



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

**St Marys Refining Company
St Marys, West Virginia**

EPA ID No. WVD004337135

August 2011

I. Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the St Marys Refining Company (SMRC) facility located at 201 Barkwill Street, St Marys, West Virginia, 26170 (Facility). EPA's proposed remedy is summarized below:

- For soil on the "Bluff Area", EPA is proposing no further action.
- For soil in the Northern Refinery, EPA is proposing the development and implementation of a Soils Management Plan (SMP) and the restriction to industrial use through the compliance with and maintenance of institutional controls (ICs).
- For soil around the "Underground Pipeway" on the 1.2-acre tract of undeveloped property, EPA is proposing continued use of enhanced anaerobic biodegradation to reduce contaminants in soil; the development and implementation of a SMP, and the restriction to industrial use through the compliance with and maintenance of ICs.
- For groundwater, EPA is proposing continued use of enhanced anaerobic bioremediation at the 1.2-Acre Tract and monitored natural attenuation and compliance with and maintenance of ICs for the Northern Refinery and the 1.2 Acre Tract.
- For sediment and surface water in the Tackett Run and Tannery Run and sediment in the Ohio River, EPA is proposing no further action.
- For soil vapor, EPA is proposing no further action.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901, *et seq.* The Corrective Action program requires that certain facilities subject to RCRA investigate and address environmental releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred on their property.

This SB highlights key information EPA used in proposing the remedy for the Facility. The Administrative Record (AR) contains all documents, including data and quality assurance information, on which our proposed decision is based. See Section IX, Public Participation, for information on how you may review the AR.

II. Facility Background

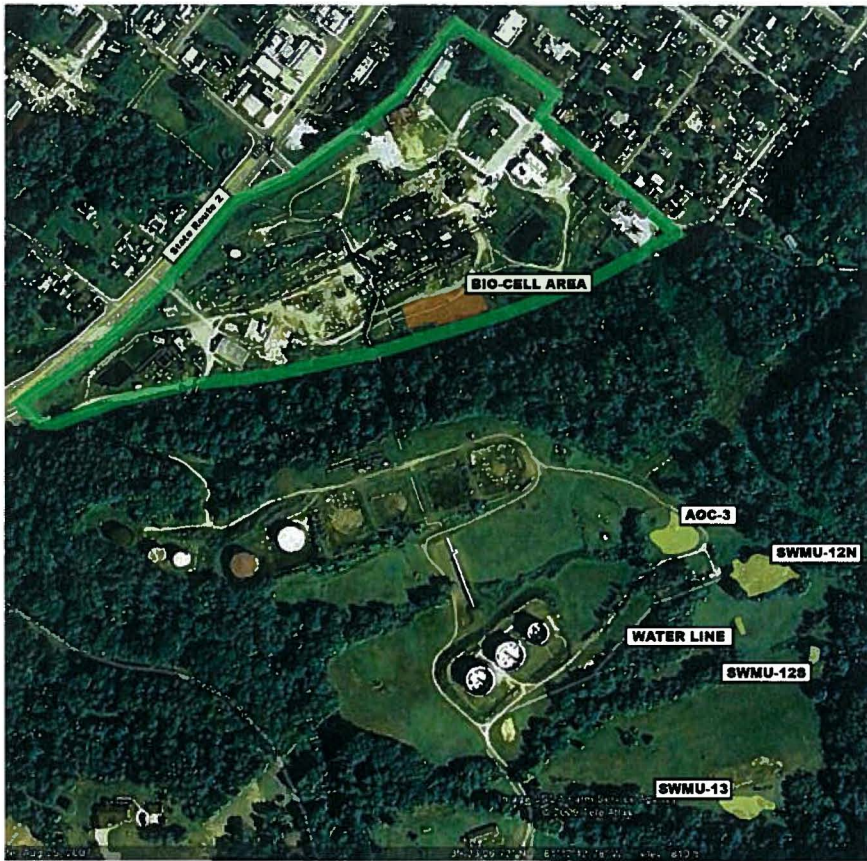
A. Facility Operations

The Facility is a former petroleum refinery that was designed to produce lubricating oils, waxes, gasoline, jet fuel and other petroleum products throughout its operating history. Refining operations were conducted at the Facility by various owners from 1913 until 1993 when refinery operations ceased. Historic releases of hydrocarbons occurred primarily in the former refinery area, called the "Northern Refinery," and impacted soil and ground water. Since April 1993, the Facility has been used primarily for the bulk storage of petroleum products including gasoline and diesel fuel. SMRC has owned the Facility since August 1991. The Facility receives gasoline and diesel fuel

products by barge, conveys products to the refinery by underground and aboveground pipes, and transports product offsite by tanker trucks.

The Facility encompasses approximately 70 acres. It is bordered by State Route 2 to the north, with residential and commercial properties around the Facility. Figure 1 is an aerial view of the Northern Refinery outlined. The Northern Refinery encompasses approximately 21 acres of Ohio River alluvial bottomland, along a steep valley wall. The Northern Refinery is currently used for loading gasoline and diesel onto tanker trucks for distribution. On top of the valley wall, which ascends 100 to 150 feet, is the “Bluff Area,” which encompasses approximately 48 acres. Within the Bluff Area are two tank farms, a closed solid waste disposal area, two surface impoundments, and an historic fire training area. The Bluff Area is bordered by a hilly and wooded area to the south that is semi-rural and sparsely populated. The Facility also includes a 1.2-acre tract of undeveloped property (1.2-acre Tract) located south of Route 2. Extending along the western edge of the undeveloped property is an aboveground pipeway to the barge loading dock on the Ohio River. South of the CSX railroad tracks, the aboveground pipeline goes below ground to the barge loading dock on the Ohio River.

Figure 1. Northern Refinery (outlined in green) and Bluff Area



B. Summary of Environmental History

In April 1997, EPA and SMRC entered into an Administrative Order on Consent under Section 7003 of RCRA (7003 Order) requiring SMRC to conduct, among other things, a RCRA Facility Investigation (RFI) to characterize the extent of soil and groundwater contamination at the Facility and to evaluate remedy options. In June 2003, SMRC submitted an RFI Report to EPA for review and

approval. The RFI identified soil and groundwater contamination associated with the release of petroleum at the Facility; delineated the extent of contamination, and identified the contaminants of concern (COCs). EPA approved the RFI Report in August 2005.

1. Soil Investigation

The EPA-approved RFI Report identified the following COCs in soils at the Facility: benzene, toluene, ethylbenzene, xylenes, naphthalene, methyl tertiary butyl ether (MTBE), benzo(a)pyrene, benzo(b)fluoranthene, arsenic and lead. SMRC screened Facility soils for COCs using the U.S. EPA Region 3 Risk Based Concentrations (RBCs) table (April 11, 2006).

The RFI Report identified 15 Solid Waste Management Units (SWMUs) and 5 Areas of Concern (AOCs). A SWMU is any discernible waste management unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been randomly and systematically released. SWMUs are units where solid or hazardous waste was placed, or where solid wastes have been routinely released. AOCs are areas where a release occurred that requires investigation. Given the close proximity of numerous aboveground storage tanks (ASTs) located in the Northern Refinery, the RFI Report consolidated those ASTs which showed signs of leakage into one AOC identified as AOC2, Facility-wide Soil and Groundwater Releases. Table 1 identifies the SWMUs and AOCs and the current status and EPA's proposed remedy for each.

2. Groundwater Investigation

The Facility is located within an alluvial terrace of the Ohio River. The geology of the Facility includes a unit containing a mixture of clays and silts approximately 15 to 30 feet below ground surface (bgs), underlain by a sandy unit with interbedded silt to bedrock. Depth to bedrock ranges from approximately 45 to 80 feet bgs. Groundwater in both units flows to the northwest towards the Ohio River.

Pursuant to the EPA-approved RFI Report, SMRC has installed 72 groundwater monitoring wells, with 38 wells on-site and 34 wells off-site. SMRC has conducted groundwater sampling from those wells on a semi-annual basis since 2005. Figure 2 shows the locations of the monitoring wells.

The RFI Report identified the following COCs in Facility groundwater: benzene, toluene, ethylbenzene, xylenes, naphthalene, methyl tertiary butyl ether (MTBE), arsenic, and tert-butyl-alcohol. Although the Facility is located within an area where groundwater is not used as a source for drinking water, concentrations of COCs in groundwater were screened against drinking water criteria, known as the Maximum Contaminant Levels (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1. Sampling results from 1993 to 2002 showed benzene, ethylbenzene, toluene, naphthalene and arsenic above their respective MCLs in groundwater in the shallow and intermediate aquifer in the area of the Northern Refinery and benzene and arsenic above their respective MCLs in the intermediate aquifer off-site, in the neighborhood northwest of the Facility, across from Route 2.

III. Interim Measures (IMs)

Interim Measures (IMs) are activities to control or abate imminent threats to human health and the environment from contaminated releases at RCRA facilities. In accordance with the IM provision in the 7003 Order, SMRC implemented the following IMs at the Facility:

A. Soil Vapor Extraction and Bioventing (SVEB)

In May 2006, in order to address AOC2, Facility-Wide Soil and Groundwater Releases, SMRC proposed to install and operate a Soil Vapor Extraction and Bioventing (SVEB) system to extract volatile and some semi-volatile contaminant vapors from contaminated soils in the smear zone at the Northern Refinery. The smear zone is the area where contaminants accumulate in the subsurface at the water table. The SVEB also extracts volatile contaminants in the upper zone of the groundwater, or the water table, and free phase product floating on the water table. By reducing mobile contaminants from the smear zone, the source of the groundwater contamination is removed. The bioventing system draws more oxygen into the soil which expands the existing microbial population and, subsequently, the microbes break down residual hydrocarbons.

In 2008, EPA approved the SVEB IM Workplan. In accordance with the Workplan, SMRC installed 107 vapor extraction wells, to an average depth of 40 feet. In early 2007, the SVEB system began operating and by September 2008, the SVEB had removed about 98% of source mass with no significant rebound (i.e., reappearance of contaminants in groundwater). Sampling results from 2011 show that benzene remains in the groundwater above its MCL and naphthalene, which does not have an MCL, remains in concentrations above its EPA RBC. All the other COCs are below MCLs or EPA's RBCs. EPA anticipates that the remaining benzene and naphthalene will be reduced over time by natural attenuation because the concentrations of those contaminants have already been significantly reduced and benzene and naphthalene have been shown to be effectively remediated by natural attenuation processes. Figure 4 depicts benzene concentrations in groundwater during Fall 2010, post treatment. Figure 4 shows that benzene concentrations have been significantly reduced on- and off-site. In May 2011, EPA determined that the remedial goals of the SVEB system were met, and approved the SVEB IM Completion Report.

Groundwater was not found on the Bluff Area because the shallow soil layer on the bedrock does not sustain a water table.

B. Enhanced Anaerobic Bioremediation (EAB)

SMRC conducted enhanced anaerobic bioremediation (EAB) to supplement SVEB to enable biodegradation of hydrocarbons in the oxygen poor intermediate aquifer (below the shallow water table aquifer). As part of the EAB, sulfate was injected into the intermediate aquifer to grow the existing anaerobic bacteria population such that the bacteria could consume the hydrocarbons. The EAB was successful in decreasing COCs in the intermediate aquifer. SMRC no longer injects sulfate into the aquifer, but existing bacteria continue to break down contaminants. EPA will require that groundwater be monitored until drinking water standards are met.

C. Excavation and Treatment of Bluff Area Soil

In the Fall of 2009, SMRC excavated approximately 10,000 cubic yards of soil from the following locations in the Bluff Area (Figure 2 shows locations):

1. SWMU 12 consisted of two surface impoundments where Facility sludge and fly ash were disposed from 1968 to approximately 1980. During previous investigations, SWMU 12 had been identified as SWMU 12N (north) and 12S (south). Visibly stained soil was found in SWMU 12.
2. SWMU 13 was a solid waste disposal area for disposal of construction and demolition debris. Stained soil was found in SWMU 13.
3. AOC 3 was the fire training area, used once a year. AOC 3 had four containers with sludge and oily materials and stained soil. Diesel fuel was used as a fire source.
4. Contaminated soil mounds.

Post excavation sampling of the above-listed locations showed that remaining soils meet residential use levels. SMRC backfilled the excavations with clean soil from the Bluff Area and from off-site. The Bluff Area is now grassed. The excavated soil was transported to a lined treatment cell located in the Northern Refinery. The treatment cell is 11 feet high, 270 feet long and 80 feet wide. Soil vapor extraction (SVE) pipes were installed in the soil mound to remove volatile hydrocarbons. In June 2011, EPA determined that treatment of the excavated soils was complete, and that the soils met EPA acceptable risk levels for industrial workers. SMRC intends to use the treated soils as fill in the Northern Refinery.

IV. Post RFI Investigations

A. Ambient Air Investigation

Buildings located above a contaminated groundwater plume may be vulnerable to subsurface vapor (from volatile contaminants like gasoline) entering a building through cracks, joints and utilities openings. Due to the known presence of VOC contamination in the groundwater beneath the Facility, in July 2008, EPA conducted soil vapor and air sampling at the neighborhood adjacent to the Facility on the northeast border, on Court Lane. The investigation included collection of a crawl space vapor sample (24-hours) from beneath a neighboring residence, an air sample from the basement of a second residence, and continuous (9.5-hours) ambient air samples along the fence line of the Facility, during daytime truck gas/diesel loading. The sampling results showed acceptable ambient air conditions for these residences and no contaminants were detected in the crawl space and basement.

Groundwater monitoring data from the neighborhood north of the Facility, across Route 2, have shown that shallow groundwater meets drinking water standards and intermediate depth groundwater has shown Site-related contamination above drinking water standards. Because the top layer of groundwater is not contaminated and acts as a barrier, EPA has determined that soil vapor does not pose a current threat to human health because VOCs in the intermediate layer would not enter homes in this area.

SMRC used EPA's Draft Vapor Intrusion Guidance (2002) to evaluate the on-site buildings. Based on the distances from those buildings to SWMUs and AOCs and soil and ground water results, EPA has determined that soil vapor does not pose a current threat to human health in on-site buildings.

B. Surface Water and Sediment

In 2007, SMRC collected sediment and surface water samples from two streams, Tackett Run and Tannery Run, and sediment samples from the Ohio River. Tannery Run originates above the Bluff Area and flows down hill, just off-site of the Facility's southern boundary. Tackett Run is a storm sewer pipe that discharges to an off-site channel west of Route 2 and south of Creel Street. Most of Tackett Run water comes from City storm water, with some storm water from the Facility. Both streams are intermittent and flow into the Ohio River.

Three sediment and surface water samples were collected from Tackett Run and six sediment and surface water samples were collected from Tannery Run. Surface water samples from Tackett Run contained low level barium and lead at or below ecological screening values. Surface water samples from Tannery Run contained low levels of barium at or below ecological screening values. Surface water samples from upstream of the Facility contained levels of barium equivalent to the levels of barium found in Tackett and Tannery Runs, indicating that barium is naturally present at those levels.

Sediment samples were collected at the same time and locations as the water samples in Tackett and Tannery Run. Sediment samples from Tackett Run contained semi-volatile organic compounds (SVOCs) and lead which exceeded ecological screening levels. Generally, SVOCs are present in storm runoff from asphalt roads and parking lots. Given that Tackett Run is one of the stormwater outlets for the City, the SVOC contamination in Tackett Run does not indicate a single source.

Sediment samples from Tannery Run contained SVOCs above detection limits, but below ecological screening levels, and arsenic and lead in concentrations that exceeded ecological screening levels. Similar arsenic and lead concentrations were found in sediment upstream of the Facility, indicating that those contaminants are naturally occurring, and represent "background."

Six sediment samples were collected immediately off-shore of the Facility in the Ohio River, which included two upstream of the barge loading dock, two at the dock and two downstream. Low concentrations of total petroleum hydrocarbons and diesel range organics were found upstream and downstream of the Facility loading dock. Two SVOCs were detected in the two downstream samples at low concentrations that were above ecological screening levels. Although the SVOCs were above ecological screening levels, EPA determined that they were detected at sufficiently low concentrations that they did not warrant further investigation or remediation.

C. 1.2-Acre Parcel

In 2004, soil contamination was found in the area of the underground pipeway located on the 1.2-acre Parcel (Underground Pipeway) when the City of St Marys was taking soil samples in the area to expand its wastewater treatment plant. To address the contamination, SMRC entered into WVDEP's Voluntary Remediation Program to investigate and remediate the 1.2-Acre Parcel. As a

result of its environmental investigations, SMRC documented soil and groundwater petroleum contamination in the area of the Underground Pipeway. Under WVDEP oversight, SMRC is currently remediating the soils and groundwater contamination related to the Underground Pipeway using EAB technologies.

D. Environmental Indicators (EIs)

Under the Government Performance and Results Act (GPRA), EPA has set national goals for RCRA corrective action facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control and (2) Migration of Contaminated Groundwater Under Control. The Facility met these two indicators in September 2003, and October 2009, respectively.

E. Human Health Risk Assessment

In May 2011, EPA approved the “Focused Health Risk Assessment for Soil for the St Marys Refinery, St Marys, WV” (RA) which evaluated the health risks to workers posed by soils in the Northern Refinery. The RA found that some samples had arsenic levels above EPA’s Risk Screening Level for industrial soil in the Northern Refinery including post-treated soil in the treatment cell. However, the RA also found that the overall health risk posed to workers from arsenic to be within EPA’s acceptable risk level. As a precaution, EPA’s proposed final remedy for soil requires the development and implementation of a Soils Management Plan which will include procedures to notify workers of the locations where contaminants remain in soils. Soil treated in the treatment cell located in the Northern Refinery that is used for fill at the Facility will be vegetated with grass or other vegetation, after emplacement, to prevent erosion.

The remaining soils on the Bluff Area meet residential use standards so no further action is proposed for the Bluff Area.

V. Corrective Action Objectives

EPA has identified the following Corrective Action Objectives for soils and groundwater at the Facility:

A. Soils

The Corrective Action Objective for Facility soils is remediate contaminated soils related to the Underground Pipeway to WVDEP’s non-residential soil cleanup standards and to control human and environmental exposure to the hazardous wastes and hazardous constituents that will remain in the subsurface and treatment pile in the Northern Refinery and in the area around the Underground Pipeway.

B. Groundwater

The Corrective Action Objective for contaminated groundwater at the Facility and off-site is to restore the groundwater to drinking water standards and until such time as drinking water standards are achieved, prohibit use of the groundwater at the Facility for water supply purposes.

VI. Proposed Remedy

A. Soils

EPA's proposed remedy for the Facility consists of the following components:

1. Continued Use of EAB at the 1.2-Acre Parcel

EPA's proposed remedy requires the continued use of EAB for soil contamination related to the Underground Pipeway. EPA is proposing that such remediation continue until those soils meet WVDEP's non-residential clean-up levels for soils.

2. Development and Implementation of a Soils Management Plan

EPA's proposed remedy requires the development and implementation of a Soils Management Plan (SMP) to be approved by EPA before any earth moving activities, including construction and drilling, can be done at the Northern Refinery or where there is soil contamination related to the Underground Pipeway. The SMP will detail how all excavated soils will be handled and disposed. In addition, the SMP will include soil stabilization requirements to minimize contact between storm water runoff and soils. Soil stabilization measures may include the construction of berms to prevent storm water from flowing onto certain areas as well as the construction of sumps with pumps to remove ponded water from low lying areas.

The SMP will include a Health and Safety Plan, Sampling and Analysis Plan and Quality Assurance Project Plan. The Health and Safety Plan will identify the locations at the Facility where contaminants remain in soils; detail how future on-site workers and contractors will be notified about such locations and about the presence of the contaminated soil.

3. Compliance with and Maintenance of Institutional Controls

EPA's proposed remedy for Facility soils consists of the compliance with and maintenance of land use restrictions to be implemented through enforceable institutional controls (ICs). ICs are non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. ICs for the Northern Refinery may be implemented immediately. Those for the 1.2-Acre Tract will be implemented after the Facility has remediated the contaminated soils related to the Underground Pipeway to non-residential levels. EPA proposes that the ICs contain the following elements:

- 1) The Northern Refinery shall be restricted to industrial uses and shall not be used for residential purposes unless it is demonstrated to WVDEP in consultation with EPA, that such use will not pose a threat to human health or the environment.

The areas on the 1.2 Acre Tract where there is soil contamination above WVDEP's residential clean-up standards shall be restricted to industrial uses and shall not be used for residential purposes unless it is demonstrated to WVDEP in consultation with EPA, that such use will not pose a threat to human health or the environment;

- 2) All earth moving activities in the Northern Refinery, including drilling and construction activities, shall be done in accordance with the EPA-approved Soils Management Plan, and
- 3) All earth moving activities in the areas on the 1.2 Acre Tract where there is soil contamination above WVDEP's residential clean-up standards shall be done in accordance with the EPA-approved Soils Management Plan.

EPA proposes to implement the land and resource use restrictions through enforceable ICs such as a permit, order and/or an Environmental Covenant pursuant to the West Virginia Uniform Environmental Covenants Act, WV Code Section 22-17, (UECA) to be recorded with the deed for the Facility property. SMRC will be required to provide a coordinate survey as well as a metes and bounds survey of the Northern Refinery, the area on the 1.2-Acre Parcel where there is soil contamination above WVDEP's residential cleanup levels, and the Facility boundary.

If the Facility owner or subsequent owners fail to meet their obligations under the ICs or if EPA and/or WVDEP, in its sole discretion, deems that additional engineering controls or land and/or resource restrictions are necessary to protect human health or the environment, EPA and/or WVDEP has the authority to require and enforce such additional engineering controls or land and/or groundwater use restrictions.

B. Groundwater

For the 1.2-Acre Tract, EPA is proposing continued use of EAB, monitored natural attenuation (MNA), and institutional controls. For the Northern Refinery, EPA is proposing MNA and institutional controls. Natural attenuation refers to a system where a variety of physical, chemical, or biological processes act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. As decomposition of the contaminants takes place, compounds called "breakdown products" are produced. Ultimately, the breakdown products are also decomposed resulting in compounds which are not a threat to human health or the environment. Monitored Natural Attenuation simply refers to the act of collecting samples to "monitor" the natural attenuation process after the completion of active remediation.

EPA proposes to require the Facility to continue its use of EAB at the 1.2-Acre Tract until the source mass is sufficiently reduced to prevent migration of residual contaminants to the groundwater. EPA is selecting MNA for the 1.2 Acre-Tract until groundwater cleanup standards, discussed below, are attained.

With respect to the Northern Refinery, the remedial actions taken by SMRC have removed about 98% of the source mass which was migrating into the groundwater from the Northern Refinery. While benzene and naphthalene remain in the groundwater, those contaminants have shown to be effectively remediated by natural attenuation processes. EPA anticipates that the concentrations of benzene and naphthalene will exhibit a decreasing trend and decompose rapidly enough to prevent the contaminants and the breakdown products from migrating from the Facility. Therefore, EPA is

selecting MNA for the Northern Refinery until groundwater cleanup standards, discussed immediately below, are attained.

The groundwater cleanup standards consist of the MCLs for all Facility COCs. If a COC does not have an MCL, then the cleanup standard for the COC will be EPA's RBC. SMRC will be required to sample the groundwater monitoring well network in accordance with the Groundwater Sampling and Analysis Plan (SAP) presented in the EPA-approved RFI Workplan. Any modification to the sampling plan will have to be approved by EPA prior to implementation.

Because contamination will remain in the groundwater at the Facility until MCLS or RBCs, as applicable, are met, EPA's proposed final remedy includes groundwater use restrictions to be implemented through enforceable ICs. The proposed ICs for groundwater are:

- Use of groundwater beneath the Facility for potable purposes or any other use that could result in human exposure, unless such use is required by the Final Remedy, shall be prohibited.
- Well drilling without prior EPA approval shall be prohibited at the Facility to prevent inadvertent exposure to the contaminated groundwater and adverse affects to the final remedy.

C. Surface Water and Sediment

EPA proposes no further action with respect to Facility COCs for the sediments and surface water of the Tackett Run and Tannery Run and sediment in the Ohio River.

D. Soil Vapor

EPA proposes that no further action with respect to soil vapor.

VII. Evaluation of EPA's Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

1. Protect Human Health and the Environment - The primary human health and environmental threat posed by contaminated soils at the Facility was related to direct contact with those soils and as a continuing source for groundwater contamination. Soils at the Bluff Area were remediated to WVDEP residential values for soils which are within EPA's risk range for residential use, and therefore no longer pose a threat to human health or the environment. Soil contamination related to the Underground Pipeway will be remediated to meet WVDEP's non-residential clean-up levels. Since soils at the Northern Refinery and the 1.2-Acre Tract will contain some residual

contamination above WVDEP residential values for soils, institutional controls will be implemented to restrict future use of those areas to industrial activities. In addition, EPA will require that workers be informed of the potential risks so that precautions to reduce exposure to residual contaminants may be taken.

With respect to groundwater, SMRC's remedial activities removed the majority of contaminants that could potentially migrate from the Northern Refinery to the groundwater. Benzene and naphthalene do remain in the groundwater beneath the Facility; however, EPA anticipates that the concentrations of those contaminants will continue to decrease and decompose rapidly enough to prevent the contaminants and the breakdown products from migrating from the Facility. With respect to groundwater contamination related to the Underground Pipeway, SMRC will be required to use EAB to reduce the source of contamination. In addition, SMRC conducted two well surveys in the community around the Facility. The survey showed that no residences or commercial operations around the Facility used their own groundwater source and all were connected to the City of St Marys' public water supply system. While there are no current consumptive uses of Facility-contaminated groundwater, the remedial goal for Facility-wide groundwater is to restore it to drinking water standards.

2. Achieve Media Cleanup Objectives - The Facility has achieved WVDEP residential values for soils at the Bluff Area. The human health risk assessment also shows that the area meets residential use risk levels. For soils at the Northern Refinery, the Facility reduced contamination to industrial use risk levels. For contaminated soils related to the Underground Pipeway, the Facility will remediate the soil contamination to industrial use risk levels. Because contaminants will remain in place above WVDEP's, EPA's proposed final remedy requires the implementation and maintenance of institutional controls to ensure that the Northern Refinery and contaminated soils at the 1.2-Acre Tract is not used for residential purposes.

Even though there are no current consumptive uses of Facility-contaminated groundwater, it is EPA's goal that groundwater be restored to drinking water standards to be protective of potential future use. The proposed remedy, monitored natural attenuation and compliance with and maintenance of ICs, will attain the media cleanup criterion by restoring groundwater to drinking water standards. Under EPA's proposed remedy, SMRC will be required to monitor groundwater until the concentration of benzene does not exceed its MCL and naphthalene does not exceed its EPA RBC, for three continuous years. Until groundwater is restored to drinking water standards, EPA is proposing to require ICs, as necessary, to prevent consumptive use of the groundwater.

3. Remediating the Source of Releases - In all remedy decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. SMRC removed the source of contaminants from the Bluff Area by excavating and treating contaminated soils. In addition, SMRC remediated sources of releases, i.e., contaminated soil, in the Northern Refinery and is remediating contaminated soil relating to the Underground Pipeway with EAB.

C. Balancing/Evaluation Criteria

1. **Long-Term Effectiveness** - The long-term reliability and effectiveness standard is intended to address protection of human health and the environment over the long term. SMRC has demonstrated that, due to biological activity, the contaminants in the groundwater are decomposing rapidly enough to prevent the contaminants or the breakdown products from migrating beyond the Facility boundary. EPA expects this natural attenuation process to continue. SMRC will continue to monitor the groundwater to demonstrate that this attenuation process continues until the groundwater cleanup standards are met. The required groundwater monitoring program will provide EPA with data to determine the rate of attenuation.

The proposed ICs will maintain protection of human health and the environment over time by controlling exposure to the hazardous constituents remaining in the soils at the Northern Refinery, at the 1.2-Acre Tract and in the groundwater. EPA anticipates that the land use and/or groundwater use restrictions will be implemented through an environmental covenant to be recorded with the deed for the Facility property. The environmental covenant will run with the land and as such, will be enforceable by EPA and the State against future land owners.

2. **Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents** - The reduction of toxicity, mobility and volume of hazardous constituents at the Facility has already been achieved by SMRC excavating and treating contaminated soils in the Bluff Area and installing and operating the SVEB and EAB systems which recovered floating and dissolved product and remediated soil and groundwater contamination in the Northern Refinery. Natural attenuation, by definition, refers to a system where a variety of physical, chemical, or biological processes act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. EPA's proposed remedy will, therefore, accomplish this criterion.

3. **Short-Term Effectiveness** - EPA's proposed final remedy does not involve any activities, such as construction or excavation, that would pose short-term risks workers, residents, and the environment. In addition, EPA anticipates that the land use and/or groundwater use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments.

4. **Implementability** - EPA's proposed remedy is readily implementable. All necessary components of the monitoring network are in place and are currently operational. In addition, EPA does not anticipate any regulatory constraints in requiring SMRC to record an environmental covenant with the deed to the Facility property. Therefore, EPA does not anticipate any regulatory constraints in implementing its proposed remedy.

5. **Cost** - The capital costs associated with excavating and treating contaminated soils in the Bluff Area, installing and operating the SVEB and EAB systems and groundwater monitoring wells have already been incurred and the remaining costs are minimal.

6. Community Acceptance - EPA will evaluate Community acceptance of the proposed remedy during the public comment period and it will be described in the Final Decision and Response to Comments.

7. State/Support Agency Acceptance - EPA will evaluate State acceptance based on comments received from WVDEP during the public comment period and it will be described in the Final Decision and Response to Comments.

VIII. Financial Assurance

SMRC will provide the assurance that there are sufficient funds for implementation of monitored natural attenuation for groundwater and implementation of the ICs into the future.

IX. Public Participation

Interested persons are invited to comment on EPA's proposed decision. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, e-mail, or phone to Ms. Barbara Smith at the address listed below.

Interested parties are encouraged to review the AR and comment on EPA's proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or e-mail to Ms. Barbara Smith. EPA will hold a public meeting to discuss this proposed decision upon request. Requests for a public meeting should be made to Ms. Smith at the address listed below regarding the public meeting. Also, the Administrative Record contains all the information considered by EPA for the proposed decision at this Facility. The Administrative Record is available at the following locations:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Contact: Ms. Barbara Smith (3LC20)
Phone: (215) 814-5786
Fax: (215) 814-3113
Email: smith.barbara@epamail.epa.gov

Pleasants County Public Library
101 Lafayette Street
St. Mary's, WV 26170
Phone: (304) 684-7494
Fax: (304) 684-7495
Email: polinge@mail.mln.lib.wv.us

Monday to Wednesday 10am-5pm
Thursday 5pm-8pm
Friday - 10am-5pm
Saturday - 10am-3pm

Signature:



Abraham Ferdas, Director
Land and Chemicals Division (3LC20)

Date:

9/13/11



Legend

- SMRC Facility Limits
- Ohio River Staff Gauge
- ⊠ Active Monitoring Wells (November 2008)
- ⊙ Abandoned Well

SCALE:
1 inch equals 200 feet

| LAYER 1 WELLS | LAYER 2 WELLS | LAYER 3 WELLS |
|---------------|---------------|---------------|
| OW-1 VE-1 | MW-10 | MW-150 |
| OW-4 VE-2 | MW-40 | MW-170 |
| OW-5 VE-3 | MW-60 | MW-175 |
| OW-6 VE-4 | MW-70 | MW-200 |
| OW-7 VE-5 | MW-100 | MW-210 |
| OW-8 VE-6 | MW-110 | MW-215 |
| OW-9 VE-7 | MW-120 | MW-216 |
| MW-10 VE-8 | MW-13 | MW-290 |
| MW-11 VE-9 | MW-15 | MW-300 |
| MW-12 VE-10 | MW-16 | CW-1 |
| MW-16 VE-11 | MW-170 | CW-2 |
| MW-17 VE-12 | MW-180 | |
| MW-18 VE-13 | MW-190 | |
| MW-19 VE-14 | MW-210 | |
| MW-20 | MW-220 | |
| MW-215 | MW-240 | |
| MW-225 | MW-245 | |
| MW-235 | MW-250 | |
| MW-235 | MW-260 | |
| MW-275 | MW-270 | |
| MW-285 | MW-280 | |
| MW-295 | MW-285 | |
| MW-305 | MW-305 | |
| MW-315 | MW-310 | |
| MW-325 | MW-320 | |
| MW-335 | MW-330 | |
| MW-345 | MW-340 | |
| MW-355 | MW-350 | |
| MW-365 | MW-360 | |
| MW-37 | MW-380 | |
| MW-385 | MW-390 | |
| MW-395 | MW-400 | |
| MW-405 | MW-410 | |
| MW-415 | CW-3 | |
| MW-425 | | |
| MW-435 | | |

THE APPROXIMATE TOP AND BOTTOM ELEVATIONS OF THE LAYERS:
 LAYER 1: 686.5 TO 586.5 FT. MSL
 LAYER 2: 585.5 TO 575.5 FT. MSL
 LAYER 3: 576.5 FT. MSL TO TOP OF BEDROCK

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 FIRST SEMI-ANNUAL 2008
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Figure 2
MONITORING WELL LOCATIONS
MAY 2009

LEGEND

- ⊕ RCRA Monitoring Well
- ⊖ Abandoned Monitoring Well
- ⬢ Damaged Well/Not Sampled
- ⊙ Perched Groundwater Well
- ▬ SMRC On-Site Boundary

Baseline Benzene Distribution

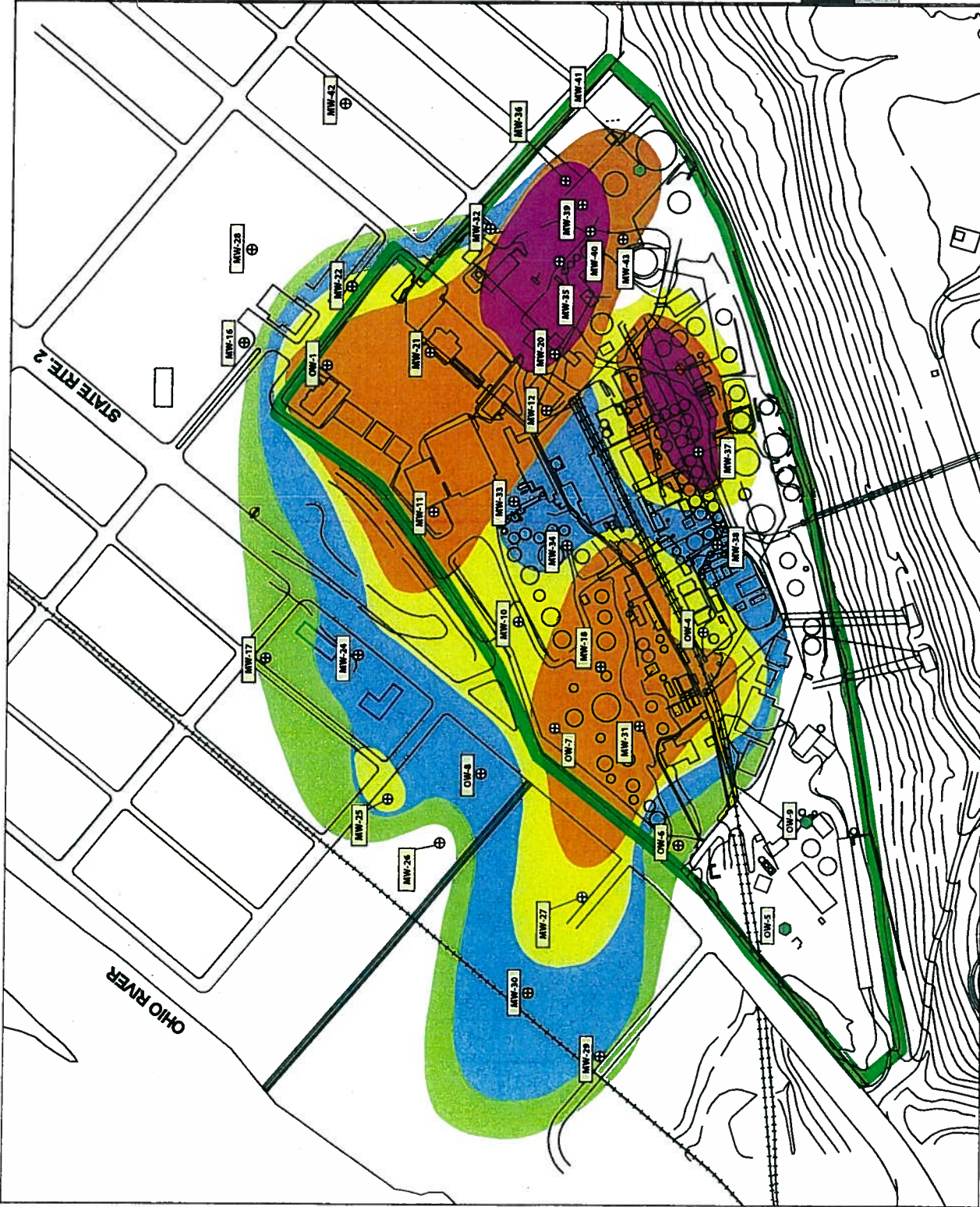
- Benzene Isoconcentration Line (5 ug/L)
- Benzene Isoconcentration Line (50 ug/L)
- Benzene Isoconcentration Line (500 ug/L)
- Benzene Isoconcentration Line (1000 ug/L)
- Benzene Isoconcentration Line (5000 ug/L)

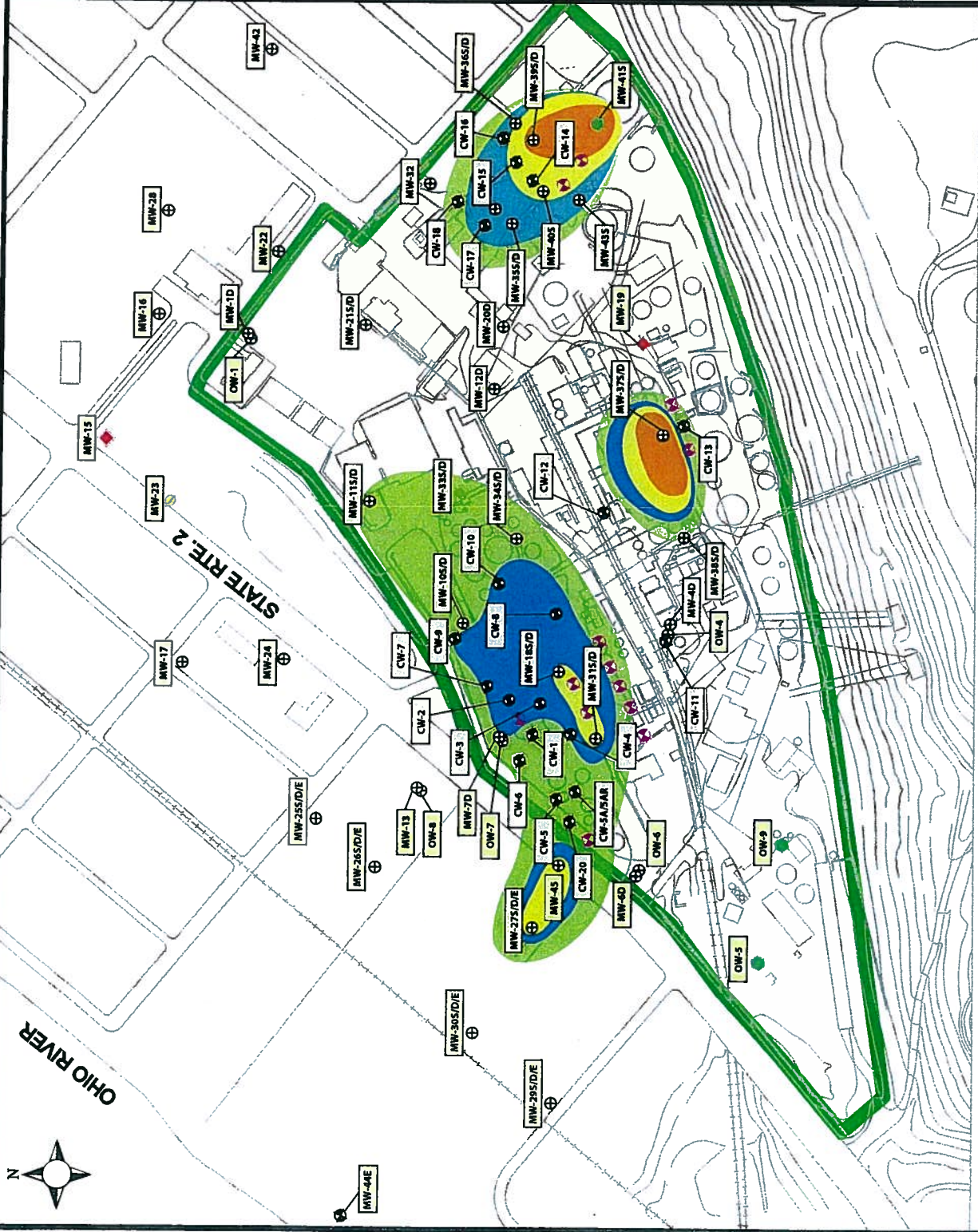


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Figure 3
BASELINE BENZENE DISTRIBUTION





LEGEND

- EAB RECIRCULATION WELL
- RCRA MONITORING WELL
- ABANDONED MONITORING WELL
- DAMAGED WELL/NOT SAMPLED
- PERCHED GROUNDWATER WELL
- VE WELL
- SMRC ON-SITE BOUNDARY
- BENZENE ISOCONCENTRATION LINE (5 ug/L)
- BENZENE ISOCONCENTRATION LINE (50 ug/L)
- BENZENE ISOCONCENTRATION LINE (500 ug/L)
- BENZENE ISOCONCENTRATION LINE (1,000 ug/L)
- BENZENE ISOCONCENTRATION LINE (5,000 ug/L)



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FIGURE 4
BENZENE ISOCONCENTRATION LINES -
OCTOBER 2010

Table 1. Solid Water Management Units (SWMUs) and Areas of Concern (AOC) and Proposed Remedy

| 1988 RFA SWMU | 2005 RFI SWMU | Description | 2011 Status | Proposed Remedy |
|---------------|---------------|--|---|---|
| 1 | 1 | Waste Biological Sludge and Transfer Pump | Concrete basin used to store waste biological sludge from the WWTP. NFA advised in RFA. No investigation necessary, no evidence of release. | No further action (NFA) is necessary. |
| 2 | 2 | K048 Hazardous Waste Storage Tanks, Transfer Pump and Transfer Lines | K048 waste generated from the dissolved air flotation (DAF) floats at WWTP. Investigation found arsenic above EPA RBC industrial level in subsurface soil. To included in human health risk assessment. | Risk levels calculated in the human health risk assessment for the Northern Refinery area found that any residual contamination in surface soil presents acceptable risk to workers. Construction and utility workers to wear protection for subsurface work. |
| 3 | 3 | UST for DAF Float | UST at WWTP was closed in place in 1995 under WVDEP closure. | NFA |
| 4 | 4 | Box Trailer for API Separator Sludge | Identified in records, but not found at SMRC during the RFA visit. No evidence of release. | NFA |
| 5 | 5 | API Separator Sludge Storage Tank | Described in 1985 closure plan, but not found at SMRC, RFA advised NFA. | NFA |
| 6 | 6 | Waste Water Treatment Plant (WWTP) | Includes SWMUs 1-3. Soil and GW samples showed no significant contamination. | NFA |
| 7 | AOC 2 | Incorporated into AOC 2 | Above ground storage tanks (ASTs) T-63 and -64 had stained soil or other evidence of releases. Addressed under AOC-2 'Facility-wide releases to GW and soil.' | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 8 | 7 | Wolf Run Outfall Area Disposal | Clay ceramic tile, thought to be tower packing material was not found in Outfall Area during the RFA visit. | NFA |
| 9 | 8 | Concrete Pad for Heat Exchanger Bundle Cleaning | Soil and GW borings showed elevated petroleum contamination levels, but only arsenic and a PAH exceeded EPA's screening level for industrial uses. Unit is included in SVEB and EAB clean-up of AOC-2. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |

| 1988 RFA SWMU | 2005 RFI SWMU | Description | 2011 Status | Proposed Remedy |
|---------------|---------------|---|--|---|
| 10 | 9 | Drum Storage Area for Leaded Tank Bottoms and Spent Unifiner Catalyst | Drums were not found during RFA visit. | NFA |
| 11 | 10 | No. 1 – No. 6 Separators (Traps) | Concrete oil traps received oily waste from process. Oil was routed back to process and water to W/WTP. Two traps were removed, four remain. Contamination found in soil and GW. The traps and surrounding areas were included in AOC-2. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 12 | AOC 2 | Incorporated into AOC 2 | ASTs T-76, -77, -78 showed evidence of releases around tanks, included in AOC-2. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 13 | 11 | UST – Waste Oil Tank | This UST was mis-identified in earlier inspections, but three USTs were removed in 1997, including this tank identified as a waste oil tank (it stored gasoline). The three USTs comprise AOC 4, which was added to AOC 2 | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 14 | 12 | Surface Impoundments on the Bluff | SWMU-12 is two surface impoundments where Facility sludge and fly ash were disposed from 1967 – 1980. In 2009, the units were excavated and moved the former refinery area for treatment. | SWMU-12, 13 and AOC 3 soil was excavated from the bluff and combined in the former refinery area SVEB treatment. The clean-up goals were met and the soil is usable for on-site fill. |
| 15 | 13 | Solid Waste Disposal Area on the Bluff | Miscellaneous Facility trash and debris placed in SWMU before 1988. In 2009, SWMU-13 was excavated and trash was removed. Soil was moved to the former refinery area for treatment. A soil mound on the bluff was investigated and included in excavation and treatment. | SWMU-12, 13 and AOC 3 soil was excavated from the bluff and combined in the former refinery area SVEB treatment. The clean-up goals were met and the soil is usable for on-site fill. |
| 16 | 14 | Facility Sewer System | System is very old, located in the Northern Refinery, currently conveys stormwater and in the past, conveyed oily wastewater to the W/WTP. Part of AOC-2 clean-up. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |

| 1988 RFA SWMU | 2005 RFI SWMU | Description | 2011 Status | Proposed Remedy |
|---------------|---------------|---|---|---|
| 17 | AOC 2 | Incorporated into AOC 2 | Former Slop Oil Tanks. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 18 | 15 | Storm Catch Basins | Concrete boxes with grates on-top, collect sediment from stormwater. No releases identified. | NFA |
| 1988 RFA AOC | 2005 RFI AOC | Description | Status 2011 | Proposed Remedy |
| 1 | 1 | Facility-wide Air Releases | A strong gasoline odor was emitted from the truck loading area vent, when trucks were loading. The odors were noticeable on- and off-site. In 2007, SMRC moved the vent away from the fence line and farther into the plant. After that, EPA collected continuous air samples near the truck loading area and found that by moving the vent, air quality in the adjacent neighborhood is not impacted by the odors. | NFA |
| 2 and 5 | 2 | Facility-wide Soil and Groundwater Releases | This AOC includes dozens of ASTs that showed leakage, and RFA SWMUs 7, 12, 17, AOC 4 and RFA AOC 5. In the RFA, AOC 5 was Tank 72, which had evidence of releases. The refining operation footprint was small and soil and groundwater contamination was distributed throughout; identification with specific SWMUs and AOCs was not necessary. Soil and GW was considered as a whole for clean-up purposes. | Proposed remedy for soil and groundwater in the Northern Refinery are the Interim Measures SVEB and EAB. |
| 3 | 3 | Fire Training Area on the Bluff | There were four containers with sludge and oily materials. Diesel fuel was used as a fire source. This soil from this area was excavated and moved to the refinery area for treatment. | SWMU-12, 13 and AOC 3 soil was excavated from the bluff and combined in the former refinery area SVEB treatment. The clean-up goals were met and the soil is usable for on-site fill. |
| | 4 | UST in 'Sterling' Loading Area | In 1997, three USTs were removed. Soil and GW impacts were addressed under AOC-2. | NFA |

| 1988 RFA AOC | 2005 RFI AOC | Description | Status 2011 | Proposed Remedy |
|-----------------|-----------------|-----------------------------|---|-----------------|
| 6 | 5 | Oil Film on Sewer Discharge | Water and sediment samples were collected from this City storm conduit discharge channel. Contamination was not found. The conduit is located downgradient and off-site, and a gas station, SMRC, runoff from the road and parking lots were potential sources. | NFA |