	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	2.00	22.27	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.10	12.25	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	3.20	35.63	---	---
C2-Naphthalenes [(a)]	510.00	---	4.50	50.11	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.20	69.04	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	0.90	10.02	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.70	30.07	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.20	24.50	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	8.50	94.65	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.20	80.18	829.00	0.10
C4 Chrysenes [(a)]	1214.00	---	0.50	5.57	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	6.10	67.93	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.90	54.57	913.00	0.06
Chrysene [(a)]	844.00	826	3.00	33.41	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.25	2.78	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.80	64.59	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.92	10.24	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.88	9.80	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.20	13.36	385.00	0.03
Perylene [(a)]	967.00	431.00	0.72	8.02	967.00	0.01
Phenanthrene [(a)]	596	34300	4.60	51.22	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.40	49.00	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.01**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27			
		Field Sample ID	RREC13-27-SURF			
		Sample Depth	0-0.5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.76	0.0476	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.11	2.31	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.19	3.99	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.14	2.94	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.08	1.68	452.00	0.00
Anthracene [(a)]	594.00	1300	0.43	9.03	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.00	42.02	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.90	39.92	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	42.02	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.40	29.41	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	23.11	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	37.82	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	1.30	27.31	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.08	1.72	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.20	46.22	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.20	4.20	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.50	31.51	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.86	18.07	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.18	3.78	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.50	31.51	---	---
C2-Naphthalenes [(a)]	510.00	---	0.67	14.08	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.10	23.11	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.28	5.88	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.27	5.67	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.75	15.76	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.00	21.01	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.97	20.38	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.13	2.73	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.65	13.66	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.68	14.29	913.00	0.02
Chrysene [(a)]	844.00	826	2.30	48.32	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.32	6.72	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	3.80	79.83	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.22	4.62	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.93	19.54	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.19	3.99	385.00	0.01
Perylene [(a)]	967.00	431.00	0.47	9.87	967.00	0.01
Phenanthrene [(a)]	596	34300	2.30	48.32	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	2.80	58.82	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.83

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27				
		Field Sample ID	RREC13-27-0001				
		Sample Depth	0-1				
		Sample Date	11/4/13				
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final		Conc
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt
Total Organic Carbon**	--	--	10	0.1	---	---	9.52
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)							
1-Methylnaphthalene	446.00	165700	2.40	24.00	446.00	0.05	2.30
2-Methylnaphthalene	447.00	154800	3.00	30.00	447.00	0.07	2.90
Acenaphthene [(a)]	491.00	33400	0.43	4.30	491.00	0.01	0.49
Acenaphthylene [(a)]	452.00	24000	0.23	2.30	452.00	0.01	0.30
Anthracene [(a)]	594.00	1300	0.71	7.10	594.00	0.01	1.00
Benzo(a)anthracene [(a)]	841.00	4153	2.20	22.00	841.00	0.03	3.00
Benzo(a)pyrene [(a)]	965.00	3840	1.70	17.00	965.00	0.02	2.30
Benzo(b)fluoranthene [(a)]	979.00	2169	1.70	17.00	979.00	0.02	2.40
Benzo(e)pyrene [(a)]	967.00	4300	1.30	13.00	967.00	0.01	1.60
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.80	8.00	1095.00	0.01	1.10
Benzo(k)fluoranthene [(a)]	981.00	1220	1.60	16.00	981.00	0.02	1.90
C1 Chrysenes [(a)]	929.00	---	2.60	26.00	929.00	0.03	2.70
C1 Fluorenes [(a)]	611.00	---	1.10	11.00	611.00	0.02	1.10
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.30	53.00	770.00	0.07	5.80
C1-Naphthalenes [(a)]	444.00	---	3.70	37.00	444.00	0.08	3.60
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	110.00	670.00	0.16	11.00
C2 Chrysenes [(a)]	1008.00	---	3.60	36.00	1008.00	0.04	2.90
C2 Fluorenes [(a)]	686.00	---	3.60	36.00	686.00	0.05	3.20
C2-Fluoranthenes/Pyrenes	---	---	5.30	53.00	---	---	4.90
C2-Naphthalenes [(a)]	510.00	---	16.00	160.00	510.00	0.31	17.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	140.00	746.00	0.19	12.00
C3 Chrysenes [(a)]	1112.00	---	1.80	18.00	1112.00	0.02	1.70
C3 Fluorenes [(a)]	769.00	---	7.50	75.00	769.00	0.10	6.80
C3-Fluoranthenes/Pyrenes	949.00	---	4.10	41.00	949.00	0.04	4.40
C3-Naphthalenes [(a)]	581.00	---	23.00	230.00	581.00	0.40	26.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	140.00	829.00	0.17	14.00
C4 Chrysenes [(a)]	1214.00	---	0.93	9.30	1214.00	0.01	0.88
C4-Naphthalenes [(a)]	657.00	---	15.00	150.00	657.00	0.23	16.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	100.00	913.00	0.11	9.60
Chrysene [(a)]	844.00	826	2.50	25.00	844.00	0.03	2.90
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.20	2.00	1123.00	0.00	0.28
Fluoranthene [(a)]	707.00	23,870.00	4.20	42.00	707.00	0.06	6.10
Fluorene [(a)]	538.00	26,000.00	0.60	6.00	538.00	0.01	1.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.70	7.00	1115.00	0.01	0.97
Naphthalene [(a)]	385.00	61,700.00	0.67	6.70	385.00	0.02	1.40
Perylene [(a)]	967.00	431.00	0.67	6.70	967.00	0.01	0.80
Phenanthrene [(a)]	596	34300	4.30	43.00	596.00	0.07	5.50
Pyrene [(a)]	697.00	9,090.00	3.40	34.00	697.00	0.05	4.70
	---	**ESBTU FCVi**	---	---	---	**1.24**	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27		
		Field Sample ID	RREC13-27-0103		
		Sample Depth	1-3		
		Sample Date	11/4/13		
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Coc	Final	
	µg/g oc	µg/g oc	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.0952	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)					
1-Methylnaphthalene	446.00	165700	24.16	446.00	0.05
2-Methylnaphthalene	447.00	154800	30.46	447.00	0.07
Acenaphthene [(a)]	491.00	33400	5.15	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	3.15	452.00	0.01
Anthracene [(a)]	594.00	1300	10.50	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	31.51	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	24.16	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	25.21	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	16.81	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	11.55	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	19.96	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	28.36	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	11.55	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	60.92	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	37.82	444.00	0.09
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	115.55	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	30.46	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	33.61	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	51.47	---	---
C2-Naphthalenes [(a)]	510.00	---	178.57	510.00	0.35
C2-Phenanthrenes/Anthracenes [(a)]	746	---	126.05	746.00	0.17
C3 Chrysenes [(a)]	1112.00	---	17.86	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	71.43	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	46.22	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	273.11	581.00	0.47
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	147.06	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	9.24	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	168.07	657.00	0.26
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	100.84	913.00	0.11
Chrysene [(a)]	844.00	826	30.46	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	2.94	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	64.08	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	10.50	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	10.19	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	14.71	385.00	0.04
Perylene [(a)]	967.00	431.00	8.40	967.00	0.01
Phenanthrene [(a)]	596	34300	57.77	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	49.37	697.00	0.07
	---	**ESBTU FCVi**	---	---	**1.41**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27			
		Field Sample ID	RREC13-27-0305			
		Sample Depth	3-5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.33	0.0733	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	4.20	57.30	446.00	0.13
2-Methylnaphthalene	447.00	154800	5.80	79.13	447.00	0.18
Acenaphthene [(a)]	491.00	33400	1.30	17.74	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.32	4.37	452.00	0.01
Anthracene [(a)]	594.00	1300	2.10	28.65	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.20	57.30	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	2.70	36.83	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	36.83	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.10	28.65	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	16.37	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.70	36.83	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	5.10	69.58	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	1.90	25.92	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	10.00	136.43	770.00	0.18
C1-Naphthalenes [(a)]	444.00	---	6.70	91.41	444.00	0.21
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	19.00	259.21	670.00	0.39
C2 Chrysenes [(a)]	1008.00	---	6.30	85.95	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	4.90	66.85	686.00	0.10
C2-Fluoranthenes/Pyrenes	---	---	9.80	133.70	---	---
C2-Naphthalenes [(a)]	510.00	---	32.00	436.56	510.00	0.86
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	259.21	746.00	0.35
C3 Chrysenes [(a)]	1112.00	---	3.20	43.66	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	9.70	132.33	769.00	0.17
C3-Fluoranthenes/Pyrenes	949.00	---	7.10	96.86	949.00	0.10
C3-Naphthalenes [(a)]	581.00	---	42.00	572.99	581.00	0.99
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	300.14	829.00	0.36
C4 Chrysenes [(a)]	1214.00	---	1.60	21.83	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	21.00	286.49	657.00	0.44
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	15.00	204.64	913.00	0.22
Chrysene [(a)]	844.00	826	4.40	60.03	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	4.23	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	8.70	118.69	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	2.80	38.20	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	15.01	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.95	12.96	385.00	0.03
Perylene [(a)]	967.00	431.00	0.65	8.87	967.00	0.01
Phenanthrene [(a)]	596	34300	11.00	150.07	596.00	0.25
Pyrene [(a)]	697.00	9,090.00	7.60	103.68	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**2.90**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27			
		Field Sample ID	RREC13-27-0507			
		Sample Depth	5-7			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.49	0.0749	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.20	29.37	446.00	0.07
2-Methylnaphthalene	447.00	154800	2.90	38.72	447.00	0.09
Acenaphthene [(a)]	491.00	33400	1.20	16.02	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.29	3.87	452.00	0.01
Anthracene [(a)]	594.00	1300	2.40	32.04	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.60	61.42	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.00	40.05	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.80	37.38	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.20	29.37	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	17.36	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	37.38	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.00	53.40	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.20	16.02	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.30	110.81	770.00	0.14
C1-Naphthalenes [(a)]	444.00	---	3.40	45.39	444.00	0.10
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	13.00	173.56	670.00	0.26
C2 Chrysenes [(a)]	1008.00	---	4.00	53.40	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	3.30	44.06	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	6.40	85.45	---	---
C2-Naphthalenes [(a)]	510.00	---	16.00	213.62	510.00	0.42
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	186.92	746.00	0.25
C3 Chrysenes [(a)]	1112.00	---	1.80	24.03	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	6.60	88.12	769.00	0.11
C3-Fluoranthenes/Pyrenes	949.00	---	4.80	64.09	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	22.00	293.72	581.00	0.51
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	186.92	829.00	0.23
C4 Chrysenes [(a)]	1214.00	---	0.90	12.02	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	173.56	657.00	0.26
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.60	128.17	913.00	0.14
Chrysene [(a)]	844.00	826	4.70	62.75	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.35	4.67	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	11.00	146.86	707.00	0.21
Fluorene [(a)]	538.00	26,000.00	2.10	28.04	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	14.69	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.95	12.68	385.00	0.03
Perylene [(a)]	967.00	431.00	0.80	10.68	967.00	0.01
Phenanthrene [(a)]	596	34300	10.00	133.51	596.00	0.22
Pyrene [(a)]	697.00	9,090.00	7.20	96.13	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**2.31**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-27			
		Field Sample ID	RREC13-27-0710			
		Sample Depth	7-10			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.5	0.085	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.20	25.88	446.00	0.06
2-Methylnaphthalene	447.00	154800	3.20	37.65	447.00	0.08
Acenaphthene [(a)]	491.00	33400	1.50	17.65	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.41	4.82	452.00	0.01
Anthracene [(a)]	594.00	1300	2.70	31.76	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	5.20	61.18	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.60	42.35	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.90	45.88	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.40	28.24	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	16.47	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	35.29	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.10	48.24	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	1.50	17.65	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.20	96.47	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	3.70	43.53	444.00	0.10
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	176.47	670.00	0.26
C2 Chrysenes [(a)]	1008.00	---	3.60	42.35	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	3.60	42.35	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	5.70	67.06	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	164.71	510.00	0.32
C2-Phenanthrenes/Anthracenes [(a)]	746	---	16.00	188.24	746.00	0.25
C3 Chrysenes [(a)]	1112.00	---	1.80	21.18	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	7.20	84.71	769.00	0.11
C3-Fluoranthenes/Pyrenes	949.00	---	4.50	52.94	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	23.00	270.59	581.00	0.47
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	15.00	176.47	829.00	0.21
C4 Chrysenes [(a)]	1214.00	---	1.10	12.94	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	16.00	188.24	657.00	0.29
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	117.65	913.00	0.13
Chrysene [(a)]	844.00	826	5.00	58.82	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.42	4.94	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	12.00	141.18	707.00	0.20
Fluorene [(a)]	538.00	26,000.00	3.20	37.65	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.40	16.47	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	4.20	49.41	385.00	0.13
Perylene [(a)]	967.00	431.00	1.00	11.76	967.00	0.01
Phenanthrene [(a)]	596	34300	11.00	129.41	596.00	0.22
Pyrene [(a)]	697.00	9,090.00	7.20	84.71	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**2.37**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.74	0.0874	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.08	0.87	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.18	2.00	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.11	1.26	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.09	1.00	452.00	0.00
Anthracene [(a)]	594.00	1300	0.47	5.38	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.50	17.16	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.50	17.16	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.40	16.02	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.00	11.44	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.77	8.81	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.40	16.02	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.86	9.84	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.06	0.70	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.70	19.45	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.13	1.49	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.10	12.59	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.79	9.04	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.13	1.49	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.88	10.07	---	---
C2-Naphthalenes [(a)]	510.00	---	0.58	6.64	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.91	10.41	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.32	3.66	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.32	3.66	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.54	6.18	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.83	9.50	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.75	8.58	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.09	1.01	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.56	6.41	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.49	5.61	913.00	0.01
Chrysene [(a)]	844.00	826	1.40	16.02	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	2.52	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.30	26.32	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.17	1.95	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.69	7.89	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.18	2.00	385.00	0.01
Perylene [(a)]	967.00	431.00	0.38	4.35	967.00	0.00
Phenanthrene [(a)]	596	34300	1.10	12.59	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.70	19.45	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.32

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.1	0.101	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.20	21.78	446.00	0.05
2-Methylnaphthalene	447.00	154800	2.20	21.78	447.00	0.05
Acenaphthene [(a)]	491.00	33400	0.30	2.97	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.30	2.97	452.00	0.01
Anthracene [(a)]	594.00	1300	0.63	6.24	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	18.81	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.30	12.87	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.40	13.86	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	1.30	12.87	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	10.89	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	11.88	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	3.40	33.66	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	1.30	12.87	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.70	46.53	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	3.20	31.68	444.00	0.07
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	99.01	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	3.60	35.64	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	3.90	38.61	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	5.50	54.46	---	---
C2-Naphthalenes [(a)]	510.00	---	20.00	198.02	510.00	0.39
C2-Phenanthrenes/Anthracenes [(a)]	746	---	16.00	158.42	746.00	0.21
C3 Chrysenes [(a)]	1112.00	---	1.80	17.82	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	9.60	95.05	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	4.80	47.52	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	29.00	287.13	581.00	0.49
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	18.00	178.22	829.00	0.21
C4 Chrysenes [(a)]	1214.00	---	1.30	12.87	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	24.00	237.62	657.00	0.36
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	12.00	118.81	913.00	0.13
Chrysene [(a)]	844.00	826	2.50	24.75	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.30	2.97	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.00	29.70	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.98	9.70	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.88	8.71	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.30	2.97	385.00	0.01
Perylene [(a)]	967.00	431.00	0.30	2.97	967.00	0.00
Phenanthrene [(a)]	596	34300	3.20	31.68	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	4.00	39.60	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	**1.30**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.52	0.0452	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.70	15.49	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.70	15.49	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.70	15.49	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.70	15.49	452.00	0.03
Anthracene [(a)]	594.00	1300	2.20	48.67	594.00	0.08
Benzo(a)anthracene [(a)]	841.00	4153	5.00	110.62	841.00	0.13
Benzo(a)pyrene [(a)]	965.00	3840	3.90	86.28	965.00	0.09
Benzo(b)fluoranthene [(a)]	979.00	2169	3.50	77.43	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	2.80	61.95	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.50	55.31	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	3.20	70.80	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	4.90	108.41	929.00	0.12
C1 Fluorenes [(a)]	611.00	---	0.74	16.37	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.30	139.38	770.00	0.18
C1-Naphthalenes [(a)]	444.00	---	1.20	26.55	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.60	168.14	670.00	0.25
C2 Chrysenes [(a)]	1008.00	---	4.50	99.56	1008.00	0.10
C2 Fluorenes [(a)]	686.00	---	1.60	35.40	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	4.80	106.19	---	---
C2-Naphthalenes [(a)]	510.00	---	6.20	137.17	510.00	0.27
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	265.49	746.00	0.36
C3 Chrysenes [(a)]	1112.00	---	2.00	44.25	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	4.30	95.13	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	3.90	86.28	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	9.70	214.60	581.00	0.37
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	265.49	829.00	0.32
C4 Chrysenes [(a)]	1214.00	---	1.20	26.55	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	8.80	194.69	657.00	0.30
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.30	183.63	913.00	0.20
Chrysene [(a)]	844.00	826	5.00	110.62	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.70	15.49	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	8.00	176.99	707.00	0.25
Fluorene [(a)]	538.00	26,000.00	0.70	15.49	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.30	50.88	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	0.70	15.49	385.00	0.04
Perylene [(a)]	967.00	431.00	0.70	15.49	967.00	0.02
Phenanthrene [(a)]	596	34300	5.80	128.32	596.00	0.22
Pyrene [(a)]	697.00	9,090.00	8.50	188.05	697.00	0.27
	---	**ESBTU FCVi**	---	---	---	**3.16**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.59	0.0759	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	7.25	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.55	7.25	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.55	7.25	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.55	7.25	452.00	0.02
Anthracene [(a)]	594.00	1300	2.10	27.67	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.60	60.61	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.60	47.43	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	39.53	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.60	34.26	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	30.30	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.10	40.84	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.70	61.92	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.62	8.17	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.90	77.73	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.20	15.81	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.50	98.81	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	4.20	55.34	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	1.50	19.76	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.80	63.24	---	---
C2-Naphthalenes [(a)]	510.00	---	5.50	72.46	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	144.93	746.00	0.19
C3 Chrysenes [(a)]	1112.00	---	1.90	25.03	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.10	54.02	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	3.90	51.38	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	7.90	104.08	581.00	0.18
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	158.10	829.00	0.19
C4 Chrysenes [(a)]	1214.00	---	1.20	15.81	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.90	90.91	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.00	118.58	913.00	0.13
Chrysene [(a)]	844.00	826	4.80	63.24	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.55	7.25	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.90	90.91	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	1.70	22.40	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.10	27.67	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.50	19.76	385.00	0.05
Perylene [(a)]	967.00	431.00	0.55	7.25	967.00	0.01
Phenanthrene [(a)]	596	34300	5.70	75.10	596.00	0.13
Pyrene [(a)]	697.00	9,090.00	7.60	100.13	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.82**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.71	0.0671	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.43	6.41	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.43	6.41	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.43	6.41	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.43	6.41	452.00	0.01
Anthracene [(a)]	594.00	1300	1.90	28.32	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.40	65.57	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	3.40	50.67	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.10	46.20	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.60	38.75	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.20	32.79	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.90	43.22	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.80	71.54	929.00	0.08
C1 Fluorenes [(a)]	611.00	---	0.47	7.00	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	84.95	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.83	12.37	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.10	90.91	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	4.40	65.57	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	1.10	16.39	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.70	70.04	---	---
C2-Naphthalenes [(a)]	510.00	---	3.30	49.18	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.00	134.13	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	2.30	34.28	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	3.40	50.67	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	3.80	56.63	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	4.60	68.55	581.00	0.12
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	163.93	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	1.20	17.88	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	4.30	64.08	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.90	117.73	913.00	0.13
Chrysene [(a)]	844.00	826	4.50	67.06	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	6.41	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.50	96.87	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	1.50	22.35	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.10	31.30	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	1.60	23.85	385.00	0.06
Perylene [(a)]	967.00	431.00	0.89	13.26	967.00	0.01
Phenanthrene [(a)]	596	34300	4.70	70.04	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	7.00	104.32	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**1.86**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0709			
		Sample Depth	7-9			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.9	0.059	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.39	6.53	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.39	6.53	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.39	6.53	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.39	6.53	452.00	0.01
Anthracene [(a)]	594.00	1300	1.70	28.81	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	4.00	67.80	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	2.90	49.15	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	49.15	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.30	38.98	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	32.20	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.20	37.29	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	5.60	94.92	929.00	0.10
C1 Fluorenes [(a)]	611.00	---	0.55	9.32	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.90	100.00	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	0.95	16.10	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.60	128.81	670.00	0.19
C2 Chrysenes [(a)]	1008.00	---	5.30	89.83	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	1.30	22.03	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.90	100.00	---	---
C2-Naphthalenes [(a)]	510.00	---	4.00	67.80	510.00	0.13
C2-Phenanthrenes/Anthracenes [(a)]	746	---	12.00	203.39	746.00	0.27
C3 Chrysenes [(a)]	1112.00	---	3.00	50.85	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	4.00	67.80	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	4.90	83.05	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	5.50	93.22	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	237.29	829.00	0.29
C4 Chrysenes [(a)]	1214.00	---	1.60	27.12	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	5.10	86.44	657.00	0.13
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	169.49	913.00	0.19
Chrysene [(a)]	844.00	826	4.50	76.27	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.39	6.53	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.70	96.61	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	1.30	22.03	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.80	30.51	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	1.60	27.12	385.00	0.07
Perylene [(a)]	967.00	431.00	0.39	6.53	967.00	0.01
Phenanthrene [(a)]	596	34300	4.20	71.19	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	6.50	110.17	697.00	0.16
	---	**ESBTU FCVi**	---	---	---	**2.22**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-28			
		Field Sample ID	RREC13-28-0911			
		Sample Depth	9-11			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.11	0.0511	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.44	8.51	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.44	8.51	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.42	8.22	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.44	8.51	452.00	0.02
Anthracene [(a)]	594.00	1300	1.00	19.57	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.30	64.58	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	2.50	48.92	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.40	46.97	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.00	39.14	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.99	19.37	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	41.10	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.30	84.15	929.00	0.09
C1 Fluorenes [(a)]	611.00	---	0.38	7.44	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.70	131.12	770.00	0.17
C1-Naphthalenes [(a)]	444.00	---	0.75	14.68	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.30	142.86	670.00	0.21
C2 Chrysenes [(a)]	1008.00	---	4.80	93.93	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	1.00	19.57	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.60	109.59	---	---
C2-Naphthalenes [(a)]	510.00	---	2.90	56.75	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.10	178.08	746.00	0.24
C3 Chrysenes [(a)]	1112.00	---	2.50	48.92	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	3.20	62.62	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	5.00	97.85	949.00	0.10
C3-Naphthalenes [(a)]	581.00	---	5.00	97.85	581.00	0.17
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	234.83	829.00	0.28
C4 Chrysenes [(a)]	1214.00	---	1.50	29.35	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	3.80	74.36	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.50	166.34	913.00	0.18
Chrysene [(a)]	844.00	826	3.30	64.58	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.28	5.48	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.10	99.80	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.72	14.09	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.88	17.22	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.20	23.48	385.00	0.06
Perylene [(a)]	967.00	431.00	0.57	11.15	967.00	0.01
Phenanthrene [(a)]	596	34300	3.40	66.54	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	4.10	80.23	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**2.12**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.6	0.106	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.27	2.55	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.16	1.51	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.16	1.51	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.09	0.81	452.00	0.00
Anthracene [(a)]	594.00	1300	0.39	3.68	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.40	13.21	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.50	14.15	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	14.15	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.98	9.25	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.73	6.89	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	11.32	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.20	11.32	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.24	2.26	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	19.81	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.33	3.11	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.90	27.36	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.30	12.26	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.73	6.89	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.60	15.09	---	---
C2-Naphthalenes [(a)]	510.00	---	2.90	27.36	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.20	30.19	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.54	5.09	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	1.70	16.04	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	10.38	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	5.10	48.11	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.00	28.30	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.24	2.26	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.70	34.91	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.80	16.98	913.00	0.02
Chrysene [(a)]	844.00	826	1.40	13.21	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	2.08	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.50	23.58	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.18	1.70	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.67	6.32	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.16	1.51	385.00	0.00
Perylene [(a)]	967.00	431.00	0.42	3.96	967.00	0.00
Phenanthrene [(a)]	596	34300	1.40	13.21	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.70	16.04	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.39

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0001			
		Sample Depth	0-1			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.53	0.0753	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.36	4.78	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.35	4.65	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.12	1.59	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.08	1.00	452.00	0.00
Anthracene [(a)]	594.00	1300	0.11	1.46	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.50	6.64	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.38	5.05	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.37	4.91	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.38	5.05	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.34	4.52	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.31	4.12	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.80	10.62	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.26	3.45	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.10	14.61	770.00	0.02
C1-Naphthalenes [(a)]	444.00	---	0.52	6.91	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.50	33.20	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.99	13.15	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.80	10.62	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	1.30	17.26	---	---
C2-Naphthalenes [(a)]	510.00	---	3.90	51.79	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.50	46.48	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.50	6.64	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.80	23.90	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.20	15.94	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	6.40	84.99	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.10	54.45	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.27	3.59	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	4.80	63.75	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.70	35.86	913.00	0.04
Chrysene [(a)]	844.00	826	0.63	8.37	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.12	1.59	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.64	8.50	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.19	2.52	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.28	3.72	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.08	1.00	385.00	0.00
Perylene [(a)]	967.00	431.00	0.14	1.86	967.00	0.00
Phenanthrene [(a)]	596	34300	0.73	9.69	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.00	13.28	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.40

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0103			
		Sample Depth	1-3			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.09	0.0809	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.95	11.74	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.20	14.83	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.48	5.93	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.43	5.32	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	19.78	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.80	46.97	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	2.90	35.85	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	35.85	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.40	29.67	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	28.43	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.30	28.43	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	4.10	50.68	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.82	10.14	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	70.46	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	1.60	19.78	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.60	106.30	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	3.70	45.74	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.40	29.67	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.30	65.51	---	---
C2-Naphthalenes [(a)]	510.00	---	9.40	116.19	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	135.97	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	1.90	23.49	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.50	67.99	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	49.44	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	14.00	173.05	581.00	0.30
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	148.33	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	0.93	11.50	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	135.97	657.00	0.21
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.30	102.60	913.00	0.11
Chrysene [(a)]	844.00	826	4.00	49.44	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.80	9.89	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.50	67.99	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	1.60	19.78	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.10	25.96	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.10	13.60	385.00	0.04
Perylene [(a)]	967.00	431.00	0.85	10.51	967.00	0.01
Phenanthrene [(a)]	596	34300	4.90	60.57	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	6.30	77.87	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.63**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0305			
		Sample Depth	3-5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.58	0.0958	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	5.74	446.00	0.01
2-Methylnaphthalene	447.00	154800	1.20	12.53	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.64	6.68	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.55	5.74	452.00	0.01
Anthracene [(a)]	594.00	1300	2.10	21.92	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.60	48.02	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.70	38.62	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.70	38.62	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.80	29.23	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.50	26.10	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.90	30.27	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	4.40	45.93	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.94	9.81	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.30	65.76	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	1.50	15.66	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.80	102.30	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	3.90	40.71	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.10	21.92	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.40	56.37	---	---
C2-Naphthalenes [(a)]	510.00	---	7.40	77.24	510.00	0.15
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	135.70	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	1.80	18.79	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.40	56.37	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	41.75	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	13.00	135.70	581.00	0.23
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	135.70	829.00	0.16
C4 Chrysenes [(a)]	1214.00	---	1.10	11.48	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	114.82	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.90	92.90	913.00	0.10
Chrysene [(a)]	844.00	826	4.70	49.06	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.88	9.19	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.10	74.11	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	3.20	33.40	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.30	24.01	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.10	21.92	385.00	0.06
Perylene [(a)]	967.00	431.00	0.95	9.92	967.00	0.01
Phenanthrene [(a)]	596	34300	5.90	61.59	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	7.50	78.29	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.63**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0507			
		Sample Depth	5-7			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.39	0.0839	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.41	4.89	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.41	4.89	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.44	5.24	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.41	4.89	452.00	0.01
Anthracene [(a)]	594.00	1300	1.40	16.69	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.20	38.14	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.50	29.80	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.50	29.80	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.90	22.65	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	20.26	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	23.84	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	3.40	40.52	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.52	6.20	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.50	53.64	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.94	11.20	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.80	81.05	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	3.00	35.76	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.50	17.88	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.80	45.29	---	---
C2-Naphthalenes [(a)]	510.00	---	4.60	54.83	510.00	0.11
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.50	113.23	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.30	15.49	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.70	44.10	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.00	35.76	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	8.40	100.12	581.00	0.17
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.90	118.00	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	0.82	9.77	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	7.80	92.97	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.40	76.28	913.00	0.08
Chrysene [(a)]	844.00	826	3.40	40.52	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.60	7.15	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.60	54.83	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	1.50	17.88	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	17.88	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.20	14.30	385.00	0.04
Perylene [(a)]	967.00	431.00	0.63	7.51	967.00	0.01
Phenanthrene [(a)]	596	34300	3.40	40.52	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	5.10	60.79	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.27**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0709			
		Sample Depth	7-9			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.5	0.085	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.90	10.59	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.90	10.59	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.10	12.94	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.90	10.59	452.00	0.02
Anthracene [(a)]	594.00	1300	4.30	50.59	594.00	0.09
Benzo(a)anthracene [(a)]	841.00	4153	9.40	110.59	841.00	0.13
Benzo(a)pyrene [(a)]	965.00	3840	7.30	85.88	965.00	0.09
Benzo(b)fluoranthene [(a)]	979.00	2169	6.20	72.94	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	5.20	61.18	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.70	55.29	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	5.90	69.41	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	8.20	96.47	929.00	0.10
C1 Fluorenes [(a)]	611.00	---	0.96	11.29	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	141.18	770.00	0.18
C1-Naphthalenes [(a)]	444.00	---	1.80	21.18	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	13.00	152.94	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	6.10	71.76	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	2.00	23.53	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.70	90.59	---	---
C2-Naphthalenes [(a)]	510.00	---	8.50	100.00	510.00	0.20
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	164.71	746.00	0.22
C3 Chrysenes [(a)]	1112.00	---	3.10	36.47	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	4.50	52.94	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	4.80	56.47	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	13.00	152.94	581.00	0.26
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	15.00	176.47	829.00	0.21
C4 Chrysenes [(a)]	1214.00	---	1.40	16.47	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	9.20	108.24	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	117.65	913.00	0.13
Chrysene [(a)]	844.00	826	9.30	109.41	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.60	18.82	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	13.00	152.94	707.00	0.22
Fluorene [(a)]	538.00	26,000.00	2.80	32.94	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.30	50.59	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	2.00	23.53	385.00	0.06
Perylene [(a)]	967.00	431.00	1.80	21.18	967.00	0.02
Phenanthrene [(a)]	596	34300	11.00	129.41	596.00	0.22
Pyrene [(a)]	697.00	9,090.00	16.00	188.24	697.00	0.27
	---	**ESBTU FCVi**	---	---	---	**2.75**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-29			
		Field Sample ID	RREC13-29-0911			
		Sample Depth	9-11			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.38	0.0938	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.30	13.86	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.90	30.92	447.00	0.07
Acenaphthene [(a)]	491.00	33400	1.50	15.99	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	1.30	13.86	452.00	0.03
Anthracene [(a)]	594.00	1300	7.10	75.69	594.00	0.13
Benzo(a)anthracene [(a)]	841.00	4153	11.00	117.27	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	8.90	94.88	965.00	0.10
Benzo(b)fluoranthene [(a)]	979.00	2169	6.80	72.49	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	6.20	66.10	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	6.10	65.03	1095.00	0.06
Benzo(k)fluoranthene [(a)]	981.00	1220	6.80	72.49	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	10.00	106.61	929.00	0.11
C1 Fluorenes [(a)]	611.00	---	1.60	17.06	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	15.00	159.91	770.00	0.21
C1-Naphthalenes [(a)]	444.00	---	3.60	38.38	444.00	0.09
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	19.00	202.56	670.00	0.30
C2 Chrysenes [(a)]	1008.00	---	7.20	76.76	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	2.80	29.85	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	9.20	98.08	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	149.25	510.00	0.29
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	202.56	746.00	0.27
C3 Chrysenes [(a)]	1112.00	---	3.00	31.98	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	6.70	71.43	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	6.70	71.43	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	19.00	202.56	581.00	0.35
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	20.00	213.22	829.00	0.26
C4 Chrysenes [(a)]	1214.00	---	1.50	15.99	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	138.59	657.00	0.21
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	14.00	149.25	913.00	0.16
Chrysene [(a)]	844.00	826	11.00	117.27	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.70	18.12	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	17.00	181.24	707.00	0.26
Fluorene [(a)]	538.00	26,000.00	4.60	49.04	538.00	0.09
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.90	52.24	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	4.40	46.91	385.00	0.12
Perylene [(a)]	967.00	431.00	2.00	21.32	967.00	0.02
Phenanthrene [(a)]	596	34300	19.00	202.56	596.00	0.34
Pyrene [(a)]	697.00	9,090.00	22.00	234.54	697.00	0.34
	---	**ESBTU FCVi**	---	---	---	**3.44**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.06	0.0706	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.41	5.81	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.34	4.75	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.33	4.67	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.32	4.53	452.00	0.01
Anthracene [(a)]	594.00	1300	1.20	17.00	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	4.20	59.49	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	4.00	56.66	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.30	46.74	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.50	35.41	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.60	22.66	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.60	50.99	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	3.10	43.91	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.55	7.79	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.90	83.57	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.68	9.63	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.50	106.23	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	3.30	46.74	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	1.50	21.25	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	4.00	56.66	---	---
C2-Naphthalenes [(a)]	510.00	---	5.70	80.74	510.00	0.16
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.40	104.82	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	1.10	15.58	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.00	42.49	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	33.99	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	11.00	155.81	581.00	0.27
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.80	96.32	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.49	6.94	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	7.50	106.23	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.70	52.41	913.00	0.06
Chrysene [(a)]	844.00	826	3.90	55.24	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.48	6.80	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.30	89.24	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	0.61	8.64	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	21.25	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.78	11.05	385.00	0.03
Perylene [(a)]	967.00	431.00	1.00	14.16	967.00	0.01
Phenanthrene [(a)]	596	34300	3.60	50.99	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	5.30	75.07	697.00	0.11
	---	**ESBTU FCVi**	---	---	---	**1.48**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.1	0.111	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.40	12.61	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.10	18.92	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.46	4.10	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.46	4.10	452.00	0.01
Anthracene [(a)]	594.00	1300	0.46	4.10	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.90	26.13	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.30	20.72	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	19.82	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	2.10	18.92	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	16.22	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	16.22	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	5.50	49.55	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	2.00	18.02	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.20	55.86	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	2.50	22.52	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	153.15	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	6.80	61.26	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	5.60	50.45	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	8.00	72.07	---	---
C2-Naphthalenes [(a)]	510.00	---	22.00	198.20	510.00	0.39
C2-Phenanthrenes/Anthracenes [(a)]	746	---	23.00	207.21	746.00	0.28
C3 Chrysenes [(a)]	1112.00	---	3.50	31.53	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	11.00	99.10	769.00	0.13
C3-Fluoranthenes/Pyrenes	949.00	---	6.80	61.26	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	39.00	351.35	581.00	0.60
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	21.00	189.19	829.00	0.23
C4 Chrysenes [(a)]	1214.00	---	1.70	15.32	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	30.00	270.27	657.00	0.41
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	12.00	108.11	913.00	0.12
Chrysene [(a)]	844.00	826	3.60	32.43	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.46	4.10	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.70	33.33	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	1.20	10.81	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	13.51	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	2.90	26.13	385.00	0.07
Perylene [(a)]	967.00	431.00	0.46	4.10	967.00	0.00
Phenanthrene [(a)]	596	34300	5.10	45.95	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	5.30	47.75	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.64**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0001-FD			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.8	0.108	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.40	12.96	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.00	18.52	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.42	3.84	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.42	3.84	452.00	0.01
Anthracene [(a)]	594.00	1300	0.93	8.61	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.90	26.85	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.40	22.22	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	21.30	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	2.20	20.37	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.00	18.52	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	16.67	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	5.90	54.63	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.90	17.59	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.70	62.04	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	2.40	22.22	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	157.41	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	7.50	69.44	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	5.20	48.15	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	8.70	80.56	---	---
C2-Naphthalenes [(a)]	510.00	---	21.00	194.44	510.00	0.38
C2-Phenanthrenes/Anthracenes [(a)]	746	---	23.00	212.96	746.00	0.29
C3 Chrysenes [(a)]	1112.00	---	4.10	37.96	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	10.00	92.59	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	7.00	64.81	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	38.00	351.85	581.00	0.61
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	203.70	829.00	0.25
C4 Chrysenes [(a)]	1214.00	---	2.40	22.22	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	29.00	268.52	657.00	0.41
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	12.00	111.11	913.00	0.12
Chrysene [(a)]	844.00	826	3.60	33.33	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.42	3.84	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.90	36.11	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	1.20	11.11	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	14.81	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	2.50	23.15	385.00	0.06
Perylene [(a)]	967.00	431.00	0.42	3.84	967.00	0.00
Phenanthrene [(a)]	596	34300	5.10	47.22	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	5.70	52.78	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.70**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.4	0.104	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.40	23.08	446.00	0.05
2-Methylnaphthalene	447.00	154800	3.20	30.77	447.00	0.07
Acenaphthene [(a)]	491.00	33400	1.80	17.31	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.70	6.73	452.00	0.01
Anthracene [(a)]	594.00	1300	2.50	24.04	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.90	47.12	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	4.10	39.42	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.40	32.69	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	3.20	30.77	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.00	28.85	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	26.92	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	6.10	58.65	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	2.10	20.19	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.60	82.69	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	3.90	37.50	444.00	0.08
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	18.00	173.08	670.00	0.26
C2 Chrysenes [(a)]	1008.00	---	6.40	61.54	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	4.90	47.12	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	8.40	80.77	---	---
C2-Naphthalenes [(a)]	510.00	---	25.00	240.38	510.00	0.47
C2-Phenanthrenes/Anthracenes [(a)]	746	---	21.00	201.92	746.00	0.27
C3 Chrysenes [(a)]	1112.00	---	3.10	29.81	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	9.70	93.27	769.00	0.12
C3-Fluoranthenes/Pyrenes	949.00	---	6.30	60.58	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	38.00	365.38	581.00	0.63
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	18.00	173.08	829.00	0.21
C4 Chrysenes [(a)]	1214.00	---	1.70	16.35	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	27.00	259.62	657.00	0.40
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	11.00	105.77	913.00	0.12
Chrysene [(a)]	844.00	826	5.20	50.00	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.70	6.73	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.20	69.23	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	2.20	21.15	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	23.08	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.50	24.04	385.00	0.06
Perylene [(a)]	967.00	431.00	0.70	6.73	967.00	0.01
Phenanthrene [(a)]	596	34300	9.80	94.23	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	10.00	96.15	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**2.08**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0103-FD			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.82	0.0982	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.40	14.26	446.00	0.03
2-Methylnaphthalene	447.00	154800	2.00	20.37	447.00	0.05
Acenaphthene [(a)]	491.00	33400	1.10	11.20	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.55	5.60	452.00	0.01
Anthracene [(a)]	594.00	1300	1.30	13.24	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.30	33.60	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.90	29.53	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	23.42	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	2.10	21.38	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	12.22	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.40	24.44	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	3.10	31.57	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	1.00	10.18	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.40	65.17	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	2.30	23.42	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	112.02	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	3.20	32.59	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	2.50	25.46	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.00	50.92	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	122.20	510.00	0.24
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	112.02	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.70	17.31	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.50	45.82	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	3.60	36.66	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	22.00	224.03	581.00	0.39
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	9.40	95.72	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.76	7.74	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	132.38	657.00	0.20
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.80	59.06	913.00	0.06
Chrysene [(a)]	844.00	826	3.40	34.62	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.28	2.85	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.80	59.06	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	1.00	10.18	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.99	10.08	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.20	12.22	385.00	0.03
Perylene [(a)]	967.00	431.00	0.78	7.94	967.00	0.01
Phenanthrene [(a)]	596	34300	6.20	63.14	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	5.40	54.99	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.29**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.76	0.0876	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.40	15.98	446.00	0.04
2-Methylnaphthalene	447.00	154800	1.90	21.69	447.00	0.05
Acenaphthene [(a)]	491.00	33400	0.88	10.05	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.65	7.42	452.00	0.02
Anthracene [(a)]	594.00	1300	1.40	15.98	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	4.10	46.80	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.60	41.10	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	3.20	36.53	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.50	28.54	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	15.98	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	31.96	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	4.60	52.51	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.30	14.84	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.60	98.17	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	2.30	26.26	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	171.23	670.00	0.26
C2 Chrysenes [(a)]	1008.00	---	4.70	53.65	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	3.40	38.81	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	7.30	83.33	---	---
C2-Naphthalenes [(a)]	510.00	---	13.00	148.40	510.00	0.29
C2-Phenanthrenes/Anthracenes [(a)]	746	---	16.00	182.65	746.00	0.24
C3 Chrysenes [(a)]	1112.00	---	2.70	30.82	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	6.70	76.48	769.00	0.10
C3-Fluoranthenes/Pyrenes	949.00	---	5.70	65.07	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	28.00	319.63	581.00	0.55
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	15.00	171.23	829.00	0.21
C4 Chrysenes [(a)]	1214.00	---	1.10	12.56	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	18.00	205.48	657.00	0.31
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.60	109.59	913.00	0.12
Chrysene [(a)]	844.00	826	4.30	49.09	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.36	4.11	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.70	76.48	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.93	10.62	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	13.70	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	1.30	14.84	385.00	0.04
Perylene [(a)]	967.00	431.00	1.00	11.42	967.00	0.01
Phenanthrene [(a)]	596	34300	6.00	68.49	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	6.10	69.63	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.88**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0305-FD			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.88	0.0988	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.00	10.12	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.30	13.16	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.49	4.91	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.49	4.91	452.00	0.01
Anthracene [(a)]	594.00	1300	1.70	17.21	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.60	36.44	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	3.10	31.38	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.80	28.34	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.30	23.28	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.10	21.26	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	20.24	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	4.40	44.53	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	1.10	11.13	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.80	58.70	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.70	17.21	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	111.34	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	3.60	36.44	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	3.10	31.38	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	5.40	54.66	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	121.46	510.00	0.24
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	141.70	746.00	0.19
C3 Chrysenes [(a)]	1112.00	---	1.70	17.21	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	6.50	65.79	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	3.80	38.46	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	22.00	222.67	581.00	0.38
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	111.34	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.84	8.50	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	17.00	172.06	657.00	0.26
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.60	76.92	913.00	0.08
Chrysene [(a)]	844.00	826	3.70	37.45	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.49	4.91	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.10	51.62	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	1.30	13.16	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.80	18.22	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.98	9.92	385.00	0.03
Perylene [(a)]	967.00	431.00	0.49	4.91	967.00	0.01
Phenanthrene [(a)]	596	34300	5.50	55.67	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	6.50	65.79	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.40**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.32	0.0732	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.75	10.25	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.75	10.25	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.70	23.22	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	0.75	10.25	452.00	0.02
Anthracene [(a)]	594.00	1300	3.60	49.18	594.00	0.08
Benzo(a)anthracene [(a)]	841.00	4153	5.60	76.50	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	4.40	60.11	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.90	53.28	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.00	40.98	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.90	39.62	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	3.30	45.08	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	4.60	62.84	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.63	8.61	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.90	94.26	770.00	0.12
C1-Naphthalenes [(a)]	444.00	---	1.60	21.86	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.20	98.36	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	3.00	40.98	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.20	16.39	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.20	57.38	---	---
C2-Naphthalenes [(a)]	510.00	---	4.70	64.21	510.00	0.13
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.10	110.66	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.30	17.76	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	2.90	39.62	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	2.90	39.62	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	6.40	87.43	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.20	112.02	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	0.77	10.52	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.10	69.67	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.60	76.50	913.00	0.08
Chrysene [(a)]	844.00	826	5.30	72.40	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.75	10.25	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	150.27	707.00	0.21
Fluorene [(a)]	538.00	26,000.00	2.90	39.62	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	35.52	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	2.80	38.25	385.00	0.10
Perylene [(a)]	967.00	431.00	0.75	10.25	967.00	0.01
Phenanthrene [(a)]	596	34300	9.90	135.25	596.00	0.23
Pyrene [(a)]	697.00	9,090.00	11.00	150.27	697.00	0.22
	---	**ESBTU FCVi**	---	---	---	**2.18**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-30			
		Field Sample ID	RREC13-30-0507-FD			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.38	0.0738	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.95	12.87	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.95	12.87	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.95	12.87	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.95	12.87	452.00	0.03
Anthracene [(a)]	594.00	1300	3.90	52.85	594.00	0.09
Benzo(a)anthracene [(a)]	841.00	4153	6.40	86.72	841.00	0.10
Benzo(a)pyrene [(a)]	965.00	3840	5.30	71.82	965.00	0.07
Benzo(b)fluoranthene [(a)]	979.00	2169	4.80	65.04	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	3.60	48.78	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.70	50.14	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	4.00	54.20	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	5.30	71.82	929.00	0.08
C1 Fluorenes [(a)]	611.00	---	0.69	9.35	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.60	102.98	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	1.60	21.68	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.80	105.69	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	3.90	52.85	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	1.20	16.26	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.60	62.33	---	---
C2-Naphthalenes [(a)]	510.00	---	5.10	69.11	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.90	120.60	746.00	0.16
C3 Chrysenes [(a)]	1112.00	---	1.50	20.33	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.00	40.65	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.20	43.36	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	6.80	92.14	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.90	120.60	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	0.78	10.57	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.60	75.88	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.60	89.43	913.00	0.10
Chrysene [(a)]	844.00	826	6.30	85.37	844.00	0.10
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.95	12.87	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	162.60	707.00	0.23
Fluorene [(a)]	538.00	26,000.00	3.20	43.36	538.00	0.08
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.20	43.36	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	3.00	40.65	385.00	0.11
Perylene [(a)]	967.00	431.00	0.95	12.87	967.00	0.01
Phenanthrene [(a)]	596	34300	11.00	149.05	596.00	0.25
Pyrene [(a)]	697.00	9,090.00	11.00	149.05	697.00	0.21
	---	**ESBTU FCVi**	---	---	---	**2.37**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-31			
		Field Sample ID	RREC13-31-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.19	0.0619	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.31	4.93	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.16	2.58	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.21	3.39	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.31	4.93	452.00	0.01
Anthracene [(a)]	594.00	1300	1.00	16.16	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	2.70	43.62	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.40	38.77	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	32.31	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.70	27.46	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	27.46	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	32.31	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.90	30.69	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.12	1.94	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.80	45.23	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.20	3.23	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.10	33.93	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.94	15.19	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.16	2.58	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.40	22.62	---	---
C2-Naphthalenes [(a)]	510.00	---	0.66	10.66	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.10	17.77	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.40	6.46	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.16	2.58	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.61	9.85	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.31	4.93	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.77	12.44	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.31	4.93	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.30	4.85	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.42	6.79	913.00	0.01
Chrysene [(a)]	844.00	826	2.40	38.77	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.61	9.85	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.30	69.47	707.00	0.10
Fluorene [(a)]	538.00	26,000.00	0.31	4.93	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	24.23	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.31	4.93	385.00	0.01
Perylene [(a)]	967.00	431.00	0.64	10.34	967.00	0.01
Phenanthrene [(a)]	596	34300	2.60	42.00	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	4.30	69.47	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	0.80

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-31			
		Field Sample ID	RREC13-31-0001			
		Sample Depth	0-1			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.93	0.0393	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.12	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.12	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.07	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.12	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.28	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.04	0.94	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.03	0.84	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.03	0.87	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.03	0.64	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.02	0.61	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.03	0.64	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.04	0.99	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.10	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.05	1.25	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.16	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.05	1.15	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.04	1.04	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.16	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.03	0.87	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	0.56	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.04	1.09	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.33	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.31	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.59	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	0.81	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.05	1.20	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.15	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.87	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.04	0.92	913.00	0.00
Chrysene [(a)]	844.00	826	0.04	0.94	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.18	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.05	1.20	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.12	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.02	0.48	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.02	0.38	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.84	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	0.64	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.05	1.30	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.02

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-31			
		Field Sample ID	RREC13-31-0103			
		Sample Depth	1-3			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.21	0.0321	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.07	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.03	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.07	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.07	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.15	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.07	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.19	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.44	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.07	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.34	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.10	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.56	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.62	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.12	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.44	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.37	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.72	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.30	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.22	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.44	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	0.78	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.90	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.16	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.90	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.72	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.22	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.07	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.07	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.07	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.90	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.07	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.00	0.15	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-31			
		Field Sample ID	RREC13-31-0305			
		Sample Depth	3-5			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.19	0.0419	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.06	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.05	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.06	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.11	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.06	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.16	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.15	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.17	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.06	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.41	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.06	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.33	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.09	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.48	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.55	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.09	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.36	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.31	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.62	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.31	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.17	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.38	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.04	0.86	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	0.57	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.14	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.79	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.55	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.24	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.14	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.06	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.06	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.67	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.12	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.20	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-31			
		Field Sample ID	RREC13-31-0507			
		Sample Depth	5-7			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.32	0.0332	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.07	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.07	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.07	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.07	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.07	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.17	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.42	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.07	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.33	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.10	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.54	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.54	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.11	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.36	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.39	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.69	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.33	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.20	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.42	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	0.84	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.96	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.12	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.99	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.72	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.20	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.07	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.07	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.07	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.81	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.14	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.15	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-32			
		Field Sample ID	RREC13-32-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.95	0.0595	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	9.24	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.30	5.04	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.37	6.22	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.55	9.24	452.00	0.02
Anthracene [(a)]	594.00	1300	1.40	23.53	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	4.00	67.23	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	3.80	63.87	965.00	0.07
Benzo(b)fluoranthene [(a)]	979.00	2169	3.60	60.50	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	2.60	43.70	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	31.93	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.90	48.74	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.90	48.74	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.15	2.52	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.80	63.87	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.35	5.88	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.30	38.66	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	1.80	30.25	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.22	3.70	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.00	33.61	---	---
C2-Naphthalenes [(a)]	510.00	---	0.55	9.24	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.90	31.93	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.50	8.40	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.43	7.23	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.93	15.63	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.55	9.24	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.30	21.85	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.55	9.24	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	0.61	10.25	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.63	10.59	913.00	0.01
Chrysene [(a)]	844.00	826	3.70	62.18	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.61	10.25	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.70	95.80	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.55	9.24	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.70	28.57	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.55	9.24	385.00	0.02
Perylene [(a)]	967.00	431.00	0.96	16.13	967.00	0.02
Phenanthrene [(a)]	596	34300	3.10	52.10	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	6.10	102.52	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**1.18**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-32			
		Field Sample ID	RREC13-32-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.14	0.0914	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.52	5.69	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.34	3.72	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.84	9.19	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.95	10.39	452.00	0.02
Anthracene [(a)]	594.00	1300	2.90	31.73	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	5.70	62.36	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	4.70	51.42	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.60	50.33	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.40	37.20	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.90	31.73	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.70	40.48	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	4.40	48.14	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.65	7.11	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	7.00	76.59	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	0.62	6.78	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.40	91.90	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	3.00	32.82	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.50	16.41	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	4.10	44.86	---	---
C2-Naphthalenes [(a)]	510.00	---	3.70	40.48	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.40	80.96	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	1.30	14.22	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.90	31.73	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.50	27.35	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	8.60	94.09	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.90	64.55	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.95	10.39	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.00	65.65	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.60	39.39	913.00	0.04
Chrysene [(a)]	844.00	826	5.50	60.18	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.94	10.28	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	9.60	105.03	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	1.40	15.32	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.50	27.35	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.95	10.39	385.00	0.03
Perylene [(a)]	967.00	431.00	1.30	14.22	967.00	0.01
Phenanthrene [(a)]	596	34300	6.60	72.21	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	9.70	106.13	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**1.52**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-32			
		Field Sample ID	RREC13-32-0103			
		Sample Depth	1-3			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.97	0.0297	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.14	4.71	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.04	1.41	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.35	11.78	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.17	5.56	452.00	0.01
Anthracene [(a)]	594.00	1300	0.65	21.89	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	1.10	37.04	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	0.82	27.61	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	0.51	17.17	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.54	18.18	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.40	13.47	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.57	19.19	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.10	37.04	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.18	6.06	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.90	63.97	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.13	4.38	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.30	77.44	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	0.67	22.56	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.23	7.74	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.10	37.04	---	---
C2-Naphthalenes [(a)]	510.00	---	1.00	33.67	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.40	47.14	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.24	8.08	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.29	9.76	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.49	16.50	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.20	40.40	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.83	27.95	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.08	2.56	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.51	17.17	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.42	14.14	913.00	0.02
Chrysene [(a)]	844.00	826	0.95	31.99	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.13	4.38	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.30	43.77	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.33	11.11	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.31	10.44	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	5.56	385.00	0.01
Perylene [(a)]	967.00	431.00	0.23	7.74	967.00	0.01
Phenanthrene [(a)]	596	34300	1.40	47.14	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	1.90	63.97	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	0.89

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-32			
		Field Sample ID	RREC13-32-0305			
		Sample Depth	3-5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.36	0.0236	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.03	1.40	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.02	1.02	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.06	2.42	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.06	2.33	452.00	0.01
Anthracene [(a)]	594.00	1300	0.20	8.47	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.38	16.10	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.36	15.25	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	0.27	11.44	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.23	9.75	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.23	9.75	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.26	11.02	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.34	14.41	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.03	1.44	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.50	21.19	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.04	1.86	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.49	20.76	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.19	8.05	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.06	2.42	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.29	12.29	---	---
C2-Naphthalenes [(a)]	510.00	---	0.21	8.90	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.35	14.83	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.06	2.54	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.10	4.24	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.13	5.51	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.33	13.98	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.25	10.59	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.01	0.51	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.20	8.47	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.16	6.78	913.00	0.01
Chrysene [(a)]	844.00	826	0.37	15.68	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.07	3.14	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.55	23.31	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.10	4.24	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.20	8.47	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.06	2.33	385.00	0.01
Perylene [(a)]	967.00	431.00	0.32	13.56	967.00	0.01
Phenanthrene [(a)]	596	34300	0.42	17.80	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	0.56	23.73	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.36

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.83	0.0783	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	1.09	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.08	1.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.05	0.63	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.09	1.09	452.00	0.00
Anthracene [(a)]	594.00	1300	0.09	1.09	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.53	6.77	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.62	7.92	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.80	10.22	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.53	6.77	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.47	6.00	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.53	6.77	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.64	8.17	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.04	0.49	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.67	8.56	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.09	1.17	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.47	6.00	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.78	9.96	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.11	1.40	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.68	8.68	---	---
C2-Naphthalenes [(a)]	510.00	---	0.35	4.47	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.79	10.09	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.42	5.36	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.38	4.85	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.51	6.51	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.44	5.62	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.00	12.77	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.19	2.43	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.46	5.87	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.86	10.98	913.00	0.01
Chrysene [(a)]	844.00	826	0.65	8.30	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.15	1.92	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.75	9.58	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.09	1.09	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.41	5.24	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.09	1.09	385.00	0.00
Perylene [(a)]	967.00	431.00	0.19	2.43	967.00	0.00
Phenanthrene [(a)]	596	34300	0.40	5.11	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.92	11.75	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.18

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.55	0.0355	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.15	4.23	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.18	5.07	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.20	5.63	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.08	2.11	452.00	0.00
Anthracene [(a)]	594.00	1300	0.24	6.76	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.50	42.25	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.60	45.07	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	1.70	47.89	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	1.20	33.80	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.71	20.00	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	36.62	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.00	56.34	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.39	10.99	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.60	101.41	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	0.20	5.63	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.50	126.76	670.00	0.19
C2 Chrysenes [(a)]	1008.00	---	3.00	84.51	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	1.70	47.89	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	3.50	98.59	---	---
C2-Naphthalenes [(a)]	510.00	---	1.50	42.25	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.80	191.55	746.00	0.26
C3 Chrysenes [(a)]	1112.00	---	1.40	39.44	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	3.80	107.04	769.00	0.14
C3-Fluoranthenes/Pyrenes	949.00	---	2.70	76.06	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	6.90	194.37	581.00	0.33
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	338.03	829.00	0.41
C4 Chrysenes [(a)]	1214.00	---	0.66	18.59	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	7.30	205.63	657.00	0.31
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.50	211.27	913.00	0.23
Chrysene [(a)]	844.00	826	1.80	50.70	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.18	5.07	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.10	59.15	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.17	4.79	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.65	18.31	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.18	5.07	385.00	0.01
Perylene [(a)]	967.00	431.00	0.52	14.65	967.00	0.02
Phenanthrene [(a)]	596	34300	1.30	36.62	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	2.50	70.42	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**2.07**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.19	0.0319	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.94	29.47	446.00	0.07
2-Methylnaphthalene	447.00	154800	0.43	13.48	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.47	14.73	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.33	10.34	452.00	0.02
Anthracene [(a)]	594.00	1300	1.30	40.75	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	3.80	119.12	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	2.70	84.64	965.00	0.09
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	94.04	979.00	0.10
Benzo(e)pyrene [(a)]	967.00	4300	2.10	65.83	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.97	30.41	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.50	78.37	981.00	0.08
C1 Chrysenes [(a)]	929.00	---	4.80	150.47	929.00	0.16
C1 Fluorenes [(a)]	611.00	---	1.30	40.75	611.00	0.07
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.20	288.40	770.00	0.37
C1-Naphthalenes [(a)]	444.00	---	0.88	27.59	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	532.92	670.00	0.80
C2 Chrysenes [(a)]	1008.00	---	8.10	253.92	1008.00	0.25
C2 Fluorenes [(a)]	686.00	---	4.60	144.20	686.00	0.21
C2-Fluoranthenes/Pyrenes	---	---	8.20	257.05	---	---
C2-Naphthalenes [(a)]	510.00	---	8.20	257.05	510.00	0.50
C2-Phenanthrenes/Anthracenes [(a)]	746	---	21.00	658.31	746.00	0.88
C3 Chrysenes [(a)]	1112.00	---	3.40	106.58	1112.00	0.10
C3 Fluorenes [(a)]	769.00	---	10.00	313.48	769.00	0.41
C3-Fluoranthenes/Pyrenes	949.00	---	6.70	210.03	949.00	0.22
C3-Naphthalenes [(a)]	581.00	---	24.00	752.35	581.00	1.29
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	689.66	829.00	0.83
C4 Chrysenes [(a)]	1214.00	---	1.90	59.56	1214.00	0.05
C4-Naphthalenes [(a)]	657.00	---	20.00	626.96	657.00	0.95
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	16.00	501.57	913.00	0.55
Chrysene [(a)]	844.00	826	3.90	122.26	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.28	8.78	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.80	213.17	707.00	0.30
Fluorene [(a)]	538.00	26,000.00	0.90	28.21	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.95	29.78	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.43	13.48	385.00	0.04
Perylene [(a)]	967.00	431.00	0.98	30.72	967.00	0.03
Phenanthrene [(a)]	596	34300	4.80	150.47	596.00	0.25
Pyrene [(a)]	697.00	9,090.00	5.60	175.55	697.00	0.25
	---	**ESBTU FCVi**	---	---	---	**5.85**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.1	0.041	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.20	53.66	446.00	0.12
2-Methylnaphthalene	447.00	154800	2.70	65.85	447.00	0.15
Acenaphthene [(a)]	491.00	33400	1.40	34.15	491.00	0.07
Acenaphthylene [(a)]	452.00	24000	0.54	13.17	452.00	0.03
Anthracene [(a)]	594.00	1300	4.50	109.76	594.00	0.18
Benzo(a)anthracene [(a)]	841.00	4153	6.80	165.85	841.00	0.20
Benzo(a)pyrene [(a)]	965.00	3840	4.70	114.63	965.00	0.12
Benzo(b)fluoranthene [(a)]	979.00	2169	3.50	85.37	979.00	0.09
Benzo(e)pyrene [(a)]	967.00	4300	3.10	75.61	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	43.90	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	3.90	95.12	981.00	0.10
C1 Chrysenes [(a)]	929.00	---	7.40	180.49	929.00	0.19
C1 Fluorenes [(a)]	611.00	---	2.00	48.78	611.00	0.08
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	16.00	390.24	770.00	0.51
C1-Naphthalenes [(a)]	444.00	---	3.50	85.37	444.00	0.19
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	25.00	609.76	670.00	0.91
C2 Chrysenes [(a)]	1008.00	---	7.10	173.17	1008.00	0.17
C2 Fluorenes [(a)]	686.00	---	5.00	121.95	686.00	0.18
C2-Fluoranthenes/Pyrenes	---	---	11.00	268.29	---	---
C2-Naphthalenes [(a)]	510.00	---	17.00	414.63	510.00	0.81
C2-Phenanthrenes/Anthracenes [(a)]	746	---	23.00	560.98	746.00	0.75
C3 Chrysenes [(a)]	1112.00	---	3.70	90.24	1112.00	0.08
C3 Fluorenes [(a)]	769.00	---	11.00	268.29	769.00	0.35
C3-Fluoranthenes/Pyrenes	949.00	---	7.30	178.05	949.00	0.19
C3-Naphthalenes [(a)]	581.00	---	32.00	780.49	581.00	1.34
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	24.00	585.37	829.00	0.71
C4 Chrysenes [(a)]	1214.00	---	2.00	48.78	1214.00	0.04
C4-Naphthalenes [(a)]	657.00	---	22.00	536.59	657.00	0.82
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	16.00	390.24	913.00	0.43
Chrysene [(a)]	844.00	826	6.10	148.78	844.00	0.18
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	10.49	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	10.00	243.90	707.00	0.34
Fluorene [(a)]	538.00	26,000.00	2.20	53.66	538.00	0.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	36.59	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	1.05	25.61	385.00	0.07
Perylene [(a)]	967.00	431.00	0.88	21.46	967.00	0.02
Phenanthrene [(a)]	596	34300	13.00	317.07	596.00	0.53
Pyrene [(a)]	697.00	9,090.00	11.00	268.29	697.00	0.38
	---	**ESBTU FCVi**	---	---	---	**6.48**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.73	0.0773	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.30	29.75	446.00	0.07
2-Methylnaphthalene	447.00	154800	3.30	42.69	447.00	0.10
Acenaphthene [(a)]	491.00	33400	1.80	23.29	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	0.61	7.89	452.00	0.02
Anthracene [(a)]	594.00	1300	6.90	89.26	594.00	0.15
Benzo(a)anthracene [(a)]	841.00	4153	13.00	168.18	841.00	0.20
Benzo(a)pyrene [(a)]	965.00	3840	10.00	129.37	965.00	0.13
Benzo(b)fluoranthene [(a)]	979.00	2169	8.70	112.55	979.00	0.11
Benzo(e)pyrene [(a)]	967.00	4300	6.10	78.91	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.60	46.57	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	8.40	108.67	981.00	0.11
C1 Chrysenes [(a)]	929.00	---	9.60	124.19	929.00	0.13
C1 Fluorenes [(a)]	611.00	---	1.20	15.52	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	21.00	271.67	770.00	0.35
C1-Naphthalenes [(a)]	444.00	---	3.80	49.16	444.00	0.11
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	21.00	271.67	670.00	0.41
C2 Chrysenes [(a)]	1008.00	---	8.70	112.55	1008.00	0.11
C2 Fluorenes [(a)]	686.00	---	1.50	19.40	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	9.60	124.19	---	---
C2-Naphthalenes [(a)]	510.00	---	9.00	116.43	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	142.30	746.00	0.19
C3 Chrysenes [(a)]	1112.00	---	2.50	32.34	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	1.90	24.58	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	4.80	62.10	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	8.60	111.25	581.00	0.19
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.60	98.32	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	1.10	14.23	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	3.80	49.16	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.20	67.27	913.00	0.07
Chrysene [(a)]	844.00	826	12.00	155.24	844.00	0.18
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.10	14.23	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	20.00	258.73	707.00	0.37
Fluorene [(a)]	538.00	26,000.00	3.30	42.69	538.00	0.08
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.20	41.40	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	1.55	20.05	385.00	0.05
Perylene [(a)]	967.00	431.00	1.90	24.58	967.00	0.03
Phenanthrene [(a)]	596	34300	19.00	245.80	596.00	0.41
Pyrene [(a)]	697.00	9,090.00	19.00	245.80	697.00	0.35
	---	**ESBTU FCVi**	---	---	---	**3.65**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0709			
		Sample Depth	7-9			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.5	0.065	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.00	15.38	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.30	20.00	447.00	0.04
Acenaphthene [(a)]	491.00	33400	1.20	18.46	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	0.20	3.08	452.00	0.01
Anthracene [(a)]	594.00	1300	2.40	36.92	594.00	0.06
Benzo(a)anthracene [(a)]	841.00	4153	4.60	70.77	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	3.50	53.85	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	2.10	32.31	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.20	33.85	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.50	23.08	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.20	49.23	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	4.10	63.08	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.60	9.23	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.50	146.15	770.00	0.19
C1-Naphthalenes [(a)]	444.00	---	1.60	24.62	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.10	140.00	670.00	0.21
C2 Chrysenes [(a)]	1008.00	---	3.70	56.92	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	0.86	13.23	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	5.40	83.08	---	---
C2-Naphthalenes [(a)]	510.00	---	5.00	76.92	510.00	0.15
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.00	76.92	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.20	18.46	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	0.93	14.31	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.50	38.46	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	4.90	75.38	581.00	0.13
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.10	63.08	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.36	5.54	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.80	27.69	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.10	32.31	913.00	0.04
Chrysene [(a)]	844.00	826	4.10	63.08	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	6.62	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.40	98.46	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	1.50	23.08	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	20.00	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.47	7.23	385.00	0.02
Perylene [(a)]	967.00	431.00	0.74	11.38	967.00	0.01
Phenanthrene [(a)]	596	34300	6.70	103.08	596.00	0.17
Pyrene [(a)]	697.00	9,090.00	6.80	104.62	697.00	0.15
	---	**ESBTU FCVi**	---	---	---	**1.69**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-33			
		Field Sample ID	RREC13-33-0911			
		Sample Depth	9-11			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.63	0.0963	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.02	0.25	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.05	0.48	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.04	0.38	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.02	0.19	452.00	0.00
Anthracene [(a)]	594.00	1300	0.10	1.04	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.35	3.63	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.31	3.22	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.30	3.12	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.24	2.49	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.13	1.35	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.30	3.12	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.28	2.91	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.03	0.34	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.55	5.71	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.04	0.40	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.45	4.67	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.26	2.70	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.05	0.54	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.29	3.01	---	---
C2-Naphthalenes [(a)]	510.00	---	0.16	1.66	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.30	3.12	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.08	0.84	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.09	0.98	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.14	1.45	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.27	2.80	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.25	2.60	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.03	0.32	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.17	1.77	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.17	1.77	913.00	0.00
Chrysene [(a)]	844.00	826	0.34	3.53	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.03	0.35	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.55	5.71	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.06	0.64	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.11	1.14	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.05	0.48	385.00	0.00
Perylene [(a)]	967.00	431.00	0.12	1.25	967.00	0.00
Phenanthrene [(a)]	596	34300	0.38	3.95	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.51	5.30	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.08

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-SURF			
		Sample Depth	0-0.5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.74	0.0574	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.67	11.67	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.70	12.20	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.39	6.79	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.30	5.23	452.00	0.01
Anthracene [(a)]	594.00	1300	0.60	10.45	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.20	38.33	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.80	31.36	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	34.84	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.70	29.62	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.80	31.36	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	20.91	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	3.10	54.01	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.30	22.65	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.40	76.66	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.00	17.42	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	14.00	243.90	670.00	0.36
C2 Chrysenes [(a)]	1008.00	---	3.00	52.26	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	4.40	76.66	686.00	0.11
C2-Fluoranthenes/Pyrenes	---	---	4.90	85.37	---	---
C2-Naphthalenes [(a)]	510.00	---	11.00	191.64	510.00	0.38
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	331.01	746.00	0.44
C3 Chrysenes [(a)]	1112.00	---	1.70	29.62	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	9.60	167.25	769.00	0.22
C3-Fluoranthenes/Pyrenes	949.00	---	4.00	69.69	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	24.00	418.12	581.00	0.72
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	17.00	296.17	829.00	0.36
C4 Chrysenes [(a)]	1214.00	---	1.10	19.16	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	24.00	418.12	657.00	0.64
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	174.22	913.00	0.19
Chrysene [(a)]	844.00	826	2.70	47.04	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.60	10.45	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	3.70	64.46	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.50	8.71	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	27.87	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.30	5.23	385.00	0.01
Perylene [(a)]	967.00	431.00	0.58	10.10	967.00	0.01
Phenanthrene [(a)]	596	34300	3.00	52.26	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.70	81.88	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**2.49**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0001			
		Sample Depth	0-1			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	11.4	0.114	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.30	11.40	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.80	15.79	447.00	0.04
Acenaphthene [(a)]	491.00	33400	1.00	8.77	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.55	4.82	452.00	0.01
Anthracene [(a)]	594.00	1300	1.30	11.40	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.60	31.58	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.80	24.56	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	25.44	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.50	21.93	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.60	22.81	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.20	19.30	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	4.00	35.09	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	1.60	14.04	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.60	49.12	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	2.20	19.30	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	131.58	670.00	0.20
C2 Chrysenes [(a)]	1008.00	---	4.40	38.60	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	5.40	47.37	686.00	0.07
C2-Fluoranthenes/Pyrenes	---	---	6.50	57.02	---	---
C2-Naphthalenes [(a)]	510.00	---	19.00	166.67	510.00	0.33
C2-Phenanthrenes/Anthracenes [(a)]	746	---	22.00	192.98	746.00	0.26
C3 Chrysenes [(a)]	1112.00	---	2.40	21.05	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	12.00	105.26	769.00	0.14
C3-Fluoranthenes/Pyrenes	949.00	---	5.20	45.61	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	35.00	307.02	581.00	0.53
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	21.00	184.21	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	1.40	12.28	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	29.00	254.39	657.00	0.39
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	15.00	131.58	913.00	0.14
Chrysene [(a)]	844.00	826	4.20	36.84	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.87	7.63	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.30	55.26	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	1.10	9.65	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.20	19.30	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.55	4.82	385.00	0.01
Perylene [(a)]	967.00	431.00	0.91	7.98	967.00	0.01
Phenanthrene [(a)]	596	34300	6.50	57.02	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	7.30	64.04	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.69**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0103			
		Sample Depth	1-3			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	13.3	0.133	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.10	8.27	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.10	8.27	447.00	0.02
Acenaphthene [(a)]	491.00	33400	1.00	7.52	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	1.10	8.27	452.00	0.02
Anthracene [(a)]	594.00	1300	3.10	23.31	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	8.10	60.90	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	6.20	46.62	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	6.10	45.86	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	4.90	36.84	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	5.00	37.59	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	5.90	44.36	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	6.30	47.37	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	1.30	9.77	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.50	63.91	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.90	14.29	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	112.78	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	6.40	48.12	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	4.10	30.83	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	7.70	57.89	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	105.26	510.00	0.21
C2-Phenanthrenes/Anthracenes [(a)]	746	---	18.00	135.34	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	2.80	21.05	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	9.30	69.92	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	5.80	43.61	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	25.00	187.97	581.00	0.32
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	17.00	127.82	829.00	0.15
C4 Chrysenes [(a)]	1214.00	---	1.60	12.03	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	18.00	135.34	657.00	0.21
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	12.00	90.23	913.00	0.10
Chrysene [(a)]	844.00	826	8.40	63.16	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.50	11.28	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	14.00	105.26	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	1.90	14.29	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.50	33.83	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	1.10	8.27	385.00	0.02
Perylene [(a)]	967.00	431.00	2.00	15.04	967.00	0.02
Phenanthrene [(a)]	596	34300	12.00	90.23	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	15.00	112.78	697.00	0.16
	---	**ESBTU FCVi**	---	---	---	**1.84**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0305			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.72	0.0972	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.30	13.37	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.30	13.37	447.00	0.03
Acenaphthene [(a)]	491.00	33400	1.30	13.37	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	1.30	13.37	452.00	0.03
Anthracene [(a)]	594.00	1300	3.50	36.01	594.00	0.06
Benzo(a)anthracene [(a)]	841.00	4153	6.80	69.96	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	4.60	47.33	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.60	47.33	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	4.00	41.15	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.30	33.95	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	43.21	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	5.90	60.70	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	1.60	16.46	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.30	95.68	770.00	0.12
C1-Naphthalenes [(a)]	444.00	---	2.40	24.69	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	154.32	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	6.40	65.84	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	4.30	44.24	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	8.70	89.51	---	---
C2-Naphthalenes [(a)]	510.00	---	15.00	154.32	510.00	0.30
C2-Phenanthrenes/Anthracenes [(a)]	746	---	21.00	216.05	746.00	0.29
C3 Chrysenes [(a)]	1112.00	---	3.40	34.98	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	10.00	102.88	769.00	0.13
C3-Fluoranthenes/Pyrenes	949.00	---	6.90	70.99	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	27.00	277.78	581.00	0.48
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	23.00	236.63	829.00	0.29
C4 Chrysenes [(a)]	1214.00	---	1.90	19.55	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	25.00	257.20	657.00	0.39
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	15.00	154.32	913.00	0.17
Chrysene [(a)]	844.00	826	6.60	67.90	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.30	13.37	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	17.00	174.90	707.00	0.25
Fluorene [(a)]	538.00	26,000.00	4.00	41.15	538.00	0.08
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.80	28.81	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	1.30	13.37	385.00	0.03
Perylene [(a)]	967.00	431.00	1.30	13.37	967.00	0.01
Phenanthrene [(a)]	596	34300	18.00	185.19	596.00	0.31
Pyrene [(a)]	697.00	9,090.00	18.00	185.19	697.00	0.27
	---	**ESBTU FCVi**	---	---	---	**2.81**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	12.1	0.121	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.80	6.61	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.80	6.61	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.80	6.61	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.80	6.61	452.00	0.01
Anthracene [(a)]	594.00	1300	2.10	17.36	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	5.90	48.76	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	4.20	34.71	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	4.10	33.88	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	3.60	29.75	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.90	23.97	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	3.80	31.40	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	6.50	53.72	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	1.20	9.92	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.30	68.60	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	2.00	16.53	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	13.00	107.44	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	6.20	51.24	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	3.20	26.45	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	7.80	64.46	---	---
C2-Naphthalenes [(a)]	510.00	---	12.00	99.17	510.00	0.19
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	157.02	746.00	0.21
C3 Chrysenes [(a)]	1112.00	---	2.80	23.14	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	7.70	63.64	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	6.30	52.07	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	20.00	165.29	581.00	0.28
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	181.82	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	1.70	14.05	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	18.00	148.76	657.00	0.23
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	13.00	107.44	913.00	0.12
Chrysene [(a)]	844.00	826	6.10	50.41	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.80	6.61	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	10.00	82.64	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	3.20	26.45	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	21.49	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.80	6.61	385.00	0.02
Perylene [(a)]	967.00	431.00	0.80	6.61	967.00	0.01
Phenanthrene [(a)]	596	34300	8.10	66.94	596.00	0.11
Pyrene [(a)]	697.00	9,090.00	12.00	99.17	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.73**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0709			
		Sample Depth	7-9			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.98	0.0898	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.80	8.91	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.80	8.91	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.80	8.91	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.80	8.91	452.00	0.02
Anthracene [(a)]	594.00	1300	2.60	28.95	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	6.70	74.61	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	4.60	51.22	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.20	46.77	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.70	41.20	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.30	36.75	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.10	45.66	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	7.90	87.97	929.00	0.09
C1 Fluorenes [(a)]	611.00	---	1.20	13.36	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.10	101.34	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	1.50	16.70	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	15.00	167.04	670.00	0.25
C2 Chrysenes [(a)]	1008.00	---	6.90	76.84	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	3.20	35.63	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	8.50	94.65	---	---
C2-Naphthalenes [(a)]	510.00	---	8.20	91.31	510.00	0.18
C2-Phenanthrenes/Anthracenes [(a)]	746	---	25.00	278.40	746.00	0.37
C3 Chrysenes [(a)]	1112.00	---	3.60	40.09	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	8.80	98.00	769.00	0.13
C3-Fluoranthenes/Pyrenes	949.00	---	7.00	77.95	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	14.00	155.90	581.00	0.27
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	25.00	278.40	829.00	0.34
C4 Chrysenes [(a)]	1214.00	---	1.80	20.04	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	17.00	189.31	657.00	0.29
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	18.00	200.45	913.00	0.22
Chrysene [(a)]	844.00	826	7.30	81.29	844.00	0.10
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.80	8.91	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	122.49	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	2.40	26.73	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.90	32.29	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.80	8.91	385.00	0.02
Perylene [(a)]	967.00	431.00	0.80	8.91	967.00	0.01
Phenanthrene [(a)]	596	34300	7.10	79.06	596.00	0.13
Pyrene [(a)]	697.00	9,090.00	12.00	133.63	697.00	0.19
	---	**ESBTU FCVi**	---	---	---	**2.62**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-34			
		Field Sample ID	RREC13-34-0911			
		Sample Depth	9-11			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.72	0.0972	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.85	8.74	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.90	19.55	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.85	8.74	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.85	8.74	452.00	0.02
Anthracene [(a)]	594.00	1300	2.60	26.75	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	6.60	67.90	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	4.30	44.24	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.90	40.12	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	3.60	37.04	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.30	33.95	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.60	37.04	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	9.80	100.82	929.00	0.11
C1 Fluorenes [(a)]	611.00	---	1.40	14.40	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	11.00	113.17	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	2.60	26.75	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	18.00	185.19	670.00	0.28
C2 Chrysenes [(a)]	1008.00	---	12.00	123.46	1008.00	0.12
C2 Fluorenes [(a)]	686.00	---	4.20	43.21	686.00	0.06
C2-Fluoranthenes/Pyrenes	---	---	13.00	133.74	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	144.03	510.00	0.28
C2-Phenanthrenes/Anthracenes [(a)]	746	---	33.00	339.51	746.00	0.46
C3 Chrysenes [(a)]	1112.00	---	6.40	65.84	1112.00	0.06
C3 Fluorenes [(a)]	769.00	---	12.00	123.46	769.00	0.16
C3-Fluoranthenes/Pyrenes	949.00	---	13.00	133.74	949.00	0.14
C3-Naphthalenes [(a)]	581.00	---	24.00	246.91	581.00	0.42
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	44.00	452.67	829.00	0.55
C4 Chrysenes [(a)]	1214.00	---	3.60	37.04	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	24.00	246.91	657.00	0.38
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	33.00	339.51	913.00	0.37
Chrysene [(a)]	844.00	826	7.90	81.28	844.00	0.10
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.85	8.74	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	9.70	99.79	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	2.30	23.66	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.70	27.78	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.85	8.74	385.00	0.02
Perylene [(a)]	967.00	431.00	0.85	8.74	967.00	0.01
Phenanthrene [(a)]	596	34300	8.50	87.45	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	13.00	133.74	697.00	0.19
	---	**ESBTU FCVi**	---	---	---	**3.08**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-35			
		Field Sample ID	RREC13-35-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.03	0.0503	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.47	9.24	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.34	6.76	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.36	7.16	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.47	9.24	452.00	0.02
Anthracene [(a)]	594.00	1300	1.00	19.88	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.00	59.64	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	2.50	49.70	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.80	55.67	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	2.00	39.76	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	27.83	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.40	47.71	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.90	57.65	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.20	3.98	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.00	59.64	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.44	8.75	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.80	55.67	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	2.20	43.74	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	0.37	7.36	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.60	51.69	---	---
C2-Naphthalenes [(a)]	510.00	---	1.70	33.80	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.20	63.62	746.00	0.09
C3 Chrysenes [(a)]	1112.00	---	1.10	21.87	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	0.62	12.33	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.50	29.82	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	2.10	41.75	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.10	61.63	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.42	8.35	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	1.50	29.82	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.40	47.71	913.00	0.05
Chrysene [(a)]	844.00	826	3.10	61.63	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.58	11.53	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.00	99.40	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.47	9.24	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	25.84	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.10	21.87	385.00	0.06
Perylene [(a)]	967.00	431.00	0.65	12.92	967.00	0.01
Phenanthrene [(a)]	596	34300	3.10	61.63	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	4.80	95.43	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.34**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-35			
		Field Sample ID	RREC13-35-0001			
		Sample Depth	0-1			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.91	0.0491	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.20	24.44	446.00	0.05
2-Methylnaphthalene	447.00	154800	1.20	24.44	447.00	0.05
Acenaphthene [(a)]	491.00	33400	1.70	34.62	491.00	0.07
Acenaphthylene [(a)]	452.00	24000	1.20	24.44	452.00	0.05
Anthracene [(a)]	594.00	1300	5.60	114.05	594.00	0.19
Benzo(a)anthracene [(a)]	841.00	4153	7.00	142.57	841.00	0.17
Benzo(a)pyrene [(a)]	965.00	3840	5.00	101.83	965.00	0.11
Benzo(b)fluoranthene [(a)]	979.00	2169	3.80	77.39	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	3.40	69.25	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.00	61.10	1095.00	0.06
Benzo(k)fluoranthene [(a)]	981.00	1220	3.20	65.17	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	7.00	142.57	929.00	0.15
C1 Fluorenes [(a)]	611.00	---	1.20	24.44	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	244.40	770.00	0.32
C1-Naphthalenes [(a)]	444.00	---	1.40	28.51	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	346.23	670.00	0.52
C2 Chrysenes [(a)]	1008.00	---	3.80	77.39	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	1.10	22.40	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	6.10	124.24	---	---
C2-Naphthalenes [(a)]	510.00	---	7.30	148.68	510.00	0.29
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.10	185.34	746.00	0.25
C3 Chrysenes [(a)]	1112.00	---	1.80	36.66	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	1.50	30.55	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.60	52.95	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	6.10	124.24	581.00	0.21
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.80	97.76	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.75	15.27	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.30	46.84	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.60	93.69	913.00	0.10
Chrysene [(a)]	844.00	826	6.40	130.35	844.00	0.15
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.94	19.14	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	11.00	224.03	707.00	0.32
Fluorene [(a)]	538.00	26,000.00	2.70	54.99	538.00	0.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	48.88	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	1.20	24.44	385.00	0.06
Perylene [(a)]	967.00	431.00	1.00	20.37	967.00	0.02
Phenanthrene [(a)]	596	34300	16.00	325.87	596.00	0.55
Pyrene [(a)]	697.00	9,090.00	15.00	305.50	697.00	0.44
	---	**ESBTU FCVi**	---	---	---	**3.98**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-35			
		Field Sample ID	RREC13-35-0103			
		Sample Depth	1-3			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.78	0.0078	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.21	26.45	446.00	0.06
2-Methylnaphthalene	447.00	154800	0.21	26.45	447.00	0.06
Acenaphthene [(a)]	491.00	33400	0.42	54.19	491.00	0.11
Acenaphthylene [(a)]	452.00	24000	0.21	26.45	452.00	0.06
Anthracene [(a)]	594.00	1300	0.95	122.58	594.00	0.21
Benzo(a)anthracene [(a)]	841.00	4153	1.30	167.74	841.00	0.20
Benzo(a)pyrene [(a)]	965.00	3840	1.00	129.03	965.00	0.13
Benzo(b)fluoranthene [(a)]	979.00	2169	0.61	78.71	979.00	0.08
Benzo(e)pyrene [(a)]	967.00	4300	0.64	82.58	967.00	0.09
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.59	76.13	1095.00	0.07
Benzo(k)fluoranthene [(a)]	981.00	1220	0.73	94.19	981.00	0.10
C1 Chrysenes [(a)]	929.00	---	1.20	154.84	929.00	0.17
C1 Fluorenes [(a)]	611.00	---	0.24	30.97	611.00	0.05
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	270.97	770.00	0.35
C1-Naphthalenes [(a)]	444.00	---	0.21	27.10	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.90	374.19	670.00	0.56
C2 Chrysenes [(a)]	1008.00	---	0.66	85.16	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	0.21	27.10	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	1.00	129.03	---	---
C2-Naphthalenes [(a)]	510.00	---	1.00	129.03	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.50	193.55	746.00	0.26
C3 Chrysenes [(a)]	1112.00	---	0.28	36.13	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	0.26	33.55	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	0.47	60.65	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	1.10	141.94	581.00	0.24
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.84	108.39	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.12	15.48	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	0.42	54.19	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.58	74.84	913.00	0.08
Chrysene [(a)]	844.00	826	1.20	154.84	844.00	0.18
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.19	24.52	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	2.10	270.97	707.00	0.38
Fluorene [(a)]	538.00	26,000.00	0.66	85.16	538.00	0.16
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.46	59.35	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	0.21	26.45	385.00	0.07
Perylene [(a)]	967.00	431.00	0.22	28.39	967.00	0.03
Phenanthrene [(a)]	596	34300	2.70	348.39	596.00	0.58
Pyrene [(a)]	697.00	9,090.00	2.80	361.29	697.00	0.52
	---	**ESBTU FCVi**	---	---	---	**4.56**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-35			
		Field Sample ID	RREC13-35-0305			
		Sample Depth	3-5			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.13	0.0013	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	1.55	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	1.55	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	3.41	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.00	1.55	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	10.08	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	0.02	16.28	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.02	12.40	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	9.30	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.01	9.30	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	8.53	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	7.44	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.02	16.28	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.00	2.40	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.03	23.26	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.00	2.87	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.04	31.01	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.01	9.30	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.00	2.17	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	12.40	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	11.63	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	18.60	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.01	4.34	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.00	3.41	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	6.74	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.02	12.40	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	11.63	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.00	1.86	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.01	6.12	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.01	7.75	913.00	0.01
Chrysene [(a)]	844.00	826	0.02	13.18	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	2.71	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.03	21.71	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	0.01	5.89	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	6.43	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.00	1.55	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	25.58	967.00	0.03
Phenanthrene [(a)]	596	34300	0.04	28.68	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	0.04	31.01	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.42

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

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TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-36			
		Field Sample ID	RREC13-36-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/28/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	13.9	0.139	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	1.20	8.63	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.08	0.58	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.20	1.44	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	1.20	8.63	452.00	0.02
Anthracene [(a)]	594.00	1300	0.62	4.46	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	4.40	31.65	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	5.00	35.97	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	8.30	59.71	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	5.30	38.13	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.50	25.18	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	6.90	49.64	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.70	19.42	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	1.20	8.63	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.00	35.97	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	1.20	8.63	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.60	11.51	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	3.10	22.30	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.20	8.63	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	3.30	23.74	---	---
C2-Naphthalenes [(a)]	510.00	---	0.34	2.45	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.00	7.19	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	1.70	12.23	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.27	1.94	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	16.55	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.44	3.17	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.00	7.19	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.56	4.03	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.36	2.59	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.65	4.68	913.00	0.01
Chrysene [(a)]	844.00	826	7.10	51.08	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.69	4.96	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	15.00	107.91	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	0.30	2.16	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.90	20.86	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	1.20	8.63	385.00	0.02
Perylene [(a)]	967.00	431.00	1.40	10.07	967.00	0.01
Phenanthrene [(a)]	596	34300	4.20	30.22	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	9.60	69.06	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	0.82

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-36			
		Field Sample ID	RREC13-36-0001			
		Sample Depth	0-1			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.08	0.0808	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.75	9.28	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.14	1.73	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.27	3.34	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.75	9.28	452.00	0.02
Anthracene [(a)]	594.00	1300	0.75	9.28	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.30	40.84	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.30	40.84	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	4.80	59.41	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	3.30	40.84	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.50	30.94	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.70	45.79	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.70	33.42	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.24	2.97	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.40	42.08	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.17	2.10	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.40	29.70	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	2.30	28.47	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.62	7.67	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.70	33.42	---	---
C2-Naphthalenes [(a)]	510.00	---	1.60	19.80	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.20	39.60	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.94	11.63	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.60	19.80	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.70	21.04	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	3.40	42.08	581.00	0.07
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.10	38.37	829.00	0.05
C4 Chrysenes [(a)]	1214.00	---	0.52	6.44	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	3.00	37.13	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.20	27.23	913.00	0.03
Chrysene [(a)]	844.00	826	4.50	55.69	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.82	10.15	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	8.00	99.01	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.75	9.28	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	29.70	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.75	9.28	385.00	0.02
Perylene [(a)]	967.00	431.00	0.91	11.26	967.00	0.01
Phenanthrene [(a)]	596	34300	3.30	40.84	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	7.90	97.77	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**1.09**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-36			
		Field Sample ID	RREC13-36-0103			
		Sample Depth	1-3			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.74	0.0674	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.29	4.23	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.24	3.56	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.46	6.82	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.29	4.23	452.00	0.01
Anthracene [(a)]	594.00	1300	0.60	8.90	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.90	28.19	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.40	20.77	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	26.71	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.40	20.77	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	17.80	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	19.29	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.40	35.61	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.60	8.90	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.10	45.99	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.32	4.75	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.50	66.77	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	2.80	41.54	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	1.50	22.26	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	3.20	47.48	---	---
C2-Naphthalenes [(a)]	510.00	---	4.20	62.31	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.10	105.34	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	1.40	20.77	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.40	50.45	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	2.50	37.09	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	10.00	148.37	581.00	0.26
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.40	109.79	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.85	12.61	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	8.90	132.05	657.00	0.20
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.00	74.18	913.00	0.08
Chrysene [(a)]	844.00	826	2.30	34.12	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	6.38	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	3.30	48.96	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.92	13.65	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	16.32	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.29	4.23	385.00	0.01
Perylene [(a)]	967.00	431.00	0.50	7.42	967.00	0.01
Phenanthrene [(a)]	596	34300	3.10	45.99	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	3.80	56.38	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.14**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/28/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6	0.06	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	1.50	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.14	2.33	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.36	6.00	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.37	6.17	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	26.67	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	6.50	108.33	841.00	0.13
Benzo(a)pyrene [(a)]	965.00	3840	6.50	108.33	965.00	0.11
Benzo(b)fluoranthene [(a)]	979.00	2169	5.80	96.67	979.00	0.10
Benzo(e)pyrene [(a)]	967.00	4300	3.90	65.00	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.70	45.00	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	5.50	91.67	981.00	0.09
C1 Chrysenes [(a)]	929.00	---	3.40	56.67	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.80	13.33	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.00	100.00	770.00	0.13
C1-Naphthalenes [(a)]	444.00	---	0.80	13.33	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.90	48.33	670.00	0.07
C2 Chrysenes [(a)]	1008.00	---	2.40	40.00	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	0.80	13.33	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.40	40.00	---	---
C2-Naphthalenes [(a)]	510.00	---	0.56	9.33	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.70	28.33	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.99	16.50	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.32	5.33	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.20	20.00	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.63	10.50	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.50	25.00	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.18	3.00	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.40	6.67	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.78	13.00	913.00	0.01
Chrysene [(a)]	844.00	826	5.40	90.00	844.00	0.11
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.68	11.33	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	11.00	183.33	707.00	0.26
Fluorene [(a)]	538.00	26,000.00	0.65	10.83	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	40.00	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	0.80	13.33	385.00	0.03
Perylene [(a)]	967.00	431.00	1.70	28.33	967.00	0.03
Phenanthrene [(a)]	596	34300	5.40	90.00	596.00	0.15
Pyrene [(a)]	697.00	9,090.00	6.90	115.00	697.00	0.16
	---	**ESBTU FCVi**	---	---	---	**1.76**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.73	0.0573	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.57	9.95	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.27	4.71	447.00	0.01
Acenaphthene [(a)]	491.00	33400	1.70	29.67	491.00	0.06
Acenaphthylene [(a)]	452.00	24000	0.90	15.71	452.00	0.03
Anthracene [(a)]	594.00	1300	3.30	57.59	594.00	0.10
Benzo(a)anthracene [(a)]	841.00	4153	7.50	130.89	841.00	0.16
Benzo(a)pyrene [(a)]	965.00	3840	6.70	116.93	965.00	0.12
Benzo(b)fluoranthene [(a)]	979.00	2169	5.20	90.75	979.00	0.09
Benzo(e)pyrene [(a)]	967.00	4300	4.40	76.79	967.00	0.08
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.40	59.34	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	73.30	981.00	0.07
C1 Chrysenes [(a)]	929.00	---	8.60	150.09	929.00	0.16
C1 Fluorenes [(a)]	611.00	---	0.81	14.14	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	209.42	770.00	0.27
C1-Naphthalenes [(a)]	444.00	---	0.60	10.47	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	12.00	209.42	670.00	0.31
C2 Chrysenes [(a)]	1008.00	---	5.30	92.50	1008.00	0.09
C2 Fluorenes [(a)]	686.00	---	1.10	19.20	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.40	129.14	---	---
C2-Naphthalenes [(a)]	510.00	---	5.30	92.50	510.00	0.18
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.70	134.38	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	2.10	36.65	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	1.40	24.43	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	3.50	61.08	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	5.50	95.99	581.00	0.17
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.80	101.22	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.99	17.28	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	2.20	38.39	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.80	66.32	913.00	0.07
Chrysene [(a)]	844.00	826	7.00	122.16	844.00	0.14
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.20	20.94	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	8.20	143.11	707.00	0.20
Fluorene [(a)]	538.00	26,000.00	1.50	26.18	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.90	50.61	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	0.90	15.71	385.00	0.04
Perylene [(a)]	967.00	431.00	1.30	22.69	967.00	0.02
Phenanthrene [(a)]	596	34300	6.70	116.93	596.00	0.20
Pyrene [(a)]	697.00	9,090.00	12.00	209.42	697.00	0.30
	---	**ESBTU FCVi**	---	---	---	**2.83**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0103			
		Sample Depth	1-3			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.62	0.0362	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.75	20.72	446.00	0.05
2-Methylnaphthalene	447.00	154800	0.14	3.87	447.00	0.01
Acenaphthene [(a)]	491.00	33400	2.10	58.01	491.00	0.12
Acenaphthylene [(a)]	452.00	24000	0.33	9.12	452.00	0.02
Anthracene [(a)]	594.00	1300	1.60	44.20	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	2.30	63.54	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	2.10	58.01	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	1.30	35.91	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.30	35.91	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.94	25.97	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.40	38.67	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.40	66.30	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.49	13.54	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.90	107.73	770.00	0.14
C1-Naphthalenes [(a)]	444.00	---	0.64	17.68	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.20	143.65	670.00	0.21
C2 Chrysenes [(a)]	1008.00	---	1.40	38.67	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	0.52	14.36	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.20	60.77	---	---
C2-Naphthalenes [(a)]	510.00	---	4.50	124.31	510.00	0.24
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.00	82.87	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	0.52	14.36	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.56	15.47	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	0.99	27.35	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	3.40	93.92	581.00	0.16
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.70	46.96	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.14	3.87	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.10	30.39	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.87	24.03	913.00	0.03
Chrysene [(a)]	844.00	826	2.10	58.01	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	8.56	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	2.90	80.11	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	1.20	33.15	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.76	20.99	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.33	9.12	385.00	0.02
Perylene [(a)]	967.00	431.00	0.43	11.88	967.00	0.01
Phenanthrene [(a)]	596	34300	3.90	107.73	596.00	0.18
Pyrene [(a)]	697.00	9,090.00	4.40	121.55	697.00	0.17
	---	**ESBTU FCVi**	---	---	---	**1.76**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0305			
		Sample Depth	3-5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.2	0.042	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.05	1.17	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.31	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.09	2.12	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.02	0.51	452.00	0.00
Anthracene [(a)]	594.00	1300	0.15	3.57	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	0.19	4.52	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.17	4.05	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.10	2.38	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.11	2.62	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.10	2.33	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.10	2.38	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.25	5.95	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.04	1.00	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.38	9.05	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.04	1.05	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.50	11.90	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.15	3.57	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.05	1.12	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.23	5.48	---	---
C2-Naphthalenes [(a)]	510.00	---	0.28	6.67	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.28	6.67	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.06	1.50	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.05	1.24	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.13	3.10	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.29	6.90	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.18	4.29	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.02	0.55	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.12	2.86	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.10	2.38	913.00	0.00
Chrysene [(a)]	844.00	826	0.18	4.29	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.03	0.76	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.24	5.71	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.08	1.83	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.08	1.90	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.02	0.51	385.00	0.00
Perylene [(a)]	967.00	431.00	0.08	1.83	967.00	0.00
Phenanthrene [(a)]	596	34300	0.30	7.14	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.38	9.05	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.13

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0507			
		Sample Depth	5-7			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.31	0.0431	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.18	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.26	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.28	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	0.49	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	0.35	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.32	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.30	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.02	0.37	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.26	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.04	0.81	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.15	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.04	1.02	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.18	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.07	1.67	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.03	0.79	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.18	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.03	0.77	---	---
C2-Naphthalenes [(a)]	510.00	---	0.04	0.93	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.05	1.11	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.02	0.35	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.30	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.03	0.63	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.06	1.37	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.05	1.09	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.13	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.05	1.04	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.03	0.63	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	0.53	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.10	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.03	0.60	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.01	0.22	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.23	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.72	967.00	0.00
Phenanthrene [(a)]	596	34300	0.04	0.86	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.04	0.90	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.02

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0709			
		Sample Depth	7-9			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.4	0.034	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.09	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.02	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.04	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.07	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.13	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.19	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.04	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.35	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.07	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.32	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.11	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.71	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.59	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.12	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.38	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.41	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.71	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.32	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.21	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.41	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	0.97	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.97	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.12	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.94	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.59	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.22	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.07	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.07	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.06	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.02	0.71	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.20	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.15	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-37			
		Field Sample ID	RREC13-37-0911			
		Sample Depth	9-11			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.68	0.0368	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.10	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.04	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.04	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.09	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.18	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.16	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.24	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.08	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.43	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.08	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.41	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.12	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.03	0.84	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.65	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.11	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.46	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	0.52	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.79	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.35	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.25	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.49	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.05	1.25	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.04	1.09	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.15	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.05	1.25	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.63	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.30	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.04	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.19	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.10	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.09	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.92	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.30	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.24	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.33	0.0233	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.14	5.79	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.07	2.88	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.07	2.92	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.14	5.79	452.00	0.01
Anthracene [(a)]	594.00	1300	0.34	14.59	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.20	51.50	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	1.30	55.79	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	1.10	47.21	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	0.85	36.48	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.76	32.62	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	0.95	40.77	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	0.91	39.06	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.04	1.63	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.10	47.21	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.08	3.26	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.62	26.61	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	0.55	23.61	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.07	2.88	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.58	24.89	---	---
C2-Naphthalenes [(a)]	510.00	---	0.14	5.79	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.53	22.75	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.26	11.16	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.12	5.15	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.29	12.45	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.14	5.79	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.35	15.02	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.14	5.79	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.15	6.44	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.14	6.01	913.00	0.01
Chrysene [(a)]	844.00	826	1.10	47.21	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.26	11.16	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	1.30	55.79	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.14	5.79	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.66	28.33	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.14	5.79	385.00	0.02
Perylene [(a)]	967.00	431.00	0.32	13.73	967.00	0.01
Phenanthrene [(a)]	596	34300	0.61	26.18	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	1.40	60.09	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	0.83

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-SURF-FD			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.74	0.0274	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.17	6.02	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.07	2.37	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.08	3.03	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.17	6.02	452.00	0.01
Anthracene [(a)]	594.00	1300	0.53	19.34	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	1.80	65.69	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	1.70	62.04	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	1.40	51.09	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	1.20	43.80	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	43.80	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	1.40	51.09	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	1.20	43.80	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.06	2.15	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.70	62.04	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.08	2.81	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.00	36.50	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.63	22.99	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.08	2.92	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.75	27.37	---	---
C2-Naphthalenes [(a)]	510.00	---	0.17	6.02	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.64	23.36	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.24	8.76	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.13	4.74	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.33	12.04	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.17	6.02	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.44	16.06	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.17	6.02	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.16	5.84	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.28	10.22	913.00	0.01
Chrysene [(a)]	844.00	826	1.60	58.39	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.43	15.69	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	2.30	83.94	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	0.17	6.02	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	40.15	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	0.17	6.02	385.00	0.02
Perylene [(a)]	967.00	431.00	0.46	16.79	967.00	0.02
Phenanthrene [(a)]	596	34300	0.93	33.94	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	2.20	80.29	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.05**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-0001			
		Sample Depth	0-1			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.27	0.0227	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.33	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.33	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.03	1.23	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.01	0.33	452.00	0.00
Anthracene [(a)]	594.00	1300	0.02	0.97	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.07	2.86	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.06	2.82	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.06	2.64	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.05	2.11	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.05	2.25	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.05	1.98	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.07	2.95	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.29	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.09	3.79	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.31	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.07	3.13	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.05	2.16	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.40	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.05	2.33	---	---
C2-Naphthalenes [(a)]	510.00	---	0.03	1.15	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.06	2.73	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.02	0.84	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.02	0.75	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.03	1.28	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.04	1.94	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.05	2.25	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.33	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.04	1.63	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.04	1.72	913.00	0.00
Chrysene [(a)]	844.00	826	0.07	2.95	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.02	0.75	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.08	3.66	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.01	0.48	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.04	1.94	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.33	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	1.72	967.00	0.00
Phenanthrene [(a)]	596	34300	0.04	1.81	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.10	4.19	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.06

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-0103			
		Sample Depth	1-3			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.57	0.0357	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.07	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.04	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.03	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.14	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.07	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.17	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.16	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.23	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.39	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.06	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.42	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.09	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.59	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.56	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.11	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.48	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.31	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.76	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.28	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.22	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.45	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	0.67	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.84	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.13	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.84	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.64	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.26	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.22	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.07	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.09	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	0.98	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.18	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.26	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-0305			
		Sample Depth	3-5			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.15	0.0415	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.05	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.05	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.03	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.05	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.04	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.22	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.01	0.24	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.27	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.24	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.34	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.19	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.51	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.06	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.41	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.08	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.51	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.58	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.11	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.46	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.29	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.67	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.24	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.20	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.41	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	0.63	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.77	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.10	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.75	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.51	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.34	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.09	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.24	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.05	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.21	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.05	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	0.89	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.17	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.27	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-38			
		Field Sample ID	RREC13-38-0507			
		Sample Depth	5-7			
		Sample Date	11/2/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.37	0.0337	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.07	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.04	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.05	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.07	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.15	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.14	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.19	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.39	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.06	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.33	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.07	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.47	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.56	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.11	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.39	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.29	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.65	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.33	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.23	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.39	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	0.65	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.80	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.12	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	0.86	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.56	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.26	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.15	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.04	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.07	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.07	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.92	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.07	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.19	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.93	0.0793	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.65	8.20	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.24	3.03	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.35	4.41	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.65	8.20	452.00	0.02
Anthracene [(a)]	594.00	1300	1.70	21.44	594.00	0.04
Benzo(a)anthracene [(a)]	841.00	4153	5.80	73.14	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	6.30	79.45	965.00	0.08
Benzo(b)fluoranthene [(a)]	979.00	2169	5.50	69.36	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	4.10	51.70	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.50	44.14	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	4.60	58.01	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	4.60	58.01	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.21	2.65	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	71.88	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.29	3.66	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.30	41.61	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	2.70	34.05	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.33	4.16	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	3.20	40.35	---	---
C2-Naphthalenes [(a)]	510.00	---	0.65	8.20	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.90	36.57	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.96	12.11	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.61	7.69	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.50	18.92	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.65	8.20	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.70	21.44	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.65	8.20	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	0.84	10.59	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.91	11.48	913.00	0.01
Chrysene [(a)]	844.00	826	5.70	71.88	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.20	15.13	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.90	87.01	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	0.65	8.20	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.10	39.09	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	0.65	8.20	385.00	0.02
Perylene [(a)]	967.00	431.00	1.60	20.18	967.00	0.02
Phenanthrene [(a)]	596	34300	3.50	44.14	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	7.10	89.53	697.00	0.13
	---	**ESBTU FCVi**	---	---	---	**1.24**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.32	0.0732	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.65	8.88	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.25	17.08	447.00	0.04
Acenaphthene [(a)]	491.00	33400	1.10	15.03	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.64	8.74	452.00	0.02
Anthracene [(a)]	594.00	1300	5.60	76.50	594.00	0.13
Benzo(a)anthracene [(a)]	841.00	4153	12.00	163.93	841.00	0.19
Benzo(a)pyrene [(a)]	965.00	3840	11.00	150.27	965.00	0.16
Benzo(b)fluoranthene [(a)]	979.00	2169	9.60	131.15	979.00	0.13
Benzo(e)pyrene [(a)]	967.00	4300	6.10	83.33	967.00	0.09
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.10	56.01	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	10.00	136.61	981.00	0.14
C1 Chrysenes [(a)]	929.00	---	6.00	81.97	929.00	0.09
C1 Fluorenes [(a)]	611.00	---	0.69	9.43	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	16.00	218.58	770.00	0.28
C1-Naphthalenes [(a)]	444.00	---	0.72	9.84	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	11.00	150.27	670.00	0.22
C2 Chrysenes [(a)]	1008.00	---	5.50	75.14	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	1.30	17.76	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	6.80	92.90	---	---
C2-Naphthalenes [(a)]	510.00	---	3.80	51.91	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.70	105.19	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	1.40	19.13	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	2.20	30.05	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.90	39.62	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	9.30	127.05	581.00	0.22
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.70	91.53	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	1.25	17.08	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.50	75.14	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.00	54.64	913.00	0.06
Chrysene [(a)]	844.00	826	11.00	150.27	844.00	0.18
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.30	17.76	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	20.00	273.22	707.00	0.39
Fluorene [(a)]	538.00	26,000.00	1.50	20.49	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.90	53.28	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	1.25	17.08	385.00	0.04
Perylene [(a)]	967.00	431.00	2.40	32.79	967.00	0.03
Phenanthrene [(a)]	596	34300	11.00	150.27	596.00	0.25
Pyrene [(a)]	697.00	9,090.00	16.00	218.58	697.00	0.31
	---	**ESBTU FCVi**	---	---	---	**3.15**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.23	0.0723	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.07	0.98	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.17	2.28	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.28	3.87	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.06	0.86	452.00	0.00
Anthracene [(a)]	594.00	1300	0.71	9.82	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.80	24.90	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.50	20.75	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	0.80	11.07	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.88	12.17	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.50	6.92	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	15.21	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.40	19.36	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.15	2.07	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.30	45.64	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.08	1.07	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.40	33.20	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.83	11.48	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.23	3.18	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.50	20.75	---	---
C2-Naphthalenes [(a)]	510.00	---	0.60	8.30	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.30	17.98	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.25	3.46	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.18	2.49	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.63	8.71	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.90	12.45	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.00	13.83	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.04	0.48	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.39	5.39	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.40	5.53	913.00	0.01
Chrysene [(a)]	844.00	826	1.40	19.36	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.14	1.94	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.80	24.90	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.21	2.90	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.42	5.81	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	2.28	385.00	0.01
Perylene [(a)]	967.00	431.00	0.30	4.15	967.00	0.00
Phenanthrene [(a)]	596	34300	1.40	19.36	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.70	37.34	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.46

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.84	0.0884	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.01	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.02	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.00	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.02	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.07	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.04	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.06	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.05	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.04	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.02	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.10	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.02	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.19	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.02	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.19	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.01	0.16	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.03	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.16	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.08	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.31	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.08	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.00	0.05	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.12	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	0.21	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	0.21	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.03	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.02	0.21	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.17	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.08	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.01	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.11	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.02	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.02	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.02	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.36	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.08	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.12	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.00

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.18	0.0718	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.01	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.03	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.00	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.03	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.00	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.03	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.01	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.03	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.03	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.03	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.03	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.09	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.02	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.12	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.02	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.01	0.17	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.01	0.17	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.04	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.14	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.07	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.01	0.19	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.08	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.00	0.06	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.13	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	0.22	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	0.31	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.05	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.02	0.25	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.01	0.19	913.00	0.00
Chrysene [(a)]	844.00	826	0.00	0.06	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.00	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.03	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.01	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.01	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.03	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.45	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.03	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.00	0.03	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.00

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0709			
		Sample Depth	7-9			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.8	0.068	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.02	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.03	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.00	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.03	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.01	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.03	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.01	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.00	0.03	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.04	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.04	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.03	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.12	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.02	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.15	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.03	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.01	0.21	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.01	0.21	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.04	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.16	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.09	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.22	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.10	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.00	0.06	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.16	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	0.26	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.03	0.38	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.05	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.02	0.34	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.25	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.08	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.01	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.03	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.02	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.01	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.03	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	0.40	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.03	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.00	0.03	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.00

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-39			
		Field Sample ID	RREC13-39-0911			
		Sample Depth	9-11			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.53	0.0253	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.08	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.09	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.01	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.03	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.09	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.08	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.20	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.17	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.16	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.09	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	0.43	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.07	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.59	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.10	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.02	0.83	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.83	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.15	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.63	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.35	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.02	0.87	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.36	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.25	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.63	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.03	1.19	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.04	1.42	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.20	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	1.26	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.87	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.32	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.21	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.06	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.05	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.09	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	1.46	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.19	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.26	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-40			
		Field Sample ID	RREC13-40-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/28/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	4.68	0.0468	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.04	0.94	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.09	1.82	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.08	1.77	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.11	2.35	452.00	0.01
Anthracene [(a)]	594.00	1300	0.40	8.55	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	40.60	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.00	42.74	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	38.46	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.30	27.78	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.75	16.03	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	38.46	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	1.20	25.64	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.04	0.94	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	44.87	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.09	1.92	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.94	20.09	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.10	23.50	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.08	1.65	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.97	20.73	---	---
C2-Naphthalenes [(a)]	510.00	---	0.24	5.13	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.66	14.10	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.35	7.48	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.16	3.42	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.44	9.40	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.30	6.41	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.59	12.61	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.06	1.37	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.19	4.06	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.27	5.77	913.00	0.01
Chrysene [(a)]	844.00	826	1.70	36.32	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	4.70	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.20	47.01	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.11	2.35	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.68	14.53	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.17	3.63	385.00	0.01
Perylene [(a)]	967.00	431.00	0.49	10.47	967.00	0.01
Phenanthrene [(a)]	596	34300	0.85	18.16	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.80	38.46	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.61

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-40			
		Field Sample ID	RREC13-40-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.48	0.0248	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.15	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.17	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.44	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.02	0.67	452.00	0.00
Anthracene [(a)]	594.00	1300	0.02	0.97	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.11	4.44	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	0.10	3.83	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.07	2.78	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.08	3.02	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.06	2.58	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.08	3.02	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.13	5.24	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.01	0.37	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.18	7.26	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.01	0.23	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.14	5.65	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.08	3.27	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.02	0.77	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.11	4.44	---	---
C2-Naphthalenes [(a)]	510.00	---	0.03	1.17	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.12	4.84	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.03	1.21	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.03	1.17	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.06	2.50	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.07	2.78	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.09	3.67	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.32	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.05	2.10	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.05	1.81	913.00	0.00
Chrysene [(a)]	844.00	826	0.11	4.44	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.02	0.73	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.14	5.65	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.01	0.35	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.05	1.81	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.02	0.67	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	1.69	967.00	0.00
Phenanthrene [(a)]	596	34300	0.04	1.61	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.19	7.66	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.09

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-40			
		Field Sample ID	RREC13-40-0103			
		Sample Depth	1-3			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.11	0.0311	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.08	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.04	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.06	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.05	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.23	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.01	0.17	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.27	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.22	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.29	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.16	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.74	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.08	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.02	0.58	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.11	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.03	0.93	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.03	0.80	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.14	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	0.55	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.42	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.90	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.39	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.28	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.58	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.04	1.13	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.04	1.16	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.17	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.04	1.19	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.68	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.35	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.06	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.31	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.07	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.15	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	1.38	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.23	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.42	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-40			
		Field Sample ID	RREC13-40-0305			
		Sample Depth	3-5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.26	0.0326	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.10	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.07	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.08	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.01	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.08	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.07	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.16	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.15	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.23	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.06	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.49	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.08	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.37	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.12	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.03	0.83	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	0.67	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.14	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.43	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	0.43	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.80	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.34	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.28	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.46	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.04	1.10	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.04	1.17	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.18	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.04	1.10	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.61	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.27	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.17	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.08	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.08	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.08	385.00	0.00
Perylene [(a)]	967.00	431.00	0.05	1.38	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.20	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.19	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-40			
		Field Sample ID	RREC13-40-0507			
		Sample Depth	5-7			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.27	0.0327	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.11	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.08	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.08	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.02	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.08	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.06	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.16	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.16	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.24	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.07	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	0.49	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.08	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	0.37	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.13	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.03	0.80	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.03	0.80	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.13	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	0.43	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	0.52	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	0.83	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	0.40	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.25	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.02	0.52	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.04	1.19	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.04	1.13	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.18	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.04	1.16	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	0.61	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	0.27	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.03	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.08	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.09	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.08	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.08	385.00	0.00
Perylene [(a)]	967.00	431.00	0.04	1.10	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.24	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	0.17	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.01

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	12.1	0.121	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.55	4.55	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.90	7.44	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.59	4.88	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.55	4.55	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	13.22	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.50	28.93	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.40	19.83	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.60	21.49	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	2.10	17.36	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	11.57	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	14.88	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	5.80	47.93	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.71	5.87	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.30	52.07	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.10	9.09	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	82.64	670.00	0.12
C2 Chrysenes [(a)]	1008.00	---	6.70	55.37	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.10	17.36	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.00	57.85	---	---
C2-Naphthalenes [(a)]	510.00	---	6.30	52.07	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	18.00	148.76	746.00	0.20
C3 Chrysenes [(a)]	1112.00	---	3.20	26.45	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	5.70	47.11	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	6.40	52.89	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	10.00	82.64	581.00	0.14
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	22.00	181.82	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	1.90	15.70	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	9.00	74.38	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	15.00	123.97	913.00	0.14
Chrysene [(a)]	844.00	826	4.30	35.54	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.48	3.97	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.80	39.67	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	1.50	12.40	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	10.74	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.55	4.55	385.00	0.01
Perylene [(a)]	967.00	431.00	0.62	5.12	967.00	0.01
Phenanthrene [(a)]	596	34300	5.10	42.15	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	6.10	50.41	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	**1.30**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0001			
		Sample Depth	0-1			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.2	0.082	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	5.80	70.73	446.00	0.16
2-Methylnaphthalene	447.00	154800	8.30	101.22	447.00	0.23
Acenaphthene [(a)]	491.00	33400	1.70	20.73	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	2.60	31.71	452.00	0.07
Anthracene [(a)]	594.00	1300	5.40	65.85	594.00	0.11
Benzo(a)anthracene [(a)]	841.00	4153	7.60	92.68	841.00	0.11
Benzo(a)pyrene [(a)]	965.00	3840	5.10	62.20	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.90	47.56	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.70	45.12	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.00	36.59	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.70	45.12	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	10.00	121.95	929.00	0.13
C1 Fluorenes [(a)]	611.00	---	2.10	25.61	611.00	0.04
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	14.00	170.73	770.00	0.22
C1-Naphthalenes [(a)]	444.00	---	10.00	121.95	444.00	0.27
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	23.00	280.49	670.00	0.42
C2 Chrysenes [(a)]	1008.00	---	8.10	98.78	1008.00	0.10
C2 Fluorenes [(a)]	686.00	---	2.80	34.15	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	10.00	121.95	---	---
C2-Naphthalenes [(a)]	510.00	---	21.00	256.10	510.00	0.50
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	231.71	746.00	0.31
C3 Chrysenes [(a)]	1112.00	---	4.40	53.66	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	5.20	63.41	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	6.60	80.49	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	15.00	182.93	581.00	0.31
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	15.00	182.93	829.00	0.22
C4 Chrysenes [(a)]	1214.00	---	2.10	25.61	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	9.30	113.41	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	10.00	121.95	913.00	0.13
Chrysene [(a)]	844.00	826	7.20	87.80	844.00	0.10
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.10	13.41	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	146.34	707.00	0.21
Fluorene [(a)]	538.00	26,000.00	3.10	37.80	538.00	0.07
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	29.27	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	5.40	65.85	385.00	0.17
Perylene [(a)]	967.00	431.00	1.10	13.41	967.00	0.01
Phenanthrene [(a)]	596	34300	14.00	170.73	596.00	0.29
Pyrene [(a)]	697.00	9,090.00	14.00	170.73	697.00	0.24
	---	**ESBTU FCVi**	---	---	---	**3.19**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0103			
		Sample Depth	1-3			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.29	0.0829	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	5.90	71.17	446.00	0.16
2-Methylnaphthalene	447.00	154800	8.60	103.74	447.00	0.23
Acenaphthene [(a)]	491.00	33400	1.80	21.71	491.00	0.04
Acenaphthylene [(a)]	452.00	24000	3.50	42.22	452.00	0.09
Anthracene [(a)]	594.00	1300	8.00	96.50	594.00	0.16
Benzo(a)anthracene [(a)]	841.00	4153	9.80	118.21	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	6.80	82.03	965.00	0.09
Benzo(b)fluoranthene [(a)]	979.00	2169	5.10	61.52	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	4.40	53.08	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.80	45.84	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	4.40	53.08	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	12.00	144.75	929.00	0.16
C1 Fluorenes [(a)]	611.00	---	2.50	30.16	611.00	0.05
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	19.00	229.19	770.00	0.30
C1-Naphthalenes [(a)]	444.00	---	10.00	120.63	444.00	0.27
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	26.00	313.63	670.00	0.47
C2 Chrysenes [(a)]	1008.00	---	8.20	98.91	1008.00	0.10
C2 Fluorenes [(a)]	686.00	---	2.70	32.57	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	11.00	132.69	---	---
C2-Naphthalenes [(a)]	510.00	---	24.00	289.51	510.00	0.57
C2-Phenanthrenes/Anthracenes [(a)]	746	---	17.00	205.07	746.00	0.27
C3 Chrysenes [(a)]	1112.00	---	4.00	48.25	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	4.10	49.46	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	6.40	77.20	949.00	0.08
C3-Naphthalenes [(a)]	581.00	---	16.00	193.00	581.00	0.33
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	168.88	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	1.80	21.71	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	7.10	85.65	657.00	0.13
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.00	108.56	913.00	0.12
Chrysene [(a)]	844.00	826	9.10	109.77	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.30	15.68	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	13.00	156.82	707.00	0.22
Fluorene [(a)]	538.00	26,000.00	4.60	55.49	538.00	0.10
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.00	36.19	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	4.70	56.69	385.00	0.15
Perylene [(a)]	967.00	431.00	1.40	16.89	967.00	0.02
Phenanthrene [(a)]	596	34300	20.00	241.25	596.00	0.40
Pyrene [(a)]	697.00	9,090.00	18.00	217.13	697.00	0.31
	---	**ESBTU FCVi**	---	---	---	**3.65**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0103-FD			
		Sample Depth	1-3			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.34	0.0834	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	3.70	44.36	446.00	0.10
2-Methylnaphthalene	447.00	154800	5.30	63.55	447.00	0.14
Acenaphthene [(a)]	491.00	33400	1.20	14.39	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	1.05	12.59	452.00	0.03
Anthracene [(a)]	594.00	1300	4.90	58.75	594.00	0.10
Benzo(a)anthracene [(a)]	841.00	4153	7.10	85.13	841.00	0.10
Benzo(a)pyrene [(a)]	965.00	3840	4.60	55.16	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.60	43.17	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	3.30	39.57	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.80	33.57	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.10	37.17	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	8.60	103.12	929.00	0.11
C1 Fluorenes [(a)]	611.00	---	1.50	17.99	611.00	0.03
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	143.88	770.00	0.19
C1-Naphthalenes [(a)]	444.00	---	6.40	76.74	444.00	0.17
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	17.00	203.84	670.00	0.30
C2 Chrysenes [(a)]	1008.00	---	6.60	79.14	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	1.80	21.58	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.70	92.33	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	167.87	510.00	0.33
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	155.88	746.00	0.21
C3 Chrysenes [(a)]	1112.00	---	3.30	39.57	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	3.00	35.97	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	5.00	59.95	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	10.00	119.90	581.00	0.21
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	131.89	829.00	0.16
C4 Chrysenes [(a)]	1214.00	---	1.60	19.18	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	5.30	63.55	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.40	88.73	913.00	0.10
Chrysene [(a)]	844.00	826	6.30	75.54	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.00	11.99	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	9.00	107.91	707.00	0.15
Fluorene [(a)]	538.00	26,000.00	2.60	31.18	538.00	0.06
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.40	28.78	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	3.50	41.97	385.00	0.11
Perylene [(a)]	967.00	431.00	0.99	11.87	967.00	0.01
Phenanthrene [(a)]	596	34300	12.00	143.88	596.00	0.24
Pyrene [(a)]	697.00	9,090.00	12.00	143.88	697.00	0.21
	---	**ESBTU FCVi**	---	---	---	**2.44**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0305			
		Sample Depth	3-5			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.45	0.0845	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.46	5.44	446.00	0.01
2-Methylnaphthalene	447.00	154800	1.20	14.20	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.69	8.17	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.46	5.44	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	18.93	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.60	42.60	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.60	30.77	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.50	29.59	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.10	24.85	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.70	20.12	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	24.85	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	5.20	61.54	929.00	0.07
C1 Fluorenes [(a)]	611.00	---	0.69	8.17	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	67.46	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	1.40	16.57	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	9.80	115.98	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	5.10	60.36	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	1.80	21.30	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.60	66.27	---	---
C2-Naphthalenes [(a)]	510.00	---	5.10	60.36	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	14.00	165.68	746.00	0.22
C3 Chrysenes [(a)]	1112.00	---	2.90	34.32	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	4.70	55.62	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	4.70	55.62	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	6.50	76.92	581.00	0.13
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	153.85	829.00	0.19
C4 Chrysenes [(a)]	1214.00	---	1.40	16.57	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.10	72.19	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.80	104.14	913.00	0.11
Chrysene [(a)]	844.00	826	3.80	44.97	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.63	7.46	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.60	78.11	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	1.40	16.57	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	17.75	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	2.30	27.22	385.00	0.07
Perylene [(a)]	967.00	431.00	0.63	7.46	967.00	0.01
Phenanthrene [(a)]	596	34300	5.10	60.36	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	5.70	67.46	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.64**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0305-FD			
		Sample Depth	3-5			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	10.3	0.103	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.83	8.06	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.20	11.65	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.62	6.02	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.41	3.98	452.00	0.01
Anthracene [(a)]	594.00	1300	1.60	15.53	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.90	37.86	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.90	28.16	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.50	24.27	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	2.20	21.36	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.60	15.53	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.50	24.27	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	5.50	53.40	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.56	5.44	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.90	57.28	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.40	13.59	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.40	71.84	670.00	0.11
C2 Chrysenes [(a)]	1008.00	---	5.60	54.37	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	1.40	13.59	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	5.50	53.40	---	---
C2-Naphthalenes [(a)]	510.00	---	5.00	48.54	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	106.80	746.00	0.14
C3 Chrysenes [(a)]	1112.00	---	2.40	23.30	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.10	39.81	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	4.60	44.66	949.00	0.05
C3-Naphthalenes [(a)]	581.00	---	6.20	60.19	581.00	0.10
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	135.92	829.00	0.16
C4 Chrysenes [(a)]	1214.00	---	1.60	15.53	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.50	53.40	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.90	96.12	913.00	0.11
Chrysene [(a)]	844.00	826	4.10	39.81	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.64	6.21	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.20	50.49	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	1.50	14.56	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.50	14.56	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	2.40	23.30	385.00	0.06
Perylene [(a)]	967.00	431.00	0.69	6.70	967.00	0.01
Phenanthrene [(a)]	596	34300	4.50	43.69	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	6.20	60.19	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.27**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0507			
		Sample Depth	5-7			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.95	0.0795	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.40	30.19	446.00	0.07
2-Methylnaphthalene	447.00	154800	3.40	42.77	447.00	0.10
Acenaphthene [(a)]	491.00	33400	0.80	10.06	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	1.40	17.61	452.00	0.04
Anthracene [(a)]	594.00	1300	2.90	36.48	594.00	0.06
Benzo(a)anthracene [(a)]	841.00	4153	5.10	64.15	841.00	0.08
Benzo(a)pyrene [(a)]	965.00	3840	3.80	47.80	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.90	36.48	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.90	36.48	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.30	28.93	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.80	35.22	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	7.10	89.31	929.00	0.10
C1 Fluorenes [(a)]	611.00	---	0.97	12.20	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	8.50	106.92	770.00	0.14
C1-Naphthalenes [(a)]	444.00	---	4.10	51.57	444.00	0.12
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	12.00	150.94	670.00	0.23
C2 Chrysenes [(a)]	1008.00	---	6.00	75.47	1008.00	0.07
C2 Fluorenes [(a)]	686.00	---	1.50	18.87	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	7.00	88.05	---	---
C2-Naphthalenes [(a)]	510.00	---	10.00	125.79	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	138.36	746.00	0.19
C3 Chrysenes [(a)]	1112.00	---	3.20	40.25	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	3.50	44.03	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	5.10	64.15	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	8.50	106.92	581.00	0.18
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	12.00	150.94	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.60	20.13	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	5.60	70.44	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	7.90	99.37	913.00	0.11
Chrysene [(a)]	844.00	826	4.70	59.12	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.90	11.32	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.90	86.79	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	1.50	18.87	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.90	23.90	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	3.20	40.25	385.00	0.10
Perylene [(a)]	967.00	431.00	0.84	10.57	967.00	0.01
Phenanthrene [(a)]	596	34300	7.40	93.08	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	8.00	100.63	697.00	0.14
	---	**ESBTU FCVi**	---	---	---	**2.00**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0507-FD			
		Sample Depth	5-7			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.73	0.0873	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	2.50	28.64	446.00	0.06
2-Methylnaphthalene	447.00	154800	3.60	41.24	447.00	0.09
Acenaphthene [(a)]	491.00	33400	0.94	10.77	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	1.50	17.18	452.00	0.04
Anthracene [(a)]	594.00	1300	3.50	40.09	594.00	0.07
Benzo(a)anthracene [(a)]	841.00	4153	6.30	72.16	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	4.20	48.11	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.20	36.66	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	3.20	36.66	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.60	29.78	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	34.36	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	8.20	93.93	929.00	0.10
C1 Fluorenes [(a)]	611.00	---	1.00	11.45	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.90	113.40	770.00	0.15
C1-Naphthalenes [(a)]	444.00	---	4.30	49.26	444.00	0.11
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	14.00	160.37	670.00	0.24
C2 Chrysenes [(a)]	1008.00	---	6.80	77.89	1008.00	0.08
C2 Fluorenes [(a)]	686.00	---	1.80	20.62	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	8.30	95.07	---	---
C2-Naphthalenes [(a)]	510.00	---	11.00	126.00	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	148.91	746.00	0.20
C3 Chrysenes [(a)]	1112.00	---	3.40	38.95	1112.00	0.04
C3 Fluorenes [(a)]	769.00	---	4.00	45.82	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	5.90	67.58	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	9.70	111.11	581.00	0.19
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	148.91	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.90	21.76	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	6.20	71.02	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.10	104.24	913.00	0.11
Chrysene [(a)]	844.00	826	5.70	65.29	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.00	11.45	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	7.80	89.35	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	1.60	18.33	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.30	26.35	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	3.40	38.95	385.00	0.10
Perylene [(a)]	967.00	431.00	0.93	10.65	967.00	0.01
Phenanthrene [(a)]	596	34300	8.30	95.07	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	9.50	108.82	697.00	0.16
	---	**ESBTU FCVi**	---	---	---	**2.09**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0709			
		Sample Depth	7-9			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.47	0.0847	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	9.40	110.98	446.00	0.25
2-Methylnaphthalene	447.00	154800	14.00	165.29	447.00	0.37
Acenaphthene [(a)]	491.00	33400	2.40	28.34	491.00	0.06
Acenaphthylene [(a)]	452.00	24000	5.10	60.21	452.00	0.13
Anthracene [(a)]	594.00	1300	10.00	118.06	594.00	0.20
Benzo(a)anthracene [(a)]	841.00	4153	10.00	118.06	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	7.30	86.19	965.00	0.09
Benzo(b)fluoranthene [(a)]	979.00	2169	5.10	60.21	979.00	0.06
Benzo(e)pyrene [(a)]	967.00	4300	4.70	55.49	967.00	0.06
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.10	48.41	1095.00	0.04
Benzo(k)fluoranthene [(a)]	981.00	1220	4.60	54.31	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	13.00	153.48	929.00	0.17
C1 Fluorenes [(a)]	611.00	---	3.10	36.60	611.00	0.06
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	19.00	224.32	770.00	0.29
C1-Naphthalenes [(a)]	444.00	---	16.00	188.90	444.00	0.43
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	30.00	354.19	670.00	0.53
C2 Chrysenes [(a)]	1008.00	---	9.60	113.34	1008.00	0.11
C2 Fluorenes [(a)]	686.00	---	3.00	35.42	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	12.00	141.68	---	---
C2-Naphthalenes [(a)]	510.00	---	34.00	401.42	510.00	0.79
C2-Phenanthrenes/Anthracenes [(a)]	746	---	19.00	224.32	746.00	0.30
C3 Chrysenes [(a)]	1112.00	---	4.80	56.67	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	4.60	54.31	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	7.00	82.64	949.00	0.09
C3-Naphthalenes [(a)]	581.00	---	21.00	247.93	581.00	0.43
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	165.29	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	2.10	24.79	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	9.30	109.80	657.00	0.17
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.50	112.16	913.00	0.12
Chrysene [(a)]	844.00	826	9.20	108.62	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.50	17.71	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	15.00	177.10	707.00	0.25
Fluorene [(a)]	538.00	26,000.00	8.20	96.81	538.00	0.18
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.40	40.14	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	8.10	95.63	385.00	0.25
Perylene [(a)]	967.00	431.00	1.40	16.53	967.00	0.02
Phenanthrene [(a)]	596	34300	25.00	295.16	596.00	0.50
Pyrene [(a)]	697.00	9,090.00	20.00	236.13	697.00	0.34
	---	**ESBTU FCVi**	---	---	---	**4.17**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0709-FD			
		Sample Depth	7-9			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.25	0.0825	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	8.40	101.82	446.00	0.23
2-Methylnaphthalene	447.00	154800	12.00	145.45	447.00	0.33
Acenaphthene [(a)]	491.00	33400	2.10	25.45	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	4.20	50.91	452.00	0.11
Anthracene [(a)]	594.00	1300	8.80	106.67	594.00	0.18
Benzo(a)anthracene [(a)]	841.00	4153	9.10	110.30	841.00	0.13
Benzo(a)pyrene [(a)]	965.00	3840	6.30	76.36	965.00	0.08
Benzo(b)fluoranthene [(a)]	979.00	2169	4.40	53.33	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	4.00	48.48	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.00	36.36	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	4.50	54.55	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	10.00	121.21	929.00	0.13
C1 Fluorenes [(a)]	611.00	---	2.80	33.94	611.00	0.06
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	18.00	218.18	770.00	0.28
C1-Naphthalenes [(a)]	444.00	---	15.00	181.82	444.00	0.41
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	24.00	290.91	670.00	0.43
C2 Chrysenes [(a)]	1008.00	---	9.30	112.73	1008.00	0.11
C2 Fluorenes [(a)]	686.00	---	2.70	32.73	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	11.00	133.33	---	---
C2-Naphthalenes [(a)]	510.00	---	31.00	375.76	510.00	0.74
C2-Phenanthrenes/Anthracenes [(a)]	746	---	17.00	206.06	746.00	0.28
C3 Chrysenes [(a)]	1112.00	---	4.60	55.76	1112.00	0.05
C3 Fluorenes [(a)]	769.00	---	4.00	48.48	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	5.80	70.30	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	19.00	230.30	581.00	0.40
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	14.00	169.70	829.00	0.20
C4 Chrysenes [(a)]	1214.00	---	2.10	25.45	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	8.60	104.24	657.00	0.16
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.10	110.30	913.00	0.12
Chrysene [(a)]	844.00	826	8.20	99.39	844.00	0.12
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.20	14.55	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	12.00	145.45	707.00	0.21
Fluorene [(a)]	538.00	26,000.00	6.00	72.73	538.00	0.14
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.70	32.73	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	6.90	83.64	385.00	0.22
Perylene [(a)]	967.00	431.00	1.20	14.55	967.00	0.02
Phenanthrene [(a)]	596	34300	22.00	266.67	596.00	0.45
Pyrene [(a)]	697.00	9,090.00	18.00	218.18	697.00	0.31
	---	**ESBTU FCVi**	---	---	---	**3.73**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0911			
		Sample Depth	9-11			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.48	0.0748	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	10.00	133.69	446.00	0.30
2-Methylnaphthalene	447.00	154800	15.00	200.53	447.00	0.45
Acenaphthene [(a)]	491.00	33400	4.30	57.49	491.00	0.12
Acenaphthylene [(a)]	452.00	24000	3.05	40.78	452.00	0.09
Anthracene [(a)]	594.00	1300	15.00	200.53	594.00	0.34
Benzo(a)anthracene [(a)]	841.00	4153	16.00	213.90	841.00	0.25
Benzo(a)pyrene [(a)]	965.00	3840	11.00	147.06	965.00	0.15
Benzo(b)fluoranthene [(a)]	979.00	2169	7.70	102.94	979.00	0.11
Benzo(e)pyrene [(a)]	967.00	4300	6.70	89.57	967.00	0.09
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.80	64.17	1095.00	0.06
Benzo(k)fluoranthene [(a)]	981.00	1220	7.60	101.60	981.00	0.10
C1 Chrysenes [(a)]	929.00	---	19.00	254.01	929.00	0.27
C1 Fluorenes [(a)]	611.00	---	4.70	62.83	611.00	0.10
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	31.00	414.44	770.00	0.54
C1-Naphthalenes [(a)]	444.00	---	18.00	240.64	444.00	0.54
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	43.00	574.87	670.00	0.86
C2 Chrysenes [(a)]	1008.00	---	13.00	173.80	1008.00	0.17
C2 Fluorenes [(a)]	686.00	---	4.30	57.49	686.00	0.08
C2-Fluoranthenes/Pyrenes	---	---	17.00	227.27	---	---
C2-Naphthalenes [(a)]	510.00	---	45.00	601.60	510.00	1.18
C2-Phenanthrenes/Anthracenes [(a)]	746	---	28.00	374.33	746.00	0.50
C3 Chrysenes [(a)]	1112.00	---	5.30	70.86	1112.00	0.06
C3 Fluorenes [(a)]	769.00	---	5.40	72.19	769.00	0.09
C3-Fluoranthenes/Pyrenes	949.00	---	8.70	116.31	949.00	0.12
C3-Naphthalenes [(a)]	581.00	---	26.00	347.59	581.00	0.60
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	18.00	240.64	829.00	0.29
C4 Chrysenes [(a)]	1214.00	---	2.40	32.09	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	11.00	147.06	657.00	0.22
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	11.00	147.06	913.00	0.16
Chrysene [(a)]	844.00	826	14.00	187.17	844.00	0.22
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.80	24.06	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	21.00	280.75	707.00	0.40
Fluorene [(a)]	538.00	26,000.00	8.40	112.30	538.00	0.21
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.40	58.82	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	7.90	105.61	385.00	0.27
Perylene [(a)]	967.00	431.00	2.10	28.07	967.00	0.03
Phenanthrene [(a)]	596	34300	36.00	481.28	596.00	0.81
Pyrene [(a)]	697.00	9,090.00	33.00	441.18	697.00	0.63
	---	**ESBTU FCVi**	---	---	---	**6.59**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-41			
		Field Sample ID	RREC13-41-0911-FD			
		Sample Depth	9-11			
		Sample Date	10/31/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.51	0.0751	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	10.00	133.16	446.00	0.30
2-Methylnaphthalene	447.00	154800	15.00	199.73	447.00	0.45
Acenaphthene [(a)]	491.00	33400	4.40	58.59	491.00	0.12
Acenaphthylene [(a)]	452.00	24000	2.60	34.62	452.00	0.08
Anthracene [(a)]	594.00	1300	14.00	186.42	594.00	0.31
Benzo(a)anthracene [(a)]	841.00	4153	16.00	213.05	841.00	0.25
Benzo(a)pyrene [(a)]	965.00	3840	12.00	159.79	965.00	0.17
Benzo(b)fluoranthene [(a)]	979.00	2169	8.30	110.52	979.00	0.11
Benzo(e)pyrene [(a)]	967.00	4300	7.20	95.87	967.00	0.10
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.80	63.91	1095.00	0.06
Benzo(k)fluoranthene [(a)]	981.00	1220	8.40	111.85	981.00	0.11
C1 Chrysenes [(a)]	929.00	---	19.00	253.00	929.00	0.27
C1 Fluorenes [(a)]	611.00	---	4.50	59.92	611.00	0.10
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	31.00	412.78	770.00	0.54
C1-Naphthalenes [(a)]	444.00	---	18.00	239.68	444.00	0.54
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	42.00	559.25	670.00	0.83
C2 Chrysenes [(a)]	1008.00	---	14.00	186.42	1008.00	0.18
C2 Fluorenes [(a)]	686.00	---	4.70	62.58	686.00	0.09
C2-Fluoranthenes/Pyrenes	---	---	17.00	226.36	---	---
C2-Naphthalenes [(a)]	510.00	---	42.00	559.25	510.00	1.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	29.00	386.15	746.00	0.52
C3 Chrysenes [(a)]	1112.00	---	5.70	75.90	1112.00	0.07
C3 Fluorenes [(a)]	769.00	---	5.70	75.90	769.00	0.10
C3-Fluoranthenes/Pyrenes	949.00	---	8.70	115.85	949.00	0.12
C3-Naphthalenes [(a)]	581.00	---	25.00	332.89	581.00	0.57
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	19.00	253.00	829.00	0.31
C4 Chrysenes [(a)]	1214.00	---	2.70	35.95	1214.00	0.03
C4-Naphthalenes [(a)]	657.00	---	11.00	146.47	657.00	0.22
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	12.00	159.79	913.00	0.18
Chrysene [(a)]	844.00	826	15.00	199.73	844.00	0.24
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	2.00	26.63	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	22.00	292.94	707.00	0.41
Fluorene [(a)]	538.00	26,000.00	8.00	106.52	538.00	0.20
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	4.40	58.59	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	8.70	115.85	385.00	0.30
Perylene [(a)]	967.00	431.00	2.30	30.63	967.00	0.03
Phenanthrene [(a)]	596	34300	35.00	466.05	596.00	0.78
Pyrene [(a)]	697.00	9,090.00	33.00	439.41	697.00	0.63
	---	**ESBTU FCVi**	---	---	---	**6.64**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-42			
		Field Sample ID	RREC13-42-SURF			
		Sample Depth	0-0.5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.29	0.0329	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	3.01	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.13	3.80	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.15	4.56	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.09	2.80	452.00	0.01
Anthracene [(a)]	594.00	1300	0.42	12.77	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	1.30	39.51	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	1.10	33.43	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	0.92	27.96	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	0.73	22.19	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.54	16.41	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	0.99	30.09	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	0.70	21.28	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.07	2.10	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.40	42.55	770.00	0.06
C1-Naphthalenes [(a)]	444.00	---	0.17	5.17	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.99	30.09	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	0.42	12.77	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.09	2.58	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.64	19.45	---	---
C2-Naphthalenes [(a)]	510.00	---	0.50	15.20	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.54	16.41	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.13	3.95	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.08	2.43	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.28	8.51	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.65	19.76	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.40	12.16	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.05	1.64	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.31	9.42	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.20	6.08	913.00	0.01
Chrysene [(a)]	844.00	826	1.10	33.43	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.15	4.56	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.10	63.83	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.19	5.78	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.47	14.29	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.33	10.03	385.00	0.03
Perylene [(a)]	967.00	431.00	0.31	9.42	967.00	0.01
Phenanthrene [(a)]	596	34300	1.10	33.43	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	1.60	48.63	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.69

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-42			
		Field Sample ID	RREC13-42-0001			
		Sample Depth	0-1			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	1.38	0.0138	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.41	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.40	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.87	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.17	452.00	0.00
Anthracene [(a)]	594.00	1300	0.02	1.45	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	1.59	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	1.23	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.80	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.94	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.69	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.02	1.09	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.02	1.16	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.01	0.41	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.04	2.54	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.70	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.05	3.77	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.01	0.57	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.52	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.02	1.16	---	---
C2-Naphthalenes [(a)]	510.00	---	0.06	3.99	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.03	1.88	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.00	0.19	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.62	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	0.53	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.06	4.64	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	1.30	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.10	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.03	2.10	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.01	0.72	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	1.52	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.14	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.05	3.41	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.02	1.16	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.49	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.40	385.00	0.00
Perylene [(a)]	967.00	431.00	0.07	5.22	967.00	0.01
Phenanthrene [(a)]	596	34300	0.07	4.71	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.04	2.83	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.06

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-42			
		Field Sample ID	RREC13-42-0103			
		Sample Depth	1-3			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.88	0.0088	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.19	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.24	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.14	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.05	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.20	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.01	0.57	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.35	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.63	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.01	0.65	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.56	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.40	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.01	1.36	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.12	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.01	1.59	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.28	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.01	1.47	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.02	2.38	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.24	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.01	1.59	---	---
C2-Naphthalenes [(a)]	510.00	---	0.01	1.11	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.01	1.59	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.01	1.09	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.01	0.57	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.01	1.59	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.02	2.27	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.02	2.49	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.35	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.02	1.70	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.02	1.70	913.00	0.00
Chrysene [(a)]	844.00	826	0.01	1.00	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.07	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.01	0.93	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.20	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.19	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.24	385.00	0.00
Perylene [(a)]	967.00	431.00	0.00	0.44	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.70	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.01	1.13	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.02

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-42			
		Field Sample ID	RREC13-42-0305			
		Sample Depth	3-5			
		Sample Date	11/4/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.48	0.0248	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.02	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.09	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.02	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.01	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.02	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.00	0.05	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.00	0.05	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.01	0.22	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.00	0.14	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.00	0.03	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.00	0.10	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.00	0.08	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.09	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.00	0.10	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.00	0.03	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.00	0.13	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.00	0.09	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.00	0.02	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.00	0.08	---	---
C2-Naphthalenes [(a)]	510.00	---	0.00	0.12	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.00	0.13	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.00	0.05	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.00	0.09	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.00	0.07	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.00	0.19	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.00	0.11	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.00	0.09	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.00	0.13	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.00	0.09	913.00	0.00
Chrysene [(a)]	844.00	826	0.00	0.09	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.01	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.00	0.09	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.03	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.00	0.02	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.09	385.00	0.00
Perylene [(a)]	967.00	431.00	0.01	0.23	967.00	0.00
Phenanthrene [(a)]	596	34300	0.00	0.09	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.00	0.09	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.00

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-44			
		Field Sample ID	RREC13-44-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.98	0.0698	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.07	0.99	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.13	1.86	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.08	1.17	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.07	1.03	452.00	0.00
Anthracene [(a)]	594.00	1300	0.40	5.73	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.10	15.76	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.20	17.19	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.10	15.76	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.92	13.18	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.81	11.60	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	17.19	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.82	11.75	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.05	0.70	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.30	18.62	770.00	0.02
C1-Naphthalenes [(a)]	444.00	---	0.13	1.86	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.75	10.74	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	0.78	11.17	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.10	1.43	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.93	13.32	---	---
C2-Naphthalenes [(a)]	510.00	---	0.41	5.87	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.67	9.60	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.41	5.87	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.28	4.01	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.72	10.32	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.48	6.88	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.84	12.03	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.18	2.58	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.35	5.01	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.74	10.60	913.00	0.01
Chrysene [(a)]	844.00	826	1.20	17.19	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.21	3.01	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.80	25.79	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.13	1.86	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.69	9.89	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.15	2.08	385.00	0.01
Perylene [(a)]	967.00	431.00	0.37	5.30	967.00	0.01
Phenanthrene [(a)]	596	34300	0.78	11.17	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.40	20.06	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.33

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-44			
		Field Sample ID	RREC13-44-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.03	0.0603	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.08	1.28	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.19	3.15	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.14	2.32	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.09	1.48	452.00	0.00
Anthracene [(a)]	594.00	1300	0.43	7.13	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.60	26.53	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.70	28.19	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	31.51	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.20	19.90	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.70	11.61	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.60	26.53	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.10	18.24	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.09	1.53	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.80	29.85	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.16	2.65	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.30	21.56	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.50	24.88	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.25	4.15	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.30	21.56	---	---
C2-Naphthalenes [(a)]	510.00	---	0.48	7.96	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.30	21.56	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.75	12.44	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.62	10.28	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	18.24	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	0.84	13.93	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.30	21.56	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.33	5.47	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.85	14.10	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.10	18.24	913.00	0.02
Chrysene [(a)]	844.00	826	1.60	26.53	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	3.65	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.20	53.07	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.18	2.99	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.67	11.11	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.19	3.15	385.00	0.01
Perylene [(a)]	967.00	431.00	0.50	8.29	967.00	0.01
Phenanthrene [(a)]	596	34300	1.00	16.58	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.80	29.85	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.55

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-44				
		Field Sample ID	RREC13-44-0103				
		Sample Depth	1-3				
		Sample Date	11/1/13				
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final		Conc
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt
Total Organic Carbon**	--	--	7	0.07	---	---	8.51
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)							
1-Methylnaphthalene	446.00	165700	0.10	1.43	446.00	0.00	0.31
2-Methylnaphthalene	447.00	154800	0.18	2.50	447.00	0.01	0.42
Acenaphthene [(a)]	491.00	33400	0.12	1.71	491.00	0.00	0.22
Acenaphthylene [(a)]	452.00	24000	0.06	0.91	452.00	0.00	0.10
Anthracene [(a)]	594.00	1300	0.22	3.14	594.00	0.01	0.23
Benzo(a)anthracene [(a)]	841.00	4153	0.98	14.00	841.00	0.02	1.00
Benzo(a)pyrene [(a)]	965.00	3840	0.93	13.29	965.00	0.01	0.89
Benzo(b)fluoranthene [(a)]	979.00	2169	1.10	15.71	979.00	0.02	1.10
Benzo(e)pyrene [(a)]	967.00	4300	0.73	10.43	967.00	0.01	0.76
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.35	5.00	1095.00	0.00	0.36
Benzo(k)fluoranthene [(a)]	981.00	1220	0.78	11.14	981.00	0.01	0.77
C1 Chrysenes [(a)]	929.00	---	1.20	17.14	929.00	0.02	1.50
C1 Fluorenes [(a)]	611.00	---	0.17	2.43	611.00	0.00	0.44
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.80	25.71	770.00	0.03	2.70
C1-Naphthalenes [(a)]	444.00	---	0.16	2.29	444.00	0.01	0.49
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.40	34.29	670.00	0.05	4.60
C2 Chrysenes [(a)]	1008.00	---	2.80	40.00	1008.00	0.04	3.40
C2 Fluorenes [(a)]	686.00	---	0.68	9.71	686.00	0.01	1.60
C2-Fluoranthenes/Pyrenes	---	---	2.20	31.43	---	---	3.40
C2-Naphthalenes [(a)]	510.00	---	1.00	14.29	510.00	0.03	3.50
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.60	51.43	746.00	0.07	7.10
C3 Chrysenes [(a)]	1112.00	---	1.30	18.57	1112.00	0.02	1.90
C3 Fluorenes [(a)]	769.00	---	2.00	28.57	769.00	0.04	3.80
C3-Fluoranthenes/Pyrenes	949.00	---	2.40	34.29	949.00	0.04	3.40
C3-Naphthalenes [(a)]	581.00	---	3.30	47.14	581.00	0.08	9.60
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.60	65.71	829.00	0.08	10.00
C4 Chrysenes [(a)]	1214.00	---	0.55	7.86	1214.00	0.01	1.00
C4-Naphthalenes [(a)]	657.00	---	3.30	47.14	657.00	0.07	7.90
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.60	51.43	913.00	0.06	7.60
Chrysene [(a)]	844.00	826	1.10	15.71	844.00	0.02	1.10
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.09	1.21	1123.00	0.00	0.09
Fluoranthene [(a)]	707.00	23,870.00	1.80	25.71	707.00	0.04	2.00
Fluorene [(a)]	538.00	26,000.00	0.12	1.71	538.00	0.00	0.34
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.33	4.71	1115.00	0.00	0.30
Naphthalene [(a)]	385.00	61,700.00	0.18	2.50	385.00	0.01	0.16
Perylene [(a)]	967.00	431.00	0.38	5.43	967.00	0.01	0.48
Phenanthrene [(a)]	596	34300	0.77	11.00	596.00	0.02	1.30
Pyrene [(a)]	697.00	9,090.00	1.50	21.43	697.00	0.03	2.00
	---	**ESBTU FCVi**	---	---	---	0.55	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-44		
		Field Sample ID	RREC13-44-0305		
		Sample Depth	3-5		
		Sample Date	11/1/13		
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Coc	Final	
	µg/g oc	µg/g oc	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	0.0851	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)					
1-Methylnaphthalene	446.00	165700	3.64	446.00	0.01
2-Methylnaphthalene	447.00	154800	4.94	447.00	0.01
Acenaphthene [(a)]	491.00	33400	2.59	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	1.18	452.00	0.00
Anthracene [(a)]	594.00	1300	2.70	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	11.75	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	10.46	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	12.93	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	8.93	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	4.23	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	9.05	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	17.63	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	5.17	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	31.73	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	5.76	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	54.05	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	39.95	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	18.80	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	39.95	---	---
C2-Naphthalenes [(a)]	510.00	---	41.13	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	83.43	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	22.33	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	44.65	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	39.95	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	112.81	581.00	0.19
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	117.51	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	11.75	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	92.83	657.00	0.14
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	89.31	913.00	0.10
Chrysene [(a)]	844.00	826	12.93	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.00	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	23.50	707.00	0.03
Fluorene [(a)]	538.00	26,000.00	4.00	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.53	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	1.88	385.00	0.00
Perylene [(a)]	967.00	431.00	5.64	967.00	0.01
Phenanthrene [(a)]	596	34300	15.28	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	23.50	697.00	0.03
	---	**ESBTU FCVi**	---	---	0.77

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-44			
		Field Sample ID	RREC13-44-0507			
		Sample Depth	5-7			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.56	0.0856	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.41	4.79	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.61	7.13	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.32	3.74	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.10	1.17	452.00	0.00
Anthracene [(a)]	594.00	1300	0.41	4.79	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.80	21.03	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.50	17.52	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	17.52	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.20	14.02	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.67	7.83	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.50	17.52	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.50	29.21	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.72	8.41	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.30	50.23	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.69	8.06	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.50	99.30	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	4.80	56.07	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	2.50	29.21	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.80	56.07	---	---
C2-Naphthalenes [(a)]	510.00	---	6.10	71.26	510.00	0.14
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	151.87	746.00	0.20
C3 Chrysenes [(a)]	1112.00	---	2.70	31.54	1112.00	0.03
C3 Fluorenes [(a)]	769.00	---	6.80	79.44	769.00	0.10
C3-Fluoranthenes/Pyrenes	949.00	---	5.30	61.92	949.00	0.07
C3-Naphthalenes [(a)]	581.00	---	14.00	163.55	581.00	0.28
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	151.87	829.00	0.18
C4 Chrysenes [(a)]	1214.00	---	1.60	18.69	1214.00	0.02
C4-Naphthalenes [(a)]	657.00	---	14.00	163.55	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	9.00	105.14	913.00	0.12
Chrysene [(a)]	844.00	826	2.00	23.36	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.17	1.99	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.10	59.58	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.39	4.56	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.58	6.78	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.40	4.67	385.00	0.01
Perylene [(a)]	967.00	431.00	0.58	6.78	967.00	0.01
Phenanthrene [(a)]	596	34300	2.40	28.04	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	3.70	43.22	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	**1.25**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-45			
		Field Sample ID	RREC13-45-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/29/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7	0.07	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.20	2.86	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.35	5.00	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.23	3.29	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.17	2.43	452.00	0.01
Anthracene [(a)]	594.00	1300	1.00	14.29	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.40	48.57	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.60	51.43	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	42.86	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.20	31.43	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.50	21.43	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.70	38.57	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.10	30.00	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.13	1.86	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.90	55.71	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.37	5.29	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.10	30.00	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.40	20.00	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.17	2.43	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.70	24.29	---	---
C2-Naphthalenes [(a)]	510.00	---	1.10	15.71	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.30	18.57	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.53	7.57	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.30	4.29	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.95	13.57	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.00	14.29	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.10	15.71	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.13	1.86	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.65	9.29	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.61	8.71	913.00	0.01
Chrysene [(a)]	844.00	826	3.20	45.71	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.40	5.71	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.30	61.43	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.37	5.29	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.40	20.00	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.69	9.86	385.00	0.03
Perylene [(a)]	967.00	431.00	0.91	13.00	967.00	0.01
Phenanthrene [(a)]	596	34300	2.20	31.43	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	3.80	54.29	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.81

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-45			
		Field Sample ID	RREC13-45-0001			
		Sample Depth	0-1			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.56	0.0756	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.19	2.51	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.26	3.37	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.22	2.91	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.11	1.46	452.00	0.00
Anthracene [(a)]	594.00	1300	0.65	8.60	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.70	22.49	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.60	21.16	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	23.81	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.10	14.55	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.70	9.26	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	17.20	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.00	13.23	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.13	1.72	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.30	30.42	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.28	3.70	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.80	23.81	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.10	14.55	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.20	2.65	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.20	15.87	---	---
C2-Naphthalenes [(a)]	510.00	---	1.20	15.87	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.40	18.52	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.44	5.82	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.46	6.08	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.66	8.73	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.60	21.16	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	18.52	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.18	2.38	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.00	13.23	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.86	11.38	913.00	0.01
Chrysene [(a)]	844.00	826	1.60	21.16	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	2.91	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.00	39.68	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.35	4.63	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.67	8.86	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.26	3.37	385.00	0.01
Perylene [(a)]	967.00	431.00	0.43	5.69	967.00	0.01
Phenanthrene [(a)]	596	34300	1.70	22.49	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	2.40	31.75	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.49

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-45			
		Field Sample ID	RREC13-45-0103			
		Sample Depth	1-3			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.4	0.034	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	2.68	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.11	3.09	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.18	5.29	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.03	0.97	452.00	0.00
Anthracene [(a)]	594.00	1300	0.40	11.76	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	0.52	15.29	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	0.38	11.18	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	0.41	12.06	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	0.25	7.35	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.15	4.41	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.34	10.00	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	0.37	10.88	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.11	3.24	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.84	24.71	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.11	3.24	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.10	32.35	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	0.51	15.00	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.17	5.00	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	0.51	15.00	---	---
C2-Naphthalenes [(a)]	510.00	---	0.83	24.41	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.00	29.41	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.24	7.06	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.37	10.88	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.37	10.88	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.50	44.12	581.00	0.08
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.10	32.35	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.11	3.24	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.20	35.29	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.67	19.71	913.00	0.02
Chrysene [(a)]	844.00	826	0.48	14.12	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.05	1.44	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	1.30	38.24	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.28	8.24	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.14	4.12	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.11	3.09	385.00	0.01
Perylene [(a)]	967.00	431.00	0.12	3.53	967.00	0.00
Phenanthrene [(a)]	596	34300	1.00	29.41	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	0.87	25.59	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.49

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-45			
		Field Sample ID	RREC13-45-0305			
		Sample Depth	3-5			
		Sample Date	11/1/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.97	0.0297	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.02	0.71	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.02	0.81	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.44	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.14	452.00	0.00
Anthracene [(a)]	594.00	1300	0.02	0.61	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.05	1.65	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.04	1.18	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.03	1.14	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.03	1.11	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.03	0.84	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.03	0.98	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.07	2.39	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.02	0.77	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.11	3.70	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.03	1.08	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.24	8.08	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.10	3.30	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.05	1.72	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.11	3.70	---	---
C2-Naphthalenes [(a)]	510.00	---	0.18	6.06	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.20	6.73	746.00	0.01
C3 Chrysenes [(a)]	1112.00	---	0.05	1.78	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.07	2.46	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.11	3.70	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.57	19.19	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.30	10.10	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.03	0.94	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.42	14.14	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.20	6.73	913.00	0.01
Chrysene [(a)]	844.00	826	0.06	2.15	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.16	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.08	2.53	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.02	0.74	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.47	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.02	0.51	385.00	0.00
Perylene [(a)]	967.00	431.00	0.02	0.64	967.00	0.00
Phenanthrene [(a)]	596	34300	0.11	3.70	596.00	0.01
Pyrene [(a)]	697.00	9,090.00	0.08	2.53	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.08

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.22	0.0822	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.44	5.35	446.00	0.01
2-Methylnaphthalene	447.00	154800	1.20	14.60	447.00	0.03
Acenaphthene [(a)]	491.00	33400	1.40	17.03	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.61	7.42	452.00	0.02
Anthracene [(a)]	594.00	1300	4.50	54.74	594.00	0.09
Benzo(a)anthracene [(a)]	841.00	4153	10.00	121.65	841.00	0.14
Benzo(a)pyrene [(a)]	965.00	3840	8.60	104.62	965.00	0.11
Benzo(b)fluoranthene [(a)]	979.00	2169	8.60	104.62	979.00	0.11
Benzo(e)pyrene [(a)]	967.00	4300	5.40	65.69	967.00	0.07
Benzo(g,h,i)perylene [(a)]	1095.00	648	5.50	66.91	1095.00	0.06
Benzo(k)fluoranthene [(a)]	981.00	1220	7.20	87.59	981.00	0.09
C1 Chrysenes [(a)]	929.00	---	4.20	51.09	929.00	0.06
C1 Fluorenes [(a)]	611.00	---	0.30	3.65	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	9.10	110.71	770.00	0.14
C1-Naphthalenes [(a)]	444.00	---	0.78	9.49	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.80	58.39	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	2.20	26.76	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.25	3.04	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	3.10	37.71	---	---
C2-Naphthalenes [(a)]	510.00	---	1.20	14.60	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.20	14.60	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.68	8.27	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.20	14.60	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.20	14.60	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.20	14.60	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.20	14.60	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	1.20	14.60	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	1.20	14.60	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.20	14.60	913.00	0.02
Chrysene [(a)]	844.00	826	8.90	108.27	844.00	0.13
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	1.60	19.46	1123.00	0.02
Fluoranthene [(a)]	707.00	23,870.00	20.00	243.31	707.00	0.34
Fluorene [(a)]	538.00	26,000.00	2.00	24.33	538.00	0.05
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	5.00	60.83	1115.00	0.05
Naphthalene [(a)]	385.00	61,700.00	2.60	31.63	385.00	0.08
Perylene [(a)]	967.00	431.00	2.60	31.63	967.00	0.03
Phenanthrene [(a)]	596	34300	14.00	170.32	596.00	0.29
Pyrene [(a)]	697.00	9,090.00	14.00	170.32	697.00	0.24
	---	**ESBTU FCVi**	---	---	---	**2.27**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.83	0.0583	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.28	4.80	446.00	0.01
2-Methylnaphthalene	447.00	154800	1.35	23.16	447.00	0.05
Acenaphthene [(a)]	491.00	33400	1.50	25.73	491.00	0.05
Acenaphthylene [(a)]	452.00	24000	0.43	7.38	452.00	0.02
Anthracene [(a)]	594.00	1300	3.50	60.03	594.00	0.10
Benzo(a)anthracene [(a)]	841.00	4153	15.00	257.29	841.00	0.31
Benzo(a)pyrene [(a)]	965.00	3840	13.00	222.98	965.00	0.23
Benzo(b)fluoranthene [(a)]	979.00	2169	12.00	205.83	979.00	0.21
Benzo(e)pyrene [(a)]	967.00	4300	8.10	138.94	967.00	0.14
Benzo(g,h,i)perylene [(a)]	1095.00	648	8.00	137.22	1095.00	0.13
Benzo(k)fluoranthene [(a)]	981.00	1220	11.00	188.68	981.00	0.19
C1 Chrysenes [(a)]	929.00	---	6.60	113.21	929.00	0.12
C1 Fluorenes [(a)]	611.00	---	0.45	7.72	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	12.00	205.83	770.00	0.27
C1-Naphthalenes [(a)]	444.00	---	0.55	9.43	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.40	58.32	670.00	0.09
C2 Chrysenes [(a)]	1008.00	---	3.70	63.46	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	1.00	17.15	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	5.50	94.34	---	---
C2-Naphthalenes [(a)]	510.00	---	1.35	23.16	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.35	23.16	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	1.40	24.01	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	2.30	39.45	769.00	0.05
C3-Fluoranthenes/Pyrenes	949.00	---	3.10	53.17	949.00	0.06
C3-Naphthalenes [(a)]	581.00	---	1.35	23.16	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.35	23.16	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.55	9.43	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	3.80	65.18	657.00	0.10
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.20	54.89	913.00	0.06
Chrysene [(a)]	844.00	826	14.00	240.14	844.00	0.28
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	2.50	42.88	1123.00	0.04
Fluoranthene [(a)]	707.00	23,870.00	21.00	360.21	707.00	0.51
Fluorene [(a)]	538.00	26,000.00	1.10	18.87	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	7.10	121.78	1115.00	0.11
Naphthalene [(a)]	385.00	61,700.00	1.35	23.16	385.00	0.06
Perylene [(a)]	967.00	431.00	3.20	54.89	967.00	0.06
Phenanthrene [(a)]	596	34300	7.10	121.78	596.00	0.20
Pyrene [(a)]	697.00	9,090.00	15.00	257.29	697.00	0.37
	---	**ESBTU FCVi**	---	---	---	**3.61**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.59	0.0559	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.05	0.82	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.18	3.22	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.08	1.47	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.05	0.97	452.00	0.00
Anthracene [(a)]	594.00	1300	0.42	7.51	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.30	23.26	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	0.89	15.92	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	0.90	16.10	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	0.67	11.99	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.64	11.45	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.10	19.68	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	0.52	9.30	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.04	0.79	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.20	21.47	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.07	1.32	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.47	8.41	670.00	0.01
C2 Chrysenes [(a)]	1008.00	---	0.32	5.72	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.08	1.36	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.45	8.05	---	---
C2-Naphthalenes [(a)]	510.00	---	0.18	3.22	510.00	0.01
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.18	3.22	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.12	2.15	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.18	3.22	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.23	4.11	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.18	3.22	581.00	0.01
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.18	3.22	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.05	0.86	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.18	3.22	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.18	3.22	913.00	0.00
Chrysene [(a)]	844.00	826	1.10	19.68	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.18	3.22	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.60	46.51	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.26	4.65	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.58	10.38	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.18	3.22	385.00	0.01
Perylene [(a)]	967.00	431.00	0.18	3.22	967.00	0.00
Phenanthrene [(a)]	596	34300	1.70	30.41	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	1.80	32.20	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.40

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	2.34	0.0234	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.01	0.24	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.24	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.32	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.10	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.24	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.05	2.14	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.04	1.71	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.05	2.26	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.04	1.62	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.04	1.67	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.04	1.67	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.04	1.79	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.16	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.07	3.08	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.35	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.04	1.79	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.05	2.18	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.47	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	2.39	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	1.03	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.05	2.22	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.03	1.32	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.03	1.24	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.05	2.09	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.05	2.05	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.09	3.97	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.41	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.07	2.95	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.07	2.86	913.00	0.00
Chrysene [(a)]	844.00	826	0.05	2.22	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.38	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.08	3.55	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.01	0.32	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.03	1.24	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.51	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	1.15	967.00	0.00
Phenanthrene [(a)]	596	34300	0.03	1.45	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.07	3.08	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.05

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	1.84	0.0184	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.25	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.01	0.57	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.01	0.38	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.11	452.00	0.00
Anthracene [(a)]	594.00	1300	0.01	0.57	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.06	3.48	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.05	2.72	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.06	3.26	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.04	2.28	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.04	2.39	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.04	2.39	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.04	2.28	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.21	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.07	3.91	770.00	0.01
C1-Naphthalenes [(a)]	444.00	---	0.01	0.36	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.05	2.50	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.05	2.72	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.60	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.06	2.99	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	1.20	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.05	2.93	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.03	1.41	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.03	1.47	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.05	2.45	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.05	2.55	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.10	5.22	829.00	0.01
C4 Chrysenes [(a)]	1214.00	---	0.01	0.52	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.07	3.70	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.07	3.75	913.00	0.00
Chrysene [(a)]	844.00	826	0.06	3.37	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.01	0.60	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.11	5.98	707.00	0.01
Fluorene [(a)]	538.00	26,000.00	0.01	0.38	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.03	1.85	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.01	0.57	385.00	0.00
Perylene [(a)]	967.00	431.00	0.03	1.58	967.00	0.00
Phenanthrene [(a)]	596	34300	0.04	1.96	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.09	4.95	697.00	0.01
	---	**ESBTU FCVi**	---	---	---	0.07

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-46			
		Field Sample ID	RREC13-46-0710			
		Sample Depth	7-10			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	3.23	0.0323	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.00	0.12	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.00	0.06	447.00	0.00
Acenaphthene [(a)]	491.00	33400	0.00	0.07	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.00	0.02	452.00	0.00
Anthracene [(a)]	594.00	1300	0.00	0.06	594.00	0.00
Benzo(a)anthracene [(a)]	841.00	4153	0.02	0.46	841.00	0.00
Benzo(a)pyrene [(a)]	965.00	3840	0.02	0.46	965.00	0.00
Benzo(b)fluoranthene [(a)]	979.00	2169	0.02	0.53	979.00	0.00
Benzo(e)pyrene [(a)]	967.00	4300	0.02	0.50	967.00	0.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.01	0.43	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	0.01	0.40	981.00	0.00
C1 Chrysenes [(a)]	929.00	---	0.03	0.77	929.00	0.00
C1 Fluorenes [(a)]	611.00	---	0.00	0.08	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.03	0.99	770.00	0.00
C1-Naphthalenes [(a)]	444.00	---	0.01	0.15	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.04	1.08	670.00	0.00
C2 Chrysenes [(a)]	1008.00	---	0.05	1.42	1008.00	0.00
C2 Fluorenes [(a)]	686.00	---	0.01	0.20	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	0.04	1.27	---	---
C2-Naphthalenes [(a)]	510.00	---	0.02	0.59	510.00	0.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.04	1.36	746.00	0.00
C3 Chrysenes [(a)]	1112.00	---	0.03	0.80	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.02	0.50	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.04	1.24	949.00	0.00
C3-Naphthalenes [(a)]	581.00	---	0.05	1.42	581.00	0.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.08	2.41	829.00	0.00
C4 Chrysenes [(a)]	1214.00	---	0.01	0.43	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.06	1.89	657.00	0.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.05	1.67	913.00	0.00
Chrysene [(a)]	844.00	826	0.02	0.74	844.00	0.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.00	0.07	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	0.02	0.59	707.00	0.00
Fluorene [(a)]	538.00	26,000.00	0.00	0.09	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.01	0.23	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.00	0.06	385.00	0.00
Perylene [(a)]	967.00	431.00	0.02	0.46	967.00	0.00
Phenanthrene [(a)]	596	34300	0.01	0.37	596.00	0.00
Pyrene [(a)]	697.00	9,090.00	0.02	0.71	697.00	0.00
	---	**ESBTU FCVi**	---	---	---	0.02

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.33	0.0833	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.15	1.80	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.28	3.36	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.12	1.44	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.09	1.03	452.00	0.00
Anthracene [(a)]	594.00	1300	0.36	4.32	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.50	18.01	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.60	19.21	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	21.61	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.20	14.41	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.88	10.56	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.30	15.61	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.10	13.21	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.08	1.01	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.80	21.61	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.29	3.48	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.10	13.21	670.00	0.02
C2 Chrysenes [(a)]	1008.00	---	1.20	14.41	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.20	2.40	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.30	15.61	---	---
C2-Naphthalenes [(a)]	510.00	---	0.92	11.04	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.10	13.21	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.52	6.24	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.53	6.36	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.93	11.16	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.30	15.61	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	16.81	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.22	2.64	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.10	13.21	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.10	13.21	913.00	0.01
Chrysene [(a)]	844.00	826	1.60	19.21	844.00	0.02
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.23	2.76	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.40	28.81	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.18	2.16	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.80	9.60	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.39	4.68	385.00	0.01
Perylene [(a)]	967.00	431.00	0.46	5.52	967.00	0.01
Phenanthrene [(a)]	596	34300	1.10	13.21	596.00	0.02
Pyrene [(a)]	697.00	9,090.00	1.90	22.81	697.00	0.03
	---	**ESBTU FCVi**	---	---	---	0.38

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-SURF-FD			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.3	0.063	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.15	2.38	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.28	4.44	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.14	2.22	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.10	1.59	452.00	0.00
Anthracene [(a)]	594.00	1300	0.49	7.78	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	30.16	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.00	31.75	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	28.57	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.40	22.22	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	15.87	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	30.16	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.20	19.05	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.09	1.37	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	33.33	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.29	4.60	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.30	20.63	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.20	19.05	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.21	3.33	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.20	19.05	---	---
C2-Naphthalenes [(a)]	510.00	---	0.96	15.24	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.20	19.05	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.51	8.10	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.60	9.52	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.90	14.29	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.30	20.63	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	22.22	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.18	2.86	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.10	17.46	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.00	15.87	913.00	0.02
Chrysene [(a)]	844.00	826	1.90	30.16	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.29	4.60	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.10	49.21	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.20	3.17	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.94	14.92	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.22	3.49	385.00	0.01
Perylene [(a)]	967.00	431.00	0.55	8.73	967.00	0.01
Phenanthrene [(a)]	596	34300	1.30	20.63	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.30	36.51	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.58

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.08	0.0608	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.15	2.47	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.15	2.38	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.14	2.30	491.00	0.00
Acenaphthylene [(a)]	452.00	24000	0.08	1.38	452.00	0.00
Anthracene [(a)]	594.00	1300	0.31	5.10	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.40	23.03	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	1.50	24.67	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.50	24.67	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.10	18.09	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.85	13.98	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.50	24.67	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	0.96	15.79	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.08	1.28	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.60	26.32	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.26	4.28	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.10	18.09	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.93	15.30	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.19	3.13	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.10	18.09	---	---
C2-Naphthalenes [(a)]	510.00	---	1.00	16.45	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.10	18.09	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.49	8.06	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.58	9.54	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.75	12.34	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.40	23.03	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	23.03	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.16	2.63	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.10	18.09	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.89	14.64	913.00	0.02
Chrysene [(a)]	844.00	826	1.50	24.67	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.26	4.28	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.20	36.18	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.14	2.30	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.81	13.32	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.15	2.38	385.00	0.01
Perylene [(a)]	967.00	431.00	0.45	7.40	967.00	0.01
Phenanthrene [(a)]	596	34300	1.10	18.09	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	1.80	29.61	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.49

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.06	0.0706	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	1.40	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.23	3.19	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.21	2.97	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.10	1.42	452.00	0.00
Anthracene [(a)]	594.00	1300	0.43	6.09	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.90	26.91	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.00	28.33	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	28.33	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.40	19.83	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	14.16	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.90	26.91	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.40	19.83	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.12	1.70	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.20	31.16	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.19	2.69	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.70	24.08	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.50	21.25	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.34	4.82	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.60	22.66	---	---
C2-Naphthalenes [(a)]	510.00	---	0.84	11.90	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.90	26.91	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.69	9.77	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.95	13.46	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	15.58	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.70	24.08	581.00	0.04
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.20	31.16	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.27	3.82	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.80	25.50	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.70	24.08	913.00	0.03
Chrysene [(a)]	844.00	826	1.90	26.91	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.31	4.39	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.20	45.33	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.25	3.54	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.97	13.74	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.23	3.19	385.00	0.01
Perylene [(a)]	967.00	431.00	0.58	8.22	967.00	0.01
Phenanthrene [(a)]	596	34300	1.20	17.00	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.30	32.58	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.59

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0103-FD			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.89	0.0789	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.09	1.14	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.22	2.72	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.20	2.53	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.10	1.27	452.00	0.00
Anthracene [(a)]	594.00	1300	0.49	6.21	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.00	25.35	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.00	25.35	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	24.08	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.40	17.74	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	13.94	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	22.81	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.30	16.48	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.13	1.65	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.20	27.88	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.17	2.15	444.00	0.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.70	21.55	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	1.30	16.48	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.32	4.06	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.50	19.01	---	---
C2-Naphthalenes [(a)]	510.00	---	0.77	9.76	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.80	22.81	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.59	7.48	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.90	11.41	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.00	12.67	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.40	17.74	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	2.00	25.35	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.25	3.17	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.70	21.55	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.60	20.28	913.00	0.02
Chrysene [(a)]	844.00	826	2.00	25.35	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.33	4.18	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.50	44.36	707.00	0.06
Fluorene [(a)]	538.00	26,000.00	0.17	2.15	538.00	0.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.00	12.67	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.22	2.72	385.00	0.01
Perylene [(a)]	967.00	431.00	0.59	7.48	967.00	0.01
Phenanthrene [(a)]	596	34300	1.40	17.74	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.30	29.15	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.53

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.79	0.0779	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.25	3.21	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.31	3.98	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.27	3.47	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.13	1.67	452.00	0.00
Anthracene [(a)]	594.00	1300	0.49	6.29	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.00	25.67	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.00	25.67	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.00	25.67	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.40	17.97	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.94	12.07	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	25.67	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.50	19.26	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.23	2.95	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.80	35.94	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.31	3.98	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.90	37.23	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	2.20	28.24	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.74	9.50	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.20	28.24	---	---
C2-Naphthalenes [(a)]	510.00	---	2.00	25.67	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.50	44.93	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	0.99	12.71	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.10	26.96	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	1.70	21.82	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	4.10	52.63	581.00	0.09
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.20	53.92	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.46	5.91	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.70	47.50	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.00	38.51	913.00	0.04
Chrysene [(a)]	844.00	826	1.90	24.39	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	3.08	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.70	47.50	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.24	3.08	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.89	11.42	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.31	3.98	385.00	0.01
Perylene [(a)]	967.00	431.00	0.64	8.22	967.00	0.01
Phenanthrene [(a)]	596	34300	1.80	23.11	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	2.90	37.23	697.00	0.05
	---	**ESBTU FCVi**	---	---	---	0.71

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0305-FD			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.1	0.071	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.15	2.11	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.26	3.66	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.25	3.52	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.12	1.69	452.00	0.00
Anthracene [(a)]	594.00	1300	0.56	7.89	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.30	32.39	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.40	33.80	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.40	33.80	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.70	23.94	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	18.31	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.20	30.99	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.60	22.54	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.17	2.39	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.90	40.85	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.22	3.10	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.30	32.39	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	1.80	25.35	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.52	7.32	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.10	29.58	---	---
C2-Naphthalenes [(a)]	510.00	---	1.20	16.90	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	2.70	38.03	746.00	0.05
C3 Chrysenes [(a)]	1112.00	---	0.83	11.69	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.60	22.54	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.60	22.54	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	2.40	33.80	581.00	0.06
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.30	46.48	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.39	5.49	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	2.50	35.21	657.00	0.05
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.40	33.80	913.00	0.04
Chrysene [(a)]	844.00	826	2.30	32.39	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.39	5.49	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.40	61.97	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.26	3.66	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.20	16.90	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.26	3.66	385.00	0.01
Perylene [(a)]	967.00	431.00	0.73	10.28	967.00	0.01
Phenanthrene [(a)]	596	34300	1.70	23.94	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.20	45.07	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.77

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.61	0.0861	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.61	7.08	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.45	5.23	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.34	3.95	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.22	2.56	452.00	0.01
Anthracene [(a)]	594.00	1300	0.58	6.74	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	1.80	20.91	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	1.60	18.58	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	20.91	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.30	15.10	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	15.10	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.20	13.94	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.80	20.91	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.32	3.72	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.30	26.71	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	0.75	8.71	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.80	32.52	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	2.20	25.55	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.10	12.78	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.30	26.71	---	---
C2-Naphthalenes [(a)]	510.00	---	5.20	60.39	510.00	0.12
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.70	54.59	746.00	0.07
C3 Chrysenes [(a)]	1112.00	---	1.30	15.10	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.70	31.36	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	2.10	24.39	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	7.40	85.95	581.00	0.15
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.00	69.69	829.00	0.08
C4 Chrysenes [(a)]	1214.00	---	0.76	8.83	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	6.60	76.66	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.20	48.78	913.00	0.05
Chrysene [(a)]	844.00	826	1.90	22.07	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.42	4.88	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	2.40	27.87	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.49	5.69	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	12.78	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.45	5.23	385.00	0.01
Perylene [(a)]	967.00	431.00	0.52	6.04	967.00	0.01
Phenanthrene [(a)]	596	34300	2.00	23.23	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.30	38.33	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.70

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0709			
		Sample Depth	7-9			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc		Final
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.72	0.0872	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.30	3.38	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.30	3.38	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.49	5.62	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.30	3.38	452.00	0.01
Anthracene [(a)]	594.00	1300	0.68	7.80	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.10	24.08	841.00	0.03
Benzo(a)pyrene [(a)]	965.00	3840	2.10	24.08	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	21.79	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.60	18.35	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.40	16.06	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	1.50	17.20	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	2.30	26.38	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.62	7.11	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.90	33.26	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.74	8.49	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.70	53.90	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	2.40	27.52	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.80	20.64	686.00	0.03
C2-Fluoranthenes/Pyrenes	---	---	2.90	33.26	---	---
C2-Naphthalenes [(a)]	510.00	---	7.30	83.72	510.00	0.16
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.20	82.57	746.00	0.11
C3 Chrysenes [(a)]	1112.00	---	1.20	13.76	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.00	45.87	769.00	0.06
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	26.38	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	13.00	149.08	581.00	0.26
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.70	88.30	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.72	8.26	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	12.00	137.61	657.00	0.21
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.10	58.49	913.00	0.06
Chrysene [(a)]	844.00	826	2.20	25.23	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.47	5.39	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	3.10	35.55	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.42	4.82	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.30	14.91	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.30	3.38	385.00	0.01
Perylene [(a)]	967.00	431.00	0.59	6.77	967.00	0.01
Phenanthrene [(a)]	596	34300	2.70	30.96	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	4.20	48.17	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.91

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-47			
		Field Sample ID	RREC13-47-0911			
		Sample Depth	9-11			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.81	0.0981	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.93	9.48	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.20	12.23	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.55	5.61	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.21	2.14	452.00	0.00
Anthracene [(a)]	594.00	1300	0.90	9.17	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.10	31.60	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.80	28.54	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	27.52	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	2.00	20.39	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	11.21	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.60	26.50	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.80	28.54	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.90	9.17	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	6.20	63.20	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.50	15.29	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	101.94	670.00	0.15
C2 Chrysenes [(a)]	1008.00	---	4.40	44.85	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.40	24.46	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	5.50	56.07	---	---
C2-Naphthalenes [(a)]	510.00	---	14.00	142.71	510.00	0.28
C2-Phenanthrenes/Anthracenes [(a)]	746	---	11.00	112.13	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.80	18.35	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.90	49.95	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	3.80	38.74	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	21.00	214.07	581.00	0.37
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	11.00	112.13	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	0.89	9.07	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	15.00	152.91	657.00	0.23
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	6.60	67.28	913.00	0.07
Chrysene [(a)]	844.00	826	3.00	30.58	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.36	3.67	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.90	60.14	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.67	6.83	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	11.21	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.49	4.99	385.00	0.01
Perylene [(a)]	967.00	431.00	0.84	8.56	967.00	0.01
Phenanthrene [(a)]	596	34300	4.60	46.89	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	5.40	55.05	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.22**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	5.92	0.0592	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.24	4.05	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.42	7.09	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.31	5.24	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.23	3.89	452.00	0.01
Anthracene [(a)]	594.00	1300	0.90	15.20	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	3.50	59.12	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	3.60	60.81	965.00	0.06
Benzo(b)fluoranthene [(a)]	979.00	2169	3.00	50.68	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	2.20	37.16	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	2.20	37.16	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.00	50.68	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.10	35.47	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.17	2.87	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.70	62.50	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	0.47	7.94	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.40	40.54	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	1.40	23.65	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.30	5.07	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.00	33.78	---	---
C2-Naphthalenes [(a)]	510.00	---	1.60	27.03	510.00	0.05
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.70	28.72	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.64	10.81	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.64	10.81	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	18.58	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	2.20	37.16	581.00	0.06
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.60	27.03	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.25	4.22	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.50	25.34	657.00	0.04
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.30	21.96	913.00	0.02
Chrysene [(a)]	844.00	826	3.40	57.43	844.00	0.07
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.65	10.98	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	4.80	81.08	707.00	0.11
Fluorene [(a)]	538.00	26,000.00	0.38	6.42	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.00	33.78	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.78	13.18	385.00	0.03
Perylene [(a)]	967.00	431.00	0.93	15.71	967.00	0.02
Phenanthrene [(a)]	596	34300	2.60	43.92	596.00	0.07
Pyrene [(a)]	697.00	9,090.00	3.90	65.88	697.00	0.09
	---	**ESBTU FCVi**	---	---	---	**1.07**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-SURF-FD			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.31	0.0631	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.18	2.85	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.32	5.07	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.27	4.28	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.17	2.69	452.00	0.01
Anthracene [(a)]	594.00	1300	0.62	9.83	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.40	38.03	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.80	44.37	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	34.87	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.70	26.94	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.90	30.11	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	2.10	33.28	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.60	25.36	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.13	2.06	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.60	41.20	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.35	5.55	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.80	28.53	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.00	15.85	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.26	4.12	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	1.50	23.77	---	---
C2-Naphthalenes [(a)]	510.00	---	1.30	20.60	510.00	0.04
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.40	22.19	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.41	6.50	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.57	9.03	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.88	13.95	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.90	30.11	581.00	0.05
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.40	22.19	829.00	0.03
C4 Chrysenes [(a)]	1214.00	---	0.19	3.01	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	1.40	22.19	657.00	0.03
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	1.10	17.43	913.00	0.02
Chrysene [(a)]	844.00	826	2.40	38.03	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.46	7.29	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	3.20	50.71	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.27	4.28	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.60	25.36	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.31	4.91	385.00	0.01
Perylene [(a)]	967.00	431.00	0.70	11.09	967.00	0.01
Phenanthrene [(a)]	596	34300	1.70	26.94	596.00	0.05
Pyrene [(a)]	697.00	9,090.00	2.70	42.79	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.72

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6	0.06	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.10	1.67	446.00	0.00
2-Methylnaphthalene	447.00	154800	0.19	3.17	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.17	2.83	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.10	1.67	452.00	0.00
Anthracene [(a)]	594.00	1300	0.54	9.00	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.00	33.33	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.00	33.33	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	1.80	30.00	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.30	21.67	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	21.67	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	1.60	26.67	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.30	21.67	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.08	1.32	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	2.10	35.00	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	0.21	3.50	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	1.10	18.33	670.00	0.03
C2 Chrysenes [(a)]	1008.00	---	0.80	13.33	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	0.13	2.17	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	1.10	18.33	---	---
C2-Naphthalenes [(a)]	510.00	---	0.59	9.83	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.75	12.50	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.33	5.50	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.26	4.33	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	0.60	10.00	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.67	11.17	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.79	13.17	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.13	2.17	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.47	7.83	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.68	11.33	913.00	0.01
Chrysene [(a)]	844.00	826	1.90	31.67	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.39	6.50	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	2.80	46.67	707.00	0.07
Fluorene [(a)]	538.00	26,000.00	0.22	3.67	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	18.33	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.23	3.83	385.00	0.01
Perylene [(a)]	967.00	431.00	0.53	8.83	967.00	0.01
Phenanthrene [(a)]	596	34300	1.50	25.00	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	2.40	40.00	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.58

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.55	0.0755	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.63	8.34	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.10	14.57	447.00	0.03
Acenaphthene [(a)]	491.00	33400	0.31	4.11	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.17	2.25	452.00	0.00
Anthracene [(a)]	594.00	1300	0.61	8.08	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.30	30.46	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.40	31.79	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.50	33.11	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.80	23.84	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.91	12.05	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.60	34.44	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	1.60	21.19	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.36	4.77	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.10	41.06	770.00	0.05
C1-Naphthalenes [(a)]	444.00	---	1.20	15.89	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	3.70	49.01	670.00	0.07
C2 Chrysenes [(a)]	1008.00	---	2.50	33.11	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.99	13.11	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.20	29.14	---	---
C2-Naphthalenes [(a)]	510.00	---	5.00	66.23	510.00	0.13
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.90	51.66	746.00	0.07
C3 Chrysenes [(a)]	1112.00	---	1.10	14.57	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.10	27.81	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	1.50	19.87	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	8.20	108.61	581.00	0.19
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	3.80	50.33	829.00	0.06
C4 Chrysenes [(a)]	1214.00	---	0.53	7.02	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.40	71.52	657.00	0.11
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	2.90	38.41	913.00	0.04
Chrysene [(a)]	844.00	826	2.40	31.79	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	3.18	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.40	58.28	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.40	5.30	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.85	11.26	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.26	3.38	385.00	0.01
Perylene [(a)]	967.00	431.00	0.69	9.14	967.00	0.01
Phenanthrene [(a)]	596	34300	2.50	33.11	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	3.10	41.06	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	0.84

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.4	0.064	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.88	13.75	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.50	23.44	447.00	0.05
Acenaphthene [(a)]	491.00	33400	0.70	10.94	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.22	3.44	452.00	0.01
Anthracene [(a)]	594.00	1300	0.97	15.16	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	2.70	42.19	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	2.40	37.50	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	2.20	34.38	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.70	26.56	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	17.19	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	2.20	34.38	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.10	32.81	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.66	10.31	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.80	59.38	770.00	0.08
C1-Naphthalenes [(a)]	444.00	---	1.60	25.00	444.00	0.06
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	6.00	93.75	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	1.80	28.13	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.80	28.13	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	3.00	46.88	---	---
C2-Naphthalenes [(a)]	510.00	---	10.00	156.25	510.00	0.31
C2-Phenanthrenes/Anthracenes [(a)]	746	---	6.40	100.00	746.00	0.13
C3 Chrysenes [(a)]	1112.00	---	1.10	17.19	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.70	57.81	769.00	0.08
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	35.94	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	17.00	265.63	581.00	0.46
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.60	103.13	829.00	0.12
C4 Chrysenes [(a)]	1214.00	---	0.61	9.53	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	10.00	156.25	657.00	0.24
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.70	73.44	913.00	0.08
Chrysene [(a)]	844.00	826	2.90	45.31	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.29	4.53	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.70	89.06	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	0.96	15.00	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.00	15.63	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.40	6.25	385.00	0.02
Perylene [(a)]	967.00	431.00	0.75	11.72	967.00	0.01
Phenanthrene [(a)]	596	34300	4.40	68.75	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	4.30	67.19	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.41**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.92	0.0792	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.82	10.35	446.00	0.02
2-Methylnaphthalene	447.00	154800	1.30	16.41	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.42	5.30	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.22	2.78	452.00	0.01
Anthracene [(a)]	594.00	1300	0.78	9.85	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.40	30.30	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.40	30.30	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.60	32.83	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.70	21.46	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.84	10.61	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.30	29.04	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	2.00	25.25	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.91	11.49	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.10	51.77	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	1.50	18.94	444.00	0.04
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.90	112.37	670.00	0.17
C2 Chrysenes [(a)]	1008.00	---	3.20	40.40	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	2.50	31.57	686.00	0.05
C2-Fluoranthenes/Pyrenes	---	---	3.10	39.14	---	---
C2-Naphthalenes [(a)]	510.00	---	10.00	126.26	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.80	111.11	746.00	0.15
C3 Chrysenes [(a)]	1112.00	---	1.30	16.41	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	4.50	56.82	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	29.04	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	19.00	239.90	581.00	0.41
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	7.10	89.65	829.00	0.11
C4 Chrysenes [(a)]	1214.00	---	0.66	8.33	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	13.00	164.14	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.80	60.61	913.00	0.07
Chrysene [(a)]	844.00	826	2.50	31.57	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.22	2.78	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	5.20	65.66	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.60	7.58	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.78	9.85	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.31	3.85	385.00	0.01
Perylene [(a)]	967.00	431.00	0.69	8.71	967.00	0.01
Phenanthrene [(a)]	596	34300	3.70	46.72	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	3.50	44.19	697.00	0.06
	---	**ESBTU FCVi**	---	---	---	**1.21**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-48			
		Field Sample ID	RREC13-48-0710			
		Sample Depth	7-10			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	16.9	0.169	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.62	3.67	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.98	5.80	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.42	2.49	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.18	1.07	452.00	0.00
Anthracene [(a)]	594.00	1300	0.69	4.08	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.00	11.83	841.00	0.01
Benzo(a)pyrene [(a)]	965.00	3840	2.00	11.83	965.00	0.01
Benzo(b)fluoranthene [(a)]	979.00	2169	1.90	11.24	979.00	0.01
Benzo(e)pyrene [(a)]	967.00	4300	1.30	7.69	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.72	4.26	1095.00	0.00
Benzo(k)fluoranthene [(a)]	981.00	1220	1.80	10.65	981.00	0.01
C1 Chrysenes [(a)]	929.00	---	1.90	11.24	929.00	0.01
C1 Fluorenes [(a)]	611.00	---	0.62	3.67	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.60	21.30	770.00	0.03
C1-Naphthalenes [(a)]	444.00	---	1.10	6.51	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	7.30	43.20	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	3.30	19.53	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	1.70	10.06	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	3.00	17.75	---	---
C2-Naphthalenes [(a)]	510.00	---	7.10	42.01	510.00	0.08
C2-Phenanthrenes/Anthracenes [(a)]	746	---	7.40	43.79	746.00	0.06
C3 Chrysenes [(a)]	1112.00	---	1.30	7.69	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	3.20	18.93	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	2.30	13.61	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	14.00	82.84	581.00	0.14
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	5.90	34.91	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.66	3.91	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	9.30	55.03	657.00	0.08
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.00	23.67	913.00	0.03
Chrysene [(a)]	844.00	826	2.10	12.43	844.00	0.01
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.19	1.12	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.30	25.44	707.00	0.04
Fluorene [(a)]	538.00	26,000.00	0.49	2.90	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.65	3.85	1115.00	0.00
Naphthalene [(a)]	385.00	61,700.00	0.28	1.63	385.00	0.00
Perylene [(a)]	967.00	431.00	0.60	3.55	967.00	0.00
Phenanthrene [(a)]	596	34300	3.30	19.53	596.00	0.03
Pyrene [(a)]	697.00	9,090.00	2.90	17.16	697.00	0.02
	---	**ESBTU FCVi**	---	---	---	0.46

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	9.04	0.0904	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.22	2.43	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.40	4.42	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.32	3.54	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.27	2.99	452.00	0.01
Anthracene [(a)]	594.00	1300	1.10	12.17	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	4.60	50.88	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	4.70	51.99	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	4.40	48.67	979.00	0.05
Benzo(e)pyrene [(a)]	967.00	4300	3.00	33.19	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.10	34.29	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	3.70	40.93	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	2.70	29.87	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.14	1.55	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.80	53.10	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.43	4.76	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.30	25.44	670.00	0.04
C2 Chrysenes [(a)]	1008.00	---	1.50	16.59	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.21	2.32	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	2.30	25.44	---	---
C2-Naphthalenes [(a)]	510.00	---	1.10	12.17	510.00	0.02
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.30	14.38	746.00	0.02
C3 Chrysenes [(a)]	1112.00	---	0.60	6.64	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.35	3.87	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.10	12.17	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	1.10	12.17	581.00	0.02
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.20	13.27	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.27	2.99	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.66	7.30	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.83	9.18	913.00	0.01
Chrysene [(a)]	844.00	826	4.40	48.67	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.75	8.30	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	5.70	63.05	707.00	0.09
Fluorene [(a)]	538.00	26,000.00	0.42	4.65	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	2.60	28.76	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.50	5.53	385.00	0.01
Perylene [(a)]	967.00	431.00	1.00	11.06	967.00	0.01
Phenanthrene [(a)]	596	34300	3.10	34.29	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	5.30	58.63	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	0.83

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-SURF-FD			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	6.91	0.0691	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.25	3.62	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.44	6.37	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.40	5.79	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.30	4.34	452.00	0.01
Anthracene [(a)]	594.00	1300	1.40	20.26	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	5.10	73.81	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	5.60	81.04	965.00	0.08
Benzo(b)fluoranthene [(a)]	979.00	2169	4.60	66.57	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	3.40	49.20	967.00	0.05
Benzo(g,h,i)perylene [(a)]	1095.00	648	3.50	50.65	1095.00	0.05
Benzo(k)fluoranthene [(a)]	981.00	1220	4.20	60.78	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	3.10	44.86	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.15	2.17	611.00	0.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.00	72.36	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.48	6.95	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	2.50	36.18	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	1.70	24.60	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.21	3.04	686.00	0.00
C2-Fluoranthenes/Pyrenes	---	---	2.60	37.63	---	---
C2-Naphthalenes [(a)]	510.00	---	1.20	17.37	510.00	0.03
C2-Phenanthrenes/Anthracenes [(a)]	746	---	1.50	21.71	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.62	8.97	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	0.40	5.79	769.00	0.01
C3-Fluoranthenes/Pyrenes	949.00	---	1.30	18.81	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	1.20	17.37	581.00	0.03
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	1.30	18.81	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.28	4.05	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.67	9.70	657.00	0.01
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.85	12.30	913.00	0.01
Chrysene [(a)]	844.00	826	4.80	69.46	844.00	0.08
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.98	14.18	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	6.60	95.51	707.00	0.14
Fluorene [(a)]	538.00	26,000.00	0.46	6.66	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	3.00	43.42	1115.00	0.04
Naphthalene [(a)]	385.00	61,700.00	0.55	7.96	385.00	0.02
Perylene [(a)]	967.00	431.00	1.30	18.81	967.00	0.02
Phenanthrene [(a)]	596	34300	3.40	49.20	596.00	0.08
Pyrene [(a)]	697.00	9,090.00	5.60	81.04	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.20**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-0001			
		Sample Depth	0-1			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	12.4	0.124	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.30	2.42	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.28	2.26	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.31	2.50	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.16	1.29	452.00	0.00
Anthracene [(a)]	594.00	1300	0.67	5.40	594.00	0.01
Benzo(a)anthracene [(a)]	841.00	4153	2.60	20.97	841.00	0.02
Benzo(a)pyrene [(a)]	965.00	3840	2.40	19.35	965.00	0.02
Benzo(b)fluoranthene [(a)]	979.00	2169	2.30	18.55	979.00	0.02
Benzo(e)pyrene [(a)]	967.00	4300	1.60	12.90	967.00	0.01
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.30	10.48	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.00	16.13	981.00	0.02
C1 Chrysenes [(a)]	929.00	---	1.80	14.52	929.00	0.02
C1 Fluorenes [(a)]	611.00	---	0.39	3.15	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	3.40	27.42	770.00	0.04
C1-Naphthalenes [(a)]	444.00	---	0.40	3.23	444.00	0.01
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.10	33.06	670.00	0.05
C2 Chrysenes [(a)]	1008.00	---	1.50	12.10	1008.00	0.01
C2 Fluorenes [(a)]	686.00	---	1.00	8.06	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.20	17.74	---	---
C2-Naphthalenes [(a)]	510.00	---	3.50	28.23	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	3.90	31.45	746.00	0.04
C3 Chrysenes [(a)]	1112.00	---	0.64	5.16	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	2.20	17.74	769.00	0.02
C3-Fluoranthenes/Pyrenes	949.00	---	1.50	12.10	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	8.40	67.74	581.00	0.12
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.20	33.87	829.00	0.04
C4 Chrysenes [(a)]	1214.00	---	0.36	2.90	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	5.90	47.58	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.00	24.19	913.00	0.03
Chrysene [(a)]	844.00	826	2.70	21.77	844.00	0.03
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.29	2.34	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.20	33.87	707.00	0.05
Fluorene [(a)]	538.00	26,000.00	0.48	3.87	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	8.87	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.28	2.26	385.00	0.01
Perylene [(a)]	967.00	431.00	0.68	5.48	967.00	0.01
Phenanthrene [(a)]	596	34300	2.70	21.77	596.00	0.04
Pyrene [(a)]	697.00	9,090.00	3.70	29.84	697.00	0.04
	---	**ESBTU FCVi**	---	---	---	0.54

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-0103			
		Sample Depth	1-3			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.47	0.0747	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.85	11.38	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.30	17.40	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.57	7.63	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.29	3.88	452.00	0.01
Anthracene [(a)]	594.00	1300	1.00	13.39	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.40	45.52	841.00	0.05
Benzo(a)pyrene [(a)]	965.00	3840	3.30	44.18	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.20	42.84	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.20	29.45	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.10	14.73	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	3.30	44.18	981.00	0.05
C1 Chrysenes [(a)]	929.00	---	2.70	36.14	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.77	10.31	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.70	76.31	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.50	20.08	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	8.20	109.77	670.00	0.16
C2 Chrysenes [(a)]	1008.00	---	4.00	53.55	1008.00	0.05
C2 Fluorenes [(a)]	686.00	---	2.00	26.77	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.00	53.55	---	---
C2-Naphthalenes [(a)]	510.00	---	8.90	119.14	510.00	0.23
C2-Phenanthrenes/Anthracenes [(a)]	746	---	8.70	116.47	746.00	0.16
C3 Chrysenes [(a)]	1112.00	---	1.60	21.42	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	3.80	50.87	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	2.80	37.48	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	17.00	227.58	581.00	0.39
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.00	107.10	829.00	0.13
C4 Chrysenes [(a)]	1214.00	---	0.80	10.71	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	11.00	147.26	657.00	0.22
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.00	66.93	913.00	0.07
Chrysene [(a)]	844.00	826	3.60	48.19	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.30	4.02	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.70	89.69	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	0.80	10.71	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.00	13.39	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.42	5.56	385.00	0.01
Perylene [(a)]	967.00	431.00	0.93	12.45	967.00	0.01
Phenanthrene [(a)]	596	34300	4.60	61.58	596.00	0.10
Pyrene [(a)]	697.00	9,090.00	5.10	68.27	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.47**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-0305			
		Sample Depth	3-5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.44	0.0744	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.86	11.56	446.00	0.03
2-Methylnaphthalene	447.00	154800	1.40	18.82	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.65	8.74	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.28	3.76	452.00	0.01
Anthracene [(a)]	594.00	1300	1.00	13.44	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	3.60	48.39	841.00	0.06
Benzo(a)pyrene [(a)]	965.00	3840	3.40	45.70	965.00	0.05
Benzo(b)fluoranthene [(a)]	979.00	2169	3.20	43.01	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	2.40	32.26	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.20	16.13	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	3.10	41.67	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	3.10	41.67	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.82	11.02	611.00	0.02
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	5.80	77.96	770.00	0.10
C1-Naphthalenes [(a)]	444.00	---	1.50	20.16	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	10.00	134.41	670.00	0.20
C2 Chrysenes [(a)]	1008.00	---	4.30	57.80	1008.00	0.06
C2 Fluorenes [(a)]	686.00	---	2.20	29.57	686.00	0.04
C2-Fluoranthenes/Pyrenes	---	---	4.50	60.48	---	---
C2-Naphthalenes [(a)]	510.00	---	9.50	127.69	510.00	0.25
C2-Phenanthrenes/Anthracenes [(a)]	746	---	9.80	131.72	746.00	0.18
C3 Chrysenes [(a)]	1112.00	---	1.80	24.19	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	4.00	53.76	769.00	0.07
C3-Fluoranthenes/Pyrenes	949.00	---	3.10	41.67	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	19.00	255.38	581.00	0.44
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	8.60	115.59	829.00	0.14
C4 Chrysenes [(a)]	1214.00	---	0.91	12.23	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	12.00	161.29	657.00	0.25
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	5.00	67.20	913.00	0.07
Chrysene [(a)]	844.00	826	3.70	49.73	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.32	4.30	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.80	91.40	707.00	0.13
Fluorene [(a)]	538.00	26,000.00	0.80	10.75	538.00	0.02
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	1.10	14.78	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.98	13.17	385.00	0.03
Perylene [(a)]	967.00	431.00	0.99	13.31	967.00	0.01
Phenanthrene [(a)]	596	34300	5.40	72.58	596.00	0.12
Pyrene [(a)]	697.00	9,090.00	5.30	71.24	697.00	0.10
	---	**ESBTU FCVi**	---	---	---	**1.61**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-0507			
		Sample Depth	5-7			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc		Final
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	8.12	0.0812	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.34	4.19	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.56	6.90	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.36	4.43	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.15	1.85	452.00	0.00
Anthracene [(a)]	594.00	1300	0.86	10.59	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.60	32.02	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.50	30.79	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	33.25	979.00	0.03
Benzo(e)pyrene [(a)]	967.00	4300	1.70	20.94	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	1.00	12.32	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.20	27.09	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	1.90	23.40	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.31	3.82	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.40	54.19	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.62	7.64	444.00	0.02
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	4.20	51.72	670.00	0.08
C2 Chrysenes [(a)]	1008.00	---	2.50	30.79	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	0.79	9.73	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	2.80	34.48	---	---
C2-Naphthalenes [(a)]	510.00	---	2.40	29.56	510.00	0.06
C2-Phenanthrenes/Anthracenes [(a)]	746	---	4.60	56.65	746.00	0.08
C3 Chrysenes [(a)]	1112.00	---	0.93	11.45	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	1.80	22.17	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	1.70	20.94	949.00	0.02
C3-Naphthalenes [(a)]	581.00	---	5.30	65.27	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	4.80	59.11	829.00	0.07
C4 Chrysenes [(a)]	1214.00	---	0.47	5.79	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	3.90	48.03	657.00	0.07
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	3.30	40.64	913.00	0.04
Chrysene [(a)]	844.00	826	2.70	33.25	844.00	0.04
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.30	3.69	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	4.80	59.11	707.00	0.08
Fluorene [(a)]	538.00	26,000.00	0.49	6.03	538.00	0.01
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.89	10.96	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	0.62	7.64	385.00	0.02
Perylene [(a)]	967.00	431.00	0.68	8.37	967.00	0.01
Phenanthrene [(a)]	596	34300	2.90	35.71	596.00	0.06
Pyrene [(a)]	697.00	9,090.00	3.90	48.03	697.00	0.07
	---	**ESBTU FCVi**	---	---	---	0.89

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-49			
		Field Sample ID	RREC13-49-0710			
		Sample Depth	7-10			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	7.75	0.0775	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.46	5.94	446.00	0.01
2-Methylnaphthalene	447.00	154800	0.43	5.48	447.00	0.01
Acenaphthene [(a)]	491.00	33400	0.55	7.10	491.00	0.01
Acenaphthylene [(a)]	452.00	24000	0.23	2.97	452.00	0.01
Anthracene [(a)]	594.00	1300	0.96	12.39	594.00	0.02
Benzo(a)anthracene [(a)]	841.00	4153	2.90	37.42	841.00	0.04
Benzo(a)pyrene [(a)]	965.00	3840	2.60	33.55	965.00	0.03
Benzo(b)fluoranthene [(a)]	979.00	2169	2.70	34.84	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	1.80	23.23	967.00	0.02
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.87	11.23	1095.00	0.01
Benzo(k)fluoranthene [(a)]	981.00	1220	2.70	34.84	981.00	0.04
C1 Chrysenes [(a)]	929.00	---	1.90	24.52	929.00	0.03
C1 Fluorenes [(a)]	611.00	---	0.48	6.19	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	4.00	51.61	770.00	0.07
C1-Naphthalenes [(a)]	444.00	---	0.88	11.35	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	5.20	67.10	670.00	0.10
C2 Chrysenes [(a)]	1008.00	---	2.70	34.84	1008.00	0.03
C2 Fluorenes [(a)]	686.00	---	1.10	14.19	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	2.80	36.13	---	---
C2-Naphthalenes [(a)]	510.00	---	3.50	45.16	510.00	0.09
C2-Phenanthrenes/Anthracenes [(a)]	746	---	5.90	76.13	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	1.10	14.19	1112.00	0.01
C3 Fluorenes [(a)]	769.00	---	2.30	29.68	769.00	0.04
C3-Fluoranthenes/Pyrenes	949.00	---	1.90	24.52	949.00	0.03
C3-Naphthalenes [(a)]	581.00	---	8.10	104.52	581.00	0.18
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	6.10	78.71	829.00	0.09
C4 Chrysenes [(a)]	1214.00	---	0.51	6.58	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	5.90	76.13	657.00	0.12
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	4.00	51.61	913.00	0.06
Chrysene [(a)]	844.00	826	3.00	38.71	844.00	0.05
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.24	3.10	1123.00	0.00
Fluoranthene [(a)]	707.00	23,870.00	6.60	85.16	707.00	0.12
Fluorene [(a)]	538.00	26,000.00	1.10	14.19	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.83	10.71	1115.00	0.01
Naphthalene [(a)]	385.00	61,700.00	2.60	33.55	385.00	0.09
Perylene [(a)]	967.00	431.00	0.75	9.68	967.00	0.01
Phenanthrene [(a)]	596	34300	4.20	54.19	596.00	0.09
Pyrene [(a)]	697.00	9,090.00	4.30	55.48	697.00	0.08
	---	**ESBTU FCVi**	---	---	---	**1.19**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-50			
		Field Sample ID	RREC13-50-SURF			
		Sample Depth	0-0.5			
		Sample Date	10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final	
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	1.51	0.0151	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)						
1-Methylnaphthalene	446.00	165700	0.12	7.95	446.00	0.02
2-Methylnaphthalene	447.00	154800	0.11	7.28	447.00	0.02
Acenaphthene [(a)]	491.00	33400	0.16	10.60	491.00	0.02
Acenaphthylene [(a)]	452.00	24000	0.09	6.09	452.00	0.01
Anthracene [(a)]	594.00	1300	0.30	19.87	594.00	0.03
Benzo(a)anthracene [(a)]	841.00	4153	1.10	72.85	841.00	0.09
Benzo(a)pyrene [(a)]	965.00	3840	0.62	41.06	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	0.98	64.90	979.00	0.07
Benzo(e)pyrene [(a)]	967.00	4300	0.62	41.06	967.00	0.04
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.56	37.09	1095.00	0.03
Benzo(k)fluoranthene [(a)]	981.00	1220	0.85	56.29	981.00	0.06
C1 Chrysenes [(a)]	929.00	---	0.50	33.11	929.00	0.04
C1 Fluorenes [(a)]	611.00	---	0.05	3.44	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	1.10	72.85	770.00	0.09
C1-Naphthalenes [(a)]	444.00	---	0.22	14.57	444.00	0.03
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.65	43.05	670.00	0.06
C2 Chrysenes [(a)]	1008.00	---	0.30	19.87	1008.00	0.02
C2 Fluorenes [(a)]	686.00	---	0.06	3.64	686.00	0.01
C2-Fluoranthenes/Pyrenes	---	---	0.46	30.46	---	---
C2-Naphthalenes [(a)]	510.00	---	0.53	35.10	510.00	0.07
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.33	21.85	746.00	0.03
C3 Chrysenes [(a)]	1112.00	---	0.08	5.43	1112.00	0.00
C3 Fluorenes [(a)]	769.00	---	0.06	3.77	769.00	0.00
C3-Fluoranthenes/Pyrenes	949.00	---	0.21	13.91	949.00	0.01
C3-Naphthalenes [(a)]	581.00	---	0.46	30.46	581.00	0.05
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.27	17.88	829.00	0.02
C4 Chrysenes [(a)]	1214.00	---	0.04	2.58	1214.00	0.00
C4-Naphthalenes [(a)]	657.00	---	0.24	15.89	657.00	0.02
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.12	7.95	913.00	0.01
Chrysene [(a)]	844.00	826	1.10	72.85	844.00	0.09
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.18	11.92	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	1.80	119.21	707.00	0.17
Fluorene [(a)]	538.00	26,000.00	0.23	15.23	538.00	0.03
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.54	35.76	1115.00	0.03
Naphthalene [(a)]	385.00	61,700.00	0.32	21.19	385.00	0.06
Perylene [(a)]	967.00	431.00	0.23	15.23	967.00	0.02
Phenanthrene [(a)]	596	34300	1.30	86.09	596.00	0.14
Pyrene [(a)]	697.00	9,090.00	1.30	86.09	697.00	0.12
	---	**ESBTU FCVi**	---	---	---	**1.30**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-50				
		Field Sample ID	RREC13-50-0001				
		Sample Depth	0-1				
		Sample Date	10/30/13				
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Conc	Coc	Final		Conc
	µg/g oc	µg/g oc	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt
Total Organic Carbon**	--	--	8.38	0.0838	---	---	8.05
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)							
1-Methylnaphthalene	446.00	165700	2.00	23.87	446.00	0.05	2.70
2-Methylnaphthalene	447.00	154800	2.70	32.22	447.00	0.07	5.20
Acenaphthene [(a)]	491.00	33400	3.90	46.54	491.00	0.09	5.20
Acenaphthylene [(a)]	452.00	24000	1.50	17.90	452.00	0.04	2.10
Anthracene [(a)]	594.00	1300	13.00	155.13	594.00	0.26	9.90
Benzo(a)anthracene [(a)]	841.00	4153	24.00	286.40	841.00	0.34	18.00
Benzo(a)pyrene [(a)]	965.00	3840	16.00	190.93	965.00	0.20	12.00
Benzo(b)fluoranthene [(a)]	979.00	2169	14.00	167.06	979.00	0.17	10.00
Benzo(e)pyrene [(a)]	967.00	4300	10.00	119.33	967.00	0.12	8.10
Benzo(g,h,i)perylene [(a)]	1095.00	648	7.50	89.50	1095.00	0.08	6.50
Benzo(k)fluoranthene [(a)]	981.00	1220	17.00	202.86	981.00	0.21	13.00
C1 Chrysenes [(a)]	929.00	---	12.00	143.20	929.00	0.15	11.00
C1 Fluorenes [(a)]	611.00	---	1.80	21.48	611.00	0.04	1.50
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	26.00	310.26	770.00	0.40	23.00
C1-Naphthalenes [(a)]	444.00	---	3.40	40.57	444.00	0.09	5.40
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	20.00	238.66	670.00	0.36	19.00
C2 Chrysenes [(a)]	1008.00	---	7.40	88.31	1008.00	0.09	8.20
C2 Fluorenes [(a)]	686.00	---	1.50	17.90	686.00	0.03	1.70
C2-Fluoranthenes/Pyrenes	---	---	11.00	131.26	---	---	12.00
C2-Naphthalenes [(a)]	510.00	---	7.50	89.50	510.00	0.18	12.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	13.00	155.13	746.00	0.21	13.00
C3 Chrysenes [(a)]	1112.00	---	3.10	36.99	1112.00	0.03	3.30
C3 Fluorenes [(a)]	769.00	---	3.30	39.38	769.00	0.05	4.00
C3-Fluoranthenes/Pyrenes	949.00	---	5.90	70.41	949.00	0.07	6.50
C3-Naphthalenes [(a)]	581.00	---	7.80	93.08	581.00	0.16	9.80
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	13.00	155.13	829.00	0.19	15.00
C4 Chrysenes [(a)]	1214.00	---	1.20	14.32	1214.00	0.01	1.80
C4-Naphthalenes [(a)]	657.00	---	6.20	73.99	657.00	0.11	6.20
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	8.40	100.24	913.00	0.11	10.00
Chrysene [(a)]	844.00	826	21.00	250.60	844.00	0.30	17.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	2.60	31.03	1123.00	0.03	2.20
Fluoranthene [(a)]	707.00	23,870.00	47.00	560.86	707.00	0.79	32.00
Fluorene [(a)]	538.00	26,000.00	8.20	97.85	538.00	0.18	9.80
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	7.60	90.69	1115.00	0.08	6.10
Naphthalene [(a)]	385.00	61,700.00	14.00	167.06	385.00	0.43	12.00
Perylene [(a)]	967.00	431.00	2.70	32.22	967.00	0.03	1.90
Phenanthrene [(a)]	596	34300	41.00	489.26	596.00	0.82	32.00
Pyrene [(a)]	697.00	9,090.00	29.00	346.06	697.00	0.50	23.00
	---	**ESBTU FCVi**	---	---	---	**6.06**	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID	RREC13-50			RREC13-50		
		Field Sample ID	RREC13-50-0103			RREC13-50-030		
		Sample Depth	1-3			3-5		
		Sample Date	10/30/13			10/30/13		
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]	Coc Final			Conc	Coc	
	µg/g oc	µg/g oc	µg/g oc	Coc[b]	ESBTU FCVi	µg/g Dry wt	µg/g oc	Coc[b]
Total Organic Carbon**	--	--	0.0805	---	---	6.35	0.0635	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)								
1-Methylnaphthalene	446.00	165700	33.54	446.00	0.08	1.20	18.90	446.00
2-Methylnaphthalene	447.00	154800	64.60	447.00	0.14	1.20	18.90	447.00
Acenaphthene [(a)]	491.00	33400	64.60	491.00	0.13	2.30	36.22	491.00
Acenaphthylene [(a)]	452.00	24000	26.09	452.00	0.06	0.90	14.17	452.00
Anthracene [(a)]	594.00	1300	122.98	594.00	0.21	5.90	92.91	594.00
Benzo(a)anthracene [(a)]	841.00	4153	223.60	841.00	0.27	12.00	188.98	841.00
Benzo(a)pyrene [(a)]	965.00	3840	149.07	965.00	0.15	8.60	135.43	965.00
Benzo(b)fluoranthene [(a)]	979.00	2169	124.22	979.00	0.13	8.70	137.01	979.00
Benzo(e)pyrene [(a)]	967.00	4300	100.62	967.00	0.10	5.60	88.19	967.00
Benzo(g,h,i)perylene [(a)]	1095.00	648	80.75	1095.00	0.07	4.60	72.44	1095.00
Benzo(k)fluoranthene [(a)]	981.00	1220	161.49	981.00	0.16	7.30	114.96	981.00
C1 Chrysenes [(a)]	929.00	---	136.65	929.00	0.15	6.90	108.66	929.00
C1 Fluorenes [(a)]	611.00	---	18.63	611.00	0.03	0.72	11.34	611.00
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	285.71	770.00	0.37	14.00	220.47	770.00
C1-Naphthalenes [(a)]	444.00	---	67.08	444.00	0.15	2.20	34.65	444.00
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	236.02	670.00	0.35	10.00	157.48	670.00
C2 Chrysenes [(a)]	1008.00	---	101.86	1008.00	0.10	4.60	72.44	1008.00
C2 Fluorenes [(a)]	686.00	---	21.12	686.00	0.03	0.90	14.17	686.00
C2-Fluoranthenes/Pyrenes	---	---	149.07	---	---	6.70	105.51	---
C2-Naphthalenes [(a)]	510.00	---	149.07	510.00	0.29	4.30	67.72	510.00
C2-Phenanthrenes/Anthracenes [(a)]	746	---	161.49	746.00	0.22	7.30	114.96	746.00
C3 Chrysenes [(a)]	1112.00	---	40.99	1112.00	0.04	1.80	28.35	1112.00
C3 Fluorenes [(a)]	769.00	---	49.69	769.00	0.06	2.00	31.50	769.00
C3-Fluoranthenes/Pyrenes	949.00	---	80.75	949.00	0.09	3.70	58.27	949.00
C3-Naphthalenes [(a)]	581.00	---	121.74	581.00	0.21	4.50	70.87	581.00
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	186.34	829.00	0.22	7.40	116.54	829.00
C4 Chrysenes [(a)]	1214.00	---	22.36	1214.00	0.02	0.80	12.60	1214.00
C4-Naphthalenes [(a)]	657.00	---	77.02	657.00	0.12	3.20	50.39	657.00
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	124.22	913.00	0.14	4.80	75.59	913.00
Chrysene [(a)]	844.00	826	211.18	844.00	0.25	11.00	173.23	844.00
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	27.33	1123.00	0.02	1.50	23.62	1123.00
Fluoranthene [(a)]	707.00	23,870.00	397.52	707.00	0.56	21.00	330.71	707.00
Fluorene [(a)]	538.00	26,000.00	121.74	538.00	0.23	3.90	61.42	538.00
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	75.78	1115.00	0.07	4.20	66.14	1115.00
Naphthalene [(a)]	385.00	61,700.00	149.07	385.00	0.39	6.70	105.51	385.00
Perylene [(a)]	967.00	431.00	23.60	967.00	0.02	1.20	18.90	967.00
Phenanthrene [(a)]	596	34300	397.52	596.00	0.67	17.00	267.72	596.00
Pyrene [(a)]	697.00	9,090.00	285.71	697.00	0.41	14.00	220.47	697.00
	---	**ESBTU FCVi**	---	---	**5.33**	---	---	---

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-1 EQUILIBRIUM SEDIMENT BENCHMARK TOXIC UNITS FOR POLYCYCLIC AROMATIC HYDROCARBONS
RIVER ROUGE/ECORSE SHORELINE AREA, DETROIT RIVER AREA OF CONCERN, ECORSE, MICHIGAN (NOVEMBER 2013)

		Location ID		RREC13-50			
		Field Sample ID	)5	RREC13-50-0507			
		Sample Depth		5-7			
		Sample Date		10/30/13			
	Coc, PAHi, FCVi[a]	Coc, PAHi, Maxi[a]		Conc	Coc	Final	
	µg/g oc	µg/g oc	ESBTU FCVi	µg/g Dry wt	µg/g oc	Coc[b]	ESBTU FCVi
Total Organic Carbon**	--	--	---	10.4	0.104	---	---
Enriched Polycyclic Aromatic Hydrocarbons (EPAH) (µg/kg)							
1-Methylnaphthalene	446.00	165700	0.04	1.20	11.54	446.00	0.03
2-Methylnaphthalene	447.00	154800	0.04	1.90	18.27	447.00	0.04
Acenaphthene [(a)]	491.00	33400	0.07	1.30	12.50	491.00	0.03
Acenaphthylene [(a)]	452.00	24000	0.03	0.59	5.67	452.00	0.01
Anthracene [(a)]	594.00	1300	0.16	3.00	28.85	594.00	0.05
Benzo(a)anthracene [(a)]	841.00	4153	0.22	5.90	56.73	841.00	0.07
Benzo(a)pyrene [(a)]	965.00	3840	0.14	3.70	35.58	965.00	0.04
Benzo(b)fluoranthene [(a)]	979.00	2169	0.14	3.70	35.58	979.00	0.04
Benzo(e)pyrene [(a)]	967.00	4300	0.09	2.70	25.96	967.00	0.03
Benzo(g,h,i)perylene [(a)]	1095.00	648	0.07	2.20	21.15	1095.00	0.02
Benzo(k)fluoranthene [(a)]	981.00	1220	0.12	3.30	31.73	981.00	0.03
C1 Chrysenes [(a)]	929.00	---	0.12	4.80	46.15	929.00	0.05
C1 Fluorenes [(a)]	611.00	---	0.02	0.61	5.87	611.00	0.01
C1-Fluoranthenes/Pyrenes [(a)]	770.00	---	0.29	8.80	84.62	770.00	0.11
C1-Naphthalenes [(a)]	444.00	---	0.08	2.10	20.19	444.00	0.05
C1-Phenanthrenes/Anthracenes [(a)]	670.00	---	0.24	9.90	95.19	670.00	0.14
C2 Chrysenes [(a)]	1008.00	---	0.07	4.50	43.27	1008.00	0.04
C2 Fluorenes [(a)]	686.00	---	0.02	1.10	10.58	686.00	0.02
C2-Fluoranthenes/Pyrenes	---	---	---	5.80	55.77	---	---
C2-Naphthalenes [(a)]	510.00	---	0.13	5.50	52.88	510.00	0.10
C2-Phenanthrenes/Anthracenes [(a)]	746	---	0.15	8.10	77.88	746.00	0.10
C3 Chrysenes [(a)]	1112.00	---	0.03	2.30	22.12	1112.00	0.02
C3 Fluorenes [(a)]	769.00	---	0.04	2.50	24.04	769.00	0.03
C3-Fluoranthenes/Pyrenes	949.00	---	0.06	4.40	42.31	949.00	0.04
C3-Naphthalenes [(a)]	581.00	---	0.12	6.40	61.54	581.00	0.11
C3-Phenanthrenes/Anthracenes [(a)]	829.00	---	0.14	8.60	82.69	829.00	0.10
C4 Chrysenes [(a)]	1214.00	---	0.01	1.20	11.54	1214.00	0.01
C4-Naphthalenes [(a)]	657.00	---	0.08	4.20	40.38	657.00	0.06
C4-Phenanthrenes/Anthracenes [(a)]	913.00	---	0.08	6.40	61.54	913.00	0.07
Chrysene [(a)]	844.00	826	0.21	5.40	51.92	844.00	0.06
Dibenzo(a,h)anthracene [(a)]	1123.00	2,389.00	0.02	0.67	6.44	1123.00	0.01
Fluoranthene [(a)]	707.00	23,870.00	0.47	12.00	115.38	707.00	0.16
Fluorene [(a)]	538.00	26,000.00	0.11	2.50	24.04	538.00	0.04
Indeno(1,2,3-cd)pyrene [(a)]	1115.00	---	0.06	1.90	18.27	1115.00	0.02
Naphthalene [(a)]	385.00	61,700.00	0.27	6.30	60.58	385.00	0.16
Perylene [(a)]	967.00	431.00	0.02	0.60	5.77	967.00	0.01
Phenanthrene [(a)]	596	34300	0.45	9.90	95.19	596.00	0.16
Pyrene [(a)]	697.00	9,090.00	0.32	8.30	79.81	697.00	0.11
	---	**ESBTU FCVi**	**3.95**	---	---	---	**1.61**

Notes:

aPAHs and corresponding Coc PAHi, FCVi and Coc PAHi, Maxi values are from Table 3-4 in EPA, 2003).

b COC,PAHi,Maxi is the maximum solubility limited PAH concentration in sediment on an organic carbon basis; only the contribution up to the maximum COC,PAHi,Maxi is counted in the D ESBTUFCV for the PAH mixture (EPA, 2003, Section 4.3 and Section 6.3).

**Used TOC from 10/2008 sample event for 5/2009 sample event. U-coded data was omitted from ESB calculations..

ESBTU= equilibrium sediment benchmark toxic unit.

FCV= final chronic value.

Koc = organic carbon-water partition coefficient.

µg/kg - micrograms per kilogram.

TABLE 4-2 ORGANIC CARBON NORMALIZED METALS

River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-01	RREC13-02	RREC13-03	RREC13-05	RREC13-06	RREC13-07	RREC13-09	RREC13-11	RREC13-13
	Sample Name:	RREC13-01-SURF	RREC13-02-SURF	RREC13-03-SURF	RREC13-05-SURF	RREC13-06-SURF	RREC13-07-SURF	RREC13-09-SURF	RREC13-11-SURF	RREC13-13-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/4/13	11/4/13	11/4/13
Analyte	**Units**									
Σ SEM	µmol/g dry	9.289	3.1062	10.768	3.1392	3.221	2.1853	5.1655	26.914	34.746
AVS	µmol/g dry	6.9	1.1	3.5	1.6	5.4	1.5	1.2	0.67 U	1.9
foc	fraction	0.0987	0.0904	0.116	0.0701	0.0553	0.0434	0.0353	0.0205	0.0344
(Σ SEM - AVS) / foc	µmol/g dry	24	22	63	22	-39	16	112	---	**955**

	Sample Location:	RREC13-18	RREC13-19	RREC13-20	RREC13-21	RREC13-22	RREC13-23	RREC13-24	RREC13-25	RREC13-26
	Sample Name:	RREC13-18-SURF	RREC13-19-SURF	RREC13-20-SURF	RREC13-21-SURF	RREC13-22-SURF	RREC13-23-SURF	RREC13-24-SURF	RREC13-25-SURF	RREC13-26-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/29/13	10/29/13	10/29/13	10/29/13	10/29/13	10/30/13	11/4/13	11/4/13	11/04/13
Analyte	**Units**									
Σ SEM	µmol/g dry	4.513	2.6171	1.5551	6.564	5.299	8.201	6.3578	5.2051	6.924
AVS	µmol/g dry	8.5	14.9	2.4	23.8	4.3	11.8	7.1	0.8	2.9
foc	fraction	0.0573	0.0444	0.0513	0.0691	0.0589	0.074	0.0259	0.0309	0.0609
(Σ SEM - AVS) / foc	µmol/g dry	-70	-277	-16	-249	17	-49	-29	**143**	66

NOTES:
Bolded values exceed 130 µmol/g
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detected.
"--" SEM/AVS not calculated because AVS was not detected
AVS = Acid Volatile Sulfides
SEM = Simultaneously Extracted Metals
foc = fraction organic carbon
µmol/g dry = micromole per gram dry weight

TABLE 4-2 ORGANIC CARBON NORMALIZED METALS

River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-14	RREC13-14	RREC13-15	RREC13-16	RREC13-17	RREC13-32	RREC13-33	RREC13-34	RREC13-35
	Sample Name:	RREC13-14-SURF	RREC13-14-SURF-FD	RREC13-15-SURF	RREC13-16-SURF	RREC13-17-SURF	RREC13-32-SURF	RREC13-33-SURF	RREC13-34-SURF	RREC13-35-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/4/13	11/4/13	11/4/13	10/29/13	10/29/13	10/30/13	10/30/13	10/30/13	10/30/13
Analyte	**Units**									
Σ SEM	µmol/g dry	16.135	20.845	22.974	6.752	4.273	4.0179	6.99	23.82	7.577
AVS	µmol/g dry	4.2	3	8.3	14.7	11.4	31.7	16	18.8	24.2
foc	fraction	0.0991	0.0879	0.0879	0.0665	0.0623	0.0595	0.0783	0.0574	0.0503
(Σ SEM - AVS) / foc	µmol/g dry	120	**203**	**167**	-120	-114	-465	-115	87	-330

	Sample Location:	RREC13-27	RREC13-28	RREC13-29	RREC13-30	RREC13-31	RREC13-42	RREC13-44	RREC13-45	RREC13-46
	Sample Name:	RREC13-27-SURF	RREC13-28-SURF	RREC13-29-SURF	RREC13-30-SURF	RREC13-31-SURF	RREC13-42-SURF	RREC13-44-SURF	RREC13-45-SURF	RREC13-46-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	11/04/13	11/1/13	11/1/13	11/1/13	10/30/13	11/04/13	10/30/13	10/29/13	11/5/13
Analyte	**Units**									
Σ SEM	µmol/g dry	11.932	5.702	6.598	9.665	2.5657	2.5841	6.512	4.174	1.1565
AVS	µmol/g dry	3	5.1	4.3	4.1	14.8	0.85	5.6	4.3	4.4
foc	fraction	0.0476	0.0874	0.106	0.0706	0.0619	0.0329	0.0698	0.07	0.0822
(Σ SEM - AVS) / foc	µmol/g dry	**188**	7	22	79	-198	53	13	-2	-39

NOTES:
Bolded values exceed 130 µmol/g
J = Indicates that the concentration is an estimated value.
U = Indicates the analyte was analyzed for but not detecte
"--" SEM/AVS not calculated because AVS was not dete
AVS = Acid Volatile Sulfides
SEM = Simultaneously Extracted Metals
foc = fraction organic carbon
µmol/g dry = micromole per gram dry weight

TABLE 4-2 ORGANIC CARBON NORMALIZED METALS

River Rouge/Ecorse Shoreline Area Site Characterization
Detroit River Area of Concern, Ecorse, Michigan (November 2013)

	Sample Location:	RREC13-36	RREC13-37	RREC13-38	RREC13-38	RREC13-39	RREC13-40	RREC13-41
	Sample Name:	RREC13-36-SURF	RREC13-37-SURF	RREC13-38-SURF	RREC13-38-SURF-FD	RREC13-39-SURF	RREC13-40-SURF	RREC13-41-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/28/13	10/28/13	10/30/13	10/30/13	10/30/13	10/28/13	10/30/13
Analyte	**Units**							
Σ SEM	µmol/g dry	6.365	3.293	2.5786	3.552	5.714	2.789	9.08
AVS	µmol/g dry	55.6	3.6	2.4	3.3	1.9	4	2.3
foc	fraction	0.139	0.06	0.0233	0.0274	0.0793	0.0468	0.121
(Σ SEM - AVS) / foc	µmol/g dry	-354	-5	8	9	48	-26	56

	Sample Location:	RREC13-47	RREC13-47	RREC13-48	RREC13-48	RREC13-49	RREC13-49	RREC13-50
	Sample Name:	RREC13-47-SURF	RREC13-47-SURF-FD	RREC13-48-SURF	RREC13-48-SURF-FD	RREC13-49-SURF	RREC13-49-SURF-FD	RREC13-50-SURF
	Sample Depth (ft):	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Sampled:	10/30/13	10/30/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Analyte	**Units**							
Σ SEM	µmol/g dry	6.901	7.11	5.736	5.666	8.837	8.669	2.2829
AVS	µmol/g dry	6 J	1.3 J	6.1	16.6	2.3	3.3	0.96
foc	fraction	0.0833	0.063	0.0592	0.0631	0.0904	0.0691	0.0151
(Σ SEM - AVS) / foc	µmol/g dry	11	92	-6	-173	72	78	88

NOTES:

Bolded values exceed 130 µmol/g

J = Indicates that the concentration is an estimated value.

U = Indicates the analyte was analyzed for but not detecte

"--" SEM/AVS not calculated because AVS was not dete

AVS = Acid Volatile Sulfides

SEM = Simultaneously Extracted Metals

foc = fraction organic carbon

µmol/g dry = micromole per gram dry weight

Appendix A

Field Logbook and Data Collection Forms

Appendix A:

Field Logbooks and Data Collection Forms

A1. Core Collection Logbook

10/28/13

1233 - onsite at CI13-22
42°04.4923N 83010.7203W

Poner: 2 ponars taken for volume.
Sand with some darker organic layering. Some macrophytes.

1300 - back at dock - motor to Ecorse

1520 - leave dock River Rouge/Ecorse

1533 - onsite at RREC13-36
42°14.0963N 83°08.8892W
water depth = 8.6 ft

Poner: 1 poner taken. Silty with leaf litter.

Core: Refusal = 3.0 ft
Recovery = 2.8 ft

1604 - onsite at RREC13-40
42°14.1417N 83°08.6605W
water depth = 3.5 ft
- sheen observed while anchoring

Core: Refusal = 7.0 ft
Recovery = 7.1 ft

10/28/13
RREC13-40 con't

Poner: 3 ponars taken: Medium - coarse sand with some shell frag.

1639 - onsite at RREC13-37
42°14.2855N 83°08.5958W
water depth = 3.08 ft

Poner: 1 poner taken, Silt with organics

Core: Refusal = 10 ft
Recovery = 9.5 ft

1710 - head back to dock

10/29/13

overcast
47°F
wind 5-10 mph W

0800 - meet at marina - Sea Voss
Rose Ellison
Joe Boron
Stacy Coullard

0820 - leave marina

10/29/13

0839 - onsite at RREC13-16
42°15.6170N 83°07.5062W
water depth - 19.0 ft

1st Core: Refusal = 8.5 ft
Recovery = lost contents

2nd Core: Refusal = 9.0 ft
Recovery = 9.4 ft
- odor and sheen observed

Ponar: 1 ponar taken, soft silt

0935 - onsite at RREC13-17
42°15.5956N 83°07.3997W
water depth = 17.16 ft

Ponar: 1 ponar taken, soft silt

1st Core: Refusal = 10 ft - did not hit refusal
Recovery = lost contents
- odor and sheen observed

10/29/13
RREC13-17 con't

2nd Core: Refusal = 9.5 ft
Recovery = lost contents
* will return to location with double catcher cores

1017 - onsite at RREC13-18
42°15.5613N 83°07.3893W
water depth = 21.5 ft

1st Core: Refusal - 5ft no refusal - misfeed
Recovery = discard core
2nd Core: Refusal = 10ft did not hit refusal
Recovery = 9.4 ft

Ponar: 1 ponar taken. Soft silt

1104 - onsite at RREC13-19
42°15.5331N 83°07.2826W
water depth = 17.3 ft

Ponar: 2 ponars taken, soft silt, odor + sheen

1st Core: Refusal = 1.5 ft = hard clay
Recovery = 0.5 ft
- try again

10/29/13

RREC13-19 cont

2nd core: Refusal = 1.0 gravel.
Recovery = lost contents - will keep 1st core

1137 - head in for lunch

1315 - head back out

1329 - onsite at RREC13-20
42°15.4866 N 83°07.2205 W
water depth = 24.0 ft

1st Core: Refusal: 7.5 ft
Recovery: lost contents

2nd Core: Refusal = 7.0 ft
Recovery = 6.4 ft (last 17 inches so 5 ft actual recovery)

Poner - 1 poner taken. Soft silt

1438 - onsite at RREC13-45
42°15.4340 N 83°07.1805 W
water depth = 30.58 ft

Poner: 1 poner taken. Soft silt

core: Refusal = 5.5 ft
Recovery = 5.25

10/29/13

1521 - return to RREC13-17 cont Comp.
42°15.5944 N 83°07.4011 W
water depth = 17.4 ft
- returned to location to collect core using double catcher core

Core: Refusal = 10 ft no refusal
Recovery = 9.5

1605 - onsite at RREC13-21
42°15.4348 N 83°07.4484 W
water depth = 17.75 ft

Core: Refusal = 10 ft no refusal out into stiff clay
Recovery = 9.5 ft
* sheen observed + odor

Poner: 1 poner taken. soft silt dark. odor + sheen

1638 - onsite at RREC13-22
42°15.3818 N 83°07.3237 W
* location moved b/c of barge in actual site
water depth = 13.58

Poner: 1 poner taken. soft silt

Core: Refusal: 10 ft no refusal - sheen observed odor
17 Recovery = 9.75 ft

10/30/13

clear
38°F warming to 60°
light wind - 5 mph

0730 - meet at Meijer - Sam Voss
Rose Ellison
John Borem
Stacy Courllard

0810 - leave dock

0825 - onsite at RREC13-44
42°15.3855 N 83°07.3724 W
* location moved by EPA (Rose Ellison)
water depth = 13.3 ft

Core: Refusal = 7.5 ft
Recovery = 7.25 ft sheen + odor observed

Poner: 1 poner taken. soft silt

0902 - onsite at RREC13-23
42°15.3300 N 83°07.2630 W
water depth = 13.58 ft

Poner: 1 taken. soft silt. slight sheen and odor

core: Refusal = 10 ft no refusal
Recovery = 9.9 ft

10/30/13

0954 - onsite at RREC13-1
42°16.4079 N 83°06.6083
* location moved offshore slightly
water depth = 12.25 ft

Core: Refusal = 5.5 ft
Recovery = 3.83 ft odor detected

Poner: 2 poners taken. Sandy with some clay + gravel; odor

1031 - onsite at RREC13-2
42°16.3670 N 83°06.6333
water depth = 5.5 ft

Poner: 1 poner taken: sandy silt w/ some macrophytes
1st Core - lost core
2nd Core: Refusal: 10 ft no refusal - sheen
Recovery = 9.5 ft

1119 - onsite at RREC13-47
42°15.6007 N 83°07.1160 W
* location moved by EPA (Rose Ellison)
water depth = 17.25 ft

Core: Refusal = 10 ft no refusal
Recovery = 9.8

10/30/13

RREC13 - 47 con't

Ponar: 1 ponar taken. soft silt

1145 - head in for lunch

1325 - leave marina

1340 - onsite at RREC13 - 38

42°14.2395 N 83°08.5045 W

water depth = 2.9 ft

Ponar: 1 ponar taken. sandy silt. some macrophytes

Core: Refusal = 7.5 ft no refusal

Recovery = 5.9 ft (lost 9 in total 6.5)

1420 - onsite at RREC13 - 39

42°14.2497 N 83°08.3972 W

* location moved slightly by EPA (slope)

water depth = 3.5 ft

Core: Refusal = 10 ft no refusal

Recovery = 9.5 ft

Ponar: 1 ponar taken. sandy silt with macrophytes

10/30/13

1455 - onsite at RREC13 - 32

42°14.3860 N 83°08.3116 W

water depth = 3.75 ft

Ponar: 2 ponars taken. sandy silt. Eurasian milfoil

1st core: lost contents

2nd core: Refusal = 4.25

Recovery = 3.9

1540 - onsite at RREC13 - 31

42°14.4205 N 83°08.4118 W

water depth = 3.8 ft

Core: Refusal = 7.5 no refusal

Recovery = 7.1

Ponar: 2 ponars taken. silt w/ some sand. lots of Eurasian Milfoil

1613 - onsite at RREC13 - 41

42°14.5261 N 83°08.4540 W

* location moved slight away from shore

water depth = 8.16 ft

Ponar: 1 ponar taken. silt with ~~sand~~ small pebble surface. odor + sheen

core: Refusal = 10 ft no refusal

Recovery = 9.5

10/30/13

1645- onsite at RREC13-33
42°14.4929 N 83°08.5782 W
* location moved slightly due to pilings
Water depth = 2.75 ft
Ponar - 1 taken soft silt
Core: Refusal = 10 ft no refusal
Recovery = 9.75 ft

1725- onsite at RREC13-35
42°14.3934 N 83°08.6793 W
* location moved slightly by EPA (Rose)
water depth - 17.58

Ponar: 3 ponars taken. Sandy silt with some rocks + dead mussels. Sheen present

Core: Refusal = 5.5 ft
Recovery = 4.6 ft strong odor + sheen

1800- head back to Marina

11/1/13

1430 Depart ramp to dump IDW

SW on board. SW not onboard (Sam Whitin)

No cores taken 10/31/13 and am of 11/1/13 ~~due~~ due to Gale Warning in effect

1450 Dispose of locations:
47, 18, 16, 41, 31, 35
37, 40, 17 IDW

All IDW disposed of at location where core was taken

1530 Arrive at RREC-34
sample @ 15-40
VOA: 6.5' Sheen present
42° 14.4403 83° 08.6289
Core refusal: 9.0' recovery: 9.25'

11/1/13

Ponar sample - 1 taken

1600 Arrive @ RREC-30

One ponar sample taken

DTB 11.5'

Sample @ 1615

42 14.5253 N

83 08.2419 W

7.5' core tube used

Core Refusal: none

Recovery: 7.1

Odor present

1640 Arrive @ RREC-29

DTB: 4.25'

sample @ 1700

~~83~~ 42 14.6219 N

83 08.0718 W

10 ft core tube

Core refusal: none

recovery: 9.41

Sheen present

Station moved closer to shore by EPA personel

oil sheen & bubbles up from probe location for 5-15 minutes after core collection.

One probe taken

SAV present

1720 Arrive @ RREC-28

Probe to determine which core to use. Probes look like 10+ depths

DTB: 3.9'

Sample @ 1740

75-ft downriver from an outfall which is 150 off the shore

42 14.7693 N
83 07.8486 W

10-ft core taken. No refusal - 9.4' recovery

Significant sheen present

40°F
cloudy wind 3-6mph

11/4/13

0700 meet at Marina - S. Voss
R. Ellison
J. Bohem
S. Coullard

0720 - leave marina

0734 - onsite at RREC13-27
42°14.8520 N 83°07.7260 W
* moved location inshore out of channel
water depth = 4.6 ft

Core: Refusal = 10 ft no refusal
Recovery = 9.5 ft odor + sheen

Poner: 2 ponars taken, soft silt

11/4/13

0811 - onsite at RREC13-26
42°14.9291 N 83°07.6209 W
* location moved slightly - out of channel
water depth = 17.5 ft

Ponar: 3 ponars taken. Sand, some silt + clay, shell, odor sheen

Core: Refusal = 7.5 ft no refusal
Recovery = 7.25 ft

0904 - onsite at RREC13-25
42°15.1300 N 83°07.3973 W
* location moved by EPA slightly
water depth = 19.0 ft

Core: Refusal = 10 ft
Recovery = 9.75 ft

Ponar: 2 ponars taken. Sand with shell. some silt

0956 - onsite at RREC13-24
42°15.1944 N 83°07.3252 W
* location moved slightly by EPA
water depth = 18.58 ft

Ponar: 4 ponars taken. Sand w/some silt, shell, clam sp.

Core: Refusal = 3.5 ft
Recovery = 3.3 ft

2 core takers

11/4/13

1046 - onsite at ~~RREC13~~ RREC13-12
42° 15.3669 N 83° 07.1948 W
* location moved by EPA
Water depth = 31.6

Core: Refusal = 4.5 ft
Recovery = 4.1 ft

Poner: 5 poners taken. sand, shell, rock
may not be enough for sample

1125 - head back for lunch
1315 - head back out

1329 - onsite at RREC13-15
42° 15.5124 N 83° 07.0950 W
* location moved due to proximity to ship, o.k. w/ EPA
Water depth = 20.6 ft

Core: Refusal: 3.5 ft
Recovery = 3.0 ft

Poner: 1 poner taken. sandy silt

1407 - onsite at RREC13-14
42° 15.6877 N 83° 06.9863 W
* location moved inshore by EPA
water depth = 5.4 ft

11/4/13

RREC13-14 con't

Poner: 1 poner taken. sandy silt w/ clay clumps

Core: Refusal = 10 ft no refusal
Recovery = 9.5 ft outside of core greasy

1447 - onsite at RREC13-13
42° 15.7470 N 83° 06.9614 W
* location moved by EPA
water depth = 2.1 ft

Poner: 2 poners taken. dark silt

Core: Refusal: 7.5 ft no refusal
Recovery = 7.0 ft sheen + odor detected

1525 - onsite at RREC13-11
42° 15.8260 N 83° 06.8943 W
* location moved slightly b/c of rocks
water depth = 3.9 ft

Core: Refusal = * - 3 attempts at coring with no recovery

Poner: 6 poners taken for volume. silty sand

11/4/13

1611 - onsite at RREC13-9
42°15.9326' N 83°06.8201' W
location moved slightly by EPA
water depth = ~~6.8~~ 6.6 ft STW 1/4

Poner: 5 poners taken to get volume. silty sand w/ shell

Core: Refusal = 4.5 ft
Recovery = 3.8 ft

1647 - head back to dock

11/5/13

54° F
Partly cloudy, calm

0700 - meet at marina - S Voss
R. Ellison
J. Bowen
S. Cottlerel

0730 - leave dock

0742 - onsite at RREC13-48
42°15.5722 N 83°07.0724 W
water depth = 11.8 ft

Core: Refusal = 10 ft no refusal
Recovery = 9.5 ft sheen observed

Poner: 1 poner taken. soft sed. with sheen

0819 - onsite at RREC13-49
42°15.6119 N 83°07.0358 W
water depth = 9.5 ft

Poner: 1 poner taken. soft silt

Core: Refusal = 10 ft no refusal
Recovery = 9.8 ft sheer

11/5/13

0856 - onsite at RREC13-07
42°16.0176 N 83°06.7739 W
* location off slightly due to strong current EPA OK
water depth = 9.9 ft

Core: Refusal * made 3 attempts - refusal at 6 inches and no recovery

Poner: 3 ponars taken. Sand, shell, pebble, some silt

0936 - onsite at RREC13-06
42°16.1026 N 83°07.7361 W
* location moved slightly due to lg rocks
water depth = 10.75 ft

Poner: 1 ponar taken. Soft silt

Core: Refusal = 3 ft
Recovery = 2.5 ft

1013 - onsite at RREC13-05
42°16.1596 N 83°06.7085 W
* location moved offshore slightly - too close to shore
Water depth = 12.08 ft

Core: Refusal = 5.0 ft
Recovery = 3.5 ft

Poner: 2 ponars taken. Silty sand with shell sheen

11/5/13

1048 - onsite at RREC13-03
42°16.3229 N 83°06.6321 W
* location moved away from shore bit of rocks
water depth = 23.0 ft

Poner: 1 ponar taken, soft silt

Core: Refusal = 7.5 ft no refusal
Recovery = 6.9 ft

1130 - head in for lunch

1325 - leave marina

1341 - onsite at RREC13-04
42°16.2822 N 83°06.6556 W
water depth = 14.8 ft

Core: 3 attempts - all large rock + move location

1404 - RREC13-04 old pier
42°16. N 83°06.
water depth - 19.1 ft
* dive again - to dang see wall

1427 - RREC13-04
42°16. N 83°06.
water depth = 8.9

11/5/13

RREC13-04 con't

Core - 3 attempts = no penetration or recovery

Poner: 3 poners - all gravel, glass, fishing line (gravel) + rocks

* abandon location

1453 - onsite at RREC13-50

42°16.3952 N 83°06.5955 W

water depth = 29.4 ft

Poner: 3 poners needed, sand, shell, pebble

Core: Refusal = 7.5 ft no refusal

Recovery = 6.2 ft

1532 - onsite at RRECDB-46

42°16.5942 N 83°06.8372 W

* location moved by EPA out of channel

water depth = 13.16 ft

1 Core: Refusal = 10 ft no refusal

Recovery = lost contents

2 Core: Refusal = 16 ft no refusal

Recovery = 8.5 ft

Poner = 3 poners taken. silt, stones, woody debris

11/5/13

1637 - onsite at RREC13-43

location moved

water depth = 35.3 ft

- current too strong to sample

1650 - head back to dock

A2. Field Data Collection Forms

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-1 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 0954

Sample Collected By: S. Voss

Water Depth: 12.25 **ft**

Sediment Depth: 5.5 ft

Sediment Recovery: 3.83 ft **% Recovery:** 69%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°16.4079 **Long.** 83°06.6083 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sandy with some clay + gravel. Odor detected

Comments/Remarks: A total of 2 ponars taken

Location moved offshore slightly

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-02 **Area**

Lat. 42°16.3670 **Long.** 83°06.6333 **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1031

Sample Collected By: S. Voss

Water Depth: 5.5 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Sandy silt with some macrophytes
Core - sheen observed when pulling core

Comments/Remarks: One poner taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-03 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 1048

Sample Collected By: S. Voss

Water Depth: 23.0 **ft**

Sediment Depth: >7.5 ft

Sediment Recovery: 6.9 ft **% Recovery:** 92%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) Lat. 42°16.3229 **Long.** 83°06.6321 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt

Comments/Remarks: One poner taken

Location moved away from shoreline due to rocks in area

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-041 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** _____

Sample Collected By: S. Voss

Water Depth: 8.9 **ft**

Sediment Depth: 0 ft

Sediment Recovery: 0 ft **% Recovery:** 0

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES NO _____

Coordinates as proposed: YES NO

(New) Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Location Abandoned

Comments/Remarks: Could not recover any sample after at least 3 attempts at vibracoring or ponar.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-05 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 1013

Sample Collected By: S. Voss

Water Depth: 12.08 **ft**

Sediment Depth: 5 ft

Sediment Recovery: 3.5 ft **% Recovery:** 70%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°16.1596 **Long.** 83°06.7085 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - silty sand with shell. Sheen observed

Comments/Remarks: A total of 2 poners taken.

Location moved away from shore slightly because it was too close to land.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-06 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 0936

Sample Collected By: S. Voss

Water Depth: 10.75 ft

Sediment Depth: 3 ft

Sediment Recovery: 2.5 ft **% Recovery:** 83%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°16.1026 **Long.** 83°07.7361 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt

Comments/Remarks: One poner taken.

Location moved slightly due to large rocks.

SIGNATURE: S. Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-07 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 0856

Sample Collected By: S. Voss

Water Depth: 9.9 ft

Sediment Depth: .5 ft

Sediment Recovery: 0 ft **% Recovery:** 0

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°16.0176 **Long.** 83°06.7739 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Sand, shell + pepple, some silt

Comments/Remarks: A total of 3 poners taken. Made 3 attempts at vibracoring with zero recovery.

Location moved slightly due to strong current. Approved by EPA

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-09 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1611

Sample Collected By: S. Voss

Water Depth: 6.6 **ft**

Sediment Depth: 4.5 ft

Sediment Recovery: 3.8 ft **% Recovery:** _____

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.9326 **Long.** 83°06.8201 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - silty sand with shell

Comments/Remarks: A total of 5 ponars taken

Location moved slightly by EPA.

SIGNATURE: Paul Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-11 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1525

Sample Collected By: S. Voss

Water Depth: 3.9 **ft**

Sediment Depth: < 1 ft

Sediment Recovery: 0 **% Recovery:** 0

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.8280 **Long.** 83°06.8943 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - silty sand, large rocks

Comments/Remarks: A total of six poners taken for volume. Three attempts a vibracoring produced zero recovery.

Location moved due to close proximity to some large boulders. Approved by EPA.

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-12 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: _____ **Time Collected:** _____

Sample Collected By: _____

Water Depth: _____ **ft**

Sediment Depth: _____

Sediment Recovery: _____ **% Recovery:** _____

Sample Technique: VIBRACORE GEOPROBE PONAR

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES NO _____

Coordinates as proposed: YES NO

(New) Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) _____

Comments/Remarks: Location Abandoned by EPA

SIGNATURE: _____

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-13 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1447

Sample Collected By: S. Voss

Water Depth: 2.1 **ft**

Sediment Depth: > 7.5 ft

Sediment Recovery: 7.0 ft **% Recovery:** _____

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°15.7470 **Long.** 83°06.9614 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - dark, soft silt

Comments/Remarks: A total of 2 ponars taken

Location moved by EPA.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: BREC13-14 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1407

Sample Collected By: S. Voss

Water Depth: 5.4 **ft**

Sediment Depth: > 10 ft

Sediment Recovery: 9.5 **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (~~NO~~)

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.6877 **Long.** 83°06.9863 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sandy silt with clumps of clay
Core - outside of core liner coated with grease

Comments/Remarks: A total of 1 poner taken.

Location moved inshore by EPA, away from channel

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-15 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1329

Sample Collected By: S. Voss

Water Depth: 20.6 **ft**

Sediment Depth: 3.5 ft

Sediment Recovery: 3.0 ft **% Recovery:** 85%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42° 15.5124 **Long.** 83° 07.0950 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Sandy silt

Comments/Remarks: A total of 1 poner taken

Location moved due to close proximity to a ship docking - approved by EPA

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-16 **Area**

Lat. 42°15.6176 **Long.** 83°07.5062 **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 0839

Sample Collected By: S. Voss

Water Depth: 19.0 **ft**

Sediment Depth: 9.0 ft

Sediment Recovery: 9.4 ft **% Recovery:** 104%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt.

Comments/Remarks: One poner taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13 17 **Area**

Lat. 42°15.5956 **Long.** 83°07.3997 **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 0935 (ponar) 1521 (core)

Sample Collected By: S. Voss

Water Depth: 17.4 **ft**

Sediment Depth: >10 ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - soft silt

Comments/Remarks: One ponar taken. Returned to location with double catcher in core in order to collect vibracore sample.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-18 **Area** _____

Lat. 42°15.5613 **Long.** 83°07.3893 **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 1017

Sample Collected By: S. Voss

Water Depth: 21.5 **ft**

Sediment Depth: >10 ft

Sediment Recovery: 9.4 ft **% Recovery:** 94%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt

Comments/Remarks: One poner taken.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-19 **Area**

Lat. 42°15.5331 **Long.** 83°07.2826 **Degrees Decimal Minutes**

Date Collected: 6/29/13 **Time Collected:** 1104

Sample Collected By: S. Voss

Water Depth: 17.3 **ft**

Sediment Depth: 1.5 ft

Sediment Recovery: 0.5 ft **% Recovery:** 33%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt. Odor + Sheen detected

Comments/Remarks: A total of 2 poners taken and 2 attempts to vibracore made

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-20 **Area**

Lat. 42°15.4866 **Long.** 83°07.2205 **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 1329

Sample Collected By: S. Voss

Water Depth: 24.0 **ft**

Sediment Depth: 7.0 ft

Sediment Recovery: 6.4 ft ☆ **% Recovery:** 91%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt.

Comments/Remarks: One poner taken.

☆ lost approximately 16 inches out of bottom of core, (Lost entire contents on 1st attempt at location)

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-21 **Area**

Lat. 42°15.4348 **Long.** 83°07.4484 **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 1605

Sample Collected By: S. Voss

Water Depth: 17.75 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.5ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - soft, black silt. Odor + Sheen detected
Core - odor + sheen detected

Comments/Remarks: One ponar taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-22 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/29/13 **Time Collected:** 1638

Sample Collected By: S. Voss

Water Depth: 13.58 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.75 ft **% Recovery:** 97%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°15.3818 **Long.** 83°07.3237 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt.
Core - sheen + odor observed

Comments/Remarks: One poner taken

Location moved due to barge tied off at actual sample location

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-23 **Area**

Lat. 42°15.3300 **Long.** 83°07.2630 **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 0902

Sample Collected By: S. Voss

Water Depth: 13.58 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.9 ft **% Recovery:** 99%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt. Slight sheen + odor observed

Comments/Remarks: One poner taken-

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-24 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 0956

Sample Collected By: S. Voss

Water Depth: 18.58 **ft**

Sediment Depth: 3.5 ft

Sediment Recovery: 3.3 ft **% Recovery:**

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.1944 **Long.** 83°07.3252 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) ponar - Sand with some silt. shells present

Comments/Remarks: A total of 4 ponars taken. Asiatic clams present in ponar. (live)

Location moved slightly by EPA.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-25 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 0904

Sample Collected By: S. Voss

Water Depth: 19.0 **ft**

Sediment Depth: > 10 ft

Sediment Recovery: 9.75 ft **% Recovery:** 97%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°15.1300 **Long.** 83°07.3973 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sand with shell; some silt

Comments/Remarks: A total of 2 poners taken.

Location moved by EPA

SIGNATURE: S. Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-26 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 0811

Sample Collected By: S. Voss

Water Depth: 17.5 ft

Sediment Depth: >7.5 ft

Sediment Recovery: 7.25 ft **% Recovery:** 96%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°14.9291 **Long.** 83°07.6209 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar: Sand with shell; some silt + clay. Odor and sheen present

Comments/Remarks: A total of 3 ponars taken.

Location moved slightly away from channel.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-27 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 0734

Sample Collected By: S. Voss

Water Depth: 4.6 ft

Sediment Depth: >10 ft

Sediment Recovery: 9.5 ft **% Recovery:** 95 %

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: YES (NO)

(New) Lat. 42°14.8520 **Long.** 83°07.7260 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt
core - odor + sheen detected

Comments/Remarks: A total of 2 ponars taken.
Location moved towards shore and away from channel.

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-28 **Area**

Lat. 42°14.7693 **Long.** 83°07.6486 **Degrees Decimal Minutes**

Date Collected: 11/1/13 **Time Collected:** 1740

Sample Collected By: S. Voss

Water Depth: 3.9 **ft**

Sediment Depth: >10 ft

Sediment Recovery: 9.4 ft **% Recovery:** 94%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Significant sheen observed in samples

Comments/Remarks: One ponar taken

Location was located approximately 75ft downstream of an outfall.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-29 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/1/13 **Time Collected:** 1700

Sample Collected By: S. Voss

Water Depth: 4.25 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.4 ft **% Recovery:** 94%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO)

Coordinates as proposed: YES (NO)

(New) Lat. 42°14.6219 **Long.** 83°08.0718 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - 6.1 ft. Odor and sheen observed in samples. Some macrophytes present

Comments/Remarks: One poner taken. Oil/sheen bubbled up from vibracore hole for approximately 5 minutes after core collection.

Location moved closer to shoreline by EPA.

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-30 **Area**

Lat. 42°14.5253 **Long.** 83°08.2419 **Degrees Decimal Minutes**

Date Collected: 11/1/13 **Time Collected:** 1615

Sample Collected By: S. Voss

Water Depth: 11.5 **ft**

Sediment Depth: > 7.5 ft

Sediment Recovery: 7.1 ft **% Recovery:** 94%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) odor detected in sediment

Comments/Remarks: one ponar taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-31 **Area**

Lat. 42°14.4205 **Long.** 83°08.4118 **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1540

Sample Collected By: S. Voss

Water Depth: 3.8 **ft**

Sediment Depth: > 7.5 ft

Sediment Recovery: 7.1 ft **% Recovery:** 94%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sandy silt with Eurasian milfoil

Comments/Remarks: A total of 2 poners taken.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-32 **Area**

Lat. 42°14.3860 **Long.** 83°08.3116 **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1455

Sample Collected By: S. Voss

Water Depth: 3.75 **ft**

Sediment Depth: 4.25 ft

Sediment Recovery: 3.9 ft **% Recovery:** 91%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Silt with some sand - Eurasian milfoil

Comments/Remarks: A total of 2 poners taken

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-33 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1645

Sample Collected By: S. Voss

Water Depth: 2.75 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.75ft **% Recovery:** 97%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°14.4929 **Long.** 83°08.5782 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - soft silt

Comments/Remarks: One ponar taken.

Location moved slightly due to pilings in area.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-34 **Area**

Lat. 42°14.4403 **Long.** 83°08.6289 **Degrees Decimal Minutes**

Date Collected: 11/1/13 **Time Collected:** 1540

Sample Collected By: S. Voss

Water Depth: 6.5 **ft**

Sediment Depth: 9.0 ft

Sediment Recovery: 9.25 ft **% Recovery:** 102%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Sheen observed when pulling core

Comments/Remarks: One ponar sample taken

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-35 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1725

Sample Collected By: S. Voss

Water Depth: 17.58 **ft**

Sediment Depth: 5.5 ft

Sediment Recovery: 4.6 ft **% Recovery:** 83%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°14.3934 **Long.** 83°08.6793 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sandy silt with some rocks and dead mussel shells. Sheen present.

Core - Strong odor + sheen observed

Comments/Remarks: A total of 3 poners taken

Location moved slightly by EPA.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-36 **Area**

Lat. 42°14.0963 **Long.** 83°08.8892 **Degrees Decimal Minutes**

Date Collected: 10/28/13 **Time Collected:** 1533

Sample Collected By: S. Voss

Water Depth: 8.6 **ft**

Sediment Depth: 3.0 ft

Sediment Recovery: 2.8 ft **% Recovery:** 93%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - silt with leaf litter

Comments/Remarks: One ponar taken.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-37 **Area**

Lat. 42°14.2855 **Long.** 83°08.5958 **Degrees Decimal Minutes**

Date Collected: 10/28/13 **Time Collected:** 1639

Sample Collected By: S. Voss

Water Depth: 3.08 **ft**

Sediment Depth: >16 ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - silt with organics

Comments/Remarks: one poner taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-38 **Area**

Lat. 42014.2395 **Long.** 83°08.5045 **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1340

Sample Collected By: S. Voss

Water Depth: 2.9 **ft**

Sediment Depth: >7.5 ft

Sediment Recovery: 5.9 ft **% Recovery:** 78%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Sandy silt with some macrophytes

Comments/Remarks: One poner taken.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-39 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1420

Sample Collected By: S. Voss

Water Depth: 3.5 ft

Sediment Depth: >10ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: YES (NO)

(New) Lat. 42°14.2497 **Long.** 83°08.3972 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - Sandy silt with macrophytes

Comments/Remarks: One poner taken

* location moved slightly due to steep slope

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-40 **Area**

Lat. 42°12.1417 **Long.** 83°08.6605 **Degrees Decimal Minutes**

Date Collected: 10/28/13 **Time Collected:** 1604

Sample Collected By: S. Voss

Water Depth: 3.5 **ft**

Sediment Depth: 7.0 ft

Sediment Recovery: 7.1 ft **% Recovery:** 101%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - medium/coarse sand with shell

Comments/Remarks: A total of 3 ponars taken. Sheen observed while anchoring

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-41 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1613

Sample Collected By: S. Voss

Water Depth: 8.16 **ft**

Sediment Depth: >10 ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) Lat. 42°14.5261 **Long.** 83°08.4540 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - silt with small pebbles on surface. Odor + Sheen detected

Comments/Remarks: One poner taken

Location moved slightly away from shoreline

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-42 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/4/13 **Time Collected:** 1046

Sample Collected By: S. Voss

Water Depth: 31.6 **ft**

Sediment Depth: 4.5 ft

Sediment Recovery: 4.1 ft **% Recovery:** 91%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°15.3669 **Long.** 83°07.1948 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - sand, shell + rock, little silt

Comments/Remarks: A total of 5 ponars taken. Recovery poor - not enough for full/complete sample.

Location moved by EPA

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-43 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 1637

Sample Collected By: S. Voss

Water Depth: 35.3 **ft**

Sediment Depth: —

Sediment Recovery: _____ **% Recovery:** —

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES NO _____

Coordinates as proposed: YES NO

(New) Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Location Abandoned.

Comments/Remarks: Current extremely strong. Could not collect sample

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-44 **Area**

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 0825

Sample Collected By: S. Voss

Water Depth: 13.3 **ft**

Sediment Depth: 7.5 ft

Sediment Recovery: 7.25 ft **% Recovery:** 96%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: (YES) NO

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.3855 **Long.** 83°07.3724 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - soft silt
Core - odor + sheen observed

Comments/Remarks: One ponar taken

Location moved by EPA.

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13 - 45 **Area**

Lat. 42°15.4340 **Long.** 83°07.1805 **Degrees Decimal Minutes**

Date Collected: 6/29/13 **Time Collected:** 1438

Sample Collected By: S. Voss

Water Depth: 30.58 **ft**

Sediment Depth: 5.5 ft

Sediment Recovery: 5.25 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** -

Sample Collected to refusal: (YES) NO

Coordinates as proposed: (YES) NO

(New) Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt

Comments/Remarks: One poner taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-46 **Area**

Lat. **Long.** **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 1532

Sample Collected By: S. Voss

Water Depth: 13.16 **ft**

Sediment Depth: > 10 ft

Sediment Recovery: 8.5 ft **% Recovery:** 85%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: YES (NO)

(New) **Lat.** 42°16.5942 **Long.** 83°06.8372 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Ponar - Silt with some stone and woody debris

Comments/Remarks: A total of 3 ponars taken

* Moved away from channel by EPA

SIGNATURE: Paul Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-47 **Area** _____

Lat. _____ **Long.** _____ **Degrees Decimal Minutes**

Date Collected: 10/30/13 **Time Collected:** 1119

Sample Collected By: S. Voss

Water Depth: 17.25 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.8 ft **% Recovery:** 98%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:** _____

Sample Collected to refusal: YES (NO) _____

Coordinates as proposed: YES (NO)

(New) Lat. 42°15.6007 **Long.** 83°07.1160 **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt

Comments/Remarks: One poner taken

Location moved by EPA

SIGNATURE: S Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-48 **Area**

Lat. 42°15.5722 **Long.** 83°07.0724 **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 0742

Sample Collected By: S. Voss

Water Depth: 11.8 **ft**

Sediment Depth: >10ft

Sediment Recovery: 9.5 ft **% Recovery:** 95%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt. sheen observed.

Comments/Remarks: A total of 1 poner taken

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-49 **Area**

Lat. 42°15.6119 **Long.** 83°07.0358 **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 0819

Sample Collected By: S. Voss

Water Depth: 9.5 **ft**

Sediment Depth: >10 ft

Sediment Recovery: 9.8 ft **% Recovery:** 98%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Poner - soft silt
Core: Sheen observed when pulling core

Comments/Remarks: One poner taker

SIGNATURE: Paul T Voss

Field Data Collection Form

Project Title River Rouge/Ecorse Shoreline Area Site Characterization

Sampling Location: RREC13-50 **Area**

Lat. 42°16.3952 **Long.** 83°06.5955 **Degrees Decimal Minutes**

Date Collected: 11/5/13 **Time Collected:** 1453

Sample Collected By: S. Voss

Water Depth: 29.4 **ft**

Sediment Depth: > 7.5 ft

Sediment Recovery: 6.2 ft **% Recovery:** 82%

Sample Technique: (VIBRACORE) GEOPROBE (PONAR)

Field duplicate: YES NO **Depth:**

Sample Collected to refusal: YES (NO)

Coordinates as proposed: (YES) NO

(New) Lat. **Long.** **Degrees Decimal Minutes**

Sample Observations: (color, texture, odor) Paner - Sand, shell and pebbles.

Comments/Remarks: A total of 3 paners taken.

SIGNATURE: Paul T Voss

A3. Core Processing Logbook

Location CELE[redacted]D Date 10/1/13

Project / Client EPA [redacted]/GLNPO

Tuesday [illegible] Sunny
41°, Fridge Truck

Gov't Shutdown. ~~All work stop~~
All gov't work stops - EA must be out of EPA facility by noon

S. Whitin
T. King
M. Gelinas
} EA, processing

No mudpuppy - will go without [illegible]
3 ponars

0740 CI13-26-0001 3x40z
0750 CI13-26-0103 "
0800 CI13-26-0505 "
0810 CI13-26-0507 "
0820 CI13-[illegible]-0707 "

Location CELERON ISLAND Date 10/1/13

Project / Client EPA V/GLNPO

From 9/30/13:

1500 CI13-09-SURF Held in SS bowls, AVS/SEM, not taken out.
1515 CI13-10-SURF "
1525 CI13-11-SURF "
1543 CI13-12-SURF "
1655 CI13-17-SURF "
1715 CI13-18A-SURF "
1745 CI13-30-SURF "

1815 CI13-20-SURF 1x160z, 1x20z, 3x40z

Inventory:
25x160z bottles
[illegible]x 40z ~~glovet~~ jars boxes

[illegible] M+L gloves
2 gal ziplocs

[illegible] EA equipment.
[illegible] EPA facility

Location CELERON ISLAND Date 10/1/13

Project / Client EPA V | GLNPO

1230 Ship 3 coolers to TA - Burlington
8020 0320 5251
7958 4357 7513
7958 4357 7524

1245 Drop fridge truck @ Ryeter

1315 Arrive Ann Arbor office, drop printer + ~~excess sup~~ shears

1400 leave for Detroit airport

1635 flight to BWI for
M Gelinas
T King
S Whitin

Location RIVER ROUGE/ECORSE Date 10/30/13

Project / Client EPA V | GLNPO

1130 M. RUSSO + D TWA150
M GELINAS join S Whitin @
EPA facility
Fridge truck temp: 39°F
Setup + Begin processing

10/29/13	1104	RREC13-19-SURF	1x1603 5x403
	1105	RREC13-19-SURF-MS	5x403
	1106	-MSD	5x403
10/29/13	1438	RREC13-45-SURF	1x1603 5x403
10/29/13	1638	RREC13-22-SURF	"
10/29/13	1605	RREC13-21-SURF	"
10/29/13	1329	RREC13-20-SURF	"

all of derive held in SS bowls, AVS/SEM in jar.

Location RIVER ROUGE/ECORSE Date 10/30/13

Project / Client EPA II/GLNPO

Last 3 ponars for Celeron collected - unable to collect @ time of project due to gov't shutdown

10/28/13	1233	CI13-22-SURF	1x16 1x203 3x403
10/28/13	1214	CI13-23-SURF	"
10/28/13	1154	CI13-24-SURF	"
10/29/13	839	RREC13-16	1x1603 5x403
10/29/13	935	RREC-17-SURF	"
10/29/13	1017	RREC-18-SURF	"
10/28/13	1533	RREC-36-SURF	1x1603 1x203 4x403
10/28/13	1639	RREC-37 SURF	1x1603 5x403
10/28/13	1604	RREC-40-SURF	1x1603 1x203 4x403

Location RIVER ROUGE/ECORSE Date 10/30/13

Project / Client EPA II/GLNPO

Today's ponars:

0954	RREC13-01-SURF	held in SS bowl, ANS/SEM in jar
1031	RREC13-02-SURF	"
0902	RREC13-23-SURF	"
0825	RREC13-44-SURF	" 2x803, 5x403
1119	RREC13-47-SURF	"
1119	RREC13-47-SURF-FD	5x403 jars

Test America did not send 1603 jars,

4 base samples have 3203 jars instead of 1603, 44 has 2x803

Location RIVER ROUGE Date 10/30/13

Project / Client EPA V/GLNPO

1730	RREC13-47-0001	3x40z jars
1735	RREC13-47-0103	3x40z jars
1735	RREC13-47-0103FD	3x40z jars
1740	RREC13-47-0305	3x40z
1740	RREC-13-47-0305-FD	3x40z
1745	RREC13-47-0507	"
1750	RREC13-47-0709	"
1750	RREC13-47-0709-MS	"
1750	RREC13-47-0709-MSD	"
1755	RREC 13-47-0911	"
1810	FedEX Arrives- ship 5 coolers	

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA/GLNPO

Thursday

Rain, wind- no mudpuppy

0745

S. Whitin, M. Gelinas, M. Russo } processing

Fridge truck temp: 41°F

S. Voss drives to Detroit to catch flight.

TO Date: 52% samples
46% locations

PID calibration: Isobutylene = ~~99.7~~ 100.0 ppm
Fresh Air = 0.0 ppm

0813 Reading: 0.0 ppm

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA V/GLNPO

0830	RREC13-35-0001	3x403
0835	RREC13-35-0103	"
0840	RREC13-35-0305	"
0910	RREC13-41-0001	3x403
0915	RREC13-41-0103	"
	RREC13-41-0103-FD	"
0920	RREC13-41-0305	"
	RREC13-41-0305-FD	"
0925	RREC13-41-0507	"
	RREC13-41-0507-FD	"
0930	RREC13-41-0709	"
	RREC13-41-0709-FD	"
0935	RREC13-41-0911	"
	RREC13-41-0911-FD	"

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA V/GLNPO

1010	RREC13-17-0001		
1015	RREC13-17-0103		
1020	RREC13-17-0305		
1025	RREC13-17-0507		
1030	RREC13-17-0709		
1035	RREC13-17-0911		
10/30	1540	RREC13-31-SURF	SS bowl, AVSNEM in jar
10/30	1455	RREC13-32-SURF	"
10/30	1645	RREC13-33-SURF	1x16, 5x403
10/30	1725	RREC13-35-SURF	"
10/30	1340	RREC13-38-SURF	SS bowl, 1x403 AVSNEM
	1340	RREC13-38-SURF-FD	

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA V/GLNPO

10/30 1420 RREC13-39-SURF SS bowls, MS/SEM jar

10/30 1013 RREC13-41-SURF SS bowl, MS/SEM jar

BSWA 178

1155 RREC13-19-0001 3x40z jars

1205
~~1200~~ RREC13-36-0001 3x40z

1215 RREC13-36-0103 3x40z

1245 Lunch, equipment run

1450 RREC13-31-0001 3x40z

1455 RREC13-31-0103 3x40z

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA V/GLNPO

1500 RREC13-31-0305 3x40z

1520 RREC13-31-0305-MS 3x40z

1500 RREC13-31-0305-MSD 3x40z

1505 RREC13-31-0507 3x40z

1510 RREC13-01-0001 3x40z

1520 RREC13-01-0103 "

~~1520 MS/MSD - 6x40z~~

1530 RREC13-01-0305 "

1005 RREC13-18-0001 3x40z

1015 RREC13-18-0103 3x40z
MS/MSD 6x40z

1025 RREC13-18-0305 3x40z

1035 RREC13-18-0507 "

1045 RREC13-18-0709 "

Location RIVER ROUGE/ECORSE Date 10/31/13

Project / Client EPA V/GLNPO

1655 REC13-18-0911 3x40s

To Ship on Fri:

1630 REC13-16-0001 3x40s

1640 REC13-16-0103 "

1650 REC13-16-0305 "

1650 MS/MSD

1700 REC13-16-0507 "

1710 REC13-16-0709 "

1720 REC13-16-0911 "

1810 FedEx Arrive - ship 5 coolers
Rec'd Sat. delivery stickers

Location RIVER ROUGE/ECORSE Date 11/1/13

Project / Client

FRIDAY windy - 10-15 mph, 50°F
Fridge truck temp: 42°F
PID calibration: Lamp error, will switch out with one on Mudpuppy

T. King
M. Russo } core processing @ EPA facility
M. Gelinas

Gale wind warning until 1400. No Mudpuppy

0910 REC13-37-0001 3x40s

0915 REC13-37-0103 3x40s
0920 REC13-37-0305 3x40s
0925 REC13-37-0507 "
0930 REC13-37-0709 "
0935 REC13-37-0911 "

0925 REC13-40-0001 3x40s
0935 REC13-40-0103 "
0945 REC13-40-0305 "
0955 REC13-40-0507 "

Location RIVER ROUGE/ECORSE Date 11/1/13

Project / Client EPA V/GLNPO

~~DTWA~~

1050 RREC13-32-0001 3x403

1100 RREC13-32-0103 "

1110 RREC13-32-0305 "

1115 RREC13-21-0001 3x403

-21-0001 FD "

1120 RREC13-21-0103 "

-0103FD "

1125 RREC13-21-0305 "

-21-0305-FD "

1130 RREC13-21-0507 "

RREC13-21-0507 FD "

1135 RREC13-21-0709 "

-21-0709-FD "

1140 RREC13-21-0911 "

-21-0911-FD "

1200 S Mahin goes to meet R. Ellison + Capt. Joe to discuss sampling aboard Mudpuppy this afternoon.

Location RIVER ROUGE Date 11/1/13

Project / Client EPA V/GLNPO

1230 Lunch + supplies run - need more buckets for IDW

1410 RREC13-20-0001 3x403

1420 ~~1415~~ RREC13-20-0103 "

430 ~~1420~~ RREC13-20-0305 "

1440 RREC13-45-0001 3x403

1440 RREC13-45-0001-MS "

1440 RREC13-45-0001-MSD "

1450 RREC13-45-0103 "

1500 RREC13-45-0305 "

1525 RREC13-44-0001 3x403

1530 RREC13-44-0103 "

1535 RREC13-44-0305 "

1540 RREC13-44-0507 "

1555 RREC13-22-0001 3x403

1600 RREC13-22-0103 "

1605 RREC13-22-0305 "

1610 RREC13-22-0507 "

1615 RREC13-22-0709 "

Location RIVER ROUGE/ECORSE Date 11/1/13

Project / Client EPA V/GLNPO

1020 RREC13-22-0911 3x403

1730 move processing site to EPA Boathouse

1810 FedEX Arrives- ship 3 coolers to TA-Burlington

Location RIVER ROUGE/ECORSE Date 11/2/13

Project / Client EPA V/GLNPO

Saturday Rain/drizzle, 49°F

Fridge TRUCK temp: 39°F

PID calibration: 100ppm=

0.0 ppm=

0830 Arrive processing site.

S. Whitin
T. King
M. Russo
M. Gelinas

} processing in boat house

From 11/1/13:

11/1/13 1740 RREC13-29-SURF SS bowls, AVS/SEM paired

11/1/13 1700 RREC13-29-SURF "

1700 MS/MSD

11/1/13 1615 RREC13-30-SURF "

11/1/13 1540 RREC13-34-SURF "

" 1540 RREC13-34-SURF-MS

" 1540 -SURF-MSD

Location RIVER ROUGE/ECORSE Date 11/2/13

Project / Client EPA V/GLNPO

0925	RREC13-39-0001	3x403
0930	-39-0103	"
0935	-39-0305	"
0940	-39-0507	"
0945	-39-0709	"
0950	-39-0911	"
1030	RREC13-33-0001	3x403
1035	-33-0103	"
1040	-33-0305	"
1045	-33-0507	"
1050	-33-0709	"
1055	-33-0911	"
1100	RREC13-02-0001	3x403
1105	RREC13-02-0103	"
1110	RREC13-02-0305	"
1115	-02-0507	"
1120	-02-0709	"
1125	-02-0911	"
1135	RREC13-23-0001	3x403
1140	-23-0103	"
1145	-23-0305	

Location RIVER ROUGE/ECORSE Date 11/2/13

Project / Client EPA V/GLNPO

1150	RREC13-23-0507
1155	RREC13-23-0709
1200	RREC13-23-0911
1215	RREC13-38-0001
1220	-38-0103
1225	-38-0305
1230	-38-0507

Processed to date: 23/50 = 46% cores

133/250 = 53% samples

Collected to date: 27/50 = 54% cores

155/250 62% samples *

* based on cores in truck to be processed mon AM

1245 Done processing for day

Location RIVER ROUGE/ECORSE Date 11/4/13
Project / Client EPA V/GLNPO

MONDAY

40°F, sunny & clear
Fridge truck temp: 39°F

0700 S. Voss meets mudpuppy

0730 M. Gelinas, M. Russo, T. King, S. Whitin } Processing in EPA boathouse

0815	RREC13-29-0001	3x403
0820	-29-0103	"
0825	-29-0305	"
0830	-29-0507	
0835	-29-0709	
0840	-29-0911	
0855	RREC13-34-0001	3x403
0900	RREC13-34-0103	"
~~0910~~ 0905	-34-0305	"
~~0915~~ 0910	-34-0507	"
~~0920~~ 0915	-34-0709	"
0920	-34-0911	"

Location RIVER ROUGE/ECORSE Date 11/4/13
Project / Client EPA V/GLNPO

1000	RREC13-30-0001	3x403
	-30-0001-FD	"
1005	-30-0103	"
	-30-0103-FD	"
1010	-30-0305	"
	-30-0305-FD	"
1015	-30-0507	"
	-30-0507-FD	"
1035	RREC13-28-0001	3x403
1040	-28-0103	"
~~1045~~	~~-28-0103~~	~~"~~
~~1045~~	~~-28-0103-MS~~	
~~1045~~	~~-28-0103-MSD~~	~~"~~
~~1050~~	~~-28-0305~~	~~"~~
~~1055~~	~~-28-0507~~	
1045	RREC13-28-0305	3x403
1045	-28-0305-MS	"
1045	-28-0305-MSD	"
1050	-28-0507	"
1055	-28-0709	"
1100	-28-0911	

DTWA 171 = FedEx pickup confirmation

Location RIVER ROUGE/ECORSE Date 11/4/13

Project / Client EPA V/GLNPO

1200	lunch, meet Mudpuppy + get cores/ponars)
Ponars:	
0956	RREC13-24-SURF SS bowl, AVS/SEM in jar
0904	RREC13-25-SURF "
~~0926~~	
0811	RREC13-26-SURF SS bowl, AVS/SEM in jar
0734	RREC13-27-SURF "
1046	RREC13-42-SURF "

- very poor recovery, tried 10 ponars. ~~with supplement of 0-6" in core if necessary~~ Filled 1x1603 and 2x403 jars.

Decision made to combine 7-9 and 9-11 ft. intervals. Will now have -0001, -0103, -0305, -0507, -0710

Location RIVER ROUGE/ECORSE Date 11/4/13

Project / Client EPA V/GLNPO

1430	RREC13-27-0001	3x403
1435	RREC13-27-0103	"
1440	RREC13-27-0305	"
1445	RREC13-27-0507	"
1450	RREC13-27-0710	"
1515	RREC13-42-0001	3x403
1520	-42-0103	"
1525	-42-0305	"
1615	RREC13-25-0001	3x403
1620	-25-0103	"
1625	-25-0305	"
1630	-25-0507	"
1635	-25-0710	"
1640	RREC13-24-0001	3x403
1645	RREC13-24-0103	"

Pack coolers

Location RIVER ROUGE/ECORSE Date 11/4/13

Project / Client EPA II/GLNPO

1740 RREC13-26-0001 3x403

1745 RREC13-26-0103 "

1750 RREC13-26-0305 "

1755 RREC13-26-0507 "

To be shipped on Tues. 11/5

1800 FedEx Arrives- ship 6 coolers to TA-Burlington

Location RIVER ROUGE/ECORSE Date 11/5/13

Project / Client EPA II/GLNPO

Tuesday 50°, partly sunny

Fridge Truck temp: 40°F

PID cali: 100 ppm = 100 ppm

0.0 ppm = 0.0 ppm

0700 S. Voss meets Mudpuppy

0730 Arrive EPA boathouse to process

Surface samples from mon. PM:

11/4/13 RREC13-9-SURF SS bowl, AVS/SEM in jar

11/4/13 1525 RREC-11-SURF "

11/4/13 1447 RREC13-13-SURF "

11/4/13 1407 RREC13-14-SURF "

RREC13-14-SURF-FD "

11/4 1329 RREC13-15-SURF "

Location RIVER ROUGE/ECORSE Date 11/5/13

Project / Client EPA V/GLNPO

0830	RREC13-09-0001	3X403
	-09-0103-FD	
~~0835~~	~~-09-0305~~	
	-09-0305	
0830	RREC13-09-0001-FD	"
0835	-09-0103	"
	-09-0103-FD	"
0840	-09-0305	"
	-09-0305-FD	"
0910	RREC13-15-0001	3X403
0915	-15-0103	"
"	-15-0103-MS	"
"	-15-0103-MSD	"
1015	RREC13-14-0001	3X403
1020	-14-0103	"
1020	-14-0103-MS	"
1020	-14-0103-MSD	"
1025	-14-0305	"
1030	-14-0507	"
1035	-0710	"

Location RIVER ROUGE/ECORSE Date 11/5/13

Project / Client EPA V/GLNPO

1040	RREC13-13-0001	3X403
1045	-13-0103	"
1050	-13-0305	"
1050	-13-0305-MS	"
1050	-13-0305-MSD	"
1055	-13-0507	"

DHL#121 FedEx confirmation for ~~09-1900~~ 10-1900 pickup

1200 meet Mudpuppy for lunch

1345 Return from lunch

Panels from Ann

1048	RREC13-03-SURF	SS bowl, AVISEM in jar
1013	13-05-SURF	"
0936	RREC13-06-SURF	"
0956	13-07-SURF	"
0742	13-48-SURF	"
0742	13-48-SURF-FD	"
0819	13-49-SURF	"
0819	13-49-SURF-FD	"

Location RIVER ROUGE/ECORSE Date 11/5/13

Project / Client EPA V/GLNPO

1425	RREC13-03-0001	3x403
1430	-03-0103	"
1435	-03-0305	"
1440	-03-0507	"
1520	RREC13-05-0001	3x403
1525	-05-0103	"
1530	RREC13-48-0001	3x403
1535	-48-0103	3x403
1540	-48-0305	"
1545	-48-0507	"
1550	-48-0710	"
1605	RREC13-49-0001	3x403
1610	-49-0103	"
1615	-49-0305	"
1620	-49-0507	
1625	-49-0710	
1640	RREC13-06-0001	3x403
1645	RREC13-06-0103	"

Location _____ Date _____

Project / Client _____

1715 Pack coolers for FedEX
S. Whitin picks S. Voss up from Mudpuppy - 2 coolers + porars

1800 FedEx Arrives - ship 5 coolers to TA-America-Burlington

Location RIVER ROUGE/ECORSE Date 11/6/13

Project / Client EPA V/GLNPO

Wednesday Light rain, 50°

Fridge Truck Temp: 39°F

HD Cali: 100ppm = 100 ppm

0.0ppm = 0.1 ppm

0700 S. Voss meets mudpuppy for IDW dump + final sampling

0800

M. Gelinas
T. King
S. Whitin
M. Russo
} core processing

From Tues pm

11/5/13 1453 RREC13-50 SS bowls, AVS, SEM in jar

11/5/13 1532 RREC13-46-SURF "

Location RIVER ROUGE/ECORSE Date 11/6/13

Project / Client EPA V/GLNPO

0900 RREC13-50-0001
0905 RREC13-50-0103
0910 RREC13-50-0305
0915 RREC13-50-0507

0920 RREC13-46-0001
0925 -46-0103
0930 -46-0305
0935 -46-0507
0940 -46-0710

1030 S. Voss returns from mudpuppy

1200 Done, packed

50 x 100 3
7 boxes 403

1230 Head to Ann Arbor office to leave equipment

1400 meet up P. Derrick + R. Shaft @ Ann Arbor office

Location RIVER ROUGE / ECORSE Date 11/6/13

Project / Client EPA R7/GLNPO

1430 Fedex: ship 1 cooler to TA-Burl.
ship 2 PIDS to Pine

Box: 3037 9088 5003 (Pine)
Cooler: 3020 0320 5207

~~1400 Peggy + Russ @ EA Ann Arbor~~

1720 S. Voss
T. King fly to Baltimore
M. Gelinas

2145 M. Russo flies to Providence

Location Date

Project / Client

Appendix B

Lithologic Core Logs

SEDIMENT BORING RREC13-01

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 9/30/2013 9:54:00 AM
DATE LOGGED 10/31/2013 2:55:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.4079
LONGITUDE -83° 06.6083
ELEVATION (Sediment Surface) 536.4 ft
CORE RECOVERY 4 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-01-0001		CL	SILTY CLAY WITH GRAVEL: dark gray silty clay and gravel-sized pices of asphalt (40%), some organic debris (25%). Strong hydrocarbon odor.	0.8
1							
2	24	CT	RREC13-01-0103		CL	CLAY: dark gray clay with some gravel-sized pieces of asphalt (25%), some organic debris 1-2 cm in size (25%). Hydrocarbon odor. @41-42": piece of a sponge	
3	12	CT	RREC13-01-0305				
4					CL	CLAY WITH WOOD: woody debris 40% in clay	3.9 4.0
						End of Boring at 4 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

EA Engineering, Science, and Technology, Inc.

SEDIMENT BORING RREC13-02

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 10:31:00 AM
DATE LOGGED 11/2/2013 10:45:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.3670
LONGITUDE -83° 06.6333
ELEVATION (Sediment Surface) 542.7 ft
CORE RECOVERY 9.8 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-02-0001		SC	SANDY CLAY: dark gray silty soft clay and fine sand (35%). Hydrocarbon odor	0.9
1							
2	24	CT	RREC13-02-0103				
3							
4	24	CT	RREC13-02-0305		CL	CLAY: dark gray soft clay with some organic material (20%). Hydrocarbon odor. @37" and @53": dense organic material (~70%), causes clay to 'break' here	
5							
6	24	CT	RREC13-02-0507				
7							7.3
					SC	gray soft organic clay and fine sand (35%)	7.7
8	24	CT	RREC13-02-0709		CL	CLAY: dark gray semi-soft clay	
9							9.3
	10	CT	RREC13-02-0911		SC	SANDY CLAY: gray semi-soft clay and fine sand (35%)	9.8
10						End of Boring at 9.8 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-03

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 10:48:00 AM
DATE LOGGED 11/5/2013 2:05:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.3229
LONGITUDE -83° 06.6321
ELEVATION (Sediment Surface) 521.4 ft
CORE RECOVERY 7.2 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-03-0001		CL	SILTY CLAY: gray silty clay with little fine sand (10%), little gravel (10%). Hydrocarbon odor.	
1							
2	24	CT	RREC13-03-0103				
3							
4	24	CT	RREC13-03-0305				
5					SC	CLAYEY SAND: dark gray clayey medium-coarse sand with some shell pieces <1 cm (25%) and some gravel (20%). Hydrocarbon odor.	4.8
					SC		5.1
6	26	CT	RREC13-03-0507		SC	SANDY CLAY: gray medium sandy clay with some shell pieces ~1 mm (20%), trace organic wood pieces (5%), 1 well-rounded cobble 4x3x2 cm. Hydrocarbon odor.	5.7
					CH	CLAYEY SAND: clayey medium-coarse sand with little rounded gravel (15%), little shell fragments 1 mm (15%)	6.3
7					SC	CLAY: beige/tan semi-stiff clay and gravel/coarse sand (25%)	6.8
						CLAYEY SAND: gray clayey fine-medium sand with little gravel (10%), little pebbles/cobbles up to 3x3x2 cm (10%)	7.2
8						End of Boring at 7.2 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-05

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 10:13:00 AM
DATE LOGGED 11/5/2013 3:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.1596
LONGITUDE -83° 06.7085
ELEVATION (Sediment Surface) 532.1 ft
CORE RECOVERY 3.5 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-05-0001		CL-ML	CLAYEY SILT: dark gray-black clayey silt with little fine sand (15%), trace subangular gravel (10%), trace coarse sand (5%), trace wood pieces <1 cm (1%)	
1							
2	30	CT	RREC13-05-0103				
3							3.5
4						End of Boring at 3.5 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-06

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 9:36:00 AM
DATE LOGGED 11/5/2013 4:30:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.1026
LONGITUDE -83° 07.7361
ELEVATION (Sediment Surface) 532.7 ft
CORE RECOVERY 2.8 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-06-0001		SC	SANDY CLAY: dark gray medium-coarse sandy clay with some gravel (25%) with little shell debris <0.5 cm (15%). @8-9": crimson streak. Hydrocarbon odor.	
1							
2	21.6	CT	RREC13-06-0103				
3							2.8
4						End of Boring at 2.8 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-09

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 4:11:00 PM
DATE LOGGED 11/5/2013 8:15:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.9326
LONGITUDE -83° 06.8201
ELEVATION (Sediment Surface) 536.4 ft
CORE RECOVERY 3.8 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-09-0001		SC	CLAYEY SAND: black clayey fine-medium sand and shells 1-2 cm (30%), with some grave/pebbles (20%)	0.3
1							
2	24	CT	RREC13-09-0103		CL	SILTY CLAY; dark gray silty soft clay, trace shell hash (1%). Faint hydrocarbon odor.	
3	10	CT	RREC13-09-0305				3.8
4						End of Boring at 3.8 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-13

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 2:47:00 PM
DATE LOGGED 11/5/2013 10:25:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.7470
LONGITUDE -83° 06.9614
ELEVATION (Sediment Surface) 542 ft
CORE RECOVERY 7.3 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-13-0001		SC	SANDY CLAY: black fine-medium sandy clay with little gravel (15%). Hydrocarbon odor.	0.2
1							
2	24	CT	RREC13-13-0103		CL	SILTY CLAY: black silty semi-soft clay with trace fine sand (10%). Hydrocarbon odor.	
3							
4	24	CT	RREC13-13-0305				3.8
5					CL	CLAY: gray semi-soft clay with some organics (20%). Hydrocarbon and sewage odor.	
6	27	CT	RREC13-13-0507				
7							7.3
8						End of Boring at 7.3 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

EA Engineering, Science, and Technology, Inc.

SEDIMENT BORING RREC13-14

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 2:07:00 PM
DATE LOGGED 11/5/2013 9:55:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.6877
LONGITUDE -83° 06.9863
ELEVATION (Sediment Surface) 539.1 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-14-0001		CL	CLAY: dark gray - black semi-firm clay with little rounded-subrounded gravel (10%), little organic debris (10%), trace fine sand (5%). Strong hydrocarbon odor.	
1							
2	24	CT	RREC13-14-0103				
3							
4	24	CT	RREC13-14-0305				
5							
6	24	CT	RREC13-14-0507				
7							
8	33	CT	RREC13-14-0710				
9							9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-15

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 1:29:00 PM
DATE LOGGED 11/5/2013 8:55:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.5124
LONGITUDE -83° 07.0950
ELEVATION (Sediment Surface) 525.3 ft
CORE RECOVERY 3.2 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-15-0001		CL	CLAY: gray semi-firm clay and organics (25%). Faint hydrocarbon odor.	
1							
2	26.4	CT	RREC13-15-0103				2.1
3					CH	CLAY: stiff gray clay with re/orange farving, some gravel/pebbles (25%)	3.2
4						End of Boring at 3.2 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-16

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 8:39:00 AM
DATE LOGGED 10/31/2013 4:25:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.6167
LONGITUDE -83° 07.5062
ELEVATION (Sediment Surface) 528.5 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0							
1	12	CT	RREC13-16-0001		CL	SILTY CLAY: soupy dark gray silty clay, water visible in core, with little fine sand (15%) and little asphalt pieces, gravel-sized (15%). Hydrocarbon odor.	
2	24	CT	RREC13-16-0103				2.0
3							
4	24	CT	RREC13-16-0305				
5							
6	24	CT	RREC13-16-0507		CH	CLAY: stiff gray clay with some angular fine grave/coarse sand (25%)	
7							
8	24	CT	RREC13-16-0709				
9							
10	12	CT	RREC13-16-0911				10.0
11						End of Boring at 10 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-17

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/21/2013 3:21:00 PM
DATE LOGGED 10/31/2013 9:45:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.5956
LONGITUDE -83° 07.3997
ELEVATION (Sediment Surface) 530.1 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-17-0001		CL	SILTY CLAY: dark gray silty clay. @9-10": ketchup packet. @8-10": angular coarse sand/grave ~40%. @20-22": angular gravel. @42-44": angular gravel (25%), clay pieces ~1cm, pebbles ~10%. @56-57": angular gravel 25%. @64-69": organic twigs 2-3cm long.	
1							
2	24	CT	RREC13-17-0103				
3							
4	24	CT	RREC13-17-0305				
5							
6	24	CT	RREC13-17-0507				
7							
8	24	CT	RREC13-17-0709				
9							
	9	CT	RREC13-17-0911				9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-18

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 10:17:00 AM
DATE LOGGED 10/31/2013 4:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.5613
LONGITUDE -83° 07.3893
ELEVATION (Sediment Surface) 527.8 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0							
1	12	CT	RREC13-18-0001		CL	SILTY CLAY: gray silty soft clay with little organic debris (15%), trace fine sand (1-5%)	
2	24	CT	RREC13-18-0103				2.0
3					CL	SILTY CLAY: soupy silty clay with some gravel-sized pieces of asphalt (30%). Hydrocarbon odor.	3.2
4	24	CT	RREC13-18-0305		CL	CLAY: dark gray - gray semi-stiff clay with some gravel (25%), some organic debris (25%). Hydrocarbon odor.	
5							
6	24	CT	RREC13-18-0507				6.7
7					CH	CLAY: gray still clay with red/grayish/blue farving and gravel/coarse sand (30%).	
8	24	CT	RREC13-18-0709				
9							
10	12	CT	RREC13-18-0911				10.0
11						End of Boring at 10 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-19

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 11:04:00 AM
DATE LOGGED 10/31/2013 11:45:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.5331
LONGITUDE -83° 07.2826
ELEVATION (Sediment Surface) 532.4 ft
CORE RECOVERY 0.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	9	CT	RREC13-19-0001		GC	GRAVELLEY CLAY: gray stiff clay with some pebbles (25%) and some twigs 2-3 cm long (20%). Hydrocarbon odor.	0.8
1						End of Boring at 0.75 ft.	
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-20

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 1:29:00 PM
DATE LOGGED 11/1/2013 2:20:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.4866
LONGITUDE -83° 07.2205
ELEVATION (Sediment Surface) 525.5 ft
CORE RECOVERY 5.1 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0					GC	GRAVELLEY CLAY: gray clay and gravel (30%), little pebbles (10%).	0.2
1	12	CT	RREC13-20-0001				
2	24	CT	RREC13-20-0103		CL	CLAY: gray semi-soft clay with little angular coarse sand/fine grave (15%)	
3							
4	25	CT	RREC13-20-0305				
5							5.1
6						End of Boring at 5.1 ft.	
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-21

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 4:05:00 PM
DATE LOGGED 11/1/2013 11:00:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.4348
LONGITUDE -83° 07.4484
ELEVATION (Sediment Surface) 528.8 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0							
	12	CT	RREC13-21-0001				
1							
	24	CT	RREC13-21-0103				
2							
3							
	24	CT	RREC13-21-0305		ML	SILT: black silt, VERY soupy in top foot, trace fine sand (10%). @92-98": gravel-sized pieces of asphalt. Hydrocarbon odor.	
4							
5							
	24	CT	RREC13-21-0507				
6							
7							
	24	CT	RREC13-21-0709				
8							8.2
					CH	CLAY: stiff gray clay with red farving, some coarse sand (20%), some angular gravel (25%)	
9							
	12	CT	RREC13-21-0911				
10							10.0
						End of Boring at 10 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT BORING RREC13-22

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 4:38:00 AM
DATE LOGGED 11/1/2013 3:40:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.3818
LONGITUDE -83° 07.3237
ELEVATION (Sediment Surface) 531.9 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-22-0001		CL	SILTY CLAY: dark gray-black silty soft clay with some coarse sand/fine angular grave (20%). Hydrocarbon odor.	
1							
2	24	CT	RREC13-22-0103				
3							
4	24	CT	RREC13-22-0305				
5							
6	24	CT	RREC13-22-0507				
7							
8	24	CT	RREC13-22-0709				
9							9.0
	12	CT	RREC13-22-0911		CL	CLAY: gray semi-stiff clay	9.4
					CL	CLAY: light gray semi-stiff clay	9.6
					ML	SILT: black silt	9.8
10					CL	CLAY: blackish brown semi-stiff clay	10.0
						End of Boring at 10 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-23

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 9:02:00 AM
DATE LOGGED 11/2/2013 11:25:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.3300
LONGITUDE -83° 07.2630
ELEVATION (Sediment Surface) 535.1 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-23-0001		CL	SILTY CLAY: dark gray silty soft clay with little angular gravel (15%), little fine-coarse sand (15%), trace organics (10%)	
1							
2	24	CT	RREC13-23-0103				
3							
4	24	CT	RREC13-23-0305				
5							
6	24	CT	RREC13-23-0507				
7							
8	24	CT	RREC13-23-0709				
9							
10	12	CT	RREC13-23-0911				10.0
11						End of Boring at 10 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-24

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 9:56:00 AM
DATE LOGGED 11/4/2013 4:15:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.1944
LONGITUDE -83° 07.3252
ELEVATION (Sediment Surface) 523.1 ft
CORE RECOVERY 3.3 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-24-0001		CL	SILTY CLAY: silty clay and medium sand-gravel with some organics (20%), some cobbles (15%) (up to 7x5x3 cm)	
1							
2	28	CT	RREC13-24-0103				2.0
					CL	CLAY: beige/gray semi-stiff to stiff clay, trace clay (10%)	2.6
3					CH	CLAY: gray stiff clay with blue tint; yellow/orange striations/farving, some coarse sand/gravel (20%)	3.3
4						End of Boring at 3.3 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT BORING RREC13-25

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 9:04:00 AM
DATE LOGGED 11/4/2013 4:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.1300
LONGITUDE -83° 07.3973
ELEVATION (Sediment Surface) 520.5 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-25-0001		CL	SILTY CLAY: dark gray silty soft clay and fine-medium sand (30%), with some organic debris (20%), little shell fragments (~1mm) (15%). Hydrocarbon odor	1.0
1					CL	SILTY CLAY: dark gray silty soft clay with trace fine-medium sand (10%)	1.6
2	24	CT	RREC13-25-0103		SC	CLAYEY SAND: black clayey fine-medium sand (60%)	2.0
					CL	CLAY: dark gray soft clay	2.4
					OL	PEAT: dense black organic debris (70%, 1-3 cm)	2.6
3							
4	24	CT	RREC13-25-0305				
5					CL	CLAY: dark gray semi-soft clay with some organic debris 1-3 cm long (20%)	
6	24	CT	RREC13-25-0507				
7							7.3
					SC	CLAYEY SAND: black clayey fine-medium sand (65%) with some organic material (20%)	7.6
8	33	CT	RREC13-25-0710		CL	CLAY: dark gray soft-semi-soft clay with some organics (20%)	8.8
9					SC	CLAYEY SAND: black clayey fine-medium sand (50-60%), with little shell debris (10%)	9.2
					SC	SANDY CLAY: dark gray sandy semi-soft clay with little organics (15%), trace rounded gravel (10%)	9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-26

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 8:11:00 AM
DATE LOGGED 11/4/2013 5:40:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.9291
LONGITUDE -83° 07.6209
ELEVATION (Sediment Surface) 520.5 ft
CORE RECOVERY 7.3 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-26-0001		ML	CLAYEY SILT: dark gray clayey silt, very soupy, water visible in core; trace gravel (5%). Faint hydrocarbon odor.	1.0
1	24	CT	RREC13-26-0103		CL	SILTY CLAY: dark gray silty clay with little coarse sand (15%), trace shell fragments 1-3 mm (10%). Faint hydrocarbon odor.	
2	24	CT	RREC13-26-0305				
3	27	CT	RREC13-26-0507				7.3
4						End of Boring at 7.3 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-27

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 7:34:00 AM
DATE LOGGED 11/4/2013 2:15:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.8520
LONGITUDE -83° 07.7260
ELEVATION (Sediment Surface) 532.8 ft
CORE RECOVERY 9.9 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-27-0001		CL	CLAY: gray to dark gray soft to semi-soft clay, some organics (20%), trace fine sand (10%). Strong hydrocarbon odor.	
1							
2	24	CT	RREC13-27-0103				
3							
4	24	CT	RREC13-27-0305				
5							
6	24	CT	RREC13-27-0507				
7							
8	35	CT	RREC13-27-0710				
9							
10						End of Boring at 9.9 ft.	9.9
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-28

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/1/2013 5:40:00 PM
DATE LOGGED 11/4/2013 10:20:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.7693
LONGITUDE -83° 07.8988
ELEVATION (Sediment Surface) 537.5 ft
CORE RECOVERY 9.7 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-28-0001		CL	CLAY: gray semi-soft clay, soupy at top, water visible in core. Hydrocarbon odor.	
1					SC	SANDY CLAY: black sandy (coarse, 30%) clay. Hydrocarbon odor.	1.1 1.3
2	24	CT	RREC13-28-0103				
3							
4	24	CT	RREC13-28-0305				
5							
6	24	CT	RREC13-28-0507		CL	CLAY: gray to dark gray semi-soft clay with some organic debris (20%), little coarse sand/fine gravel (10%). Hydrocarbon odor.	
7							
8	24	CT	RREC13-28-0709				
9	8	CT	RREC13-28-0911				9.7
10						End of Boring at 9.7 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-29

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/1/2013 5:00:00 PM
DATE LOGGED 11/4/2013 8:05:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.6219
LONGITUDE -83° 08.0718
ELEVATION (Sediment Surface) 535.8 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-29-0001				
1							
2	24	CT	RREC13-29-0103				
3							
4	24	CT	RREC13-29-0305		CL	SILTY CLAY: dark gray semi soft silty clay with trace gravel (5%). Strong hydrocarbon odor.	
5							
6	24	CT	RREC13-29-0507				
7							
8	24	CT	RREC13-29-0709				
					SC	SANDY CLAY: dark gray sandy (fine, 30%) clay. Hydrocarbon odor.	8.3 8.4
9	9	CT	RREC13-29-0911		CL	SILTY CLAY: dark gray silty semi-soft clay. Hydrocarbon odor.	
							9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-30

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/1/2013 4:15:00 PM
DATE LOGGED 11/4/2013 9:45:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.5253
LONGITUDE -83° 08.2419
ELEVATION (Sediment Surface) 528.6 ft
CORE RECOVERY 7.25 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-30-0001		CL	SILTY CLAY: gray semi-soft clay and organic debris (30%). Hydrocarbon odor.	
1							
2	24	CT	RREC13-30-0103				
3							
4	24	CT	RREC13-30-0305				
					CL	SILTY CLAY: gray semi-soft silty clay and organic debris (50%). Hydrocarbon odor.	4.2
					CL	SILTY CLAY: gray semi-soft clay and organic debris (30%). Hydrocarbon odor.	4.5
5							5.3
					SC	SANDY CLAY: dark gray sandy (fine, 30%) clay with some organic and shell debris 1-2 mm (20%)	5.9
6	27	CT	RREC13-30-0507		CL	CLAY: gray semi-soft clay with some organics (30%). Hydrocarbon odor.	
7							7.3
8						End of Boring at 7.25 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-31

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 3:40:00 PM
DATE LOGGED 10/31/2013 2:40:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.4205
LONGITUDE -83° 08.4118
ELEVATION (Sediment Surface) 543.8 ft
CORE RECOVERY 7.25 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0					CL	SILTY CLAY: gray silty clay, soupy water visible in core, some organic matter (30%)	0.2
1	12	CT	RREC13-31-0001				
2	24	CT	RREC13-31-0103				
3							
4	24	CT	RREC13-31-0305		CL	CLAY: gray semi-soft clay with some organic material (25%), little gravel (10%)	
5							
6	27	CT	RREC13-31-0507				
7							7.3
8						End of Boring at 7.25 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-32

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 2:55:00 PM
DATE LOGGED 11/1/2013 10:40:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.3860
LONGITUDE -83° 08.3116
ELEVATION (Sediment Surface) 543.8 ft
CORE RECOVERY 4 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-32-0001		SC	SANDY CLAY: dark gray sandy (fine, 30%) clay with some silt (25%), some organic debris (25% -- peach pit found or walnut found?). Sour hydrocarbon odor.	0.8
1					SC	SANDY CLAY: gray sandy (fine, 35-40%) clay with some rounded-subrounded gravel and organic debris (20%)	2.0
2	24	CT	RREC13-32-0103		CL	CLAY: dark gray/black clay with wood chunks -- yellow/orange in color, solid but easily shredded (40%), organic roots 30%. Strong sour odor -- maybe sewage	3.1
3	12	CT	RREC13-32-0305		CH	CLAY: stiff gray clay with reddish striations; little yellow/orange wood chunks (1 cm in size), little gravel (15%)	4.0
4						End of Boring at 4 ft.	
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-33

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 4:45:00 PM
DATE LOGGED 11/2/2013 10:15:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.4929
LONGITUDE -83° 08.5782
ELEVATION (Sediment Surface) 545.1 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0							
1	12	CT	RREC13-33-0001		CL	SILTY CLAY: dark gray silty soft clay with trace fine sand (5%). Hydrocarbon odor.	1.0
2	24	CT	RREC13-33-0103		CL	CLAY: dark gray semi-soft clay with some organics (20%). Hydrocarbon odor.	
3							
4	24	CT	RREC13-33-0305				4.5
5							
6	24	CT	RREC13-33-0507		CL	CLAY: gray semi-soft clay with some organics (20%), trace shell pieces <1 cm (5%)	
7							
8	24	CT	RREC13-33-0709				8.2
9					CL	CLAY: dark gray semi-firm clay with little white shell pieces ~1 mm (10%)	
10	12	CT	RREC13-33-0911				10.0
11						End of Boring at 10 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-34

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/1/2013 3:40:00 PM
DATE LOGGED 11/4/2013 8:30:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.4403
LONGITUDE -83° 08.6289
ELEVATION (Sediment Surface) 533.6 ft
CORE RECOVERY 9.7 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-34-0001		CL	SILTY CLAY: gray silty soft clay with little organic debris (15%). Hydrocarbon odor	0.8
1					OL	PEAT: dense black organic debris (70%, 1-3 cm). Hydrocarbon odor	0.8
					CL		1.3
					OL	SILTY CLAY: gray silty soft clay with little organic debris (15%). Hydrocarbon odor	1.3
2	24	CT	RREC13-34-0103			PEAT: dense black organic debris (70%, 1-3 cm). Hydrocarbon odor	
3					CL	SILTY CLAY: gray silty clay with some organics 1-3 cm long (25%), some fine sand (20%). Hydrocarbon odor.	
4	24	CT	RREC13-34-0305				4.5
5					CL	SILTY CLAY: dark gray/black silty clay and organic debris (35-40%), some fine-medium sand (20%). Hydrocarbon odor.	5.8
6	24	CT	RREC13-34-0507		CL	SILTY CLAY: dark gray silty semi-soft clay. Hydrocarbon odor.	6.8
7					CL	SILTY CLAY: silty clay and fine-medium sand (40%), some organics 1-2 cm (twigs) (25%)	7.0
					CL		7.1
					CL	SILTY CLAY: dark gray silty semi-soft clay. Hydrocarbon odor.	7.2
					CL		7.4
					CL	SILTY CLAY: silty clay and fine-medium sand (40%), some organics 1-2 cm (twigs) (25%)	7.5
8	24	CT	RREC13-34-0709			SILTY CLAY: dark gray silty semi-soft clay. Hydrocarbon odor.	
					CL	SILTY CLAY: silty clay and fine-medium sand (40%), some organics 1-2 cm (twigs) (25%)	
9	8	CT	RREC13-34-0911			CLAY: gray semi-soft clay	9.6
					SC	SANDY CLAY: dark gray sandy (fine-medium, 30%) semi-soft clay	9.7
10						End of Boring at 9.7 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-35

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 5:25:00 PM
DATE LOGGED 10/31/2013 8:25:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.3934
LONGITUDE -83° 08.6793
ELEVATION (Sediment Surface) 529.2 ft
CORE RECOVERY 4.9 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-35-0001		ML	SILT: black soupy silt, soupy, water visible in core, with some fine sand (20%), some wood/organic chips < 5 mm in size (20%). Strong hydrocarbon odor.	0.5
1					CL	CLAY: dark gray/black soft to semi-soft clay with little organic debris/wood chunks ~1.5 cm (15%), one twig 5 cm long, 2 cm diameter. Strong hydrocarbon odor.	1.4
2	24	CT	RREC13-35-0103		SC	SAND: gray fine-medium grained sand with little clay (10%), trace rounded gravel (5%). Sewage odor.	
3							
4	23	CT	RREC13-35-0305				4.7
5						End of Boring at 4.9 ft.	
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-36

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/28/2013 3:33:00 PM
DATE LOGGED 10/31/2013 11:55:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.0963
LONGITUDE -83° 08.8892
ELEVATION (Sediment Surface) 533.5 ft
CORE RECOVERY 2.6 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-36-0001		CL	CLAY: dark gray soft clay and organics (40-50%), roots/twigs 2-3 cm long	0.8
1	19	CT	RREC13-36-0103		CL	CLAY: dark gray soft clay. Hydrocarbon odor.	2.5
2					CH	CLAY: light gray stiff clay. Hydrocarbon/sewage odor.	2.6
3						End of Boring at 2.6 ft.	
4							
5							
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-37

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/28/2013 4:39:00 AM
DATE LOGGED 11/1/2013 9:10:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.2855
LONGITUDE -83° 08.5958
ELEVATION (Sediment Surface) 541.3 ft
CORE RECOVERY 9.8 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-37-0001		GC	GRAVELLEY CLAY: gray to dark-gray semi-soft clay and angular gravel (30-40%), trace gastropod shells (10%), trace fine sand (10%). Slight hydrocarbon odor.	0.8
1							
2	24	CT	RREC13-37-0103				
3							
4	24	CT	RREC13-37-0305				
5					CL	CLAY: gray semi-hard clay with some organic debris (20%) 3-4 cm long. @101": white shell hash.	
6	24	CT	RREC13-37-0507				
7							
8	24	CT	RREC13-37-0709				
9	9	CT	RREC13-37-0911				9.8
10						End of Boring at 9.8 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-38

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 1:40:00 PM
DATE LOGGED 11/2/2013 12:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.2395
LONGITUDE -83° 08.5045
ELEVATION (Sediment Surface) 545.1 ft
CORE RECOVERY 6 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-38-0001		CL	CLAY: gray semi-soft clay with little inclusions of black organic material (15%), trace fine sand (5%)	1.0
1							
2	24	CT	RREC13-38-0103				
3							
4	24	CT	RREC13-38-0305		CL	CLAY: gray semi-soft clay with trace little reddish-brown roots/organic material (10%), trace gravel (5%). Faint sewage odor.	
5	12	CT	RREC13-38-0507				
6							6.0
7						End of Boring at 6 ft.	
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-39

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 2:20:00 PM
DATE LOGGED 11/2/2013 9:10:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.2497
LONGITUDE -83° 08.3972
ELEVATION (Sediment Surface) 544.5 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-39-0001		SC	SANDY CLAY: dark gray sandy (fine-medium, 45%) clay with little organics/shell hash (15%). Hydrocarbon odor.	1.4
2	24	CT	RREC13-39-0103		SC	CLAYEY SAND: gray clayey (40%) fine-medium sand (fine-medium). @27-30": large cobble	3.0
4	24	CT	RREC13-39-0305		SC	SANDY CLAY: gray sandy (20%) clay with trace rounded gravel. @100-101": white shell hash	9.8
6	24	CT	RREC13-39-0507				
8	24	CT	RREC13-39-0709				
9	9	CT	RREC13-39-0911				
10						End of Boring at 9.75 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-40

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/28/2013 4:04:00 PM
DATE LOGGED 11/1/2013 9:25:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.1417
LONGITUDE -83° 08.6605
ELEVATION (Sediment Surface) 539.2 ft
CORE RECOVERY 7.4 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-40-0001		GC	GRAVELLEY CLAY: gray gravelley soft clay with some organic material/wood pices 2-3 cm (30%)	0.4
1							
2	24	CT	RREC13-40-0103				
3							
4	24	CT	RREC13-40-0305		CL	CLAY: gray semi-hard clay with some organics (25%)	
5							
6	28.8	CT	RREC13-40-0507				
7							7.4
8						End of Boring at 7.4 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-41

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 4:13:00 PM
DATE LOGGED 10/31/2013 8:50:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 14.5261
LONGITUDE -83° 08.4540
ELEVATION (Sediment Surface) 540 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-41-0001		CL	CLAY: dark gray semi-soft clay wth some organic material 1-2 cm (20%), trace coarse/fine sand. Strong hydrocarbon odor.	0.3
1							
2	24	CT	RREC13-41-0103				
3							
4	24	CT	RREC13-41-0305				
5					CL	CLAY: gray soft clay with some angular gravel (25%), little coarse sand (15%). @104-107": angular cobble 6x6x4 cm in size. Less strong hydrocarbon odor.	
6	24	CT	RREC13-41-0507				
7							
8	24	CT	RREC13-41-0709				
9	9	CT	RREC13-41-0911				9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-42

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/4/2013 10:46:00 AM
DATE LOGGED 11/4/2013 3:10:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.3669
LONGITUDE -83° 07.1948
ELEVATION (Sediment Surface) 536.4 ft
CORE RECOVERY 4.25 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-42-0001		CL	CLAY: gray semi-stiff clay with shell fragments up to 4 cm long	0.8
1							
2	24	CT	RREC13-42-0103		CH	CLAY: stiff gray clay with red/orange striations/farving	2.8
3	15	CT	RREC13-42-0305		CL	CLAY: black semi-stiff to stiff gray clay, faint hydrocarbon odor.	3.7
4					CH	CLAY: stiff gray clay with orange/light gray striations.	4.3
5						End of Boring at 4.25 ft.	
6							
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-44

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 8:25:00 AM
DATE LOGGED 11/1/2013 3:20:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42°15.3855
LONGITUDE -83° 07.3724
ELEVATION (Sediment Surface) 543.5 ft
CORE RECOVERY 7.3 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-44-0001		CL	SILTY CLAY: black silty soft clay with trace fine sand (10%) trace angular grave (5%). Hydrocarbon odor.	
1							
2	24	CT	RREC13-44-0103				
3							
4	24	CT	RREC13-44-0305				
5							
6	28	CT	RREC13-44-0507				
7							7.3
8						End of Boring at 7.3 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-45

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/29/2013 2:38:00 AM
DATE LOGGED 11/1/2013 2:30:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.4340
LONGITUDE -83° 07.1805
ELEVATION (Sediment Surface) 538.2 ft
CORE RECOVERY 5.3 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-45-0001		ML	SILT: gray to dark gray silt, soupy with some angular gravel/pebbles (20%), some organic debris (20%). Hydrocarbon odor.	0.8
1					GM	GRAVELLEY SILT: black silt with 40% gravel/coarse sand, little gravel-sized pices of asphalt (10%). Hydrocarbon odor.	1.8
2	24	CT	RREC13-45-0103				
3					CL	CLAY: gray semi-soft clay with some coarse sand (20%), trace gravel (10%)	
4	28	CT	RREC13-45-0305				
5							5.3
6						End of Boring at 5.3 ft.	
7							
8							
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-46

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 3:32:00 PM
DATE LOGGED 11/6/2013 9:00:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.5942
LONGITUDE -83° 06.8372
ELEVATION (Sediment Surface) 537.9 ft
CORE RECOVERY 8.6 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-46-0001		CL	SILTY CLAY: black silty clay with some gravel (30%), some pieces of asphalt (20%), soupy, water visible in core. Sour/sewage odor	0.2
1					CL	SILTY CLAY: black silty soft clay with little grave/coarse sand (15%), water visible in core.	1.3
2	24	CT	RREC13-46-0103		SP	SILTY SAND: silty medium-coarse sand and woody debris (35%)	1.4
					SC	SANDY CLAY: gray clay and medium-coarse sand (30%). @23": large stick, 4 cm long, 2 cm diameter	2.0
					GM	SILTY GRAVEL: subrounded gravel in silt	2.3
3							
4	24	CT	RREC13-46-0305				
5					CL	CLAY: gray semi-stiff clay with some fine sand (20%)	
6	24	CT	RREC13-46-0507				
7							
8	18	CT	RREC13-46-0710				8.6
9						End of Boring at 8.6 ft.	
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-47

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 10/30/2013 11:19:00 AM
DATE LOGGED 10/30/2013 5:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.6007
LONGITUDE -83° 07.1160
ELEVATION (Sediment Surface) 546.3 ft
CORE RECOVERY 10 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-47-0001		CL	SILTY CLAY: dark gray silty clay and organic material (30%), little wood pieces <1 cm (15%). Hydrocarbon odor throughout. @89-90": very vine (1mm) metal shavings, possibly? @110-120": VERY strong hydrocarbon odor -- wood pices orange/slight sheen	
1							
2	24	CT	RREC13-47-0103				
3							
4	24	CT	RREC13-47-0305				
5							
6	24	CT	RREC13-47-0507				
7							
8	24	CT	RREC13-47-0709				
9							
10	12	CT	RREC13-47-0911				10.0
11						End of Boring at 10 ft.	

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-48

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 7:42:00 AM
DATE LOGGED 11/5/2013 3:15:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.5722
LONGITUDE -83° 07.0724
ELEVATION (Sediment Surface) 532.9 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-48-0001		CL	SILTY CLAY: gray silty (40%) soft clay with litle coarse-medium sand (15%), little gravel (10%), grace shell fragments <1 cm.	0.3
1							
2	24	CT	RREC13-48-0103				
3							
4	24	CT	RREC13-48-0305		CL	SILTY CLAY: gray silty (30%) soft clay with some organics (small hair-like roots) (20%), trace wood and shell debris < 1 cm (1%)	
5							
6	24	CT	RREC13-48-0507				
7							
8	33	CT	RREC13-48-0710		GP-GM	CHARCOAL: charcoal pieces, black in color -- coarse to gravel-sized, angular in 10% gray silt.	8.8 8.9
9					CL	CLAY: gray soft clay with little coarse sand (15%)	9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-49

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 8:19:00 AM
DATE LOGGED 11/5/2013 4:00:00 PM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 15.6119
LONGITUDE -83° 07.0358
ELEVATION (Sediment Surface) 535.2 ft
CORE RECOVERY 9.75 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0					CL	CLAY: dark gray soft clay with some shell fragments <1 cm (30%), little coarse sand/gravel (10%), wood pieces 1-2 cm. Hydrocarbon odor	0.1
1	12	CT	RREC13-49-0001				
2	24	CT	RREC13-49-0103				
3							
4	24	CT	RREC13-49-0305				
5					CL	CLAY: dark gray soft clay with trace gravel/asphalt pieces (5%). Hydrocarbon odor.	
6	24	CT	RREC13-49-0507				
7							
8	33	CT	RREC13-49-0710				
9							9.8
10						End of Boring at 9.75 ft.	
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

SEDIMENT BORING RREC13-50

EA Engineering, Science, and Technology, Inc.

PROJECT NAME River Rouge/Ecorse Shoreline
DATE COLLECTED 11/5/2013 2:53:00 AM
DATE LOGGED 11/6/2013 8:45:00 AM
DRILLING CONTRACTOR Mudpuppy
DRILLING METHOD Vibracore
LOGGED BY M. Gelinas

PROJECT NUMBER 62561.15
LOCATION Ecorse, MI
LATITUDE 42° 16.3952
LONGITUDE -83° 06.5955
ELEVATION (Sediment Surface) 520.9 ft
CORE RECOVERY 7.1 ft

DEPTH (ft)	SAMPLE INTERVAL (inches)	SAMPLE TYPE	SAMPLE SUBMITTED FOR ANALYSIS (Sample ID at sample depth)	GRAPHIC LOG	USCS CLASS	MATERIAL DESCRIPTION	Depth (ft)
0	12	CT	RREC13-50-0001		ML	SANDY CLAYEY SILT: black silt with some fine-medium sand (20%), some clay (20%), some wood pieces 2x1 cm and organic debris (sticks/roots) (20%) little angular asphalt/cement pieces 5x2x3 cm (15%); shell fragment 5 cm across. Water visible in core. Hydrocarbon odor.	
1							
2	24	CT	RREC13-50-0103				
3							
4	24	CT	RREC13-50-0305				
5							5.5
6	25	CT	RREC13-50-0507		GC	GRAVELLY SILTY CLAY: gray silty clay and gravel (30%), large cement/asphalt pieces, large pices up to 6 cm long. Hydrocarbon odor.	
7							7.1
8						End of Boring at 7.1 ft.	
9							
10							
11							

NOTES:

Sediment Surface elevation based on IGLD1985

CT= Core Tube

SEDIMENT LOG RREC CORE LOGS.GPJ 1/2/14

Appendix C

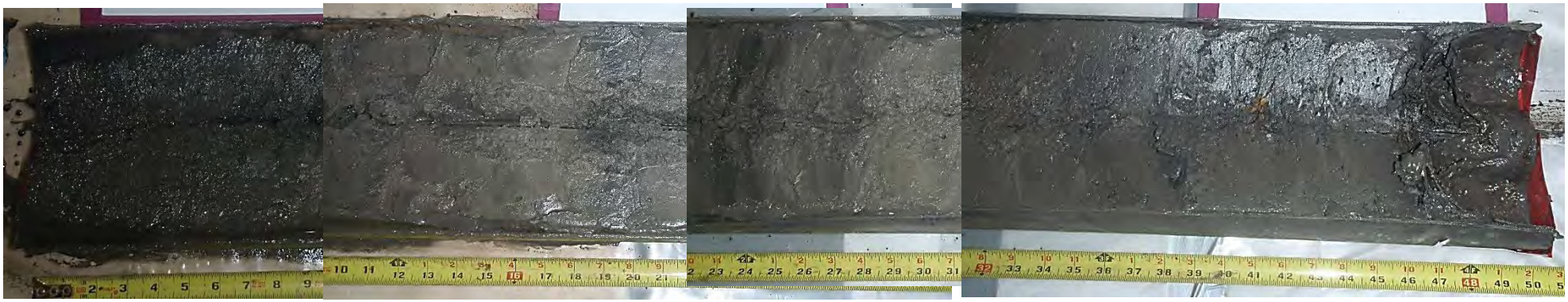
Core Photographs

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-01



RREC13-01-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-02

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

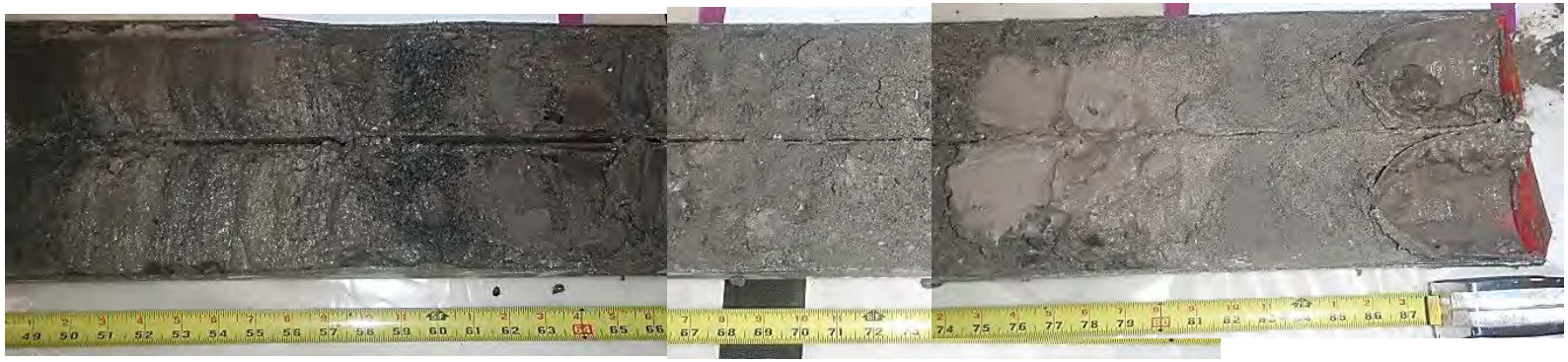
RREC13-02-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-03



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-03-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-05

RREC13-05-SURF

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Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-06

RREC13-06-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-07

No core photos

RREC13-07-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-09

RREC13-09-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-11

No Core Photos

RREC13-11-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-13

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13

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Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-14

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River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

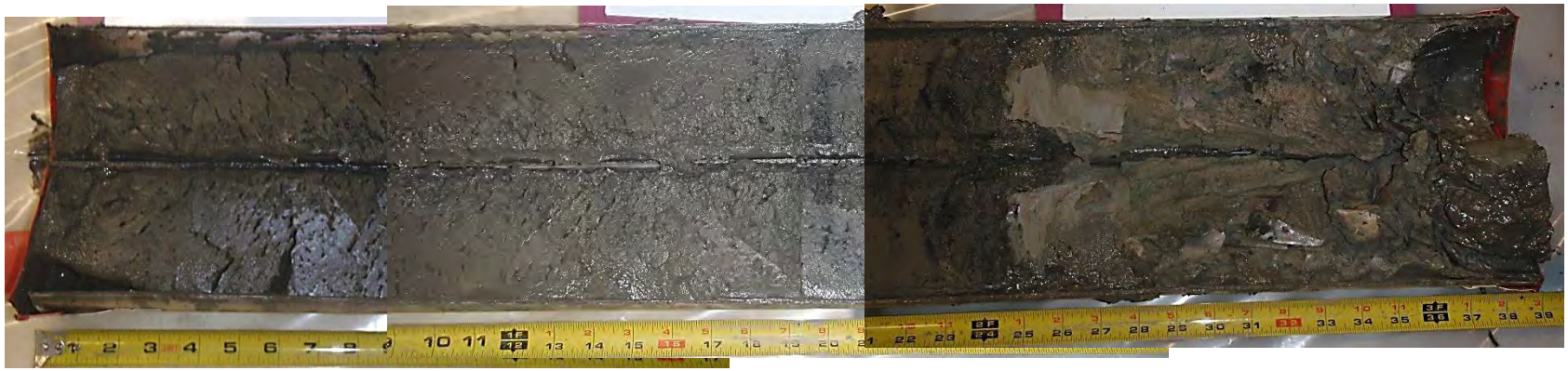
RREC13-14-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-15



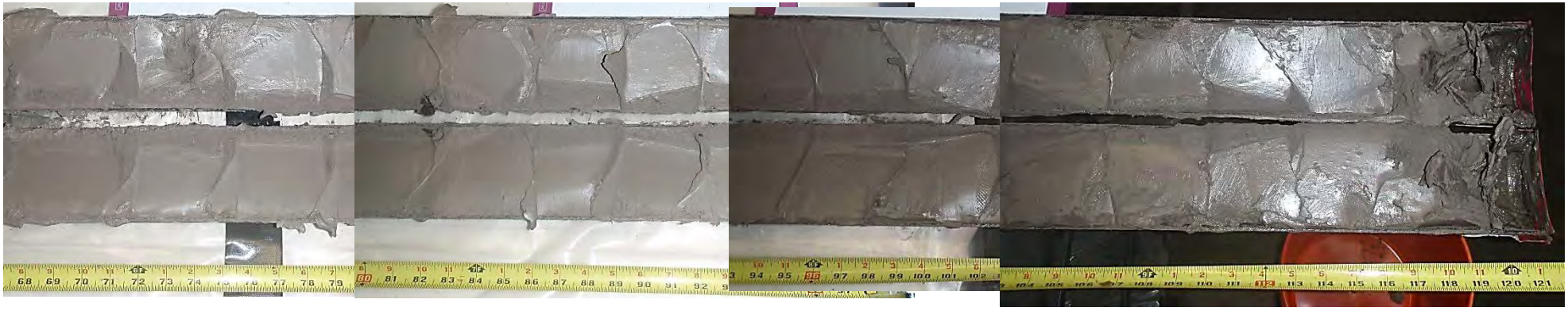
RREC13-15-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-16



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

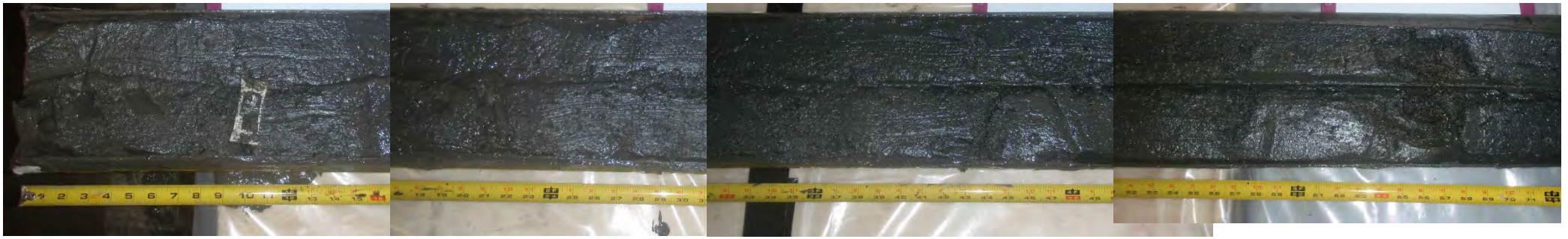
RREC13-16-SURF

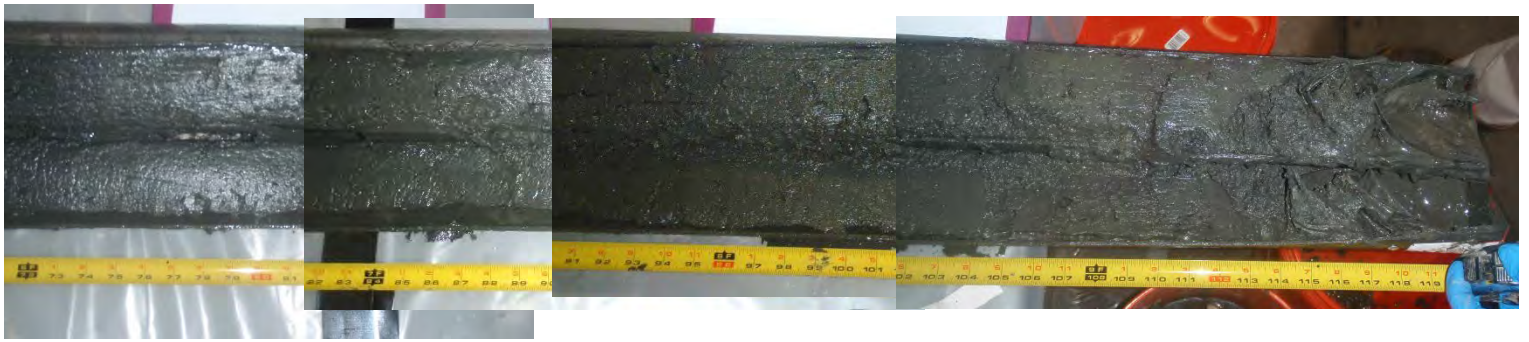
EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-17





EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-17-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-18

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River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-18-SURF

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Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-19

RREC13-19-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-20

RREC13-20-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

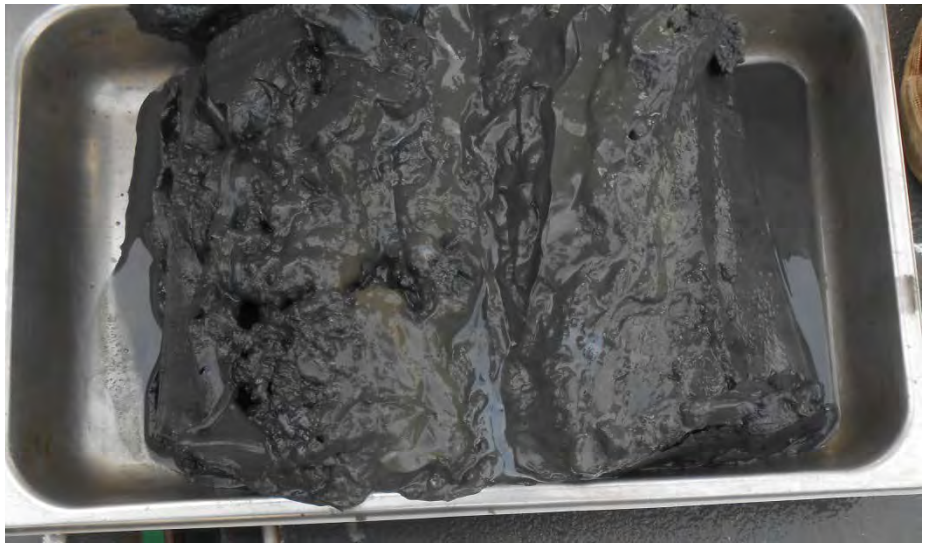
RREC13-21

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-21-SURF

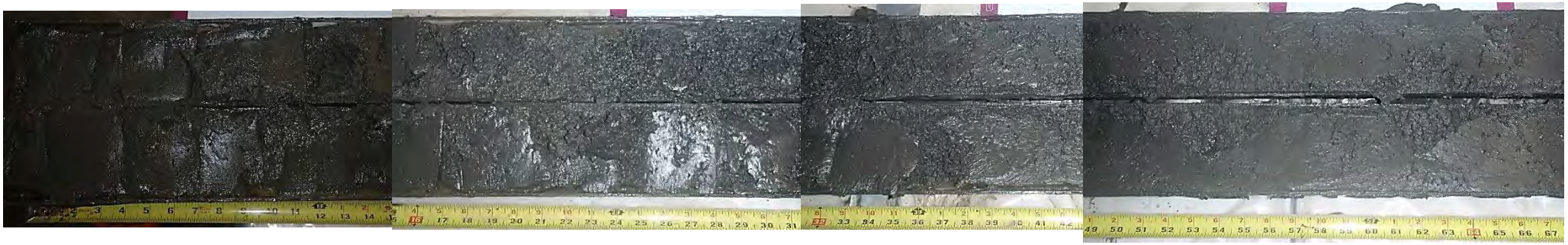


EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-22

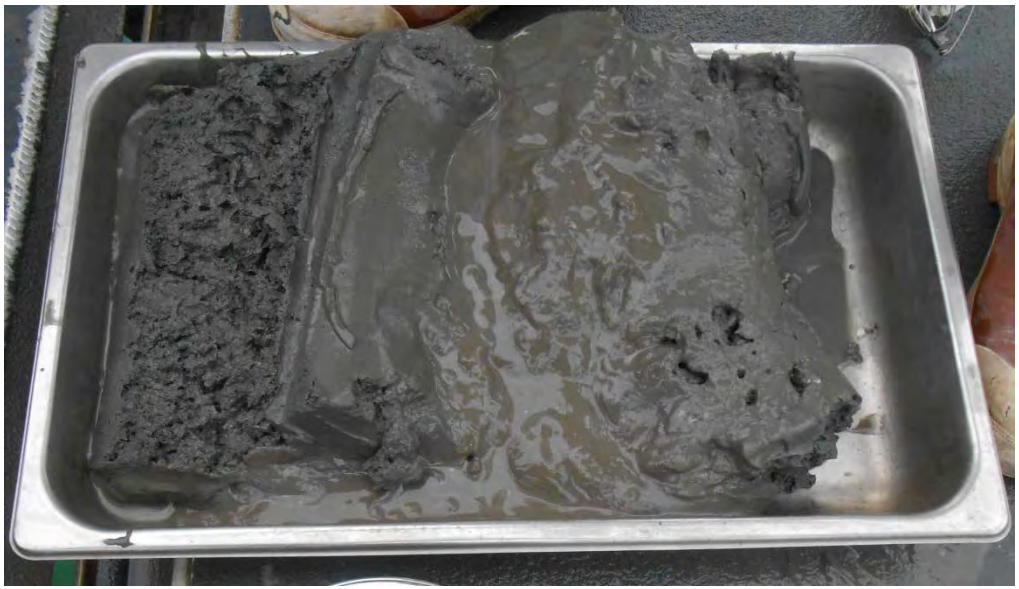


EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-22-SURF



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-23

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-23-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-24

RREC13-24-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-25

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-25-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-26

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-26-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-27

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-27-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-28

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-28-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-29

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-29-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-30

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

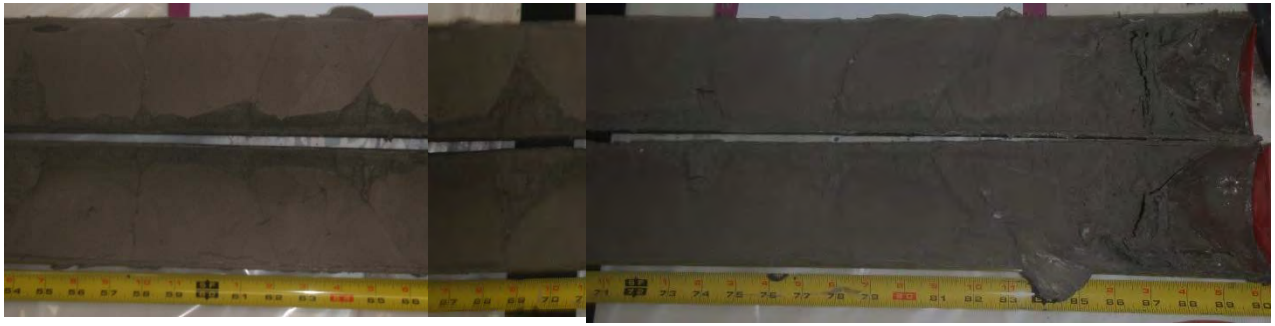
RREC13-30-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-31



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-31-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-32

RREC13-32-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-33

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-33-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-34

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-34-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-35

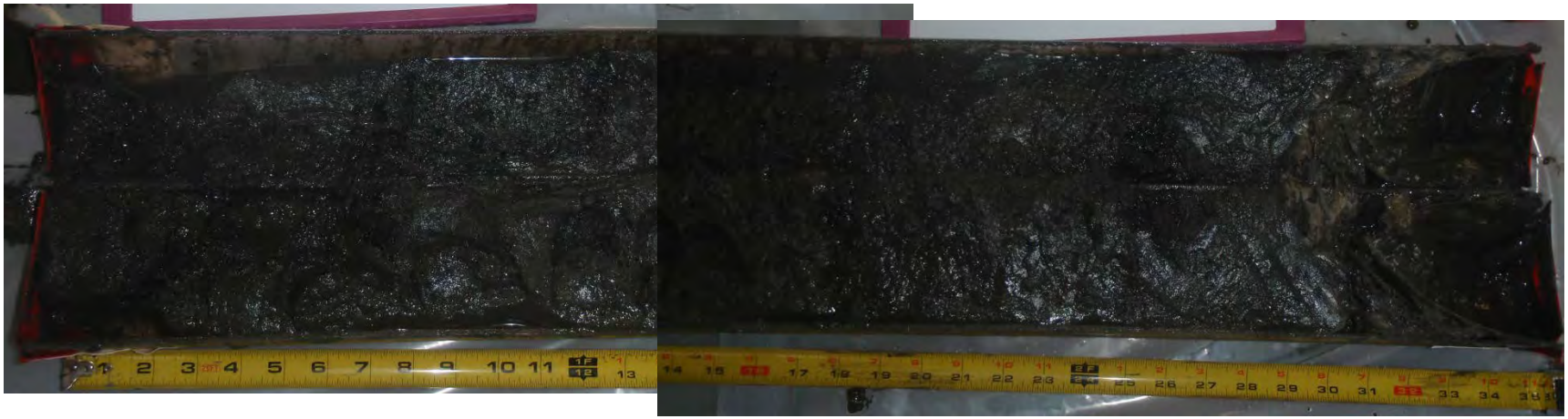
RREC13-35-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/312013

RREC13-36



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/1/2013

RREC13-37

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/1/2013

RREC13-37-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-38

RREC13-38-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

RREC13-39

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/02/2013

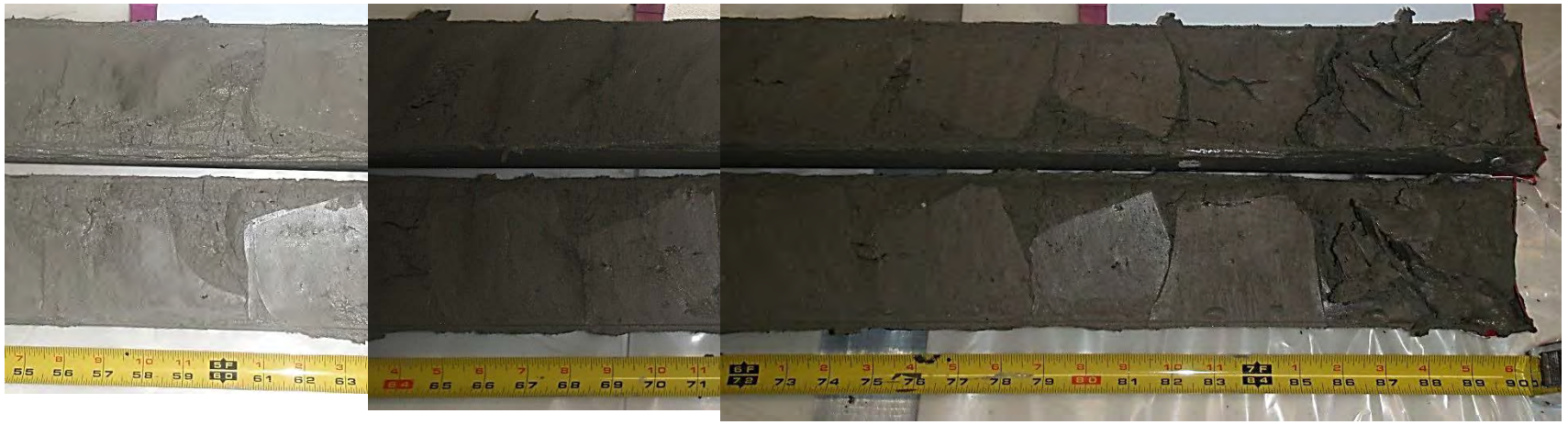
RREC13-39-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-40



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

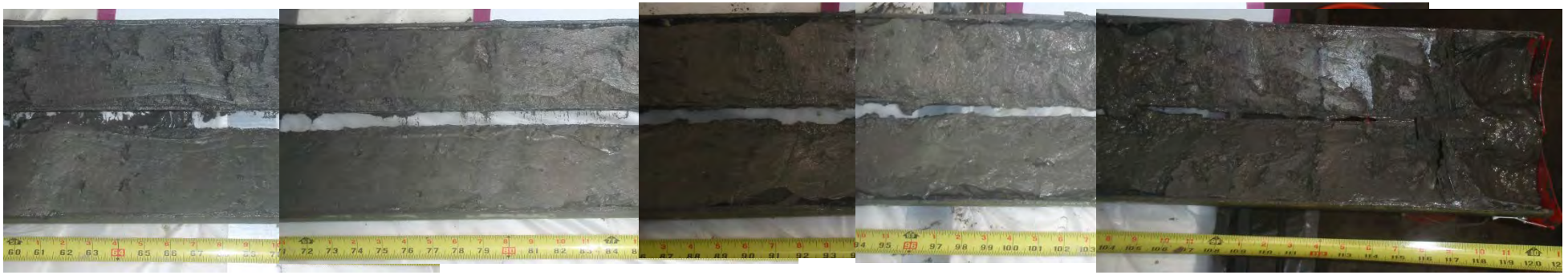
RREC13-40-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-41



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/31/2013

RREC13-41-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/04/2013

RREC13-42

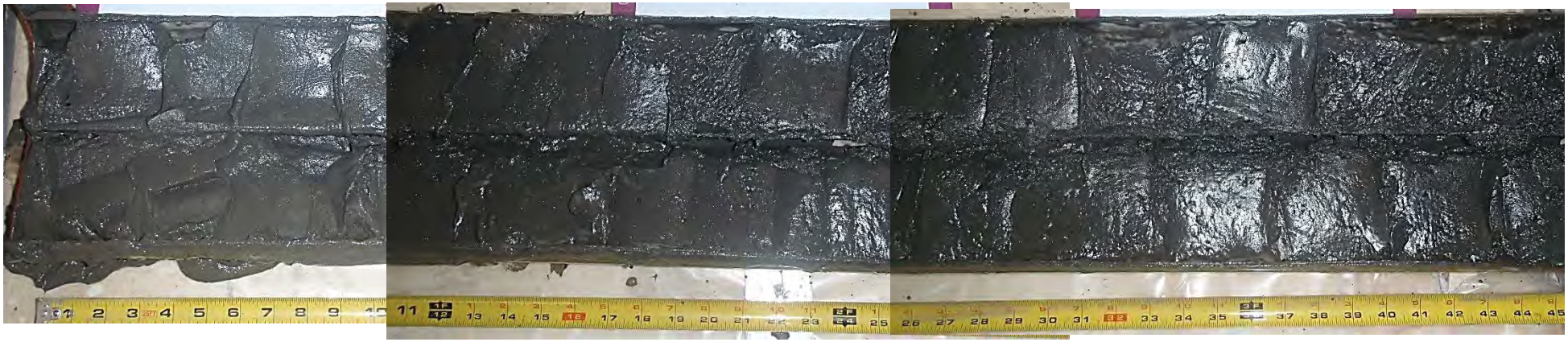
RREC13-42-SURF

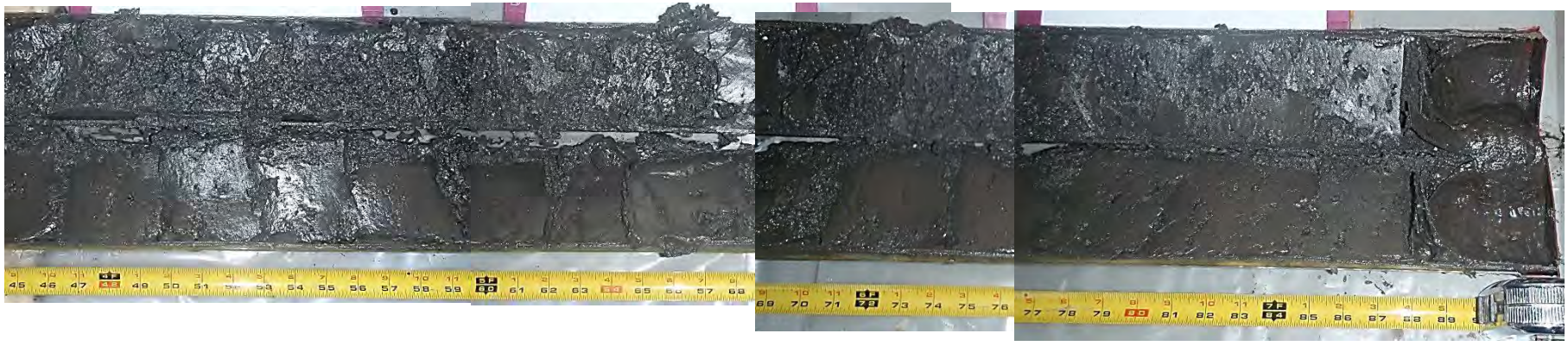
EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-44





EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-44-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/01/2013

RREC13-45

RREC13-45-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/06/2013

RREC13-46

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/06/2013

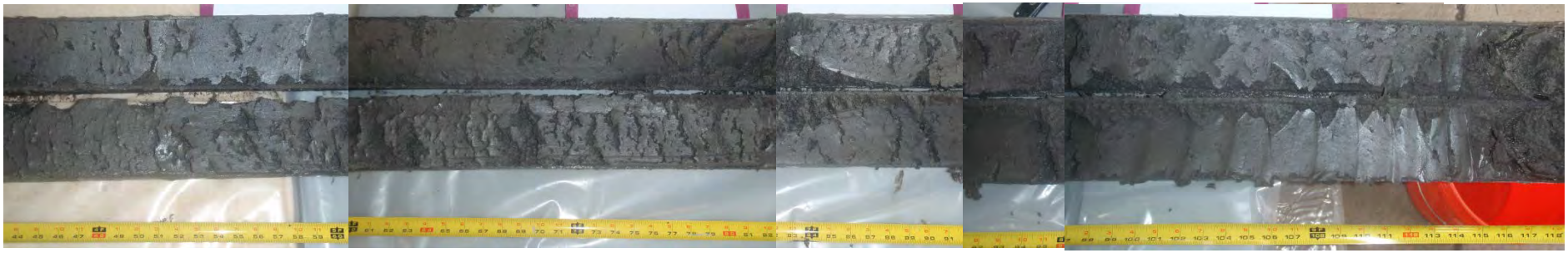
RREC13-46-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/30/2013

RREC13-47

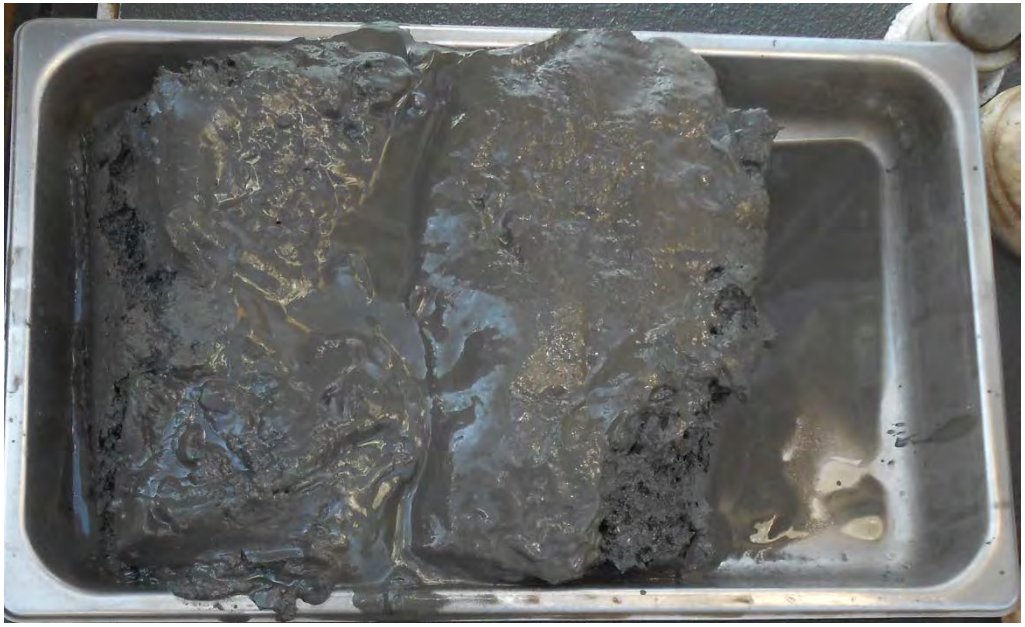


EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
10/30/2013

RREC13-47-SURF



EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-48

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-48-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-49

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/05/2013

RREC13-49-SURF

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/06/2013

RREC13-50

EA Engineering, Science, and Technology, Inc.

Photographic Record

River Rouge/Ecorse Shoreline
Grosse Ile, Michigan
11/06/2013

RREC13-50-SURF

Appendix D

Particle Size Charts

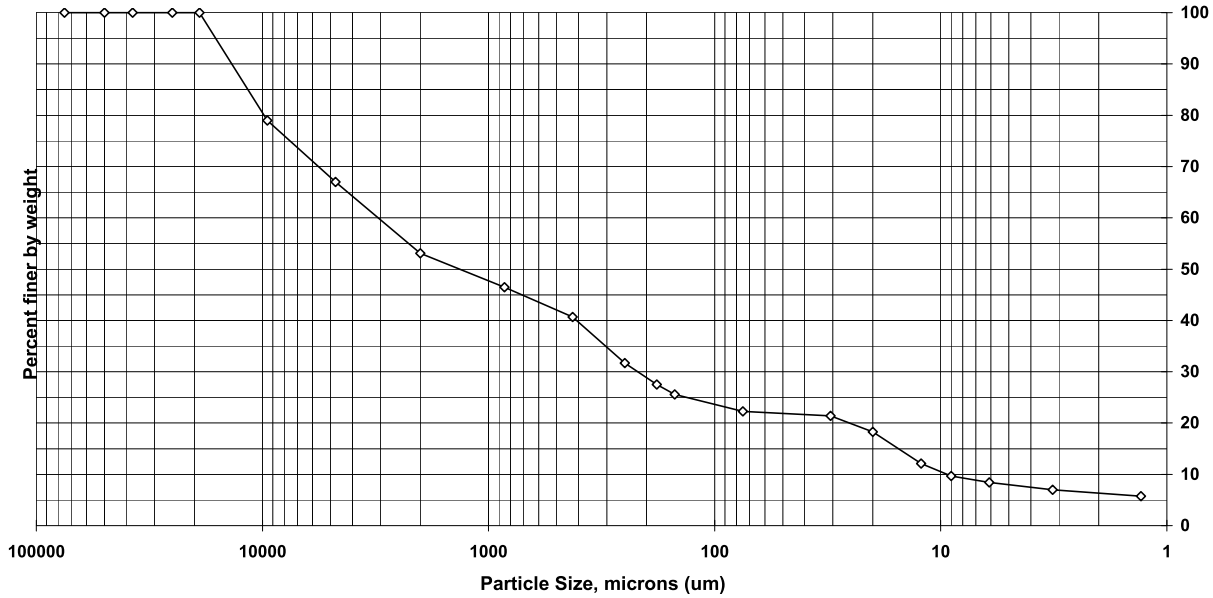
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-19-SURF	**Percent Solids:**	69.0%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-1	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Angular

Non-soil material: Shell; Plant

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	79.0	21.0
#4	4750	67.0	12.0
#10	2000	53.1	13.9
#20	850	46.5	6.6
#40	425	40.7	5.8
#60	250	31.7	9.0
#80	180	27.5	4.2
#100	150	25.6	1.9
#200	75	22.3	3.3
Hyd1	30.7	21.4	0.9
Hyd2	20	18.3	3.1
Hyd3	12.2	12.1	6.2
Hyd4	9	9.7	2.4
Hyd5	6.1	8.4	1.2
Hyd6	3.2	7.0	1.4
Hyd7	1.3	5.8	1.2

Soil Classification	Percent of sample
Gravel	33.0
Sand	44.7
Coarse Sand	13.9
Medium Sand	12.4
Fine Sand	18.4
Silt	13.9
Clay	8.4

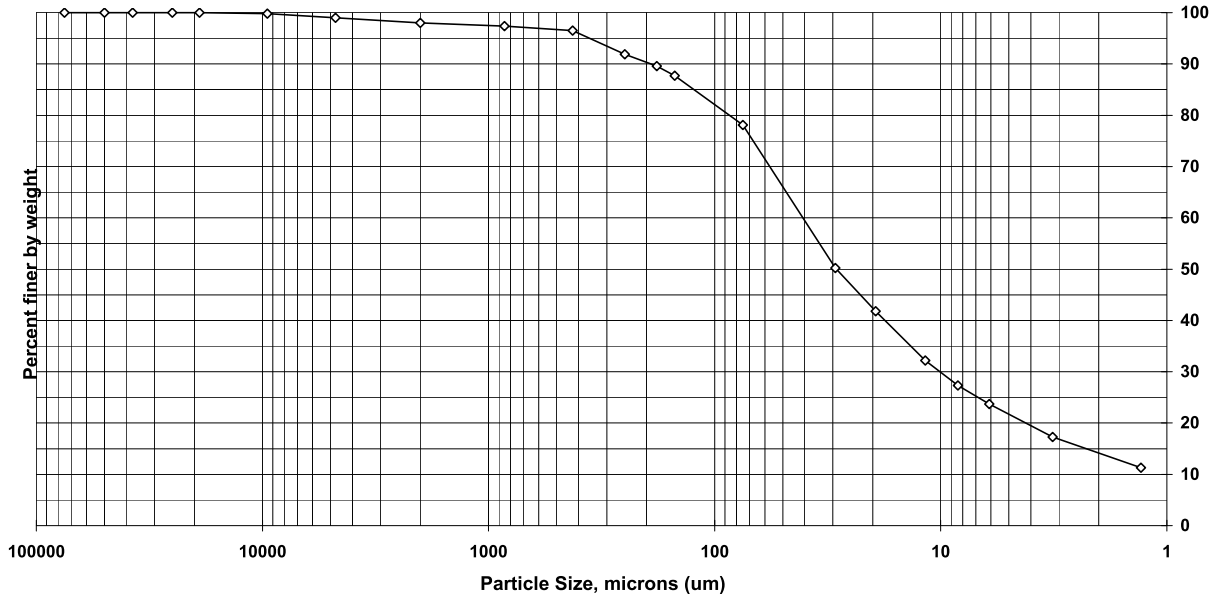
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-45-SURF	**Percent Solids:**	41.8%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-2	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Shell; Plant; Wool

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	99.8	0.2
#4	4750	99.0	0.8
#10	2000	98.0	1.0
#20	850	97.4	0.6
#40	425	96.5	0.9
#60	250	91.9	4.6
#80	180	89.6	2.3
#100	150	87.7	1.9
#200	75	78.1	9.6
Hyd1	29.3	50.2	27.9
Hyd2	19.4	41.8	8.4
Hyd3	11.7	32.2	9.6
Hyd4	8.4	27.3	4.9
Hyd5	6.1	23.7	3.6
Hyd6	3.2	17.3	6.4
Hyd7	1.3	11.3	6.0

Soil Classification	Percent of sample
Gravel	1.0
Sand	20.9
Coarse Sand	1.0
Medium Sand	1.5
Fine Sand	18.4
Silt	54.4
Clay	23.7

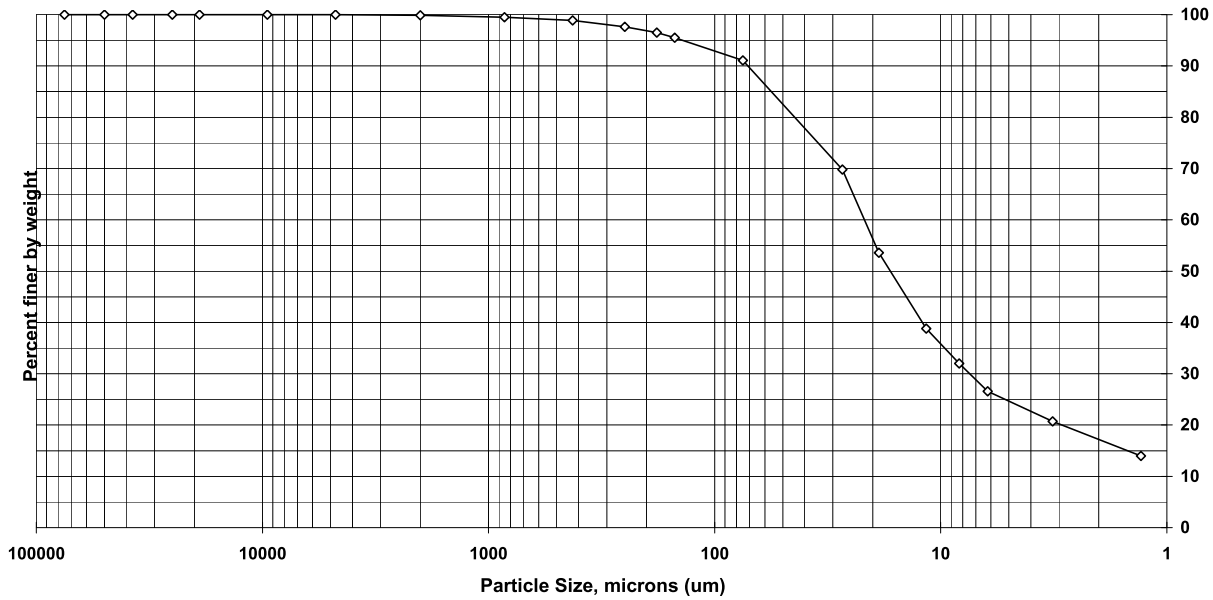
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-22-SURF	**Percent Solids:**	40.4%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-3	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Shell

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.9	0.1
#20	850	99.5	0.4
#40	425	98.9	0.6
#60	250	97.6	1.3
#80	180	96.5	1.1
#100	150	95.5	1.0
#200	75	91.1	4.4
Hyd1	27.2	69.8	21.3
Hyd2	18.8	53.6	16.2
Hyd3	11.6	38.8	14.8
Hyd4	8.3	32.0	6.8
Hyd5	6.2	26.6	5.4
Hyd6	3.2	20.7	5.9
Hyd7	1.3	14.0	6.7

Soil Classification	Percent of sample
Gravel	0.0
Sand	8.9
Coarse Sand	0.1
Medium Sand	1.0
Fine Sand	7.8
Silt	64.5
Clay	26.6

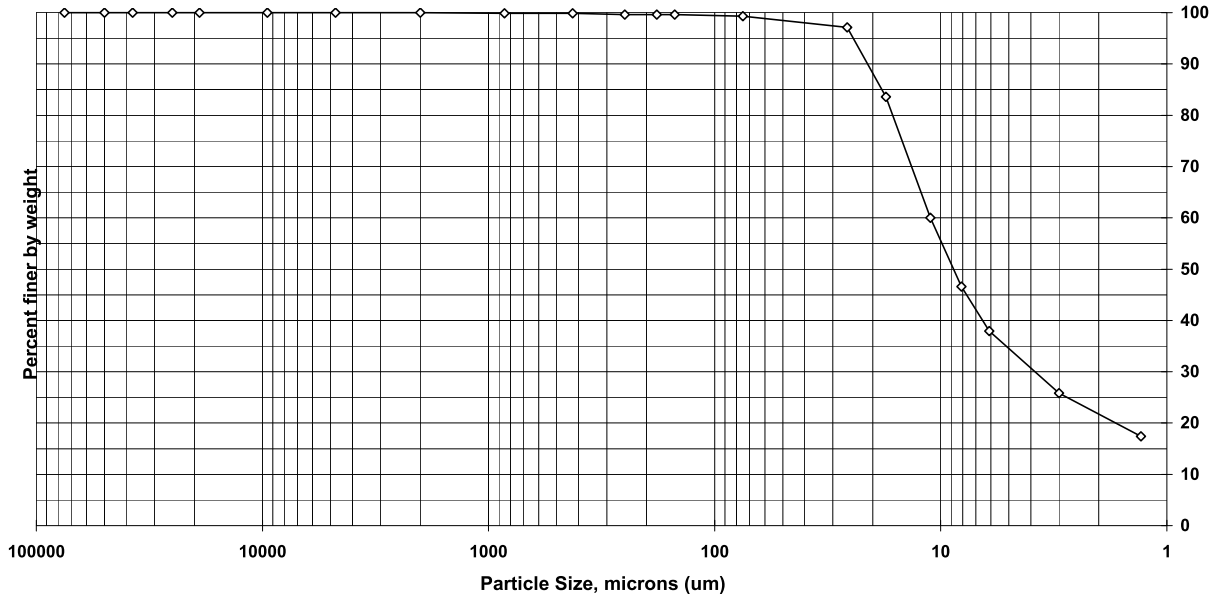
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-21-SURF	**Percent Solids:**	31.3%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-4	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Wood

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.9	0.1
#40	425	99.9	0.0
#60	250	99.6	0.3
#80	180	99.6	0.0
#100	150	99.6	0.0
#200	75	99.3	0.3
Hyd1	25.9	97.1	2.2
Hyd2	17.5	83.6	13.5
Hyd3	11.1	60.0	23.6
Hyd4	8.1	46.6	13.4
Hyd5	6.1	37.9	8.7
Hyd6	3	25.8	12.1
Hyd7	1.3	17.4	8.4

Soil Classification	Percent of sample
Gravel	0.0
Sand	0.7
Coarse Sand	0.0
Medium Sand	0.1
Fine Sand	0.6
Silt	61.4
Clay	37.9

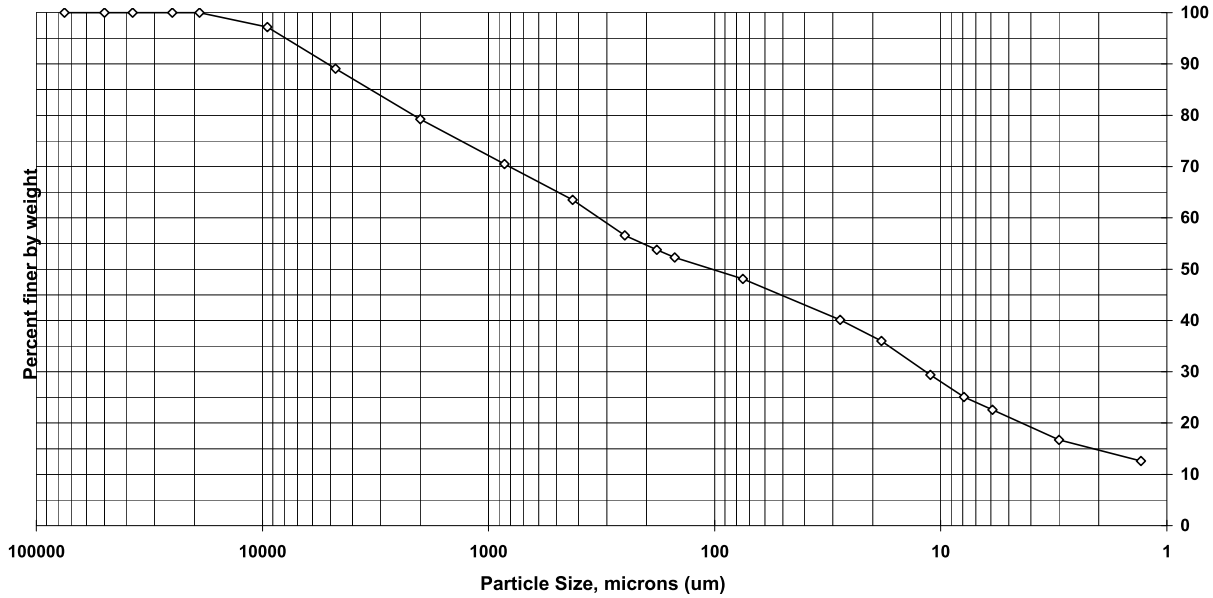
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-20-SURF	**Percent Solids:**	68.1%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-5	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Angular

Non-soil material: Plant; Wood

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	97.2	2.8
#4	4750	89.1	8.1
#10	2000	79.2	9.9
#20	850	70.5	8.7
#40	425	63.5	7.0
#60	250	56.6	6.9
#80	180	53.8	2.8
#100	150	52.3	1.5
#200	75	48.1	4.2
Hyd1	27.9	40.1	8.0
Hyd2	18.3	36.0	4.1
Hyd3	11.1	29.4	6.6
Hyd4	7.9	25.1	4.3
Hyd5	5.9	22.6	2.5
Hyd6	3	16.7	5.9
Hyd7	1.3	12.6	4.1

Soil Classification	Percent of sample
Gravel	10.9
Sand	41.0
Coarse Sand	9.9
Medium Sand	15.7
Fine Sand	15.4
Silt	25.5
Clay	22.6

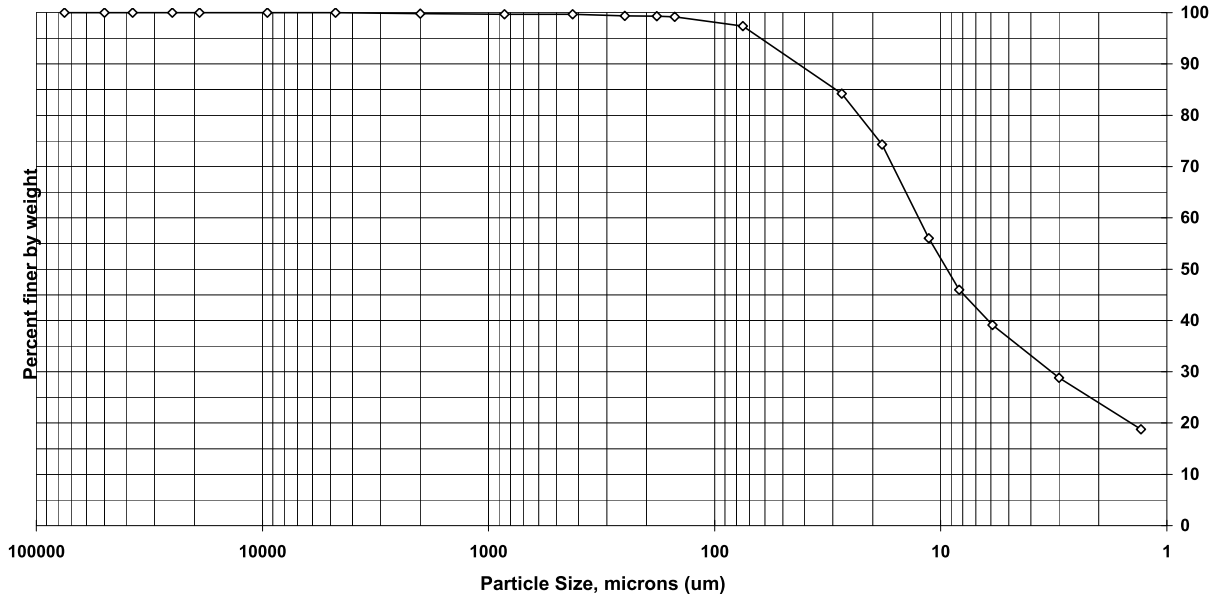
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-16-SURF	**Percent Solids:**	38.4%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-6	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Subangular

Non-soil material: NA

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.8	0.2
#20	850	99.7	0.1
#40	425	99.7	0.0
#60	250	99.4	0.3
#80	180	99.3	0.1
#100	150	99.2	0.1
#200	75	97.4	1.8
Hyd1	27.4	84.2	13.2
Hyd2	18.2	74.3	9.9
Hyd3	11.3	56.0	18.3
Hyd4	8.3	46.0	10.0
Hyd5	5.9	39.1	6.9
Hyd6	3	28.8	10.3
Hyd7	1.3	18.8	10.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	2.6
Coarse Sand	0.2
Medium Sand	0.1
Fine Sand	2.3
Silt	58.3
Clay	39.1

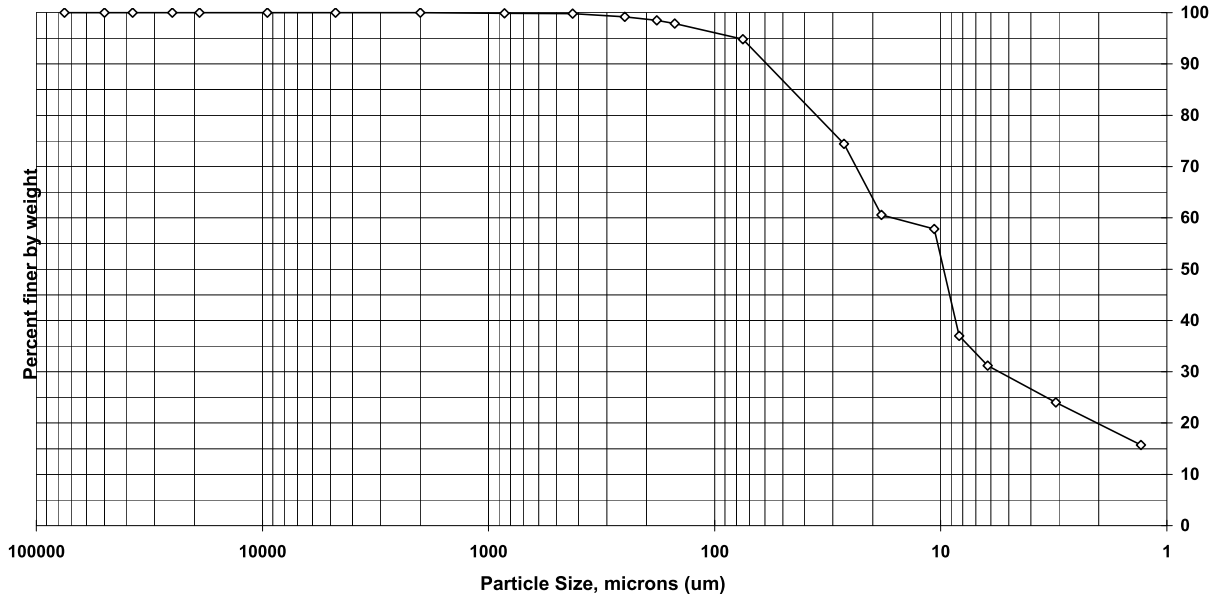
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-17-SURF	**Percent Solids:**	38.2%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-7	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: NA

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.9	0.1
#40	425	99.8	0.1
#60	250	99.2	0.6
#80	180	98.5	0.7
#100	150	97.9	0.6
#200	75	94.8	3.1
Hyd1	26.8	74.4	20.4
Hyd2	18.3	60.6	13.8
Hyd3	10.7	57.8	2.8
Hyd4	8.3	37.0	20.8
Hyd5	6.2	31.2	5.8
Hyd6	3.1	24.0	7.2
Hyd7	1.3	15.7	8.3

Soil Classification	Percent of sample
Gravel	0.0
Sand	5.2
Coarse Sand	0.0
Medium Sand	0.2
Fine Sand	5.0
Silt	63.6
Clay	31.2

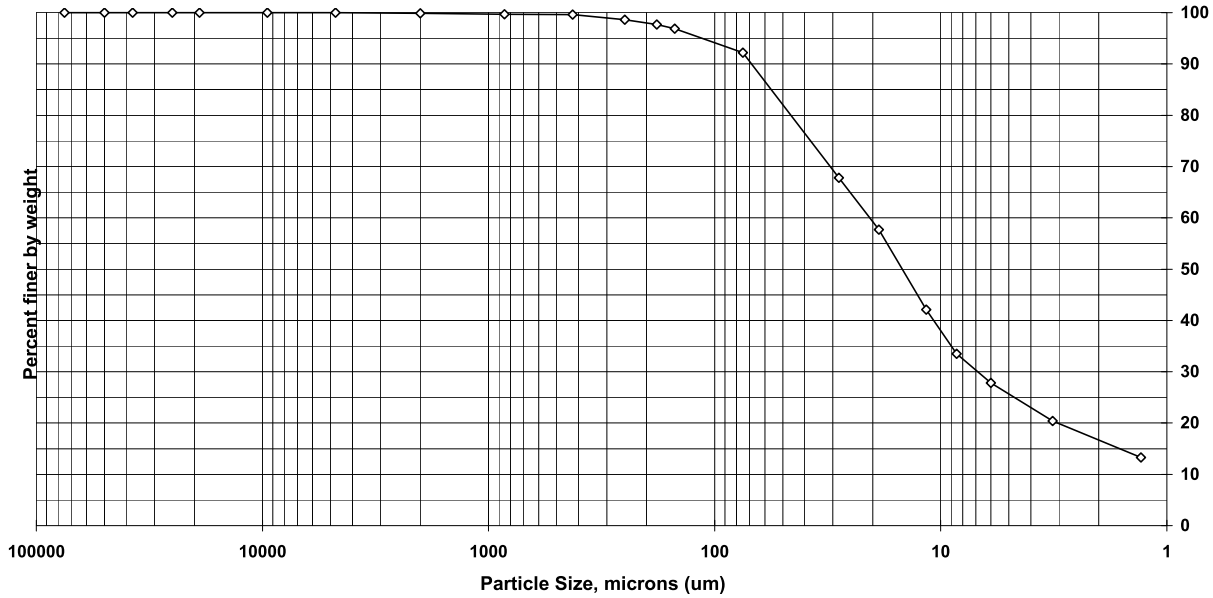
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-18-SURF	**Percent Solids:**	40.2%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-8	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Angular

Non-soil material: Shell; Plant

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.9	0.1
#20	850	99.7	0.2
#40	425	99.6	0.1
#60	250	98.6	1.0
#80	180	97.7	0.9
#100	150	96.9	0.8
#200	75	92.2	4.7
Hyd1	28.2	67.8	24.4
Hyd2	18.8	57.7	10.1
Hyd3	11.6	42.1	15.6
Hyd4	8.5	33.5	8.6
Hyd5	6	27.8	5.7
Hyd6	3.2	20.4	7.4
Hyd7	1.3	13.3	7.1

Soil Classification	Percent of sample
Gravel	0.0
Sand	7.8
Coarse Sand	0.1
Medium Sand	0.3
Fine Sand	7.4
Silt	64.4
Clay	27.8

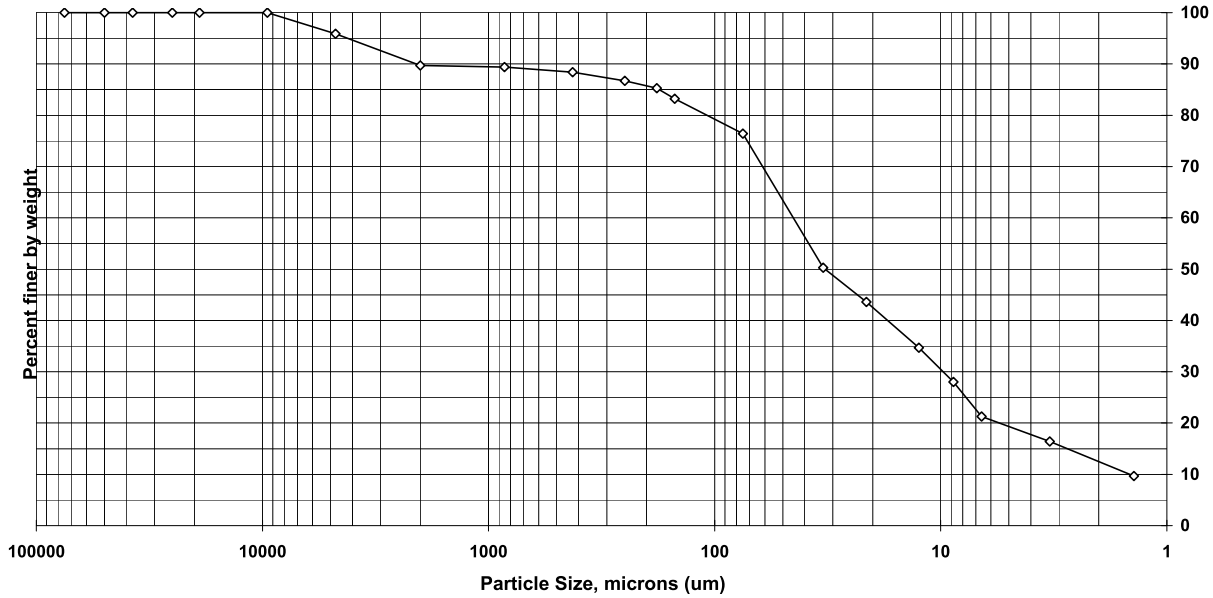
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-36-SURF	**Percent Solids:**	19.5%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-9	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Plant; Wood

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	95.9	4.1
#10	2000	89.7	6.2
#20	850	89.4	0.3
#40	425	88.4	1.0
#60	250	86.7	1.7
#80	180	85.3	1.4
#100	150	83.2	2.1
#200	75	76.4	6.8
Hyd1	33.1	50.3	26.1
Hyd2	21.3	43.6	6.7
Hyd3	12.5	34.7	8.9
Hyd4	8.8	28.0	6.7
Hyd5	6.6	21.3	6.7
Hyd6	3.3	16.4	4.9
Hyd7	1.4	9.7	6.7

Soil Classification	Percent of sample
Gravel	4.1
Sand	19.5
Coarse Sand	6.2
Medium Sand	1.3
Fine Sand	12.0
Silt	55.1
Clay	21.3

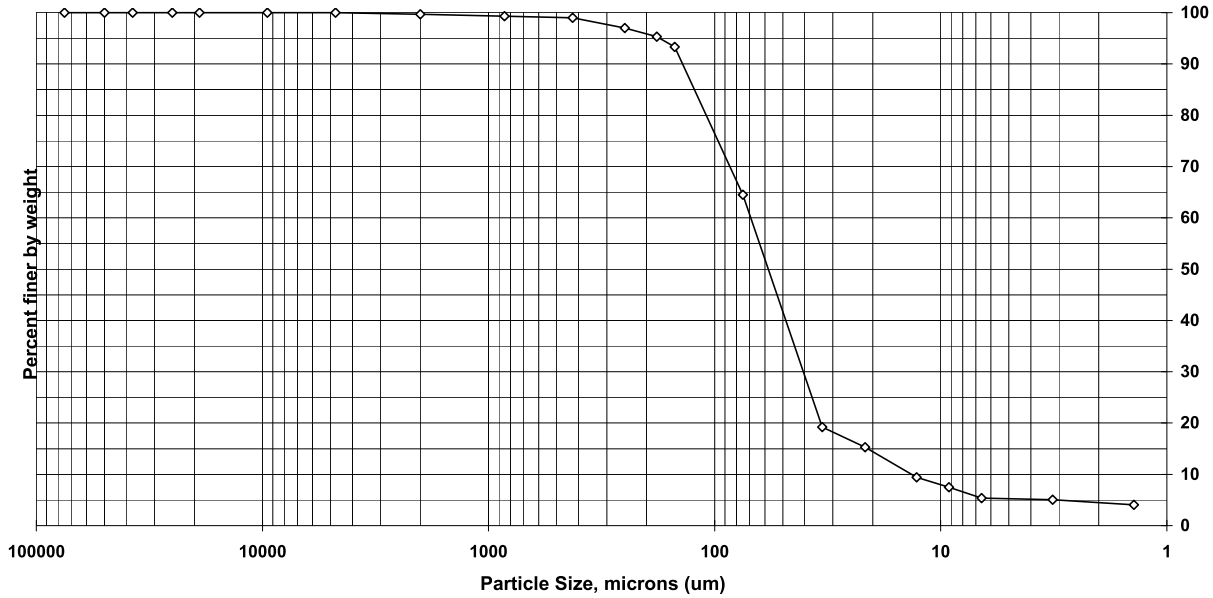
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-37-SURF	**Percent Solids:**	54.2%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-10	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Shell; Plant

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.7	0.3
#20	850	99.3	0.4
#40	425	99.0	0.3
#60	250	97.0	2.0
#80	180	95.3	1.7
#100	150	93.3	2.0
#200	75	64.5	28.8
Hyd1	33.4	19.2	45.3
Hyd2	21.6	15.3	3.9
Hyd3	12.8	9.4	5.9
Hyd4	9.2	7.5	2.0
Hyd5	6.6	5.4	2.1
Hyd6	3.2	5.0	0.3
Hyd7	1.4	4.1	1.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	35.5
Coarse Sand	0.3
Medium Sand	0.7
Fine Sand	34.5
Silt	59.1
Clay	5.4

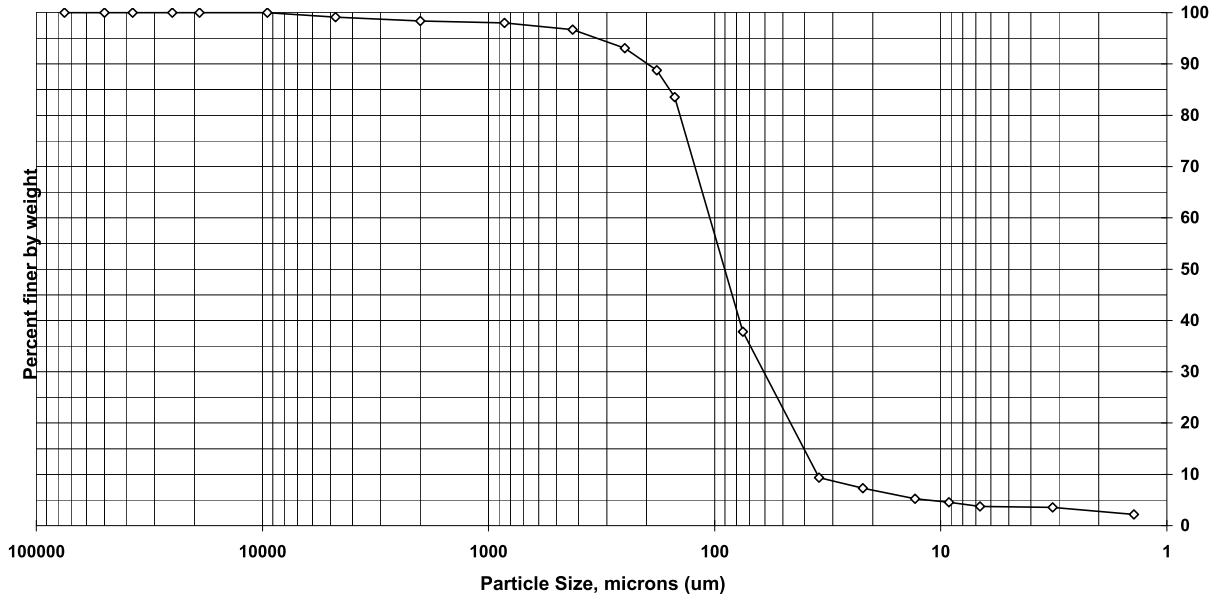
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-40-SURF	**Percent Solids:**	63.5%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-11	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Angular

Non-soil material: Shell; Plant

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.1	0.9
#10	2000	98.4	0.7
#20	850	98.0	0.4
#40	425	96.7	1.3
#60	250	93.1	3.6
#80	180	88.8	4.3
#100	150	83.5	5.3
#200	75	37.8	45.7
Hyd1	34.5	9.4	28.4
Hyd2	22.1	7.3	2.1
Hyd3	13	5.3	2.1
Hyd4	9.2	4.6	0.7
Hyd5	6.7	3.8	0.8
Hyd6	3.2	3.6	0.2
Hyd7	1.4	2.2	1.4

Soil Classification	Percent of sample
Gravel	0.9
Sand	61.3
Coarse Sand	0.7
Medium Sand	1.7
Fine Sand	58.9
Silt	34.0
Clay	3.8

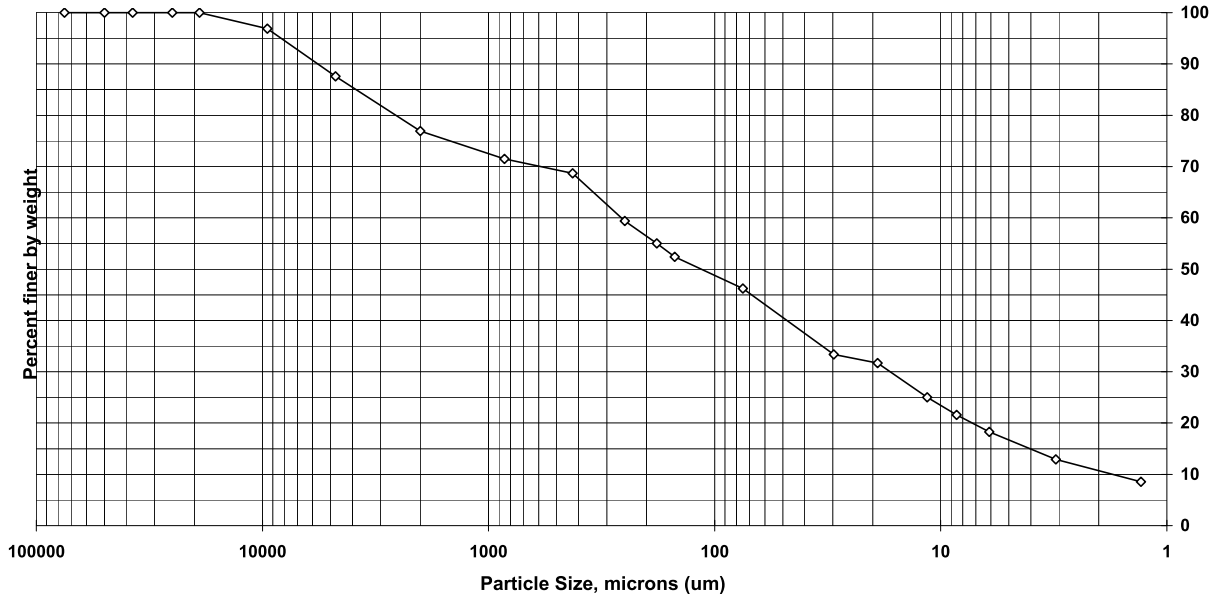
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-01-SURF	**Percent Solids:**	56.6%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-12	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Angular

Non-soil material: Shell; Wood

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	96.9	3.1
#4	4750	87.6	9.3
#10	2000	76.9	10.7
#20	850	71.5	5.4
#40	425	68.7	2.8
#60	250	59.4	9.3
#80	180	55.0	4.4
#100	150	52.4	2.6
#200	75	46.2	6.2
Hyd1	29.7	33.4	12.8
Hyd2	19	31.7	1.7
Hyd3	11.5	25.0	6.7
Hyd4	8.5	21.6	3.4
Hyd5	6.1	18.3	3.3
Hyd6	3.1	12.9	5.4
Hyd7	1.3	8.6	4.3

Soil Classification	Percent of sample
Gravel	12.4
Sand	41.4
Coarse Sand	10.7
Medium Sand	8.2
Fine Sand	22.5
Silt	27.9
Clay	18.3

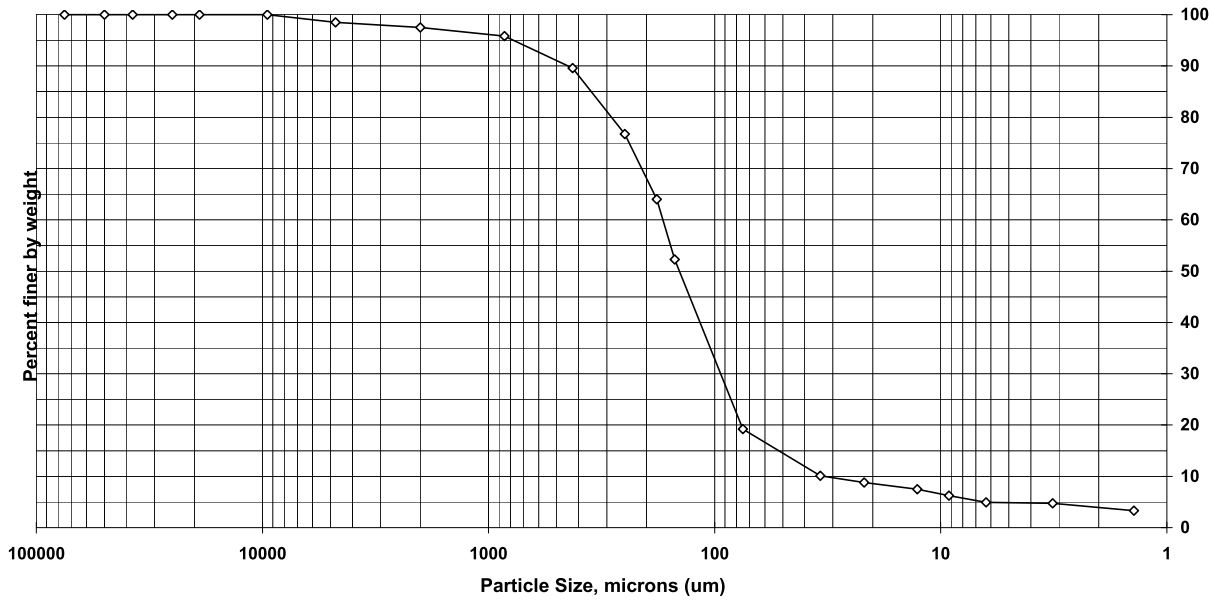
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-02-SURF	**Percent Solids:**	66.5%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-13	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Subangular

Non-soil material: Shell

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.5	1.5
#10	2000	97.5	1.0
#20	850	95.8	1.7
#40	425	89.6	6.2
#60	250	76.7	12.9
#80	180	64.0	12.7
#100	150	52.3	11.7
#200	75	19.2	33.1
Hyd1	34.1	10.1	9.1
Hyd2	21.8	8.8	1.3
Hyd3	12.7	7.5	1.3
Hyd4	9.2	6.2	1.3
Hyd5	6.3	4.9	1.3
Hyd6	3.2	4.7	0.2
Hyd7	1.4	3.3	1.4

Soil Classification	Percent of sample
Gravel	1.5
Sand	79.3
Coarse Sand	1.0
Medium Sand	7.9
Fine Sand	70.4
Silt	14.3
Clay	4.9

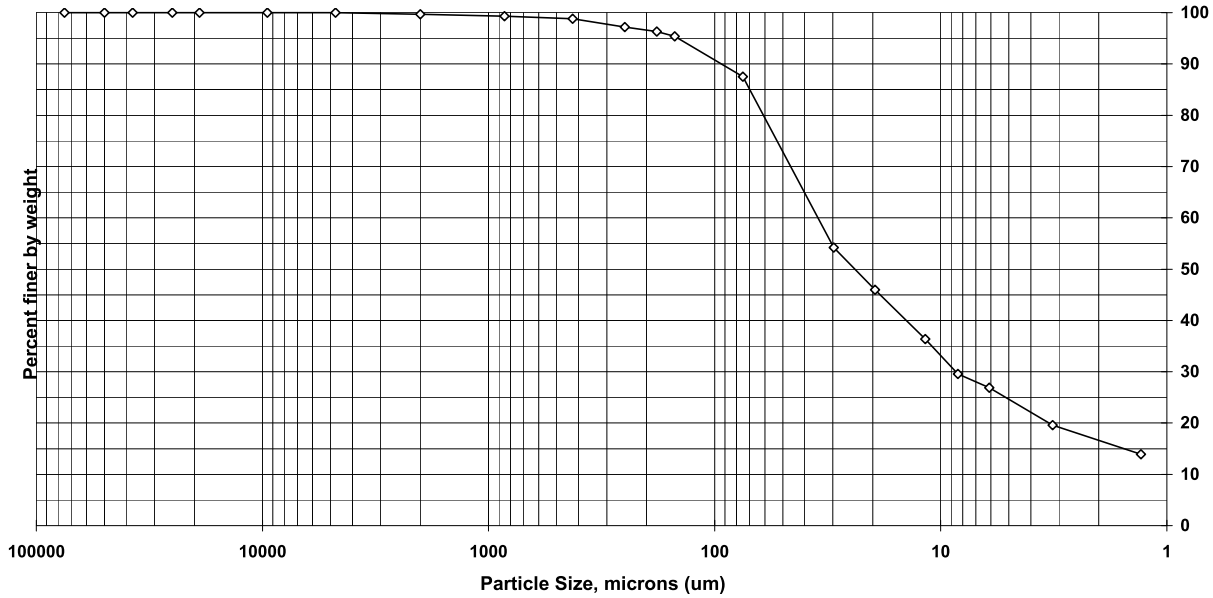
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-23-SURF	**Percent Solids:**	42.8%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-14	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): Subangular

Non-soil material: Plant

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.7	0.3
#20	850	99.3	0.4
#40	425	98.8	0.5
#60	250	97.2	1.6
#80	180	96.3	0.9
#100	150	95.4	0.9
#200	75	87.5	7.9
Hyd1	29.7	54.2	33.3
Hyd2	19.5	46.0	8.2
Hyd3	11.7	36.4	9.6
Hyd4	8.4	29.6	6.8
Hyd5	6.1	26.9	2.7
Hyd6	3.2	19.6	7.3
Hyd7	1.3	13.9	5.7

Soil Classification	Percent of sample
Gravel	0.0
Sand	12.5
Coarse Sand	0.3
Medium Sand	0.9
Fine Sand	11.3
Silt	60.6
Clay	26.9

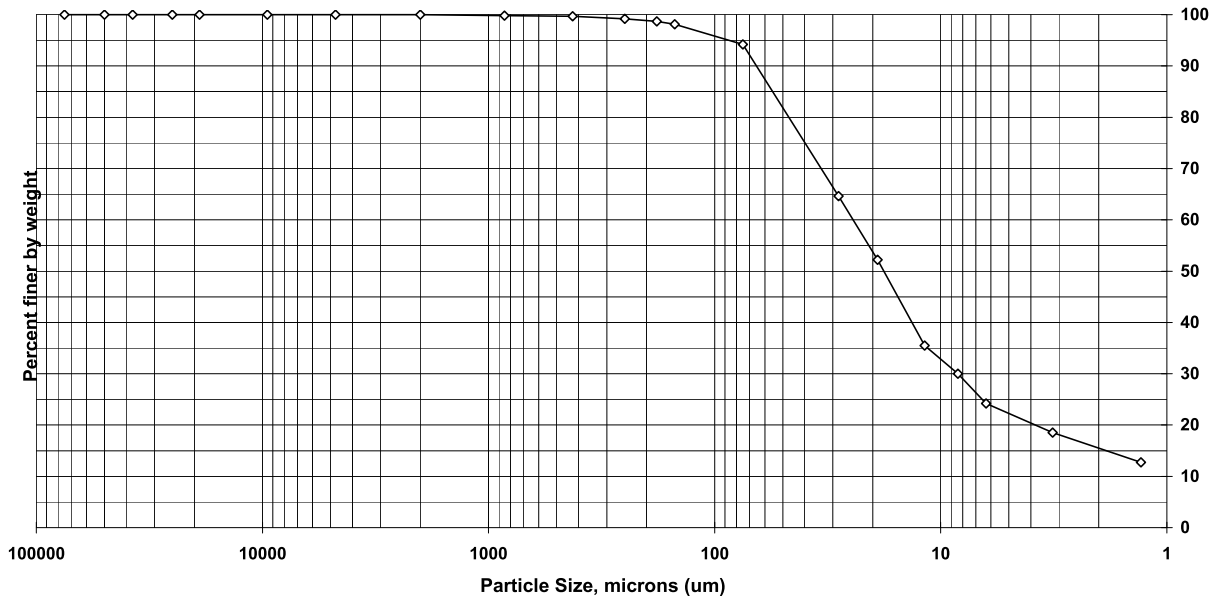
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-44-SURF	**Percent Solids:**	38.5%	**Start Date:**	11/20/2013
Lab ID:	200-19207-G-15	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Shell

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.8	0.2
#40	425	99.7	0.1
#60	250	99.2	0.5
#80	180	98.7	0.5
#100	150	98.1	0.6
#200	75	94.2	3.9
Hyd1	28.3	64.6	29.6
Hyd2	19	52.2	12.4
Hyd3	11.8	35.5	16.7
Hyd4	8.4	30.0	5.5
Hyd5	6.3	24.2	5.8
Hyd6	3.2	18.5	5.7
Hyd7	1.3	12.7	5.8

Soil Classification	Percent of sample
Gravel	0.0
Sand	5.8
Coarse Sand	0.0
Medium Sand	0.3
Fine Sand	5.5
Silt	70.0
Clay	24.2

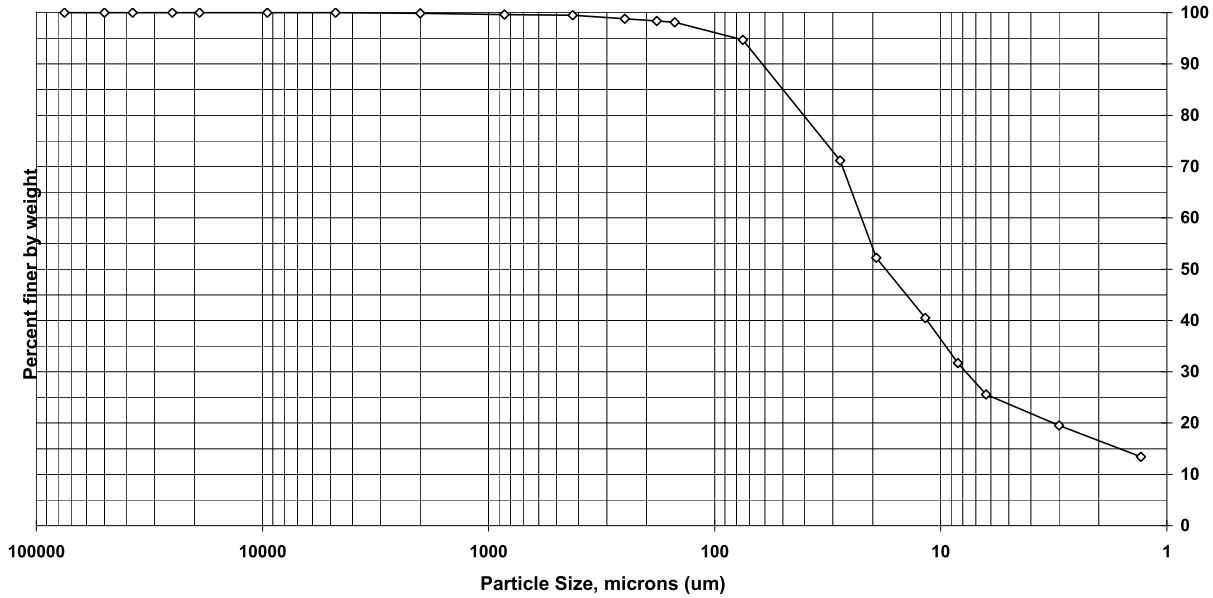
Particle Size of Soils by ASTM D422

				Date Received:	10/31/2013
Sample ID:	RREC13-47-SURF	**Percent Solids:**	36.8%	**Start Date:**	11/20/2013
Lab ID:	200-19207-F-16	**Specific Gravity:**	2.650	**End Date:**	11/23/2013

Shape (> #10): NA

Non-soil material: Plant

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.9	0.1
#20	850	99.6	0.3
#40	425	99.5	0.1
#60	250	98.8	0.7
#80	180	98.4	0.4
#100	150	98.1	0.3
#200	75	94.7	3.4
Hyd1	27.9	71.2	23.5
Hyd2	19.3	52.2	19.0
Hyd3	11.7	40.5	11.7
Hyd4	8.4	31.7	8.8
Hyd5	6.3	25.6	6.1
Hyd6	3	19.5	6.1
Hyd7	1.3	13.4	6.1

Soil Classification	Percent of sample
Gravel	0.0
Sand	5.3
Coarse Sand	0.1
Medium Sand	0.4
Fine Sand	4.8
Silt	69.1
Clay	25.6

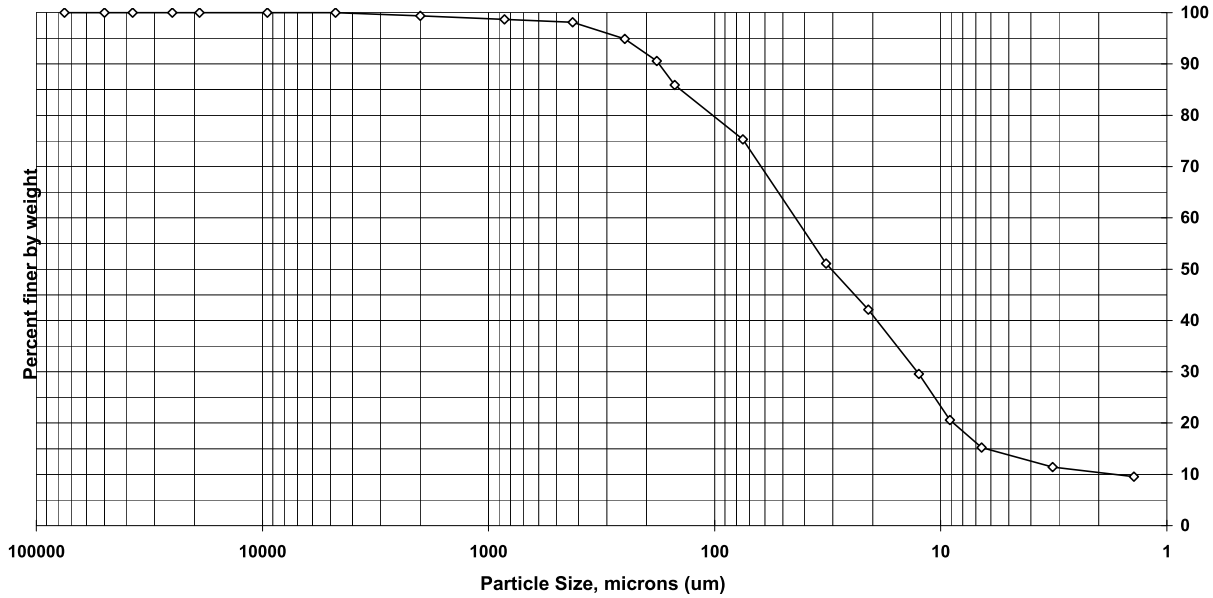
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-31-SURF	**Percent Solids:**	40.8%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-7	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): NA

Non-soil material: Shell; Plant

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.4	0.6
#20	850	98.7	0.7
#40	425	98.1	0.6
#60	250	94.9	3.2
#80	180	90.6	4.3
#100	150	85.9	4.7
#200	75	75.3	10.6
Hyd1	32.2	51.1	24.2
Hyd2	20.9	42.1	9.0
Hyd3	12.5	29.6	12.5
Hyd4	9.1	20.6	9.0
Hyd5	6.6	15.2	5.4
Hyd6	3.2	11.4	3.8
Hyd7	1.4	9.6	1.8

Soil Classification	Percent of sample
Gravel	0.0
Sand	24.7
Coarse Sand	0.6
Medium Sand	1.3
Fine Sand	22.8
Silt	60.1
Clay	15.2

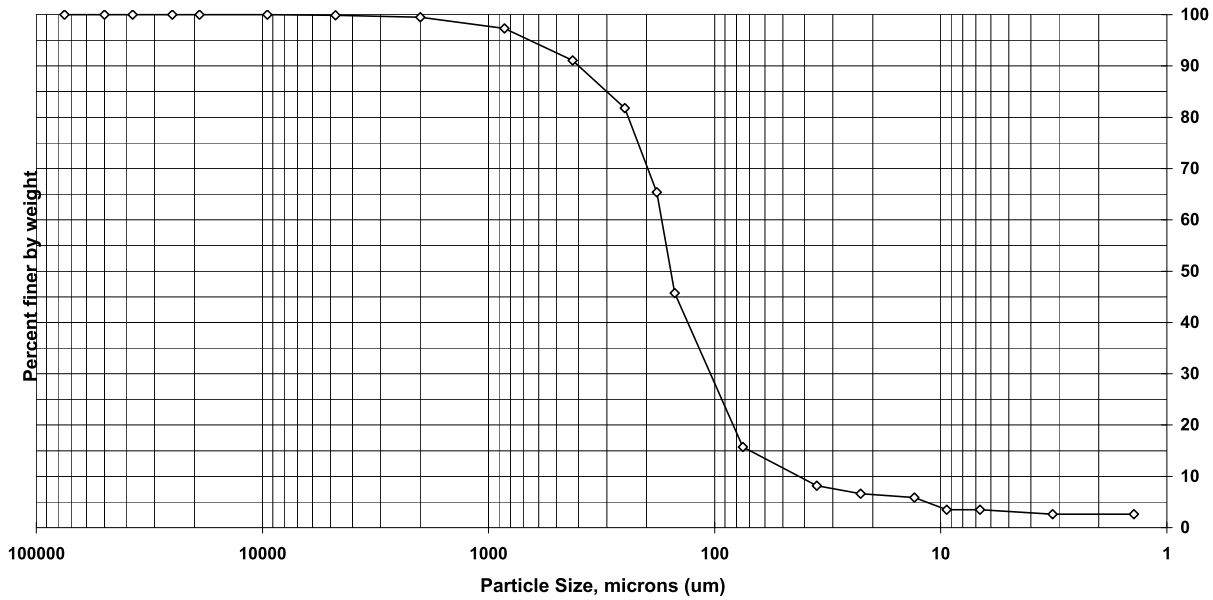
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-32-SURF	**Percent Solids:**	70.9%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-8	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): Angular

Non-soil material: Plant; Shell

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.9	0.1
#10	2000	99.5	0.4
#20	850	97.3	2.2
#40	425	91.1	6.2
#60	250	81.8	9.3
#80	180	65.4	16.4
#100	150	45.7	19.7
#200	75	15.7	30.0
Hyd1	35.3	8.2	7.5
Hyd2	22.6	6.6	1.6
Hyd3	13.1	5.9	0.8
Hyd4	9.4	3.5	2.3
Hyd5	6.7	3.5	0.0
Hyd6	3.2	2.6	0.9
Hyd7	1.4	2.6	0.0

Soil Classification	Percent of sample
Gravel	0.1
Sand	84.2
Coarse Sand	0.4
Medium Sand	8.4
Fine Sand	75.4
Silt	12.2
Clay	3.5

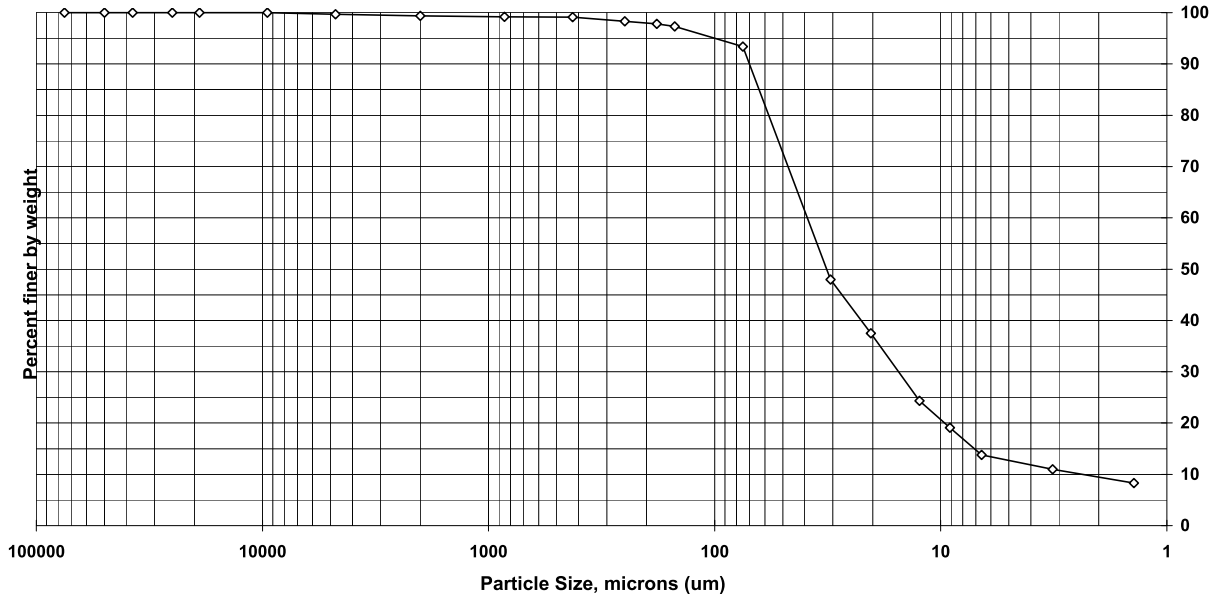
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-33-SURF	**Percent Solids:**	41.5%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-9	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): NA

Non-soil material: Plant; Shell

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.7	0.3
#10	2000	99.4	0.3
#20	850	99.2	0.2
#40	425	99.1	0.1
#60	250	98.3	0.8
#80	180	97.8	0.5
#100	150	97.3	0.5
#200	75	93.4	3.9
Hyd1	30.7	48.0	45.4
Hyd2	20.4	37.5	10.5
Hyd3	12.4	24.3	13.2
Hyd4	9.1	19.1	5.2
Hyd5	6.6	13.8	5.3
Hyd6	3.2	11.0	2.8
Hyd7	1.4	8.3	2.7

Soil Classification	Percent of sample
Gravel	0.3
Sand	6.3
Coarse Sand	0.3
Medium Sand	0.3
Fine Sand	5.7
Silt	79.6
Clay	13.8

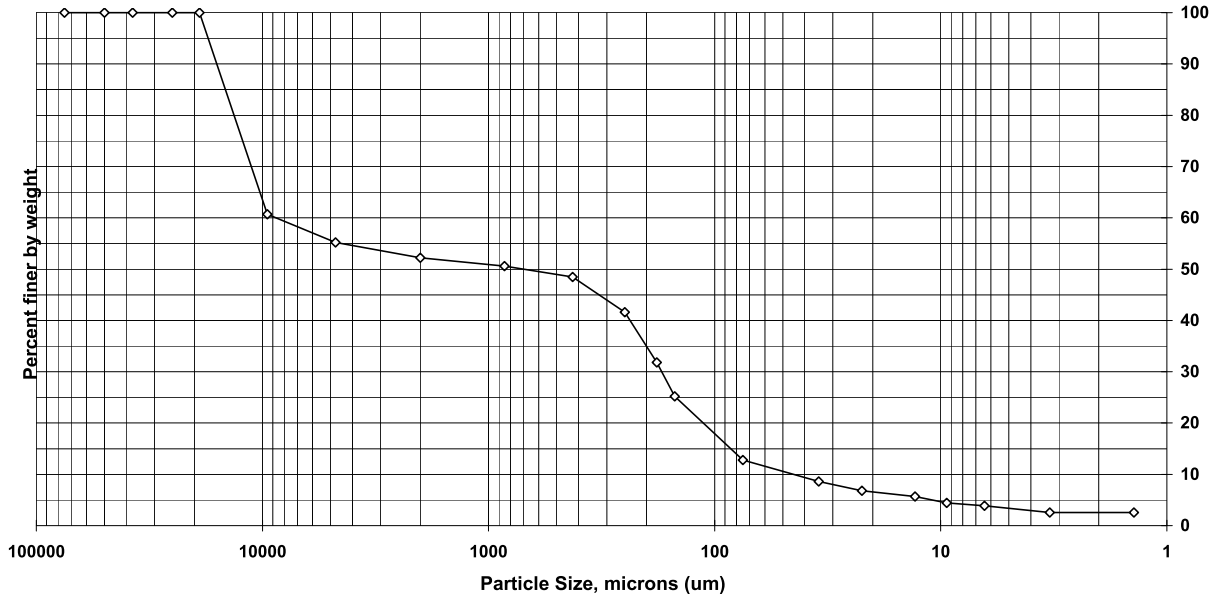
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-35-SURF	**Percent Solids:**	72.1%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-10	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): Angular

Non-soil material: Shell

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	60.7	39.3
#4	4750	55.2	5.5
#10	2000	52.2	3.0
#20	850	50.6	1.6
#40	425	48.5	2.1
#60	250	41.6	6.9
#80	180	31.8	9.8
#100	150	25.2	6.6
#200	75	12.8	12.4
Hyd1	34.7	8.6	4.2
Hyd2	22.3	6.8	1.8
Hyd3	13	5.7	1.1
Hyd4	9.4	4.5	1.2
Hyd5	6.4	3.9	0.6
Hyd6	3.3	2.6	1.3
Hyd7	1.4	2.6	0.0

Soil Classification	Percent of sample
Gravel	44.8
Sand	42.4
Coarse Sand	3.0
Medium Sand	3.7
Fine Sand	35.7
Silt	8.9
Clay	3.9

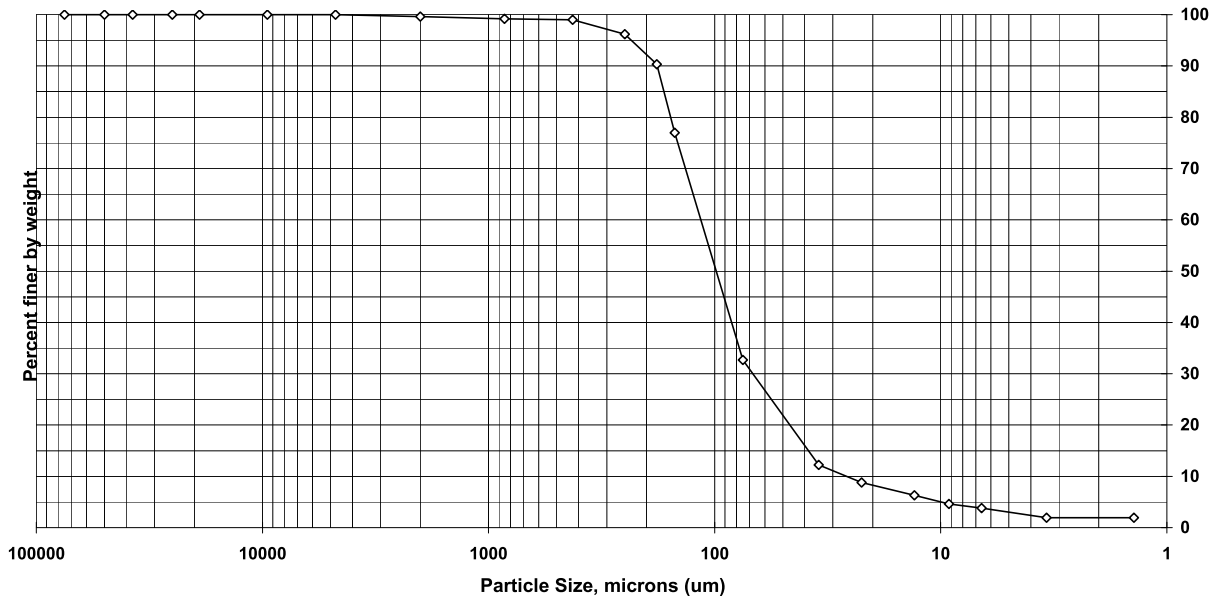
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-38-SURF	**Percent Solids:**	68.6%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-11	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): Angular

Non-soil material: Shell

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.6	0.4
#20	850	99.2	0.4
#40	425	99.0	0.2
#60	250	96.2	2.8
#80	180	90.3	5.9
#100	150	77.0	13.3
#200	75	32.7	44.3
Hyd1	34.7	12.2	20.5
Hyd2	22.4	8.8	3.4
Hyd3	13.1	6.3	2.5
Hyd4	9.2	4.6	1.7
Hyd5	6.6	3.8	0.8
Hyd6	3.4	2.0	1.8
Hyd7	1.4	2.0	0.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	67.3
Coarse Sand	0.4
Medium Sand	0.6
Fine Sand	66.3
Silt	28.9
Clay	3.8

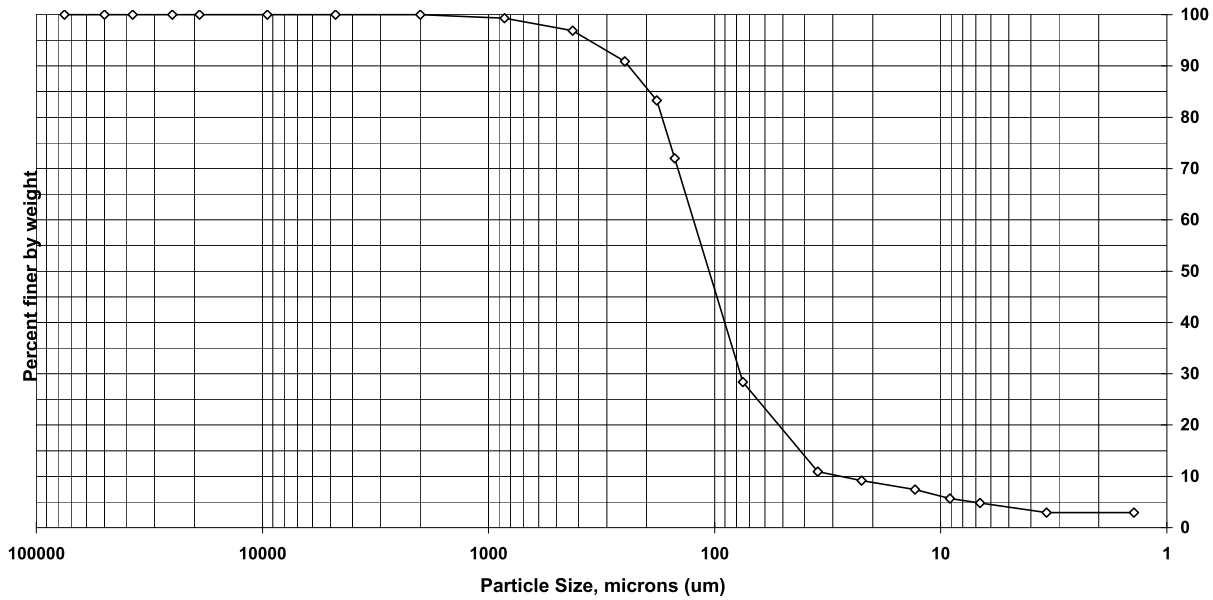
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-39-SURF	**Percent Solids:**	66.3%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-13	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): NA

Non-soil material: NA

Hardness (> #10): NA



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.3	0.7
#40	425	96.9	2.4
#60	250	90.9	6.0
#80	180	83.3	7.6
#100	150	72.0	11.3
#200	75	28.4	43.6
Hyd1	35	10.9	17.5
Hyd2	22.4	9.2	1.7
Hyd3	13	7.4	1.7
Hyd4	9.1	5.7	1.8
Hyd5	6.7	4.8	0.9
Hyd6	3.4	2.9	1.9
Hyd7	1.4	2.9	0.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	71.6
Coarse Sand	0.0
Medium Sand	3.1
Fine Sand	68.5
Silt	23.6
Clay	4.8

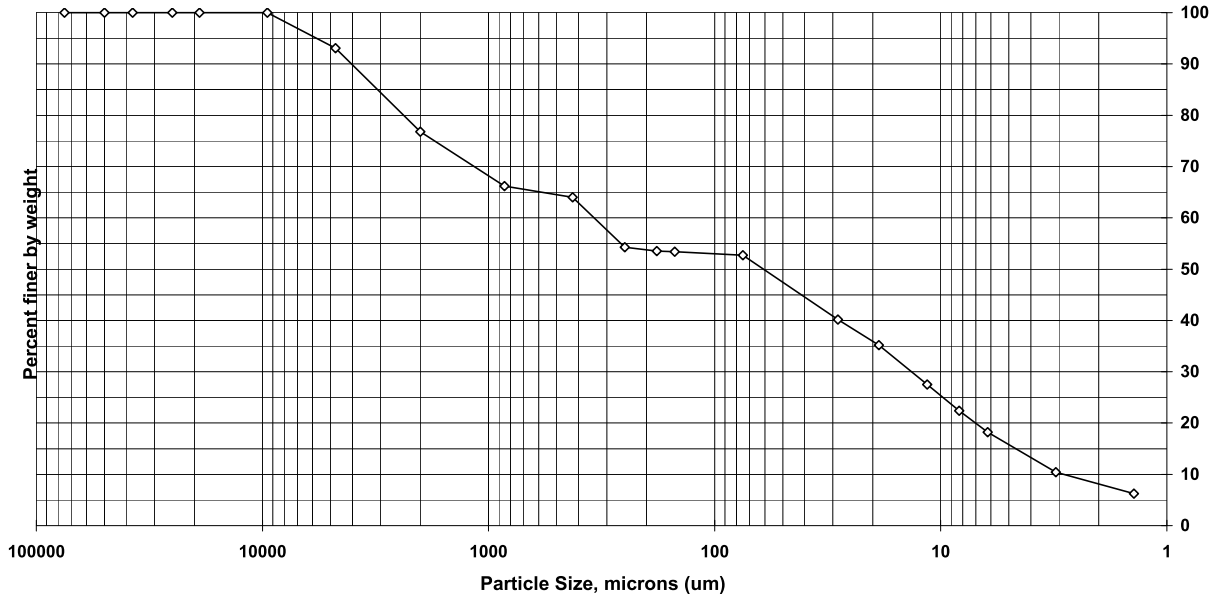
Particle Size of Soils by ASTM D422

				Date Received:	11/1/2013
Sample ID:	RREC13-41-SURF	**Percent Solids:**	63.7%	**Start Date:**	11/21/2013
Lab ID:	200-19250-F-14	**Specific Gravity:**	2.650	**End Date:**	11/25/2013

Shape (> #10): Round

Non-soil material: NA

Hardness (> #10): Hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	93.1	6.9
#10	2000	76.8	16.3
#20	850	66.2	10.6
#40	425	64.0	2.2
#60	250	54.3	9.7
#80	180	53.5	0.8
#100	150	53.4	0.1
#200	75	52.7	0.7
Hyd1	28.5	40.2	12.5
Hyd2	18.8	35.2	5.0
Hyd3	11.5	27.5	7.7
Hyd4	8.3	22.4	5.1
Hyd5	6.2	18.2	4.2
Hyd6	3.1	10.4	7.8
Hyd7	1.4	6.2	4.2

Soil Classification	Percent of sample
Gravel	6.9
Sand	40.4
Coarse Sand	16.3
Medium Sand	12.8
Fine Sand	11.3
Silt	34.5
Clay	18.2

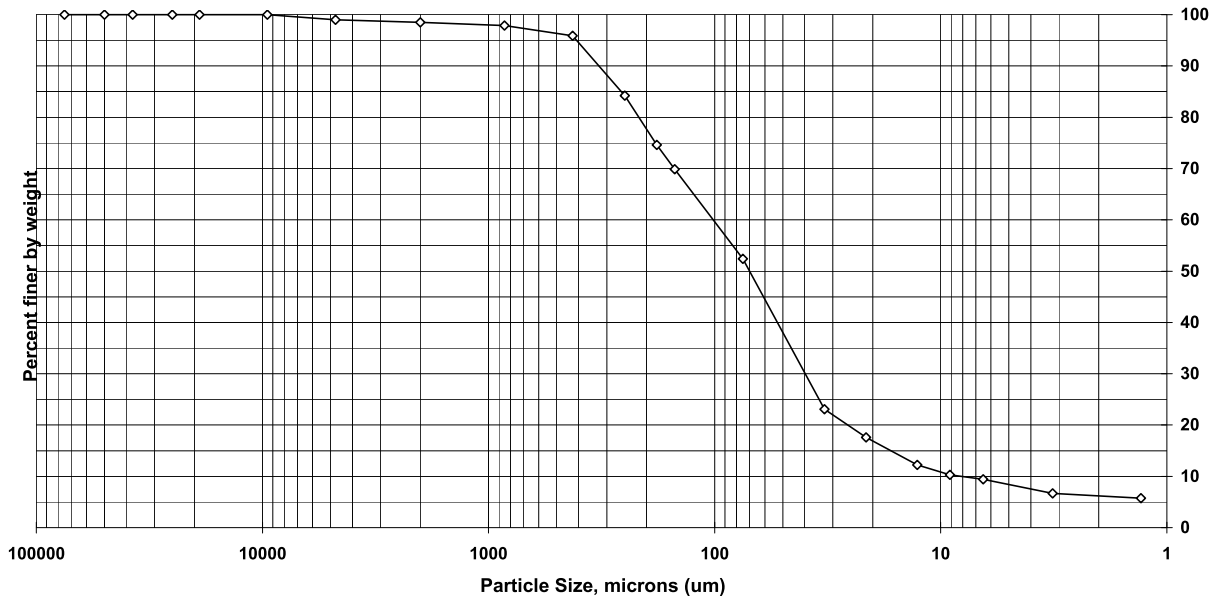
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC 13-28-SURF	**Percent Solids:**	64.3%	**Start Date:**	11/25/2013
Lab ID:	200-19294-F-1	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.0	1.0
#10	2000	98.5	0.5
#20	850	97.9	0.6
#40	425	95.9	2.0
#60	250	84.2	11.7
#80	180	74.6	9.6
#100	150	69.9	4.7
#200	75	52.4	17.5
Hyd1	32.7	23.1	29.3
Hyd2	21.4	17.6	5.5
Hyd3	12.7	12.2	5.4
Hyd4	9.1	10.3	1.9
Hyd5	6.5	9.4	0.9
Hyd6	3.2	6.7	2.7
Hyd7	1.3	5.8	0.9

Soil Classification	Percent of sample
Gravel	1.0
Sand	46.6
Coarse Sand	0.5
Medium Sand	2.6
Fine Sand	43.5
Silt	43.0
Clay	9.4

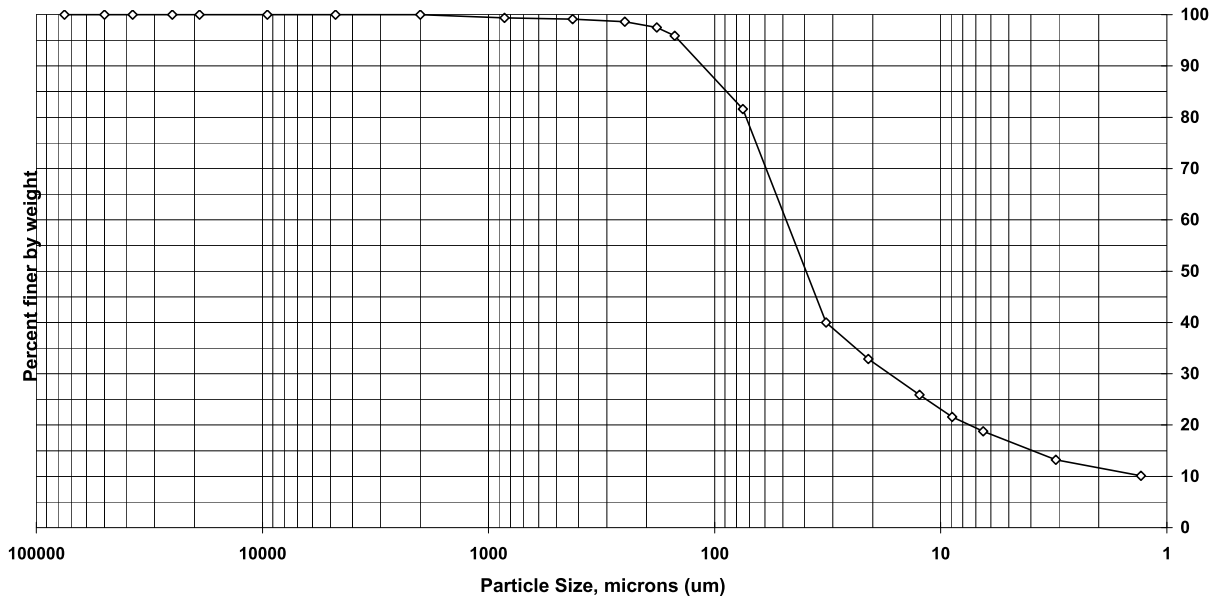
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-29-SURF	**Percent Solids:**	57.6%	**Start Date:**	11/25/2013
Lab ID:	200-19294-F-2	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): na

Non-soil material: na

Hardness (> #10): na



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.4	0.6
#40	425	99.1	0.3
#60	250	98.6	0.5
#80	180	97.5	1.1
#100	150	95.9	1.6
#200	75	81.6	14.3
Hyd1	32.2	40.0	41.6
Hyd2	20.9	32.9	7.1
Hyd3	12.4	25.9	7.0
Hyd4	8.9	21.6	4.3
Hyd5	6.5	18.8	2.8
Hyd6	3.1	13.2	5.6
Hyd7	1.3	10.1	3.1

Soil Classification	Percent of sample
Gravel	0.0
Sand	18.4
Coarse Sand	0.0
Medium Sand	0.9
Fine Sand	17.5
Silt	62.8
Clay	18.8

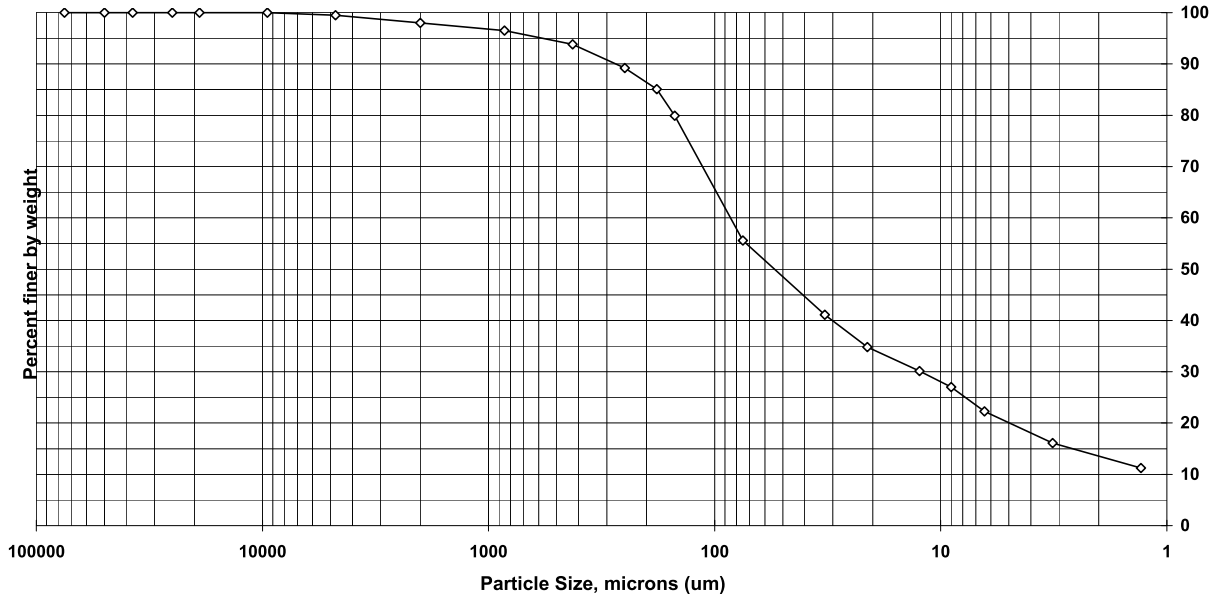
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-30-SURF	**Percent Solids:**	53.2%	**Start Date:**	11/25/2013
Lab ID:	200-19294-F-3	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.5	0.5
#10	2000	98.0	1.5
#20	850	96.5	1.5
#40	425	93.8	2.7
#60	250	89.2	4.6
#80	180	85.1	4.1
#100	150	79.9	5.2
#200	75	55.6	24.3
Hyd1	32.6	41.1	14.5
Hyd2	21.1	34.8	6.3
Hyd3	12.4	30.1	4.7
Hyd4	9	27.0	3.1
Hyd5	6.4	22.3	4.7
Hyd6	3.2	16.1	6.2
Hyd7	1.3	11.2	4.9

Soil Classification	Percent of sample
Gravel	0.5
Sand	43.9
Coarse Sand	1.5
Medium Sand	4.2
Fine Sand	38.2
Silt	33.3
Clay	22.3

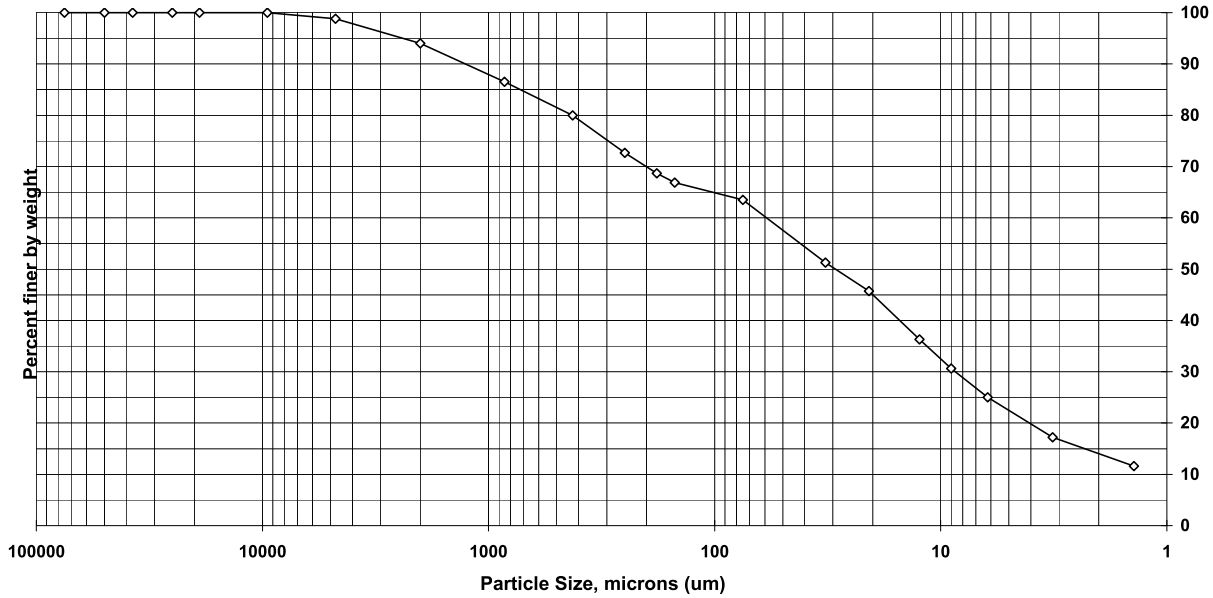
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-34-SURF	**Percent Solids:**	49.5%	**Start Date:**	11/25/2013
Lab ID:	200-19295-F-1	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.8	1.2
#10	2000	94.0	4.8
#20	850	86.5	7.5
#40	425	80.0	6.5
#60	250	72.7	7.3
#80	180	68.7	4.0
#100	150	66.9	1.8
#200	75	63.5	3.4
Hyd1	32.4	51.3	12.2
Hyd2	20.8	45.7	5.6
Hyd3	12.4	36.3	9.4
Hyd4	9	30.6	5.7
Hyd5	6.2	25.0	5.6
Hyd6	3.2	17.2	7.8
Hyd7	1.4	11.6	5.6

Soil Classification	Percent of sample
Gravel	1.2
Sand	35.3
Coarse Sand	4.8
Medium Sand	14.0
Fine Sand	16.5
Silt	38.5
Clay	25.0

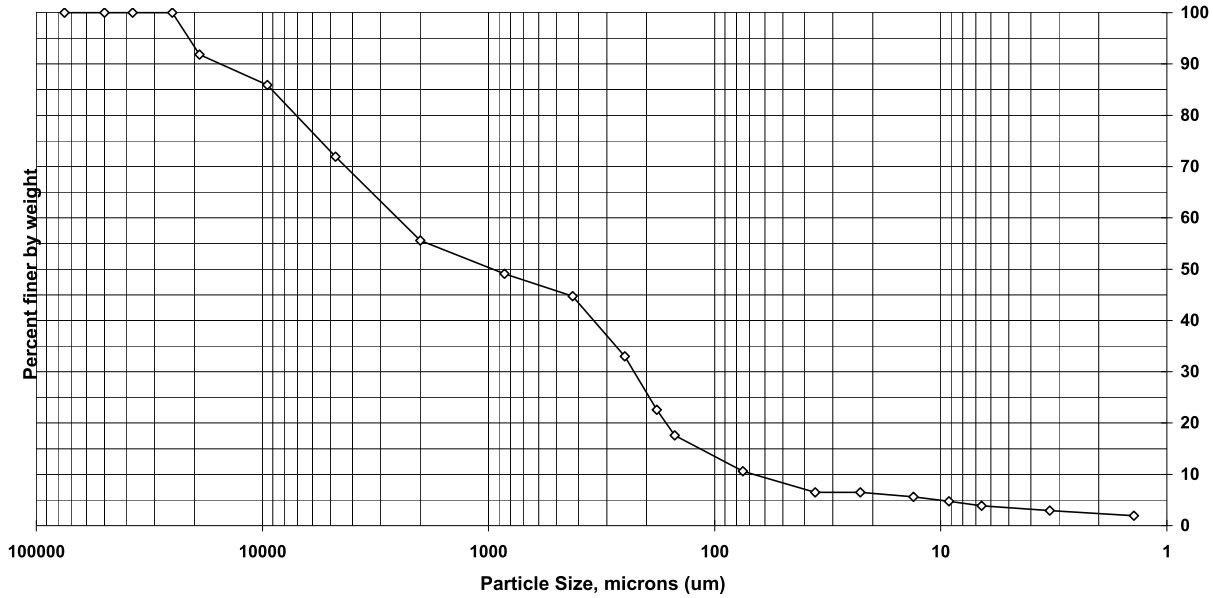
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-24-SURF	**Percent Solids:**	82.0%	**Start Date:**	11/25/2013
Lab ID:	200-19297-F-19	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	91.8	8.2
3/8 inch	9500	85.9	5.9
#4	4750	71.9	14.0
#10	2000	55.6	16.3
#20	850	49.1	6.5
#40	425	44.7	4.4
#60	250	33.0	11.7
#80	180	22.6	10.4
#100	150	17.6	5.0
#200	75	10.6	7.0
Hyd1	35.9	6.5	4.1
Hyd2	22.7	6.5	0.0
Hyd3	13.2	5.6	0.9
Hyd4	9.2	4.7	0.9
Hyd5	6.6	3.8	0.9
Hyd6	3.3	3.0	0.9
Hyd7	1.4	1.9	1.0

Soil Classification	Percent of sample
Gravel	28.1
Sand	61.3
Coarse Sand	16.3
Medium Sand	10.9
Fine Sand	34.1
Silt	6.8
Clay	3.8

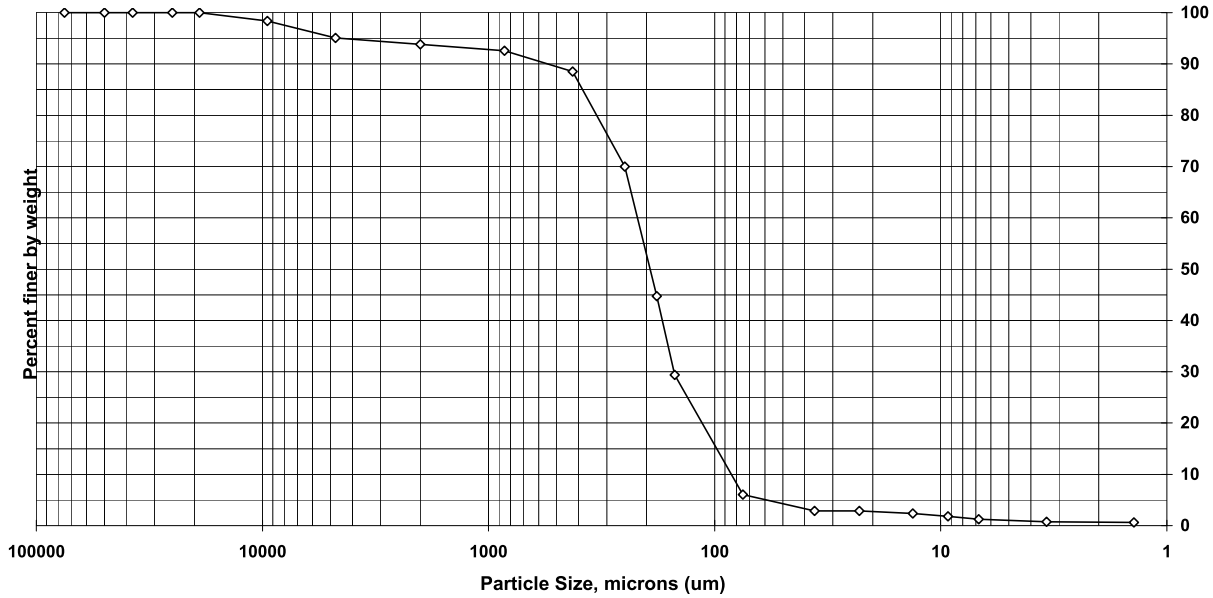
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-25-SURF	**Percent Solids:**	73.5%	**Start Date:**	11/25/2013
Lab ID:	200-19297-F-20	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	98.4	1.6
#4	4750	95.1	3.3
#10	2000	93.8	1.3
#20	850	92.6	1.2
#40	425	88.5	4.1
#60	250	70.0	18.5
#80	180	44.7	25.3
#100	150	29.4	15.3
#200	75	6.1	23.3
Hyd1	36.2	2.9	3.2
Hyd2	22.9	2.9	0.0
Hyd3	13.3	2.3	0.5
Hyd4	9.3	1.8	0.5
Hyd5	6.8	1.3	0.5
Hyd6	3.4	0.7	0.5
Hyd7	1.4	0.6	0.1

Soil Classification	Percent of sample
Gravel	4.9
Sand	89.0
Coarse Sand	1.3
Medium Sand	5.3
Fine Sand	82.4
Silt	4.8
Clay	1.3

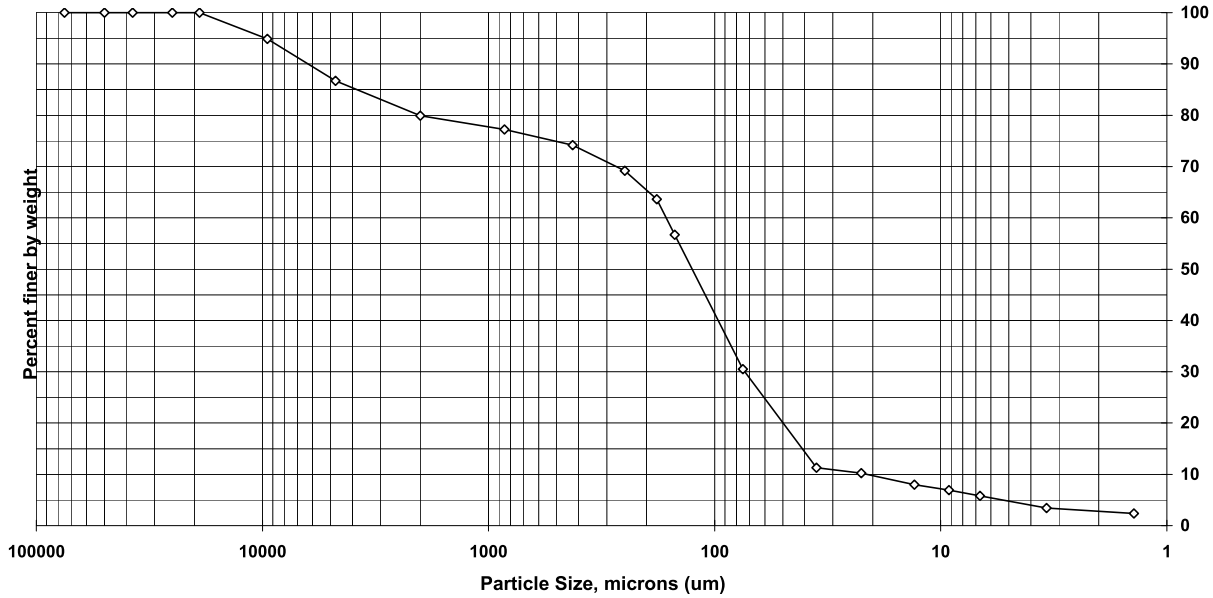
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-26-SURF	**Percent Solids:**	71.5%	**Start Date:**	11/25/2013
Lab ID:	200-19299-F-1	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	94.9	5.1
#4	4750	86.7	8.2
#10	2000	79.9	6.8
#20	850	77.2	2.7
#40	425	74.2	3.0
#60	250	69.2	5.0
#80	180	63.6	5.6
#100	150	56.7	6.9
#200	75	30.5	26.2
Hyd1	35.4	11.3	19.2
Hyd2	22.5	10.2	1.1
Hyd3	13.1	8.0	2.2
Hyd4	9.2	6.9	1.1
Hyd5	6.7	5.8	1.1
Hyd6	3.4	3.5	2.4
Hyd7	1.4	2.4	1.1

Soil Classification	Percent of sample
Gravel	13.3
Sand	56.2
Coarse Sand	6.8
Medium Sand	5.7
Fine Sand	43.7
Silt	24.7
Clay	5.8

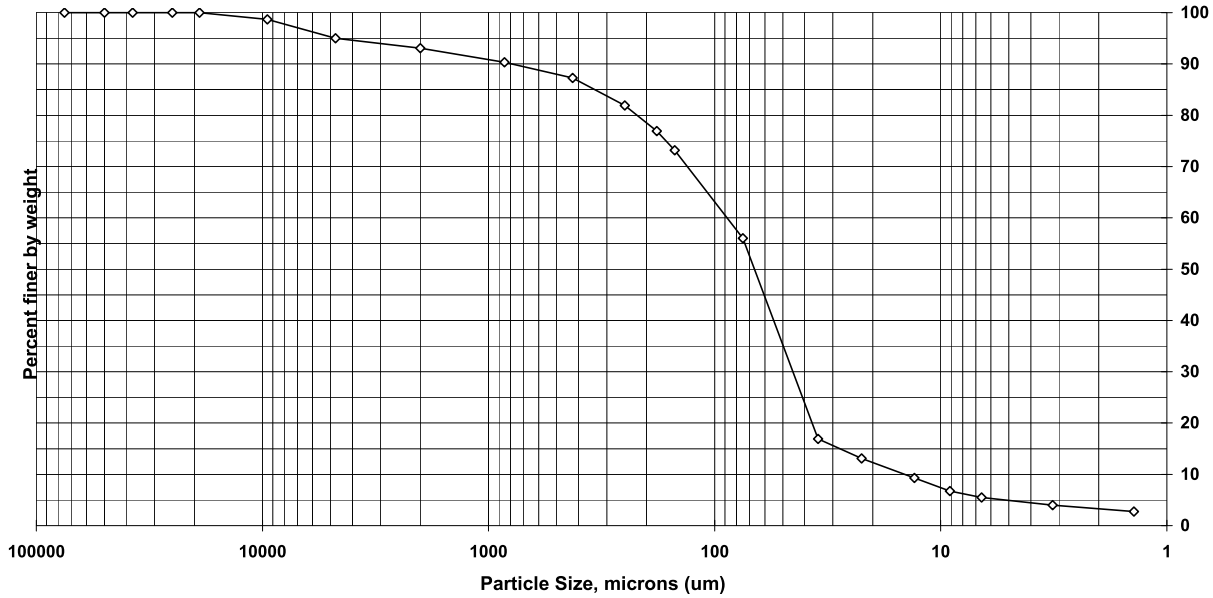
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-27-SURF	**Percent Solids:**	65.8%	**Start Date:**	11/25/2013
Lab ID:	200-19299-F-2	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: plant

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	98.7	1.3
#4	4750	95.0	3.7
#10	2000	93.1	1.9
#20	850	90.3	2.8
#40	425	87.3	3.0
#60	250	81.9	5.4
#80	180	76.9	5.0
#100	150	73.2	3.7
#200	75	56.0	17.2
Hyd1	34.9	16.9	39.1
Hyd2	22.4	13.1	3.8
Hyd3	13.1	9.3	3.8
Hyd4	9.1	6.8	2.5
Hyd5	6.6	5.5	1.3
Hyd6	3.2	4.0	1.5
Hyd7	1.4	2.7	1.3

Soil Classification	Percent of sample
Gravel	5.0
Sand	39.0
Coarse Sand	1.9
Medium Sand	5.8
Fine Sand	31.3
Silt	50.5
Clay	5.5

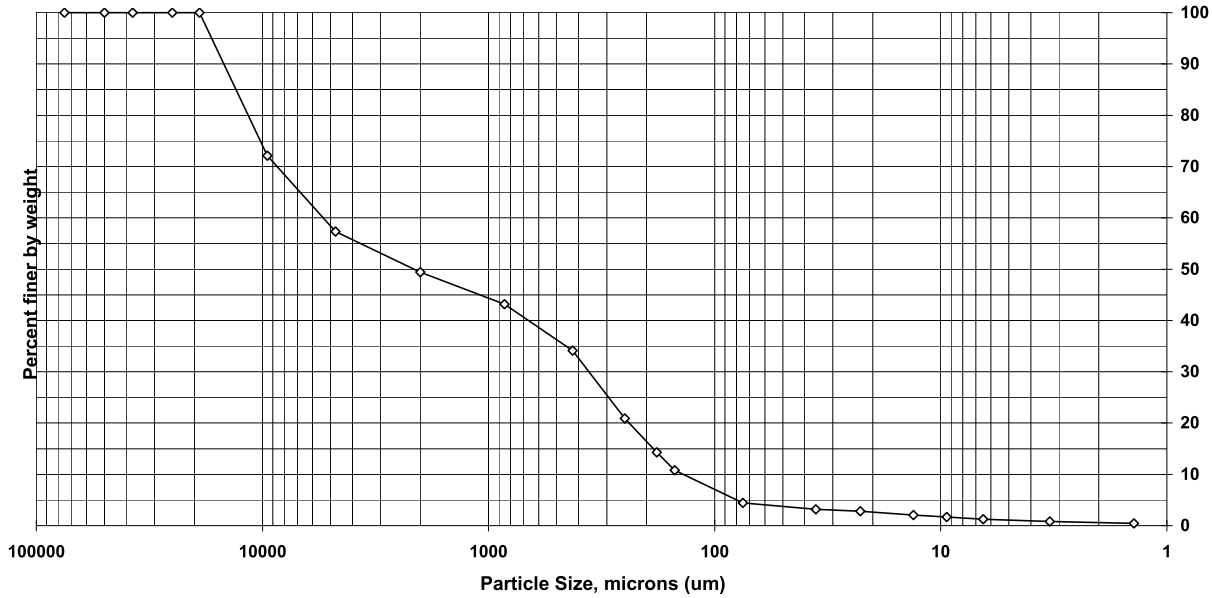
Particle Size of Soils by ASTM D422

				Date Received:	11/5/2013
Sample ID:	RREC13-42-SURF	**Percent Solids:**	80.2%	**Start Date:**	11/25/2013
Lab ID:	200-19299-C-3	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	72.1	27.9
#4	4750	57.3	14.8
#10	2000	49.4	7.9
#20	850	43.2	6.2
#40	425	34.1	9.1
#60	250	20.9	13.2
#80	180	14.3	6.6
#100	150	10.8	3.5
#200	75	4.4	6.4
Hyd1	35.7	3.2	1.2
Hyd2	22.7	2.8	0.4
Hyd3	13.2	2.0	0.8
Hyd4	9.4	1.7	0.4
Hyd5	6.5	1.3	0.4
Hyd6	3.3	0.8	0.4
Hyd7	1.4	0.4	0.4

Soil Classification	Percent of sample
Gravel	42.7
Sand	52.9
Coarse Sand	7.9
Medium Sand	15.3
Fine Sand	29.7
Silt	3.1
Clay	1.3

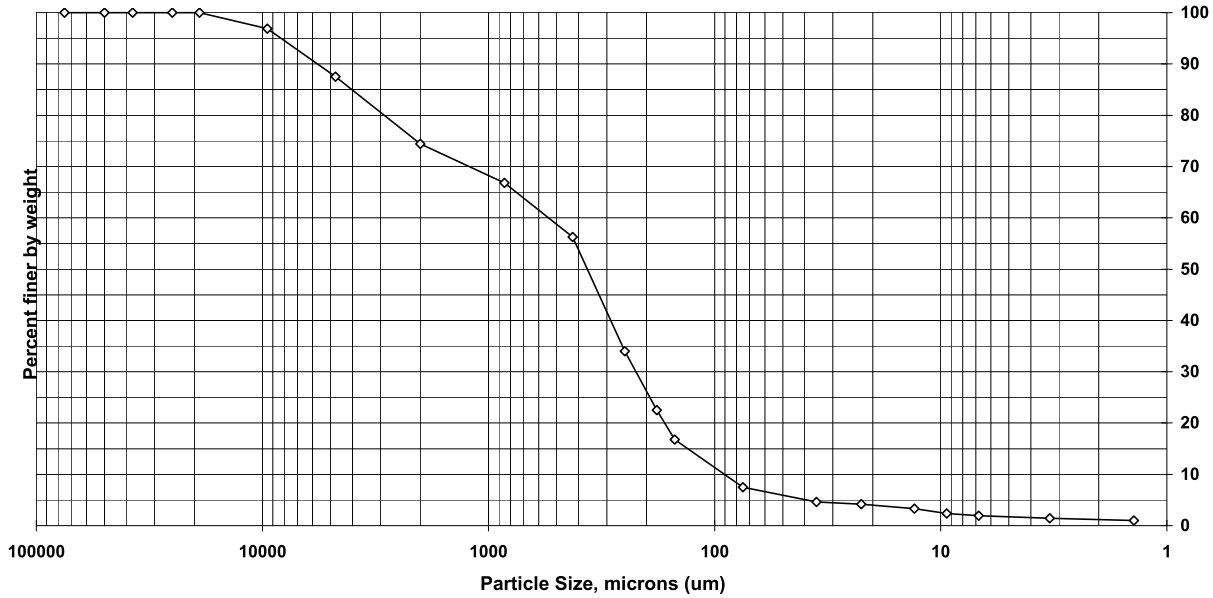
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-09-SURF	**Percent Solids:**	75.2%	**Start Date:**	11/25/2013
Lab ID:	200-19323-F-5	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	96.9	3.1
#4	4750	87.5	9.4
#10	2000	74.4	13.1
#20	850	66.8	7.6
#40	425	56.3	10.5
#60	250	34.0	22.3
#80	180	22.5	11.5
#100	150	16.8	5.7
#200	75	7.5	9.3
Hyd1	35.4	4.6	2.8
Hyd2	22.5	4.2	0.5
Hyd3	13.1	3.3	0.9
Hyd4	9.4	2.4	0.9
Hyd5	6.8	1.9	0.5
Hyd6	3.3	1.4	0.5
Hyd7	1.4	1.0	0.4

Soil Classification	Percent of sample
Gravel	12.5
Sand	80.0
Coarse Sand	13.1
Medium Sand	18.1
Fine Sand	48.8
Silt	5.6
Clay	1.9

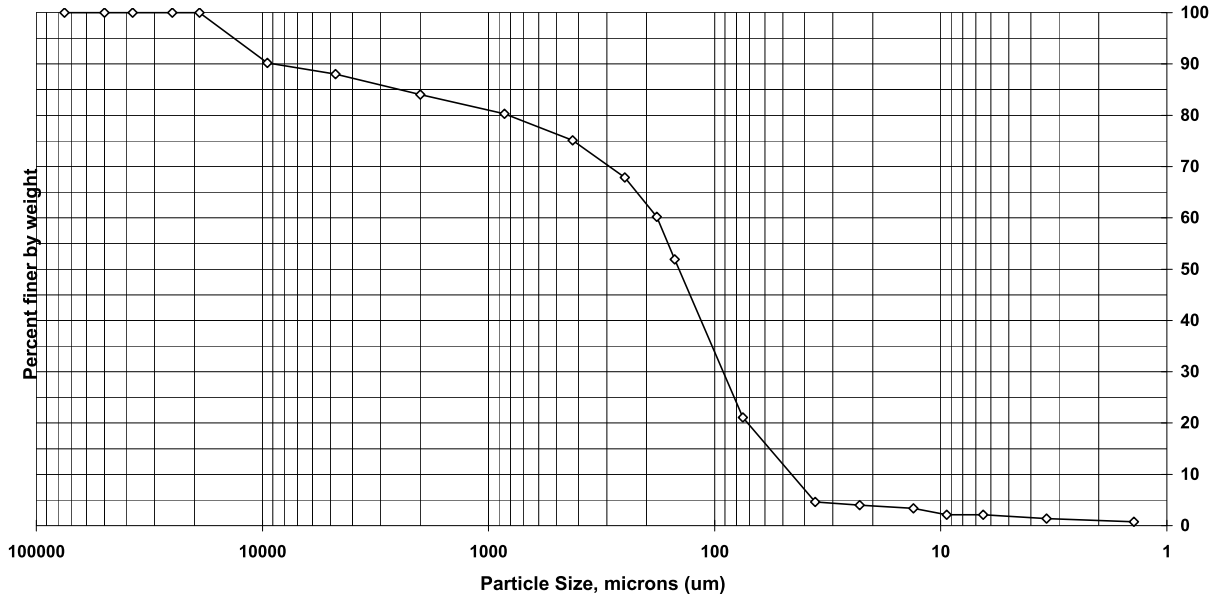
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-11-SURF	**Percent Solids:**	75.8%	**Start Date:**	11/25/2013
Lab ID:	200-19323-F-6	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell, plant

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	90.2	9.8
#4	4750	88.0	2.2
#10	2000	84.0	4.0
#20	850	80.3	3.7
#40	425	75.1	5.2
#60	250	67.9	7.2
#80	180	60.2	7.7
#100	150	51.9	8.3
#200	75	21.1	30.8
Hyd1	35.9	4.6	16.5
Hyd2	22.8	4.0	0.6
Hyd3	13.2	3.4	0.6
Hyd4	9.4	2.1	1.3
Hyd5	6.5	2.1	0.0
Hyd6	3.4	1.4	0.7
Hyd7	1.4	0.7	0.6

Soil Classification	Percent of sample
Gravel	12.0
Sand	66.9
Coarse Sand	4.0
Medium Sand	8.9
Fine Sand	54.0
Silt	19.0
Clay	2.1

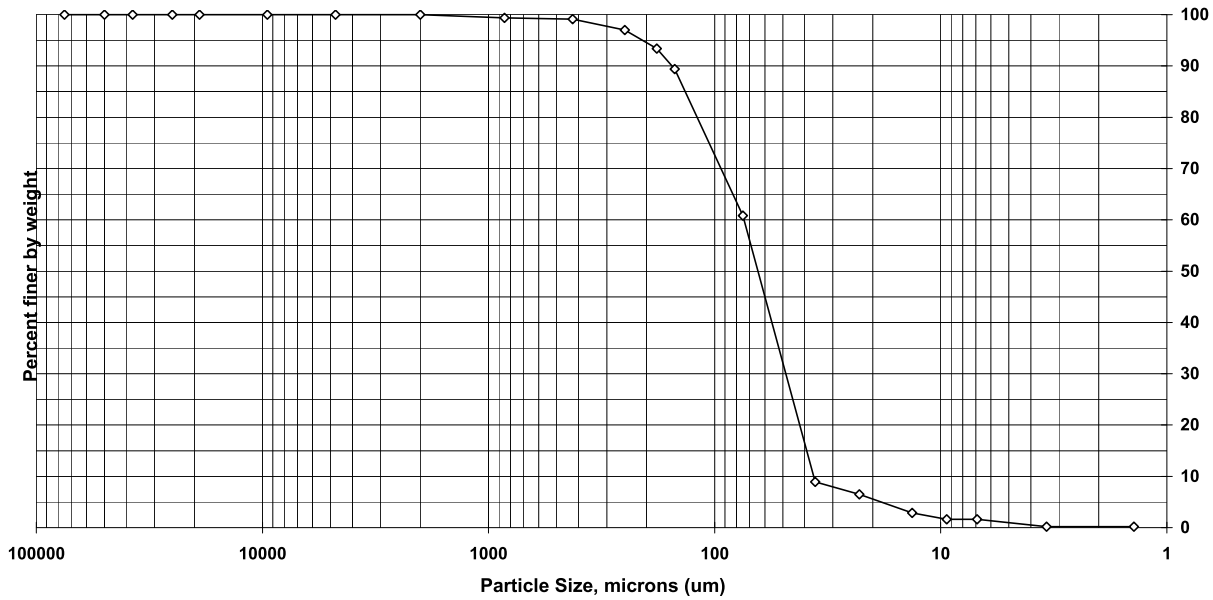
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-13-SURF	**Percent Solids:**	77.3%	**Start Date:**	11/25/2013
Lab ID:	200-19323-F-7	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): na

Non-soil material: na

Hardness (> #10): na



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.4	0.6
#40	425	99.1	0.3
#60	250	97.0	2.1
#80	180	93.4	3.6
#100	150	89.4	4.0
#200	75	60.8	28.6
Hyd1	35.9	9.0	51.9
Hyd2	22.9	6.5	2.4
Hyd3	13.4	2.9	3.7
Hyd4	9.4	1.6	1.2
Hyd5	6.9	1.6	0.0
Hyd6	3.4	0.2	1.4
Hyd7	1.4	0.2	0.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	39.2
Coarse Sand	0.0
Medium Sand	0.9
Fine Sand	38.3
Silt	59.2
Clay	1.6

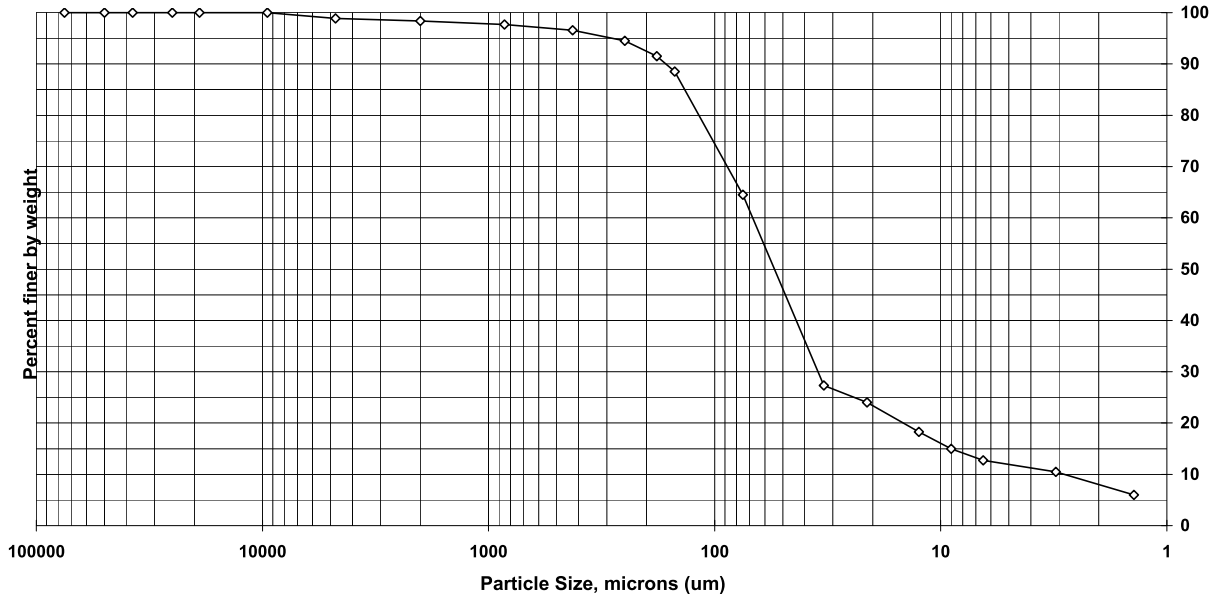
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-14-SURF	**Percent Solids:**	65.2%	**Start Date:**	11/25/2013
Lab ID:	200-19323-F-8	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell,wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.9	1.1
#10	2000	98.4	0.5
#20	850	97.7	0.7
#40	425	96.6	1.1
#60	250	94.5	2.1
#80	180	91.5	3.0
#100	150	88.5	3.0
#200	75	64.5	24.0
Hyd1	32.9	27.3	37.2
Hyd2	21.2	24.0	3.3
Hyd3	12.5	18.3	5.7
Hyd4	9	15.0	3.3
Hyd5	6.5	12.7	2.3
Hyd6	3.1	10.5	2.2
Hyd7	1.4	6.0	4.5

Soil Classification	Percent of sample
Gravel	1.1
Sand	34.4
Coarse Sand	0.5
Medium Sand	1.8
Fine Sand	32.1
Silt	51.8
Clay	12.7

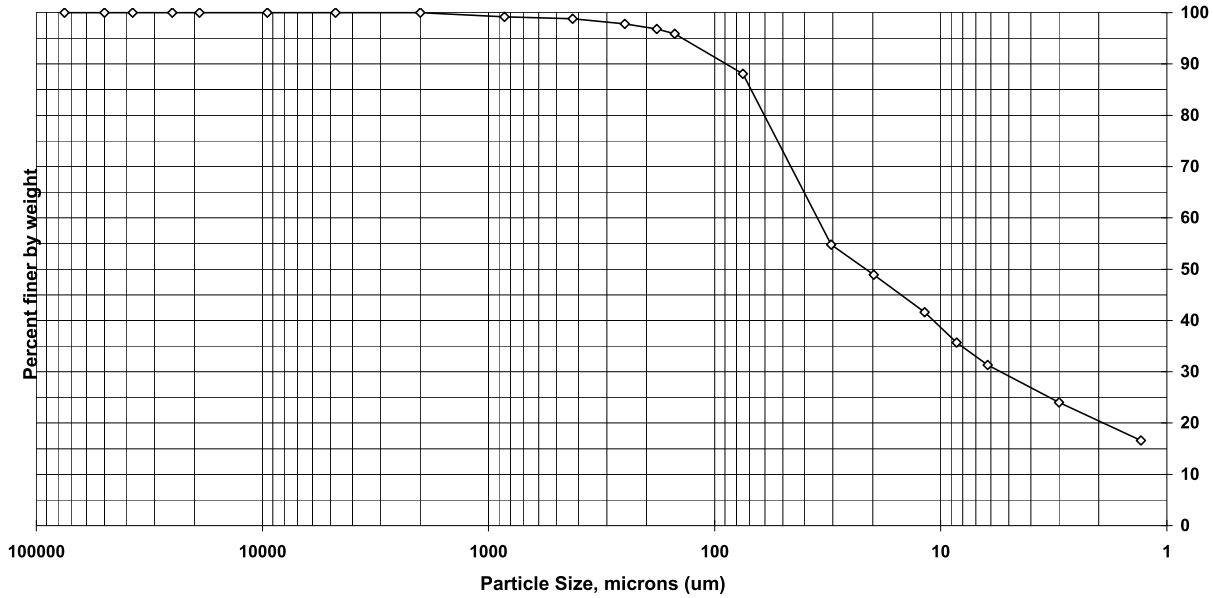
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-15-SURF	**Percent Solids:**	60.7%	**Start Date:**	11/25/2013
Lab ID:	200-19323-F-10	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): n/a

Non-soil material: n/a

Hardness (> #10): n/a



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	100.0	0.0
#20	850	99.2	0.8
#40	425	98.8	0.4
#60	250	97.8	1.0
#80	180	96.8	1.0
#100	150	95.9	0.9
#200	75	88.1	7.8
Hyd1	30.5	54.8	33.3
Hyd2	19.8	48.9	5.9
Hyd3	11.8	41.6	7.3
Hyd4	8.5	35.7	5.9
Hyd5	6.2	31.3	4.4
Hyd6	3	24.0	7.3
Hyd7	1.3	16.6	7.4

Soil Classification	Percent of sample
Gravel	0.0
Sand	11.9
Coarse Sand	0.0
Medium Sand	1.2
Fine Sand	10.7
Silt	56.8
Clay	31.3

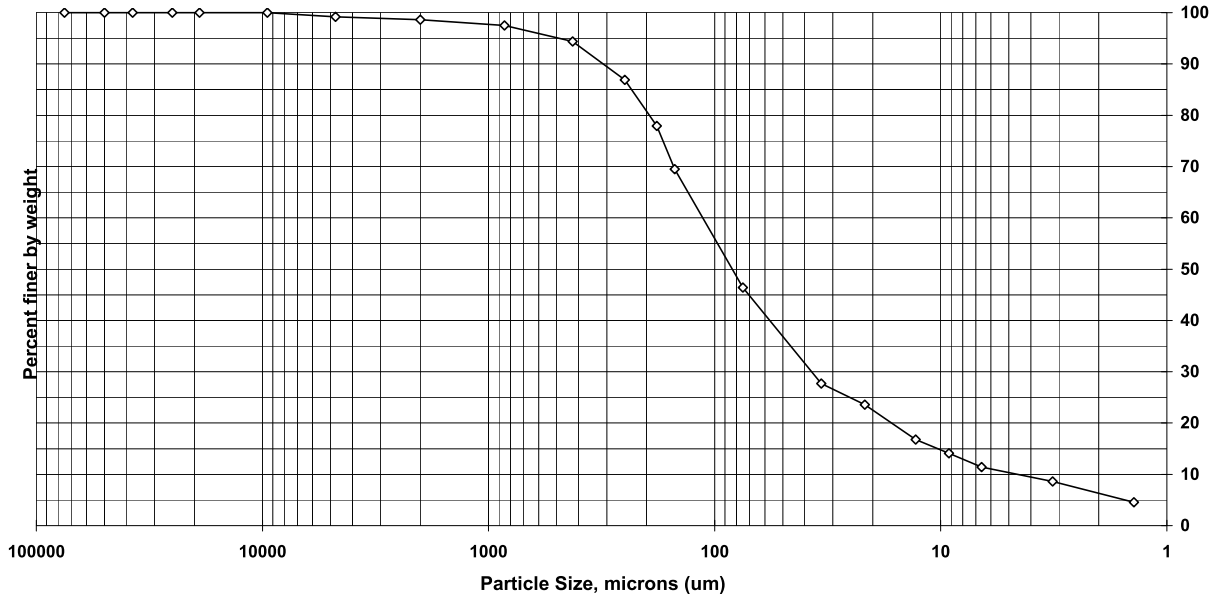
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-03-SURF	**Percent Solids:**	59.0%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-6	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subrounded

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.2	0.8
#10	2000	98.6	0.6
#20	850	97.5	1.1
#40	425	94.4	3.1
#60	250	86.9	7.5
#80	180	77.9	9.0
#100	150	69.5	8.4
#200	75	46.4	23.1
Hyd1	33.8	27.7	18.7
Hyd2	21.7	23.6	4.1
Hyd3	12.9	16.8	6.8
Hyd4	9.2	14.1	2.7
Hyd5	6.6	11.4	2.7
Hyd6	3.2	8.6	2.8
Hyd7	1.4	4.5	4.1

Soil Classification	Percent of sample
Gravel	0.8
Sand	52.8
Coarse Sand	0.6
Medium Sand	4.2
Fine Sand	48.0
Silt	35.0
Clay	11.4

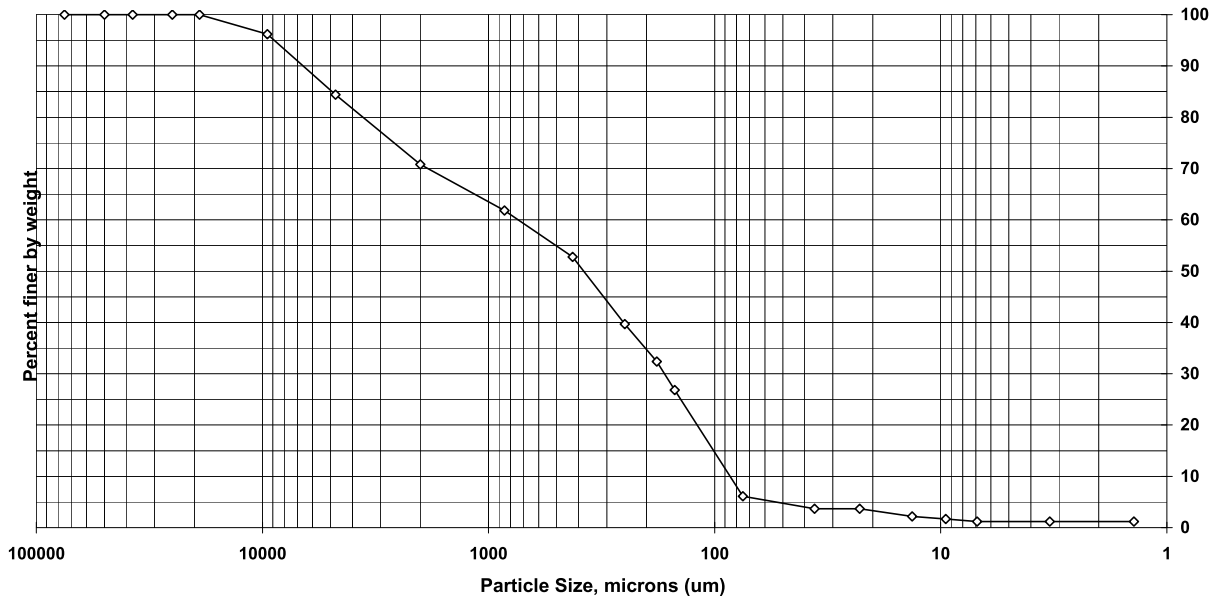
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-05-SURF	**Percent Solids:**	77.5%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-7	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	96.2	3.8
#4	4750	84.4	11.8
#10	2000	70.8	13.6
#20	850	61.8	9.0
#40	425	52.8	9.0
#60	250	39.7	13.1
#80	180	32.4	7.3
#100	150	26.8	5.6
#200	75	6.1	20.7
Hyd1	36.1	3.7	2.4
Hyd2	22.8	3.7	0.0
Hyd3	13.4	2.2	1.5
Hyd4	9.5	1.7	0.5
Hyd5	6.9	1.2	0.5
Hyd6	3.3	1.2	0.0
Hyd7	1.4	1.2	0.0

Soil Classification	Percent of sample
Gravel	15.6
Sand	78.3
Coarse Sand	13.6
Medium Sand	18.0
Fine Sand	46.7
Silt	4.9
Clay	1.2

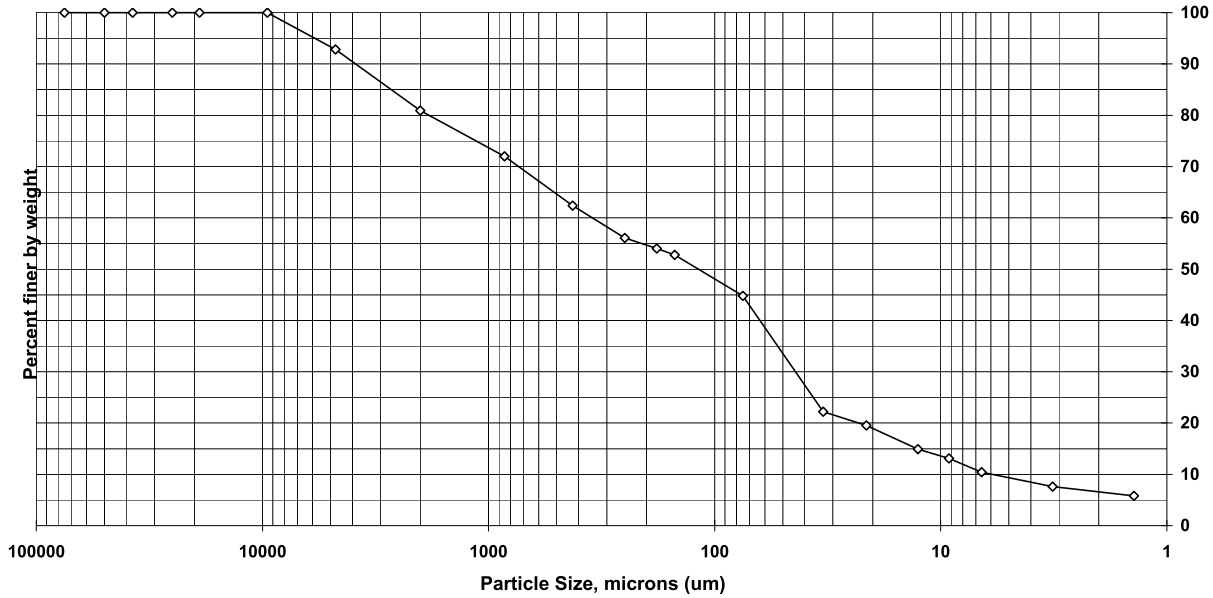
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-06-SURF	**Percent Solids:**	64.3%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-8	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): angular

Non-soil material: plant, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	92.8	7.2
#10	2000	80.9	11.9
#20	850	72.0	8.9
#40	425	62.4	9.6
#60	250	56.1	6.3
#80	180	54.0	2.1
#100	150	52.8	1.2
#200	75	44.8	8.0
Hyd1	33.1	22.2	22.6
Hyd2	21.3	19.5	2.7
Hyd3	12.6	14.9	4.6
Hyd4	9.2	13.1	1.8
Hyd5	6.6	10.4	2.7
Hyd6	3.2	7.6	2.8
Hyd7	1.4	5.8	1.8

Soil Classification	Percent of sample
Gravel	7.2
Sand	48.0
Coarse Sand	11.9
Medium Sand	18.5
Fine Sand	17.6
Silt	34.4
Clay	10.4

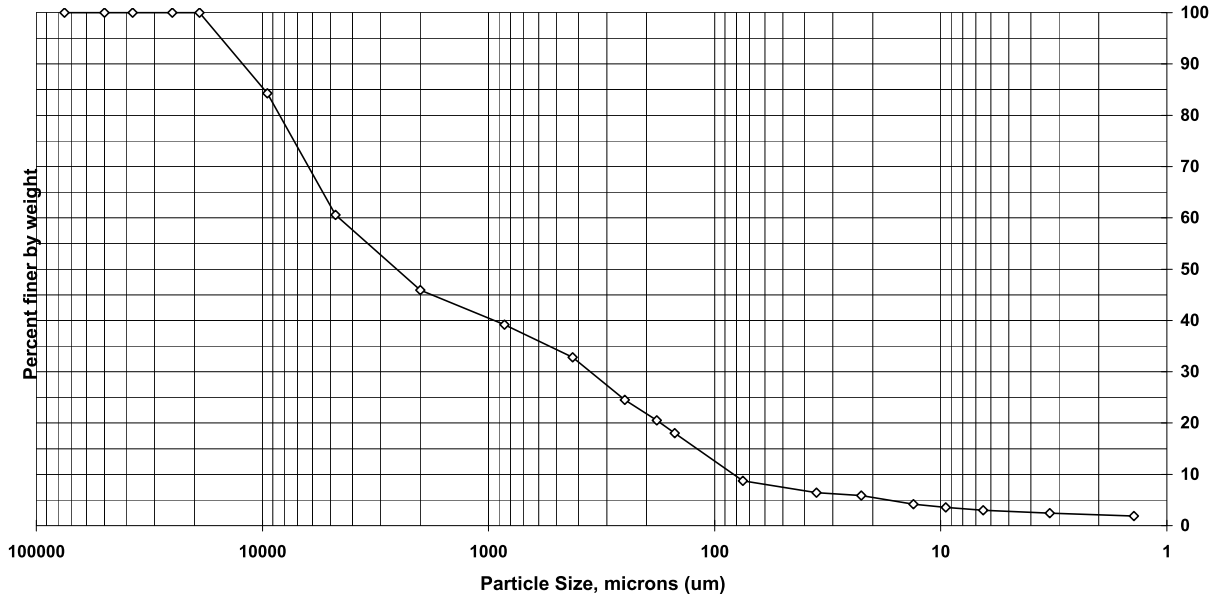
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-07-SURF	**Percent Solids:**	76.4%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-9	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	84.3	15.7
#4	4750	60.6	23.7
#10	2000	45.9	14.7
#20	850	39.2	6.7
#40	425	32.8	6.4
#60	250	24.5	8.3
#80	180	20.5	4.0
#100	150	18.0	2.5
#200	75	8.7	9.3
Hyd1	35.4	6.4	2.3
Hyd2	22.5	5.8	0.6
Hyd3	13.2	4.2	1.7
Hyd4	9.5	3.6	0.6
Hyd5	6.5	3.0	0.6
Hyd6	3.3	2.5	0.6
Hyd7	1.4	1.9	0.6

Soil Classification	Percent of sample
Gravel	39.4
Sand	51.9
Coarse Sand	14.7
Medium Sand	13.1
Fine Sand	24.1
Silt	5.7
Clay	3.0

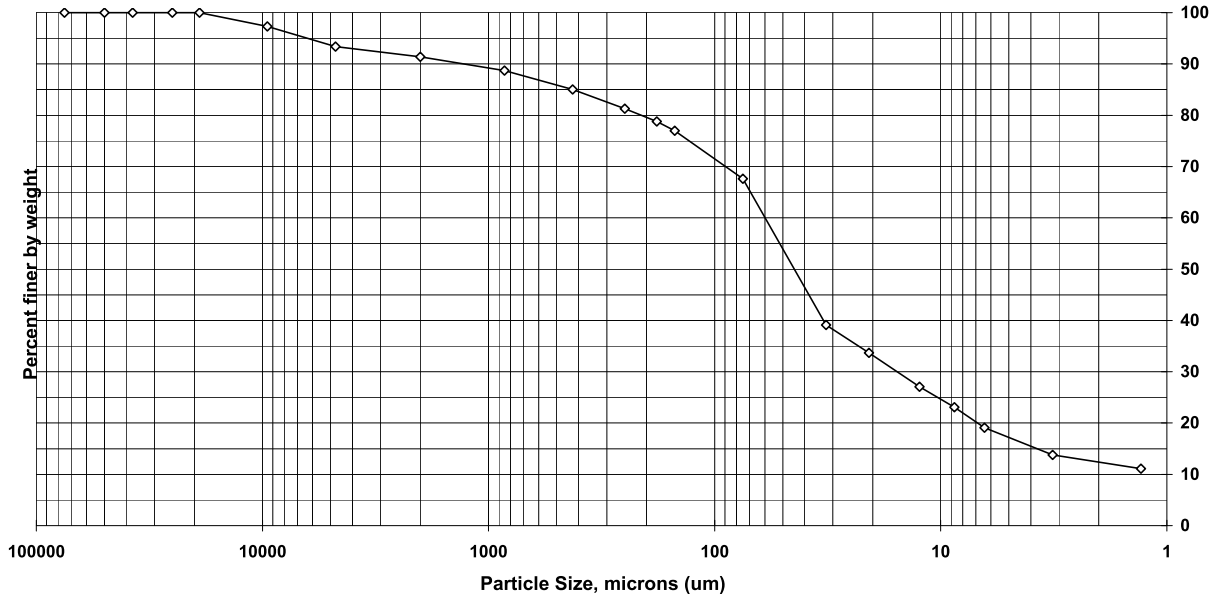
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-48-SURF	**Percent Solids:**	54.1%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-10	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell

Hardness (> #10): brittle



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	97.3	2.7
#4	4750	93.4	3.9
#10	2000	91.4	2.0
#20	850	88.7	2.7
#40	425	85.0	3.7
#60	250	81.3	3.7
#80	180	78.8	2.5
#100	150	77.0	1.8
#200	75	67.6	9.4
Hyd1	32.2	39.1	28.5
Hyd2	20.8	33.7	5.4
Hyd3	12.4	27.1	6.6
Hyd4	8.7	23.1	4.0
Hyd5	6.4	19.1	4.0
Hyd6	3.2	13.8	5.3
Hyd7	1.3	11.1	2.7

Soil Classification	Percent of sample
Gravel	6.6
Sand	25.8
Coarse Sand	2.0
Medium Sand	6.4
Fine Sand	17.4
Silt	48.5
Clay	19.1

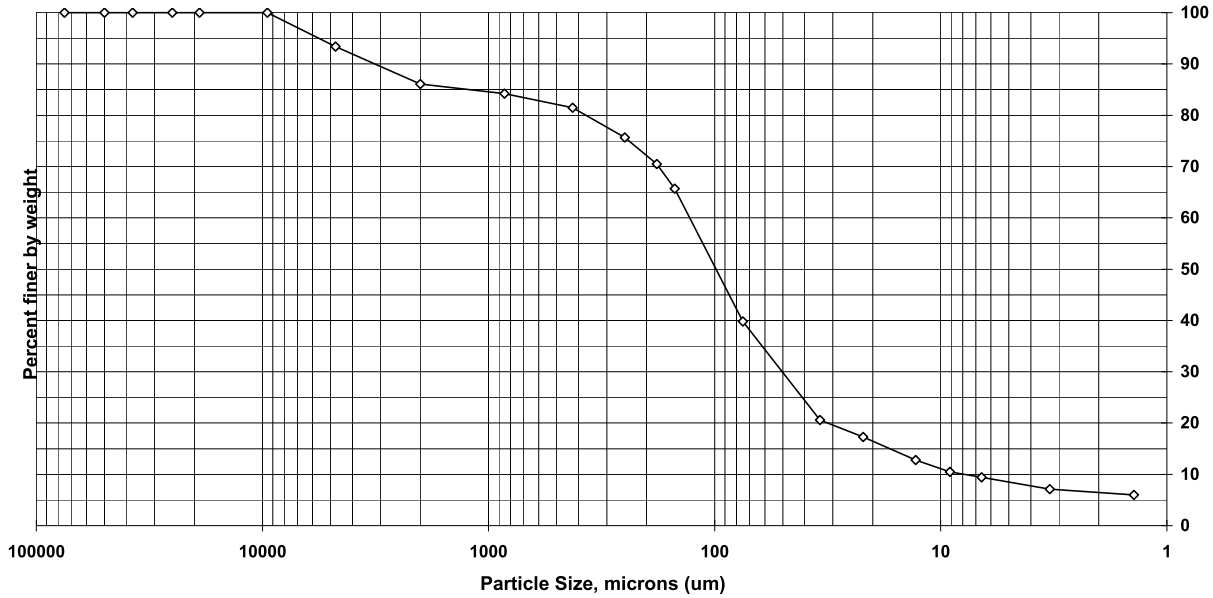
Particle Size of Soils by ASTM D422

				Date Received:	11/6/2013
Sample ID:	RREC13-49-SURF	**Percent Solids:**	59.1%	**Start Date:**	11/26/2013
Lab ID:	200-19327-F-12	**Specific Gravity:**	2.650	**End Date:**	12/2/2013

Shape (> #10): subangular

Non-soil material: shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	93.4	6.6
#10	2000	86.1	7.3
#20	850	84.2	1.9
#40	425	81.5	2.7
#60	250	75.7	5.8
#80	180	70.5	5.2
#100	150	65.7	4.8
#200	75	39.8	25.9
Hyd1	34.2	20.6	19.2
Hyd2	22	17.3	3.3
Hyd3	12.9	12.8	4.5
Hyd4	9.1	10.5	2.3
Hyd5	6.6	9.4	1.1
Hyd6	3.3	7.1	2.3
Hyd7	1.4	6.0	1.1

Soil Classification	Percent of sample
Gravel	6.6
Sand	53.6
Coarse Sand	7.3
Medium Sand	4.6
Fine Sand	41.7
Silt	30.4
Clay	9.4

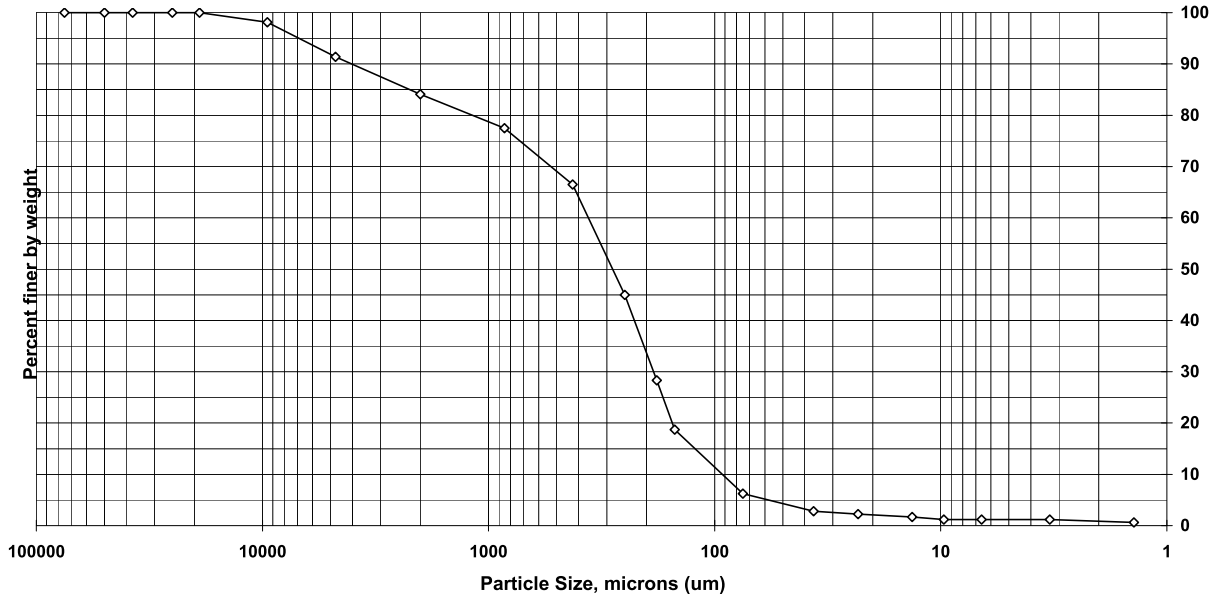
Particle Size of Soils by ASTM D422

				Date Received:	11/7/2013
Sample ID:	RREC13-50-SURF	**Percent Solids:**	78.3%	**Start Date:**	12/2/2013
Lab ID:	200-19360-F-1	**Specific Gravity:**	2.650	**End Date:**	12/5/2013

Shape (> #10): angular

Non-soil material: shell

Hardness (> #10): brittle



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	98.1	1.9
#4	4750	91.4	6.7
#10	2000	84.1	7.3
#20	850	77.5	6.6
#40	425	66.5	11.0
#60	250	45.0	21.5
#80	180	28.3	16.7
#100	150	18.7	9.6
#200	75	6.3	12.4
Hyd1	36.5	2.8	3.5
Hyd2	23.2	2.3	0.5
Hyd3	13.4	1.7	0.5
Hyd4	9.7	1.2	0.5
Hyd5	6.6	1.2	0.0
Hyd6	3.3	1.2	0.0
Hyd7	1.4	0.6	0.5

Soil Classification	Percent of sample
Gravel	8.6
Sand	85.1
Coarse Sand	7.3
Medium Sand	17.6
Fine Sand	60.2
Silt	5.1
Clay	1.2

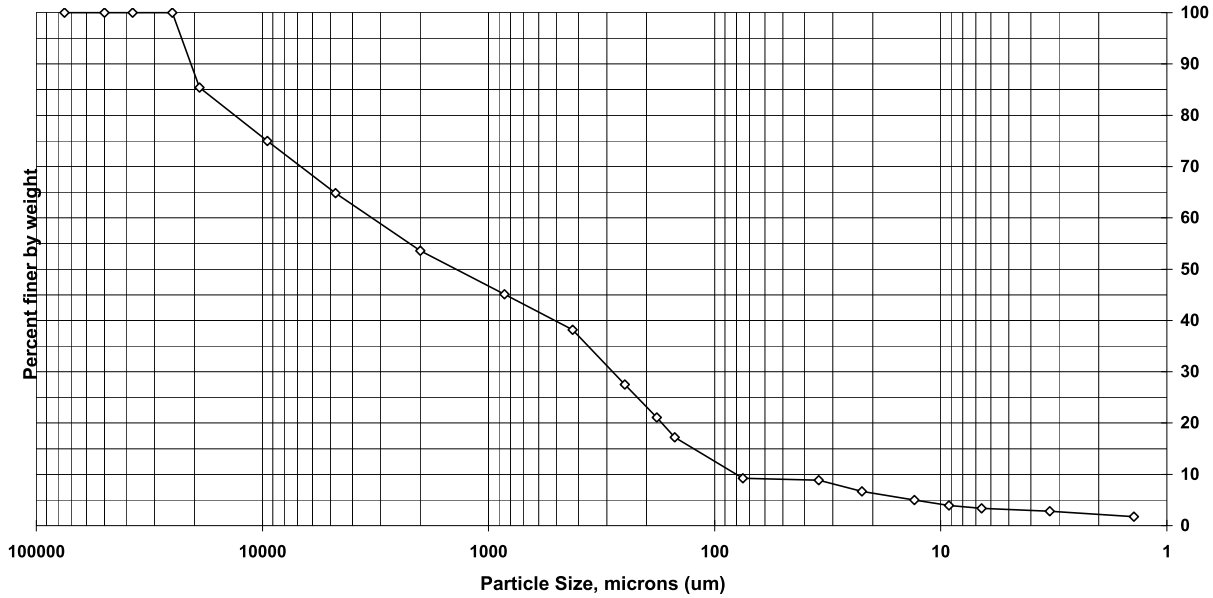
Particle Size of Soils by ASTM D422

				Date Received:	11/7/2013
Sample ID:	RREC13-46-SURF	**Percent Solids:**	68.5%	**Start Date:**	12/2/2013
Lab ID:	200-19360-F-2	**Specific Gravity:**	2.650	**End Date:**	12/5/2013

Shape (> #10): angular

Non-soil material: shell

Hardness (> #10): brittle



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	85.4	14.6
3/8 inch	9500	75.0	10.4
#4	4750	64.8	10.2
#10	2000	53.6	11.2
#20	850	45.1	8.5
#40	425	38.2	6.9
#60	250	27.5	10.7
#80	180	21.1	6.4
#100	150	17.2	3.9
#200	75	9.2	8.0
Hyd1	34.6	8.8	0.4
Hyd2	22.3	6.7	2.2
Hyd3	13.1	5.0	1.6
Hyd4	9.2	3.9	1.1
Hyd5	6.6	3.4	0.5
Hyd6	3.3	2.8	0.6
Hyd7	1.4	1.7	1.1

Soil Classification	Percent of sample
Gravel	35.2
Sand	55.6
Coarse Sand	11.2
Medium Sand	15.4
Fine Sand	29.0
Silt	5.8
Clay	3.4