REVISED CORRECTIVE MEASURES PROPOSAL

Prepared for:
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CANTON PLANT
CANTON, OHIO
USEPA I.D. No. OHR 000 110 197

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ACRONYMS

µg/dL	Micrograms per Deciliter
ALM	Adult Lead Model
AOC	Area of Concern
AOD	Argon Oxygen Decarbonization Vessel
BERA	Baseline Ecological Risk Assessment
BLL	Blood Lead Level
BTAG	Biological Technical Assistance Group
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
BUSTR	Bureau of Underground Storage Tank Regulations
CAP	RCRA Corrective Action Plan
CCR	Current Conditions Report
CMP	Corrective Measure Proposal
COPI	Chemicals of Potential Interest
CPIP	Canton Plant Improvement Program
CR	Cancer Risk
CSM	Conceptual Site Model
DOCC	Description of Current Conditions
EAF	Electric Arc Furnace
EBNC	East Branch Nimishillen Creek
EI	Environmental Indicators
Ford	Ford Motor Company
HHRA	Human Health Risk Assessment
HI	Non-Cancer Hazard Index
IM	Interim Measures
Lagoon	Stormwater Settling Lagoon
LICR	Lifetime Incremental Cancer Risk
LMF	Ladle Metallurgy Facility
MCL	Maximum Contaminant Lead
mg/kg	Milligrams per kilogram
NFA	No Further Action
NOAA	National Oceanic Atmospheric Administration
NTWP	Near Term Work Plan
O&M	Operation and Maintenance
OEPA	Ohio Environmental Protection Agency
Order	Administrative Order on Consent
OSWER	USEPA Office of Solid Waste and Emergency Response
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PentoxSD	PA Single Discharge Wasteload Allocation Program
PPE	Personal Protective Equipment
PPM	Parts per Million
PRG	Preliminary Remediation Goals
RA	Risk Assessment

Republic	Republic Engineered Products, Inc.
RESI	Republic Engineered Steels, Inc.
RFI	RCRA Facility Investigation
RTI	Republic Technologies International, LLC
Site	Republic Canton Plant
SLERA	Screening Level Ecological Risk Assessment
SMS	Safety Management System
SVOC	Semi-Volatile Organic Compounds
SWMU	Surface Waste Management Unit
TA	Target Area
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
QAPP	Quality Assurance Project Plans
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VPM	Voluntary Remedial Measure
WPC	Work Place Controls
WQCC	Water Quality Control Center

EXECUTIVE SUMMARY

Republic Engineered Products, Inc. (Republic) entered into an Administrative Order on Consent (Order) with the United States Environmental Protection Agency (USEPA) effective August 2, 2004, relative to RCRA Corrective Action at the Republic Canton Plant located at 2633 Eighth Street, NE, Canton, Ohio (Site). This Revised Corrective Measures Proposal (CMP), prepared to comply with Section VI.17 of the Order, summarizes the results of previous site investigations and activities, documents the completion of selected interim remedial measures, presents the results of supplemental investigations conducted after submission of the RCRA Facility Investigation (RFI) Report, and provides proposals for remedial activities at the Site. This revised CMP has been updated to incorporate the results of additional investigations and negotiations with USEPA since the original CMP was submitted in October 2007, including USEPA comments and Republic's Response to Comments. The results of the additional investigations and negotiations were set forth in a number of documents, which are included in Appendix E.

The Site includes 44 solid waste management units (SWMUs) and 22 Areas of Concern (AOCs). A listing of the SWMUs and AOCs is presented in Table 1, which also presents the history, current condition, and Constituents of Potential Interest (COPIs) for each of the SWMUs and AOCs. The locations of the SWMUs and AOCs are presented on Figure 6. The soils at selected SWMUs and AOCs were grouped into 11 separate Target Areas (TAs) based on geographic proximity, similarity of exposure scenario, and similar COPIs in order to facilitate the Risk Assessment (RA) as part of the RFI. The soils at the remaining SWMUs and AOCs were evaluated individually. Site groundwater as well as the surface water and sediments in the East Branch of the Nimishillen Creek (EBNC) were evaluated on a sitewide basis.

Investigations of site soils and groundwater as well as surface water and sediments in the EBNC have been conducted by both Republic and prior owners of the Site, generating data to characterize the nature and extent of COPIs at the Site.

The objective of the proposed corrective measures is to mitigate the potential threat to human health and the environment posed by exposure to COPIs through the general elimination of on-going sources to the environment where interim measures have not already done so. The media cleanup standards for human health at the Site were developed using a risk-based approach under current and anticipated future land use as detailed in the RFI Report. The standard of risk for this Site is $1x10^{-4}$ for the carcinogenic risk, 1.0 Hazard Index (HI) for the non-carcinogenic risk, and 10 micrograms per deciliter (µg/dL) blood lead level (BLL). A risk-based approach was also used to address potential risks to ecological receptors in the EBNC. The risk-based approach for the EBNC involved the use of toxicity weighted mass factors to help guide remedial efforts.

The corrective measures were evaluated based on viability to mitigate unacceptable risk over extended periods, ease of implementation, cost and operation & maintenance (O&M) requirements. The technologies that were evaluated to assess the viability of achieving the corrective measure objectives include no further action, work place and institutional controls, excavation, and pathway elimination via slag or asphalt cap.

Republic performed interim measures in lieu of evaluating potential corrective measures at the following locations during performance of the RFI:

- SWMU 47 - Old Vertical Caster Treatment Plant
- SWMU 53 - Old Baghouse #4 Melt Shop
- SWMU 59 - #3 Slab Grinder Baghouse
- AOC 94 - Mobile Repair Shop Area
- SWMU 104 - Old 8-inch Mill Day Tank

Selected groundwater samples were found to contain metals, VOCs, and/or SVOCs at concentrations above their respective screening criteria during the RFI. Although there are no current or planned uses for site groundwater, the Human Health Risk Assessment (HHRA) evaluation required by the risk assessment protocols concluded that if there were complete pathways, ingestion and dermal contact with groundwater by industrial workers and construction

workers could exceed the standard of risk for this Site. Therefore, human exposure to groundwater was evaluated in this CMP. The use of work place and institutional controls were recommended to ensure that the groundwater use pathway remains incomplete and to protect construction workers who may be exposed to groundwater.

Groundwater fate and transport modeling indicated that groundwater migration to the stream would not results concentrations of COPIs in surface water above the applicable surface water standards. Therefore, Republic concluded that further evaluation of groundwater from an ecological perspective was not required in this CMP.

USEPA expressed concerns during our June 7, 2007 meeting that there was a potential for future unacceptable ecological risk caused by COPIs detected in site groundwater recontaminating sediments in EBNC after completion of Corrective Action and requested additional investigation be performed. Accordingly, Republic conducted a supplemental groundwater investigation in conjunction with preparing the initial CMP. Republic installed piezometers in the area of the boiler house and dam in the EBNC as wells as east and south of MW-26 to provide additional information concerning groundwater elevations and flow in the areas.

Selected sediment samples were found to contain metals, VOCs, SVOCs, and/or PCBs at concentrations above their respective ecological screening criteria. Based on the measured levels of COPIs identified in the sediments and the performance of human health and ecological risk assessments, numerous completed ecological pathways have cumulative HQs greater than 1.0. The dam has undoubtedly served to trap sediment containing COPIs, transported down EBNC from a wide variety of potential sources located upstream of the Site. Comparison of sediment results adjacent to the Site to upstream background locations indicates the origin and source of a substantial amount of the COPIs in the sediments may be located upstream of the Site. During a semi-annual meeting on June 7, 2007, Republic presented its position that the company was not responsible for all of the COPIs contained in the sediments behind the dam. USEPA acknowledged that others likely contributed to the COPIs in sediment, but that Republic would be required to propose corrective measures to address, at least in part, COPIs detected in sediment.

Republic developed a risk-based approach based on the relative toxicity of various segments of sediments to better assess the potential sediment impacts behind the dam that could be fairly attributed to the Site. Republic conducted additional investigation during August and September 2007 in conjunction with preparing the initial CMP. The results of field investigation indicated that approximately 4,300 cubic yards of sediment is located between the dam and the point upstream where EBNC begins to border the Site and that COPI concentrations are generally greater near the dam.

During discussions of the preliminary results of the August and September 2007 investigation, USEPA requested that Republic provide additional details of the risk based approach and justification for the selected approach. Republic submitted the East Branch of Nimishillen Creek Sediments Risk Based Approach dated January 4, 2008 to provide the requested additional details of the risk based approach and justification for the selected approach.

During a semi-annual meeting on September 10, 2008, USEPA presented comments on the CMP, including verbal comments relative to potential risks to ecological receptors in the East Branch of Nimishillen Creek (EBNC). The primary ecologic comments were related to USEPA's opinion that Republic need to perform a Tier 2 Baseline Ecological Risk Assessment (BERA) to further evaluate instream sediments and overbank sediment deposits. Republic opted not to perform the BERA for the instream sediments and opted to proceed directly to remediation as allowed by the Order and USEPA regulations, was based on the very high estimated cost to complete the BERA and Republic's opinion that the BERA would not result in an acceptable HQ of less than 1.

On March 3, 2009, Republic submitted the Baseline Ecological Risk Assessment Report presenting the requested additional evaluation of the overbank sediment deposits. The BERA concluded that the overbank sediment deposit quality upstream of the dam is similar to that adjacent to and downstream of the dam, indicating that the origin and source of the contaminants in the overbank deposits may also be located upstream of the site rather than the site itself and that the concentrations detected are typical of the urban setting of the site. Thus, remediation of

overbank soil/sediment on the site would not appreciably reduce the overall risk to ecological receptor at and near the site.

On August 27, 2009, the USEPA submitted comments on the BERA to Republic requesting that an over-bank "hotspot" removal of COPIs be considered, if practicable. Republic submitted a Response to Comments in USEPA Letter dated August 27, 2009 – Baseline Ecological Risk Assessment – Overbank Deposits dated October 2, 2009 presenting additional evaluation of the overbank deposits and proposed a "hotspot" excavation for sediments in the area of OB-11. Subsequent to Republic's proposal to perform the "hotspot" excavation and negotiations between the parties, it was agreed that Republic would propose removal of the sediment within 500 feet upstream of the dam in this revised CMP.

Except for SWMU 66 and AOC 111, the SWMUs and AOCs that were determined to not have a calculated potential risk exceeding the standard of risk for this Site during the RFI were not evaluated as part of this CMP. During negotiations with USEPA, Republic agreed to evaluate remedial activities at SWMU 66 and AOC 111 even though the HHRA indicated the calculated potential risk for each area was below the standard of risk for this Site.

The remaining SWMUs and AOCs, as well as the EBNC sediments, were carried forward into the corrective measures evaluation and the results of the evaluation are presented in this CMP. Table 11 summarizes the corrective measures that are proposed for the Site in this CMP and Table 12 provides an overview of the evaluation used to assess the alternative corrective measures.

1.0 INTRODUCTION

This revised CMP summarizes the results of previous site investigations and activities, documents interim remedial measures already performed at the Site, and provides proposals for remedial activities at the Republic Site. The Site encompasses approximately 387 acres located at 2633 Eighth Street NE in the City of Canton, Ohio.

1.1 BACKGROUND

Republic entered into an Order with the USEPA effective August 2, 2004. This Order allowed Republic to utilize information previously collected and developed by the former Site owners as part of the RFI. This information included groundwater monitoring events, Quality Assurance Project Plans (QAPP), studies and reconnaissance reports. This CMP has been prepared to comply with Section VI.17 of the Order. The Order requires that Republic perform the following:

- Submit a brief Current Conditions Report (CCR) for the Site by September 30, 2004;
- Submit an Environmental Indicators (EI) Report by August 1, 2006;
- Perform an RFI and submit an RFI Report by February 1, 2007, revised to be March 2, 2007 after an extension was approved by USEPA;
- Propose final corrective measures by August 1, 2007, revised to be October 30, 2007 after an extension was approved by USEPA; and
- Implement the final corrective measures within a reasonable period of time after approval by USEPA.

The Order provides that Republic may limit site investigation or risk assessment activities and proceed to implementation of corrective measures, if desired.

The following documents have been submitted to comply with the order:

- Republic submitted the CCR to USEPA on September 29, 2004. Republic did not receive any comments from USEPA on the CCR;
- Republic submitted the EI Report to USEPA on July 28, 2006. Republic received verbal notification from USEPA that the final EI had been approved;
- Republic submitted the RFI Report on March 3, 2007. USEPA presented comments on the HHRA during the semiannual meeting at USEPA's offices on June 7, 2007 and comments on the Screening Level Ecological Risk Assessment (SLERA) via email on June 28, 2007;
- Republic submitted the East Branch of Nimishillen Creek Sediments Risk Based Approach dated January 4, 2008, prepared by Civil & Environmental Consultants, Inc. (CEC);
- Republic submitted the Response to Comments – RCRA Facility Investigation Report dated February 1, 2008, prepared by CEC;
- Republic submitted the Response to Comments on Corrective Measures Proposal dated January 16, 2009, prepared by CEC;
- Republic submitted the Supplemental Response to Comments on Corrective Measures Proposal dated March 3, 2009, prepared by CEC;
- Republic submitted the Baseline Ecological Risk Assessment Report dated March 2009, prepared by CEC;
- Republic submitted the Response to Comments in USEPA Letter dated August 27, 2009 – Baseline Ecological Risk Assessment – Overbank Deposits dated October 2, 2009, prepared by CEC with Cover Letter prepared by Republic; and
- Republic submitted the Submission of Additional Analytical Data for the East Branch of Nimishillen Creek in an email with the subject line Republic Canton - Data for Orange Precipitate near Outfall 011 dated December 9, 2009, sent by Tom Maher of CEC.

Communications between Republic and USEPA have also occurred through numerous meetings, phone calls and emails since the initial CMP was submitted. The documents listed above that were submitted after the original CMP are included in Appendix E.

1.2 PURPOSE AND SCOPE

This CMP has been prepared consistent with the CAP – OSWER Directive 9902.3 dated May 1994 provided by the USEPA OSWER. The purpose of this CMP is to:

- Identify and develop corrective measures alternatives
- Evaluate corrective measures alternatives
- Justify and recommend the corrective measures

1.3 SUMMARY OF PREVIOUS SITE INVESTIGATIONS

Prior investigations of soils, groundwater and sediments in the EBNC have been conducted and have generated data to characterize the nature and extent of chemical constituents of concern at the Site. A list of the investigations and corresponding reports was included in the Description of Current Conditions (DOCC) report dated August 11, 1999, submitted to the USEPA on behalf of Republic Engineered Steels, Inc. (RESI) and the CCR submitted to USEPA on behalf of Republic on September 29, 2004.

During the RFI, Republic repeated the methodology used in the 2000 Mill Fill Study to determine the concentrations of metals in mill fill at the locations present on the current Republic property. The results of the updated Mill Fill Study are enclosed as Appendix A and were utilized in the RFI to evaluate the Site soils data.

2.0 SITE CURRENT CONDITIONS

This section presents a description of the Site location and the interim measures (IM) conducted on site. Site history (including ownership and operations), regulatory status, site setting of the subject property, source characterization and contaminant migration are referenced in Sections 2 through 5 of the RFI Report.

2.1 SITE LOCATION

The Site, which encompasses approximately 387 acres, is located at 2633 Eighth Street NE, City of Canton, Stark County, Ohio, in Sections 1, 2, and 3 of Tier T. 10 N. and Range R. 8 W. The Site is over 1.5 miles long in the east-west direction. The Site Location Map (Figure 1) identifies the location of the Site on the Canton East, Ohio United States Geological Survey (USGS) topographic map.

The Site Plan (Figure 2) shows the current facility boundaries. The Surrounding Properties Map (Figure 3) shows the owners of the adjacent properties as of October 2007. Areas immediately surrounding the Site consist of a mixture of industrial, commercial, and residential properties. The residential areas are generally located to the south, while most of the industrial areas are located north and east of the Site and, to a lesser extent, to the west. Commercial properties are located north and south of the Site. The Site is partially bordered on the north by the EBNC.

2.2 INTERIM MEASURES AND OTHER WORK

2.2.1 SWMU 47 - Old Vertical Caster Treatment Plant

The initial investigation of SWMU 47 consisted of 14 soil borings drilled during the Phase I investigation of the RFI conducted in October and November 2004. Samples from borings 47-B1 through 47-B8 were analyzed for TCL-VOCs, TCL-SVOCs, TAL-metals, PCBs, cyanide and sulfide. The analytical concentrations reported exceeded the screening levels in at least one sample for vanadium, PCBs, and some SVOCs in surface samples and for some SVOCs in

subsurface samples. Samples from borings 47-B9 through 47-B14 were analyzed for TCL-SVOCs, TAL metals, and PCBs. None of the results exceeded the screening levels. The boring locations are shown on Figure 4 and the laboratory results were previously provided to USEPA (see Attachment C of the RFI).

Due to the pending start of construction of the Flex-Caster, an IM was conducted at this SWMU based on the results of a preliminary risk screening. The IM consisted of excavating the top two feet of material from the majority of the construction area and disposal of the soil offsite. The extent of the excavation is shown on Figure 4. Confirmation samples were not collected at the completion of the excavation because the limits of excavation extended beyond the defined limit of surface contamination identified during the RFI. The excavation extended to boring locations 47-B9 through 47-B14, where the detected concentrations were all below the screening criteria. Documentation of the Interim Remedial Measures (IRM) will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA. Based on the completion of the IM for this SWMU and on the results of the initial risk screening, additional corrective measures are not necessary and will not be evaluated as part of this CMP.

2.2.2 SWMU 53 - Old Baghouse #4 Melt Shop

SWMU 53 was evaluated as part of Target Area 9 as discussed in Section 6.2.1.25 of the RFI report. The RFI at this SWMU consisted of five borings and 20 surface soil sampling locations. The samples were analyzed for TAL-Metals to delineate the extent of impacts. A number of samples had lead concentrations detected that exceeded a calculated site-specific lead concentration of 1,115 mg/kg for 250 days per year industrial exposure scenario. The site-specific concentration was calculated for the RFI Report dated March 2007 using USEPA's Technical Review Workgroup's Adult Lead Model (ALM). The site-specific lead calculations are attached as Appendix F to this CMP. The highest lead concentrations detected was 20,300 mg/kg at 53-SS7. The sample locations are shown on Figure 5 and the laboratory results were previously provided to USEPA (see Attachment C of the RFI).

An IM was performed to meet the requirements of the EIs. The work included installation of approximately 410 linear feet of chain link fence. The approximate location of the fence is shown on Figure 5. Additional corrective measures for this SWMU will be evaluated and discussed as part of this CMP.

2.2.3 SWMU 59 - #3 Slab Grinder Baghouse

The RFI investigation was performed to further characterize the Site and consisted of the collection of six surface soil samples from four boring and two surface soil sampling locations. The samples were analyzed for TAL-Metals, cyanide, and sulfide. Sample 59-B4-0-1 (2,160 mg/kg) had a detected lead concentration that exceeded the calculated site-specific lead concentration of 1,115 mg/kg for a 250 days per year exposure scenario used during preparation of the RFI report. The sample locations are shown on Figure 4 and the laboratory results were previously provided to USEPA (see Attachment C of the RFI).

Although not required, an IM was conducted at this location in conjunction with an excavation to repair a water line in the vicinity. The IM consisted of the excavation and offsite disposal of soil that had to be removed to access the pipe. Confirmation samples were collected and analyzed at the completion of the excavation. The extent of the IM performed and confirmation sample locations are shown on Figure 4. Confirmation sample laboratory results are presented in Appendix B. Additional corrective measures for this SWMU will be evaluated and discussed as part of this CMP

2.2.4 AOC 94 - Mobile Repair Shop Area

The RFI investigation was performed to further characterize the Site and consisted of the collection of 11 surface soil samples from nine boring and two surface soil sampling locations. The samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL-Metals, PCBs, cyanide, and sulfide. Preliminary risk screening conducted during preparation of the EI report indicated there was an unacceptable carcinogenic risk due primarily to benzo(a)pyrene concentration detected in

surficial materials. The sample locations are shown on Figure 5 and the laboratory results were previously provided to USEPA (see Attachment C of the RFI).

The IM consisted of excavating the surficial impacted ballast materials and installation of clean ballast material. The excavations specifically targeted sample locations 94-B4 and 94-B7 to remove the detected concentrations of benzo(a)pyrene. The IM included excavation of the ballast material to the top of the railroad ties between the rails in each set of tracks; excavation of the ballast material to the base of the railroad ties between each set of tracks and outside the outer tracks; replacement of clean railroad ballast; and placement of clean fill to return the area to existing grades. . The extent of the IM performed is shown on Figure 5. Confirmation samples were not collected at the completion of the excavation because the excavation extended horizontally to boring locations where the detected concentrations were all below the screening criteria and the intention of the IM was to eliminate the potential industrial worker direct contact exposure scenario, not to address the potential calculated risk due to subsurface soils. Clean ballast/slag materials were used to backfill the excavation to eliminate the direct contact exposure pathway to underlying soils containing BAP at concentrations above the screening criteria. Documentation of the Interim Remedial Measures (IRM) will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA. Based on the completion of the IM at this SWMU additional corrective measures are not necessary and will not be evaluated as part of this CMP.

2.2.5 SWMU 104 - Old 8-inch Mill Day Tank

The RFI consisted of the collection of two surface soil samples from two surface soil sampling locations. The samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL-Metals, PCBs, cyanide, and sulfide. The sample locations are shown on Figure 4 and the laboratory results were previously provided to USEPA (see Attachment C of the RFI).

The risk screening performed during preparation of the EI report determined the concentration of COPIs in this area did not present an unacceptable risk. However, Republic elected to perform

an IM that consisted of removing and disposing visually stained material. No confirmation samples were obtained. The excavated material was replaced with slag backfill. The extent of the excavation is shown on Figure 4. Due to the completion of the IM for this SWMU and based on the results of the initial risk screening, additional corrective measures are not necessary and will not be evaluated as part of this CMP.

3.0 MEDIA CLEANUP STANDARDS

3.1 RISK DERIVED STANDARDS

3.1.1 Human Exposures

The media cleanup standards for the Site have been developed using a risk-based approach as detailed in the RFI Report. Under current and anticipated future land use, onsite industrial workers and construction workers are considered the most likely potentially exposed populations. Trespassers are also considered to be a realistic receptor group under current and anticipated future land use conditions. Offsite residents may have access to surface water, sediment, and fish in the EBNC upstream, adjacent to, and downstream of the Site through recreational use (i.e., adults and juveniles playing in the EBNC). Therefore, adult and adolescent recreational users (i.e., adult and youth recreator) are also included as potentially sensitive receptors for the Site.

The characterization of the potential exposure pathways at the Site and whether each pathway was complete is presented in the Conceptual Site Model (CSM) included in the RFI report. A revised CSM was submitted with the March 2009 BERA to address the potential exposure pathways for the overbank deposits. Based on potential release and transport mechanisms, potential receptors may be exposed to chemicals in surface soil, subsurface soil, sediment, surface water, fish, and ambient air (chemicals volatilized from groundwater and soils).

Lead was identified as a COPI for the Site in surface soil, subsurface soil and groundwater. Direct contact exposure to lead in soil was evaluated by using the USEPA Adult Lead Model (ALM), which was designed to predict the blood lead concentrations in the developing fetus of an adult woman. The USEPA has adopted a target BLL of 10 μg/dL, which has been designated by the U.S. Centers for Disease Control and Agency of Toxic Substances and Disease Registry, as a level to protect sensitive populations (neonates, infants and children). The ALM was run to estimate BLLs in the developing fetus of a female industrial worker as a result of direct contact exposures to soil.

The risk-based approach integrates the results of the Exposure Assessment and Toxicity Assessment to estimate theoretical excess lifetime cancer risks (CRs) and noncarcinogenic health effects associated with exposure to chemicals. This integration provides quantitative estimates of either cancer risk or a non-cancer HI, which are compared to standards of acceptable risk or points of departure. The standard of risk for this Site is $1x10^{-4}$ for the carcinogenic risk and 1.0 HI for the non-carcinogenic risk. The USEPA target BLL of 10 µg/dL is used for lead exposures.

3.1.2 Ecological Exposures

A risk-based approach is used to address potential risks to ecological receptors in the EBNC. This risk-based approach involves the use of toxicity weighted mass factors to help guide remedial efforts. The toxicity weighted mass factor relates the mass of a chemical to toxicity. The toxicity weighted mass factor approach consisted of the following steps:

Step 1: Calculate the mass of each COPI in the sediment by stream segment for the targeted area. COPI are determined by comparing sediment data to applicable ecological screening values as discussed in Section 3.4. For this evaluation, the targeted area is defined as the portion of the EBNC that bisects the facility. The targeted area has been broken into 11 stream segments. The targeted area and 11 stream segments are illustrated on figures presented in Section 3.4.

Step 2: Determine relative toxicity factors for each COPI. The factor is relative to the risk driving chemical (i.e., the chemical with the lowest screening value).

Step 3: Calculate a toxicity weighted mass factor for each stream segment. This factor is representative of the mass of the chemical in a particular stream segment multiplied by the chemical's relative toxicity factor (as calculated in Step 2).

Once the toxicity weighted mass factors have been calculated, these factors were used to help identify the stream segments contributing to the highest toxicity.

3.2 SOURCES OF CHEMICALS OF POTENTIAL INTEREST

This section presents a brief summary of the SWMUs and AOCs at the Site including a synopsis on the risk evaluation and a conclusion to explain the inclusion or elimination of a SWMU/AOC from the corrective measures evaluation process presented in Section 5 of this CMP.

The Site includes 44 SWMUs and 21 AOCs plus AOC 110b, added during the RFI investigation. A listing of the SWMUs and AOCs is presented in Table 1, which also presents the history, current condition, and COPIs for each of the SWMUs and AOCs. The locations of the SWMUs and AOCs are presented on Figure 6. The soils at selected SWMUs and AOCs were grouped into 11 separate TAs based on geographic proximity, similarity of exposure scenario, and similar COPIs in order to facilitate the RA as part of the RFI. The remaining SWMUs and AOCs were evaluated individually. For purpose of this section, if analytical results in a SWMU, AOC or TA did not exceed risk based screening criteria, then risks are represented by a value of (0.0).

3.2.1 SWMU 3 - Heckett Slag & Byproduct Processing Area

Risk-Screening Calculations – Surface Soil:

The surface soil at this SWMU was evaluated as part of TA No. 1, which includes SWMUs 3, 13, 46, 64, 65 and 97. The background-adjusted carcinogenic risk to industrial workers posed by the COPIs, detected in surface soil samples at this TA ($5.70x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to construction workers posed by the COPIs detected in surface soil samples at this TA ($8.70x10^{-7}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.76) was below the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (3.07) exceeds the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA ($2.13x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (4.5) exceeds the target HI of 1.0.

Conclusions

The individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soil.

3.2.2 SWMU 8 - Ingot Inoculation Baghouse Dust Containerized Storage Area

Comparisons of sample analytical results to risk-based screening criteria did not result in any COPI concentrations above the screening criteria.

Conclusions

Based on having no COPIs detected above secondary screening levels and not exceeding the risk-based standards, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.3 SWMU 9 - Waste Oil Drum Storage Area #1

This SWMU is located inside the former Swing Grind Building. There were no samples assigned to SWMU 9. This SWMU was evaluated as part of TA No. 2, which includes SWMUs 9 and 66. The discussion under Section 3.2.34 (SWMU 66) of this report includes the risk screening calculations for TA No. 2. Additional evaluation consisted of visually inspecting the concrete

floor for signs of a release as well as cracks in the floor that could have allowed releases to enter the environment. The evaluation did not find any indication of a release to the environment.

Conclusions

The individual SWMUs/AOCs associated with TA No. 2 require further evaluation due to the exceedance of the target BLL for the construction worker's potential exposure to lead in surface and subsurface soils. However, SWMU 9 is located indoors on a concrete floor with no obvious environmental impacts observed, and the surface and sub-surface samples resulting in the construction worker's potential exposure to lead were located outside the building (i.e., not associated with SWMU 9). Thus, while SWMU 9 will be evaluated further as part of this CMP for the sake of consistency for the entire TA, the focus for TA No. 2 is SWMU 66 and particular soil borings located outside the building.

3.2.4 SWMU 12 - Empty Drum Storage Area #2

Comparisons of sample analytical results to risk-based screening criteria did not result in any COPI concentrations above the screening criteria.

Conclusions

Based on having no COPIs detected above secondary screening levels, not exceeding the risk-based standards, and no obvious adverse environmental impacts being observed, corrective measures will not evaluated for this SWMU as part of this CMP.

3.2.5 SWMU 13 - Heckett Waste Oil Drum Accumulation Area

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 1. Section 3.2.1 (SWMU 3) of this report includes the risk screening calculations for TA No. 1.

Conclusions

The individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soil.

3.2.6 SWMU 14 - Ingot Inoculation Dust Collection Baghouse

Risk-Screening Calculations - Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 10, which includes SWMUs 14, 51, 52, 101, and 76b. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.58) was below the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (2.41) exceeds the target HI of 1.0.

Risk-Screening Calculations - Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (0.0) was below the target HI of 1.0.

Blood Lead Concentration Calculations

The fetal blood lead (blood lead) concentration for the industrial worker resulting from the exposure to surface soil samples at this TA (6.2) did not exceed the 10 µg/dL. The blood lead concentration for the construction worker resulting from the exposure to surface soil samples at this TA (13.1) exceeds the target level of 10 µg/dL. Lead was not detected above screening levels in subsurface soils at TA No. 10.

Conclusions

The individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron, lead, and manganese in surface soils.

3.2.7 SWMU 22 - Mill Scale Staging Area

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 3, which includes SWMUs 22, 80, 90, 109, and 113. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.87) was below the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (3.62) exceeds the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (0.0) did not exceed the target HI of 1.0.

Blood Lead Concentration Calculations

The average concentration of lead in soil samples taken from SWMU 22 did not exceed the Region IX PRG of 800 mg/kg. Therefore, the blood lead concentration calculation was not performed for TA No. 3.

Conclusions

The individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils.

3.2.8 SWMU 30 - Johnson's Pond

Risk-Screening Calculations – Sediment

The carcinogenic risk posed by the COPIs detected in sediment samples ($2.0x10^{-5}$) did not exceed the target cumulative carcinogenic risk level of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed by COPIs detected in surface samples at this SWMU (0.0) did not exceed the target HI of 1.0. Additionally, personnel do not enter the pond or contact pond sediments. Therefore, the exposure pathway for industrial workers is incomplete.

Conclusions

Corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.9 SWMU 32 - Waste Pickle Liquor Sumps

No soil samples from this region of the Site were assigned to this SWMU. However, remedial actions have been performed at the waste pickling liquid sump (SWMU 32) and the adjacent AOC 112 - Former Process Impacts at Bar/Coil Pickle Areas in accordance with the OEPA's Closure Plan Review Guidance for RCRA Facilities.

These areas were formerly utilized as part of the finishing process for certain steel products in which oxide and scale were removed from the steel surface by dissolution in acid. The plant utilized fiberglass-lined concrete secondary containment process tubs in the bar and coil pickling areas. The bar pickling area utilized a sulfuric acid process tub, a spray rinse process tub, and a lime process tub. The coil pickling area utilized two sulfuric acid process tubs, two coil rinse process tubs, a cold water process tub, a hot water process tub, and a Parcolene process tub. In addition, an acid trench, pump house, and exhaust house were present outside the pickling building. Also, two 12,500-gallon waste acid tanks were located in the waste pickling liquid sump.

Closure of these areas included the decontamination of the process tubs, pump house, exhaust house, acid trench, and waste pickle liquor sumps. Rinsate samples were collected and analyzed following the decontamination process to document that the activities resulted in clean-closure. Visual observation following decontamination verified that there were no breaches that could have resulted in a release to the environment. Closure Activities also included the disassembly and disposal of an overhead acid line and ancillary equipment. Waste materials were transported to and disposed of at offsite disposal facilities.

Conclusions

SWMU 32 has been clean-closed in accordance with OEPA's requirements. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP. Documentation of the Interim Remedial Measures (IRM) will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA.

3.2.10 SWMU 35 - Water Quality Control Center (WQCC)

Risk-Screening Calculations

Comparisons of sample analytical results to risk-based screening criteria did not result in the detection of any COPI concentrations above the screening criteria.

Conclusions

Based on having no COPIs detected above screening levels, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.11 SWMU 36 - 8-inch Mill Scale Pit & Associated Skimmer

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 7, which includes SWMUs 36 and 37. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.0) did not

exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (0.0) did not exceed the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (1.97) exceeds the target HI of 1.0.

Blood Lead Concentration Calculations

Lead was not detected above secondary screening levels in surface soils at TA No. 7. The blood lead concentration for the construction worker resulting from the exposure to subsurface soil samples at this TA (79.3) exceeds the target level of 10 µg/dL.

Conclusions

None of the samples assigned to this SWMU exceeded the secondary screening level. However, the individual SWMUs associated with TA No. 7, which includes SWMU 36, require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron and lead in subsurface soils.

3.2.12 SWMU 37 - 8-inch Mill Oil Storage Tank

The risk screening calculations for surface and subsurface soil at this SWMU and the blood lead concentration calculations were evaluated as part of TA No. 7. Please see the discussion under Section 3.2.11 (SWMU 36) of this report for the risk screening calculations for TA No. 7.

Conclusions

The individual SWMUs associated with TA No. 7 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron and lead in subsurface soils.

3.2.13 SWMU 38 - 12-inch Mill Scale Pit

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 4, which includes SWMUs 38, 39, and 40. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA ($7.71x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA ($1.38x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.6) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (2.71) exceeds the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (0.0) did not exceed the target HI of 1.0.

Conclusions

None of the surface soil samples assigned to this SWMU exceed the secondary screening level. However, the individual SWMUs/AOCs associated with TA No. 4 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to arsenic and iron in surface soil.

3.2.14 SWMU 39 - 12-inch Mill Oil Decanter Tanks

None of the samples obtained in this area were assigned to SWMU 39. This SWMU was evaluated as part of TA No. 4. Section 3.2.13 (SWMU 38) of this report includes the risk screening calculations for TA No. 4.

Conclusions

The individual SWMUs associated with TA No. 4 require further evaluation due to exceedance of the target HI for construction worker's potential exposure to arsenic and iron in surface soil.

3.2.15 SWMU 40 - 12-inch Mill Oil Storage Tank

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 4. Section 3.2.13 (SWMU 38) of this report includes the risk screening calculations for TA No. 4.

Conclusions

The individual SWMUs/AOCs associated with TA No. 4 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to arsenic and iron in surface soils.

3.2.16 SWMU 43 - Mobile Repair Shop Waste Oil Tank

Risk-Screening Calculations

Comparisons of sample analytical results against risk-based screening criteria did not result in the detection of any COPI concentrations above the screening criteria.

Conclusions

Based on having no COPIs detected above secondary screening levels and not exceeding the risk-based standards, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.17 SWMU 44 - Heat Treatment Waste Oil Decanter Tank & Storage Tank

The waste oil decanter tank and storage tank associated with SWMU 44 were located on a concrete slab floor within the Heat Treat/Bar Finish building. This equipment has been removed as part of the decommissioning of the heat treatment operation. During the decontamination process the integrity of the tank and concrete floor were evaluated to determine if there are any means (i.e., cracks, holes, or drains) by which COPIs could have been released from SWMU 44 to the soil underlying the concrete floor. No visible damage or integrity issues were observed in the area where the equipment was located. Documentation of the Interim Remedial Measures (IRM) will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA.

Conclusions

Based on prior cleanup and no visible environmental impacts being observed, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.18 SWMU 45 - Machine Shop Waste Oil Storage Tank

The tank was removed in 1998. No visible stains have been observed in soil or on concrete in the vicinity of the former tank location. RTI performed a Voluntary Remedial Measure (VRM) for the tank pad in October 2000 (under the terms of the prior owner's RCRA § 3008(h) Administrative Order on Consent). The VRM consisted of pressure washing the pad to remove visible staining.

Conclusions

SWMU 45 was previously remediated as part of a VRM. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP. Documentation of the VRMs for SWMU 45 and AOC 99 will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA.

3.2.19 SWMU 46 - Heckett Waste Oil Storage Tank

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 1. Section 3.2.1 (SWMU 3) of this report includes the risk screening calculations for TA No. 1.

Conclusions

None of the samples assigned to this SWMU exceeded the secondary screening level. However, the individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soil.

3.2.20 SWMU 47 - Old Vertical Caster Treatment Plant

An IM was conducted at this SWMU based on the results of a preliminary risk screening. The removal action consisted of excavating the top two feet of material from the majority of the construction area and disposal of the soil. Further IM details can be found under Section 2.2.1 (SWMU 47) of this report.

Conclusions

Based on the completion of the IM, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.21 SWMU 48 - #3 Melt Shop Baghouse

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 9, which includes SWMUs 48, 49, and 53. The background-adjusted carcinogenic risk for the industrial worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the industrial worker posed by COPIs detected in surface soil samples at this TA (0.75) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in surface soil samples at this TA (3.16) exceeded the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in subsurface soil samples at this TA (0.0) did not exceed the target cumulative

carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in subsurface soil samples at this TA (0.94) did not exceed the target HI of 1.0.

Blood Lead Concentration Calculations

The blood lead concentration for the industrial worker resulting from the exposure to surface soil samples at this TA (14.6) exceeds 10 µg/dL. The blood lead concentration for the construction worker resulting from the exposure to surface soil samples at this TA (17.2) exceeds 10 µg/dL. Lead was not detected above secondary screening levels in subsurface soils at TA No. 9.

Conclusions

The individual SWMUs/AOCs associated with TA No. 9 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and the target BLL for the industrial worker and construction worker's potential exposure to lead in surface soils.

3.2.22 SWMU 49 - #4 Melt Shop Baghouse

The surface and subsurface soil at this SWMU was evaluated as part of TA No. 9. Please see the discussion under Section 3.2.21 (SWMU 48) of this report for the risk screening calculations for TA No. 9.

Conclusions

The individual SWMUs/AOCs associated with TA No. 9 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and the target BLL for the industrial worker and construction worker's potential exposure to lead in surface soils.

3.2.23 SWMU 50 - Interior Solids Drop Station/Melt Shop #4

No sampling was proposed due to this SWMU being inside a building with a concrete floor. Operational controls are in place to control exposures to the site workers. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.24 SWMU 51 - Ingot Inoculation Fume Evacuation System

The risk screening calculations for surface and subsurface soil at this SWMU and the blood lead concentration calculations were evaluated as part of TA No. 10. Section 3.2.6 (SWMU 14) of this report includes the risk screening calculations for TA No. 10.

Conclusions

The individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron, lead, and manganese in surface soils.

3.2.25 SWMU 52 - Exterior Solids Drop Station #4 Melt Shop

The risk screening calculations for surface and subsurface soil at this SWMU and the blood lead concentration calculations were evaluated as part of TA No. 10. Section 3.2.6 (SWMU 14) of this report includes the risk screening calculations for TA No. 10.

Conclusions

The individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron, lead, and manganese in surface soils.

3.2.26 SWMU 53 - Old Baghouse #4 Melt Shop

The surface and subsurface soil at this SWMU was evaluated as part of TA No. 9. Section 3.2.21 (SWMU 48) of this report includes the risk screening calculations for TA No. 9.

Conclusions

The individual SWMUs/AOCs associated with TA No. 9 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and the target BLL for the industrial worker and construction worker's potential exposure to lead in surface soils.

3.2.27 SWMU 58 - Pickling Operations Mist Suppression System

RTI removed the fan and ductwork as part of the former owner's obligations upon the sale of the operating portion of the original facility to Republic. No soil samples from this region of the Site were assigned to this SWMU. However, decontamination of the concrete surfaces in this area was conducted by Republic as part of the AOC 112 - Former Process Impacts at Bar/Coil Pickle Areas remedial actions. Visual observation of the secondary containments did not reveal any signs of a release to the environment.

Conclusions

Based on the removal of equipment, decontamination and visual observation, SWMU 58 has been clean-closed in accordance OEPA's requirements. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP. Documentation of the closure activities performed for this SWMU will be included in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA.

3.2.28 SWMU 59 - #3 Slab Grinder Baghouse at #4 Steel Conditioning

Risk-Screening Calculations – Surface Soil

The background-adjusted carcinogenic risk for the industrial worker posed by the COPIs detected in surface soil samples at this SWMU (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in surface soil samples at this SWMU (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the industrial worker posed by COPIs detected in surface soil samples at this SWMU (0.0) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in surface soil samples at this SWMU (0.0) did not exceed the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in subsurface soil samples at this SWMU (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in subsurface soil samples at this SWMU (0.0) did not exceed the target HI of 1.0.

Blood Lead Concentration Calculations

The blood lead concentration for the industrial worker resulting from the exposure to surface soil samples at this SWMU (6.8) did not exceed 10 µg/dL. The blood lead concentration for the construction worker resulting from the exposure to surface soil samples at this SWMU (16) exceeds 10 µg/dL. Lead was not detected above secondary screening levels in subsurface soils at SWMU 59.

Conclusions

SWMU 59 requires further evaluation due to the exceedance of the target BLL for the construction worker's potential exposure to lead in surface soils.

3.2.29 SWMU 60 - #4 Steel Conditioning Torch Cut Baghouse

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 5, which includes SWMUs 60, 61, 70, and 75. The cumulative background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The cumulative background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the industrial worker posed by COPIs detected in surface samples at this TA (0.39) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in surface samples at this TA (1.53) exceeded the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk posed by the COPIs detected in subsurface soil samples at this TA ($1.18x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed by COPIs detected in subsurface soil samples at this TA (0.19) did not exceed the target HI of 1.0.

Conclusions

The individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to manganese in surface soils.

3.2.30 SWMU 61 - #1 Round Grinder and #2 Slab Grinder at #4 Steel Conditioning

The surface and subsurface soil at this SWMU was evaluated as part of TA No. 5. Please see the discussion under Section 3.2.29 (SWMU 60) of this report for the risk screening calculations for TA No. 5.

Conclusions

None of the samples assigned to this SWMU exceeded the secondary screening level. However, the individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to manganese in surface soils.

3.2.31 SWMU 62 - Metallurgical Lab Hood Exhaust System

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 8, which includes SWMUs 62 and 105. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.0) was below the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction

worker by the COPIs detected in surface samples at this TA (0.0) did not exceed the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

A surface soil sample was collected during the Phase I investigation. No COPIs were detected at a concentration above their respective screening criteria. The Metallurgical Lab Hood Exhaust System is located above grade on the external wall of the Metallurgical Lab and the surrounding ground surface is paved. Because any potential releases would have occurred above grade, the fact that no COPIs were detected at a concentration above their respective screening criteria in surface soils just below the pavement justified not sampling subsurface soils. Therefore, no subsurface soil samples were obtained from SWMU 62.

Conclusions

SWMU 62 will not be evaluated further based on not having COPIs detected above secondary screening levels and not exceeding risk-based standards. Therefore corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.32 SWMU 64 - Heckett Slag Screening Operation

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 1. Please see the discussion under Section 3.2.1 (SWMU 3) of this report for the risk screening calculations for TA No. 1.

Conclusions

The individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soils.

3.2.33 SWMU 65 - Heckett Refuse Collection Area

None of the samples obtained in this region of the Site were assigned to SWMU 65. Instead, the soil at this SWMU was evaluated as part of TA No. 1. Please see the discussion under Section 3.2.1 (SWMU 3) of this report for the risk screening calculations for TA No. 1.

Conclusions

The individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soils.

3.2.34 SWMU 66 - Tub and Associated Trench (includes boring location 46-GPS)

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 2, which includes SWMUs 9, 66, and 46-GPS. The background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface soil samples at this TA ($3.1x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface soil samples at this TA ($4.7x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed to the industrial worker by COPIs detected in surface samples at this TA (0.0) was below the target HI of 1.0. The background-adjusted non-carcinogenic risk posed to the construction worker by the COPIs detected in surface samples at this TA (0.0) was below the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA ($1.64x10^{-6}$) did not exceed the target cumulative

carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (0.25) was below the target HI of 1.0.

Blood Lead Concentration Calculations

The blood lead concentration for the industrial worker resulting from the exposure to surface soil samples at this TA (7.7) did not exceed 10 µg/dL. The blood lead concentration for the construction worker resulting from the exposure to surface soil samples at this TA (20.1) exceeds 10 µg/dL. The blood lead concentration for the construction worker resulting from the exposure to subsurface soil samples at this TA (113.1) exceeds 10 µg/dL.

Conclusions

The individual SWMUs/AOCs associated with TA No. 2 require further evaluation due to the exceedance of the target BLL for the construction worker's potential exposure to lead in surface and subsurface soils. In addition, although SWMU 66 does not exceed the carcinogenic risk-based standards, the PCB-impacted surface soils at this SWMU will also be evaluated as part of the CMS at USEPA's request and in response to USEPA's comments (as outlined in correspondence attached as Appendix E)."

3.2.35 SWMU 70 - Former Washout Pad West of #4 Steel Conditioning

The surface and subsurface soil at this SWMU was evaluated as part of TA No. 5. Please see the discussion under Section 3.2.29 (SWMU 60) of this report for the risk screening calculations for TA No. 5.

Conclusions

None of the samples assigned to this SWMU exceeded the secondary screening level. However, the individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the

exceedance of the target HI for the construction worker's potential exposure to manganese in surface soils.

3.2.36 SWMU 75 - Roll-Off Container Staging Area West of #4 Steel Conditioning

The surface and subsurface soil at this SWMU was evaluated as part of TA No. 5. Please see the discussion under Section 3.2.29 (SWMU 60) of this report for the risk screening calculations for TA No. 5.

Conclusions

The individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to manganese in surface soils.

3.2.37 SWMU 76b - EAF Dropout Chamber Solids Roll-Off Containers

The risk screening calculations for surface and subsurface soil at this SWMU and the blood lead concentration calculations were evaluated as part of TA No. 10. Please see the discussion under Section 3.2.6 (SWMU 14) of this report for the risk screening calculations for TA No. 10.

Conclusions

The individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron, lead, and manganese in surface soils.

3.2.38 AOC 80 - Locomotive Fueling Station

The risk screening calculations for surface and subsurface soil at this AOC were evaluated as part of TA No. 3. Please see the discussion under Section 3.2.7 (SWMU 22) of this report for the risk screening calculations for TA No. 3.

Conclusions

None of the samples assigned to this AOC exceeded the secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils.

3.2.39 AOC 81 - Diesel/Fuel Oil UST at Heckett Building

The tanks in this fueling station were owned and operated by Heckett from 1954 to 1989, a contractor providing services to the former owners of the facility during that time period. The USTs were removed and replaced to conform to the 1988 UST regulations. This AOC was previously removed from the list of SWMUs by an agreement with the USEPA based on documentation of clean closure of the USTs based on the closure report that was included in Appendix I.B.2.c.5-2 of the Description of Current Conditions Report submitted August 11, 1999. As stated in the Current Conditions Report submitted September 29, 2004, the documentation provided to USEPA on the closure of AOC 81 was determined by USEPA to be adequate to demonstrate a release had not occurred and therefore investigations at AOC 81 during the performance of the RFI was not required. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.40 AOC 83 - Diesel/Fuel Oil UST at Southeast Corner of #4 Melt Shop

Risk-Screening Calculations –Surface Soil

Surface soil samples were not obtained at this AOC because the intent of the investigation at this AOC was to evaluate whether a release had occurred from the UST. The previous location of the dispensers is unknown and; therefore, it was not possible to locate borings specifically to evaluate releases from the former dispensers or near-grade piping. However, any significant release from the former dispensers or near-grade piping would have been detected in the shallow subsurface samples that were collected. Additionally, numerous surface soil samples were obtained that were assigned to nearby SWMUs and AOCs and none of those samples had COPIs that would be associated with the Diesel/Fuel Oil UST detected above their respective screening levels.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this AOC (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this AOC (0.0) did not exceed the target HI of 1.0.

Conclusions

AOC 83 does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.41 AOC 87c - Leaking Drum/Sample Location BM-GS-5-1UA

Risk-Screening Calculations – Surface Soil

The surface soil at this AOC was evaluated as part of TA No. 6, which includes AOCs 87c and 115. The cumulative background-adjusted carcinogenic risk to the industrial worker posed by the COPIs detected in surface samples at this TA ($7.1x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The cumulative background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in surface samples at this TA ($1.07x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the industrial worker posed by COPIs detected in surface samples at this TA (0.45) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in surface samples at this TA (2.07) exceeded the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

None of the subsurface results were found in excess of their respective standards.

Conclusions

The individual SWMUs/AOCs associated with TA No. 6 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron in surface soils.

3.2.42 AOC 88 - Heckett Maintenance Garage Area

No sampling was proposed due to the location being inside a building with a concrete floor. Operational controls are in place to control worker exposure and include equipment with enclosed cabs, regular water suppression to prevent airborne dust, and the use of appropriate PPE. Therefore corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.43 AOC 90 - Melt Shop Scrap Yard

The risk screening calculations for surface and subsurface soil at this AOC were evaluated as part of TA No. 3. Please see the discussion under Section 3.2.7 (SWMU 22) of this report for the risk screening calculations for TA No. 3.

Conclusions

The individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils.

3.2.44 AOC 93 - Mobile Repair Shop Salvage Yard

Risk-Screening Calculations – Surface Soil

Comparison of the analytical data to risk-based standards did not result in the detection of any COPI at a concentration above its respective screening criteria.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this TA (6.41×10^{-6}) did not exceed the target cumulative carcinogenic risk of 1×10^{-4}. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this TA (0.02) did not exceed the target HI of 1.0.

Conclusions

The AOC does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.45 AOC 94 - Mobile Repair Shop Area

An IM was conducted for surface soil at this SWMU based on the results of a preliminary risk screening. The IM consisted of excavating the impacted railroad ballast. Further IM details can be found under Section 2.2.3 (SWMU 94) of this report.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this AOC ($2.57x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this AOC (0.04) did not exceed the target HI of 1.0.

Conclusions

Based on the completion of the IM and subsurface soils not exceeding the risk-based standards, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.46 AOC 95 - Forge Area Fueling Station

Risk-Screening Calculations – Surface Soil

The background-adjusted carcinogenic risk for the industrial worker posed by the COPIs detected in surface soil samples at this AOC (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in surface soil samples at this AOC (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the industrial worker posed by COPIs detected in surface soil samples at this AOC (0.68) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk for the

construction worker posed by COPIs detected in surface soil samples at this AOC (2.53) exceeds the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

Comparison of the analytical data to risk-based standards did not result in the detection of any COPI at a concentration above its respective screening criteria.

Conclusions

AOC 95 requires further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to manganese in surface soils.

3.2.47 AOC 97 - Solvent Collection Tank at Heckett Garage Area

The risk screening calculations for surface and subsurface soil at this AOC were evaluated as part of TA No. 1. Please see the discussion under Section 3.2.1 (SWMU 3) of this report for the risk screening calculations for TA No. 1.

Conclusions

None of the samples assigned to this AOC exceeded the secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soils.

3.2.48 AOC 98 - Ford Plant Effluent Discharge

AOC 98, the former Ford Plant Effluent Discharge, consisted of a lagoon and discharge pipe that directed effluent from the Ford Plant into EBNC. Effluent discharge operations from the Ford Plant to EBNC were discontinued in 1991. Sediment was the primary waste discharged from

this AOC. The former Ford lagoon has been cleaned and closed. The sampling that was performed for this AOC coincided with sediment sampling of the EBNC. Sediment sampling of the EBNC is discussed in Section 3.4 of this report. Corrective measures are not necessary for this AOC and will not be evaluated outside the remediation of the EBNC discussed in Section 5 of this CMP.

3.2.49 AOC 99 - Machine Shop Trench

The Machine Shop Trench located outside the old Machine Shop is a concrete stormwater conveyance, which collected drainage from the roof and from activities in the former Machine Shop. A used oil tank (SWMU 45) was located near the trench. The structures in this area were demolished and the used oil tank was removed in 1998. The concrete trench was cleaned in October 2000 by RTI as part of a VRM under the previous owners RCRA §3008(h) Administrative Order on Consent, and the fluid and debris were removed for disposal. No visible staining of concrete surfaces in the area has been observed.

Conclusions

The area was previously addressed during a VRM; therefore, corrective measures will not be evaluated for this AOC as part of this CMP. Documentation has previously been submitted to USEPA detailing the Voluntary Remedial Measure (VRM) activities for this AOC. Documentation of the VRMs for AOC 99 and SWMU 45 will be submitted in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA.

3.2.50 SWMU 101 - Canton Bloom Cast Facility LMF Baghouse Area

The risk screening calculations for surface and subsurface soil at this SWMU and the blood lead concentration calculations were evaluated as part of TA No. 10. Please see the discussion under Section 3.2.6 (SWMU 14) of this report for the risk screening calculations for TA No. 10.

Conclusions

None of the samples assigned to this SWMU exceeded the secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron, lead, and manganese in surface soils.

3.2.51 SWMU 102 - Canton Bloom Cast Facility Caster Scale Pit Area

Risk-Screening Calculations – Surface Soil

The surface soil at this SWMU was evaluated as part of TA No. 11, which includes SWMUs 102 and 103. The background-adjusted carcinogenic risk to the industrial worker and to the construction worker posed by iron detected in the surface soil sample at this TA (0.0) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk posed by iron detected in the surface soil sample at this TA (0.37) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk to the construction worker posed by iron detected in the surface sample at this TA (1.74) exceeded the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

This SWMU consists of an at-grade concrete lined structure used to stage scale. Potential routes of release would be through the concrete containment and drag out from the scale being removed from the area. The integrity of the concrete was inspected and no cracks were observed that could have resulted in a release below the concrete structure. A surface soil sample was collected during the Phase I investigation to evaluate the potential for a release due to drag out. No COPIs were detected in the surface sample at concentrations above their respective criteria. Therefore, subsurface soil sampling was not warranted based on the results of the Phase I sampling event.

Conclusions

The individual SWMUs/AOCs associated with TA. No. 11 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron in surface soils.

3.2.52 SWMU 103 - Canton Bloom Cast Facility Rolling Mill Scale Pit Area

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 11. Please see the discussion under Section 3.2.51 (SWMU 102) of this report for the risk screening calculations for TA No. 11.

Conclusions

The individual SWMUs/AOCs associated with TA. No. 11 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron in surface soils.

3.2.53 SWMU 104 - Old 8-inch Mill Day Tank

An IM was conducted at this SWMU based on the results of preliminary investigation. The removal action consisted of removing and disposing of visually stained material. Further IM details can be found under Section 2.2.5 (SWMU 104) of this report.

Conclusions

Based on the completion of the IM, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.54 SWMU 105 - Met Lab Waste Acid Tank

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 8. Please see the discussion under Section 3.2.31 (SWMU 62) of this report for the risk screening calculations for TA No. 8.

Conclusions

The individual SWMUs associated with TA No. 8, including SWMU 105 will not be evaluated further based on not having COPIs detected above secondary screening levels and not exceeding risk-based standards. Therefore corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.55 AOC 107 - Former UST Locations Adjacent to Former Plant Truck Scales

Risk-Screening Calculations – Surface Soil

The intent of the investigation at this AOC was to evaluate whether a release had occurred from the UST. Surface soil samples encountered during drilling were screened with a photoionization detector (PID) for the presence of organic vapors. The PID did not detect any concentrations of any organic vapors. Therefore, no surface soil samples were submitted to the laboratory for analysis.

Risk-Screening Calculations – Subsurface Soil

The exposure pathway to the industrial worker is incomplete due to the depth of the impacted soil. The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at this AOC (2.28×10^{-8}) did not exceed the target cumulative carcinogenic risk of 1×10^{-4}. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at this AOC (0.01) did not exceed the target HI of 1.0.

Conclusions

AOC 107 does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.56 AOC 108 - Former 8-inch Mill Etch House HCL Storage Tank

Comparisons of sample analytical results to risk-based screening criteria did not result in any COPI concentrations above the screening criteria.

Conclusions

AOC 108 did not have any COPIs detected above secondary screening levels and did not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.57 AOC 109 - Former UST Location in Melt Shop Scrap Yard

The risk screening calculations for surface and subsurface soil at this AOC were evaluated as part of TA No. 3. Please see the discussion under Section 3.2.7 (SWMU 22) of this report for the risk screening calculations for TA No. 3.

Conclusions

The individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils. .

3.2.58 AOC 110 - Former Surface Impoundment Area

Risk-Screening Calculations – Surface Soil

The risk screening calculations for surface soil at this AOC and AOC 110b were evaluated as one. Comparisons of sample analytical results against risk-based screening criteria did not result in the detection of any COPI concentrations above the screening criteria.

Risk-Screening Calculations – Subsurface Soil

The background-adjusted carcinogenic risk to the construction worker posed by the COPIs detected in subsurface soil samples at these AOCs ($1.2x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk to the construction worker posed by COPIs detected in subsurface samples at these AOCs (0.0) did not exceed the target HI of 1.0.

Conclusions

AOC 110 does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.59 AOC 110b - #6 Boilerhouse

The risk screening calculations for surface and subsurface soil at this AOC and AOC 110 were evaluated as one. Please see the discussion under Section 3.2.58 (AOC 110) of this report for the risk screening calculations.

Conclusions

AOC 110b does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.60 AOC 111 - PCB Soil Impacts at South End of 12-inch Mill Building Reheat Furnace End

Risk-Screening Calculations – Surface Soil

The background-adjusted carcinogenic risk for the industrial worker posed by the COPIs detected in surface soil samples at this AOC ($7.6x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in surface soil samples at this SWMU ($1.1x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the industrial worker posed by COPIs detected in surface soil samples at this AOC (0.0) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in surface soil samples at this AOC (0.19) did not exceed the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

Comparison of the analytical data to risk-based standards did not result in the detection of any COPI at a concentration above its respective screening criteria.

Conclusions

AOC 111 does not exceed the risk-based standards. Therefore, this AOC need not be included in the CMS evaluation process. However, the PCB-impacted surface soils at this AOC will be evaluated as part of the CMS at USEPA's request and in response to USEPA's comments (as outlined in correspondence attached as Appendix E)."

3.2.61 AOC 112 - Former Process Impacts at Bar/Coil Pickle Areas

Remedial actions have been performed at the Former Bar and Coil Pickling Areas in accordance with the OEPA's Closure Plan Review Guidance for RCRA Facilities. The closure activities at AOC 112 were performed in conjunction with activities for SWMU 32; see section 3.2.9 for a

discussion on the remedial activities. The decontamination of the containments has been completed and rinsate samples collected and analyzed to document that the activities resulted in clean-closure of the containments. Visual observation of the containments after decontamination was complete did not reveal any breaches of the containments that could have resulted in a release to the environment.

Conclusions

AOC 112 has been clean-closed in accordance OEPA's requirements. Documentation of the closure activities performed for this AOC will be submitted in the Final Remedy Construction Completion Report required by the Order, to the extent such documentation has not previously been submitted to USEPA. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.62 AOC 113 - Railroad Ties/Railroad Spoil Area

The risk screening calculations for surface and subsurface soil at this SWMU were evaluated as part of TA No. 3. Please see the discussion under Section 3.2.7 (SWMU 22) of this report for the risk screening calculations for TA No. 3.

Conclusions

The individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron and manganese in surface soils. .

3.2.63 SWMU 114 - "Old" N&T Repair Shop

SWMU 114 refers to the old N&T Repair shop. The shop is a covered building used for the servicing of equipment. None of the samples obtained in this region of the Site were assigned to SWMU 114. Soil samples collected in the vicinity of the Repair Shop were assigned to AOC 94

and SWMU 43. Therefore, corrective measures will not be evaluated for this SWMU as part of this CMP.

3.2.64 AOC 115 - Sample Location BM-GS-6-1UA

The surface and subsurface soil at this AOC was evaluated as part of TA No. 6. Please see the discussion under Section 3.2.41 (AOC 87c) of this report for the risk screening calculations for TA No. 6.

Conclusions

None of the samples assigned to this AOC exceeded the secondary screening level. However, the individual SWMUs/AOCs associated with TA No. 6 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron in surface soils.

3.2.65 AOC 116 - Sample Location BM-SB-18-1U

Risk-Screening Calculations:

Comparison of the analytical data to risk-based standards did not result in the detection of any COPIs at a concentration above its respective screening criteria.

Conclusions

AOC 116 does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.2.66 AOC 117 - Former Coke Battery

Risk-Screening Calculations – Surface Soil

The background-adjusted carcinogenic risk for the industrial worker posed by the COPIs detected in surface soil samples at this AOC ($3.2x10^{-5}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted carcinogenic risk for the construction worker posed by the COPIs detected in surface soil samples at this AOC ($5.5x10^{-6}$) did not exceed the target cumulative carcinogenic risk of $1x10^{-4}$. The background-adjusted non-carcinogenic risk for the industrial worker posed by COPIs detected in surface soil samples at this AOC (0.2) did not exceed the target HI of 1.0. The background-adjusted non-carcinogenic risk for the construction worker posed by COPIs detected in surface soil samples at this AOC (0.96) did not exceed the target HI of 1.0.

Risk-Screening Calculations – Subsurface Soil

Comparison of the analytical data to risk-based standards did not result in the detection of any COPI at a concentration above its respective screening criteria.

Conclusions

AOC 117 does not exceed the risk-based standards. Therefore, corrective measures will not be evaluated for this AOC as part of this CMP.

3.3 SITEWIDE GROUNDWATER

As stated in the RFI, selected groundwater samples were found to contain metals, VOCs, and/or SVOCs at concentrations above their respective screening criteria. Although there are no current or planned uses for site groundwater, the HHRA evaluation required by the risk assessment protocols concluded that if the groundwater use pathway was complete, ingestion and dermal contact with groundwater by industrial workers could have cumulative LICR greater than $1x10^{-4}$.

Republic currently obtains its water supply from the City of Canton for potable use onsite. Republic has no plans to develop groundwater for potable use in the future. Therefore, the groundwater use pathway is incomplete for the Site. An environmental covenant following the format specified by the Ohio Revised Code (ORC) 5301.80 through 5301.92 will be utilized to establish future use of the property as industrial use and to prohibit the use of site groundwater for potable and agricultural purposes to ensure that the groundwater use pathway remains incomplete in the future and work place controls will be implemented to protect construction workers who may be exposed to groundwater in the future.

However, USEPA expressed concerns during our June 7, 2007 meeting regarding the potential for COPIs detected in site groundwater to recontaminate sediments in EBNC after completion of Corrective Action. Specifically, USEPA expressed concerns about the total chromium in groundwater at MW-26 and naphthalene at MW-58. To address the comments from USEPA and provide additional information concerning the groundwater conditions, a supplemental investigation of the groundwater in the area of MW-26 and MW-58 was performed.

Republic conducted this supplemental groundwater investigation in conjunction with preparing the CMP. Republic installed 12 piezometers (MW-59 through MW-70) in the area of the boilerhouse and dam in the EBNC to provide additional information concerning the groundwater elevations and flow in the area. Republic also installed three piezometers (MW-71 through MW-73) east and south of MW-26 to provide additional information concerning groundwater elevations and flow in the area. The locations of the new piezometers are shown on Figure 7 and the construction details for the newly installed piezometers are shown on Table 2.

After installation and development of the piezometers, water levels were obtained from the piezometers and existing wells in each of the areas. The groundwater elevations obtained were used to prepare potentiometric surface maps for each area. The water levels obtained are summarized on Table 2 and the potentiometric surface developed based on those groundwater elevations are shown on Figure 7.

As shown on Figure 7, groundwater flows northwest from the property between Republic and the EBNC (e.g. off site) onto Republic's property near MW-58. This groundwater flow pattern is due to the mounding effect caused by the pool created behind the dam. Based on the observed groundwater flow direction, it is concluded that the COPIs previously detected at MW-58 are flowing onto Republic's property from an offsite source or sources. Therefore, corrective measures will not be evaluated for groundwater near MW-58 as part of this CMP.

As shown on Figure 7, the groundwater flow pattern near MW-26 indicates that COPIs detected at this well could be from either onsite or offsite. This well is located in the northeastern portion of the Site that is south of the EBNC. Sampling events at MW-26 detected total chromium above the MCL during four out of five sampling events and detected antimony above the MCL during the February 2006 sampling event only. Modeling of groundwater fate and transport in the vicinity of MW-26 was performed using PENTOXSD for Windows PA Single Discharge Wasteload Allocation Program for Toxics Version 2.0. This modeling indicates that groundwater discharging to EBNC from the Site will not exceed the USEPA Region V Ecological Screening Level of 0.042 mg/l. Therefore, it is reasonable to conclude that that groundwater discharging to EBNC from the Site will not impact sediments in EBNC. Additionally, none of the surface water samples collected in the area have had chromium detected above the MCL of 0.1 mg/l or the USEPA Region V Ecological Screening Level of 0.042 mg/l.

Conclusions

The migration of site groundwater has been shown to be under control in the Environmental Indicators (EI) report dated July 28, 2006. Potential future risks will be mitigated by the implementation of the Environmental Covenant limiting the use of the property to industrial, prohibiting potable and agricultural use of the groundwater, and memorializing workplace control measures that are triggered upon subsurface excavation activities when groundwater might be encountered. These restrictions will eliminate potential exposure pathways for ingestion and dermal contact. With regard to off-site considerations, Republic proposes to verify that the previous conclusions (i.e. groundwater is not impacting surface water or sediments)

remain valid following implementation of the on-site corrective measures through additional groundwater sampling at select locations over a period of up to 5 years.

3.4 SEDIMENTS IN EBNC

As stated in the RFI, selected sediment samples were found to contain metals, VOCs, SVOCs, and/or PCBs at concentrations above their respective ecological screening criteria. Based on the measured levels of COPIs identified in the sediments and the performance of human health and ecological risk assessments, the following completed pathways have cumulative HQs greater than 1.0:

- surface water to aquatic life upstream, adjacent to, and downstream of the Site
- instream sediments to aquatic life upstream, adjacent to, and downstream of the Site
- overbank sediments to plants upstream, adjacent to, and downstream of the Site
- overbank sediments to earthworms upstream, adjacent to, and downstream of the Site
- overbank sediments/soils by American robin upstream, adjacent to, and downstream of the Site
- overbank sediments/soils by masked shrew upstream, adjacent to, and downstream of the Site
- overbank sediments/soils by short-tailed shrew upstream, adjacent to, and downstream of the Site
- overbank sediments/soils by red-tailed hawk upstream, adjacent to, and downstream of the Site
- overbank sediments via earthworms to American robin upstream, adjacent to, and downstream of the Site
- overbank sediments via earthworms to American robin and then to red-tailed hawk upstream, adjacent to, and downstream of the Site
- ingestion of large whole body fish by great blue heron upstream, adjacent to, and downstream of the Site

- ingestion of large whole body fish by mink upstream, adjacent to, and downstream of the Site

Although generally addressed during a Tier II Baseline Ecological Risk Assessment (BERA), it is Republic's position that it is important to consider upstream sources of the COPIs and to compare the relative risks from media adjacent to and downstream of the Site to the media upstream of the Site (background conditions) while reviewing the results of the SLERA. The dam has undoubtedly served to trap sediment containing COPIs being transported downstream from a wide variety of potential sources located upstream of the Site. The initial sampling of sediments performed as part of the RFI identified that instream sediment upstream of the dam contain substantially higher quantities of COPIs than sediment samples collected downstream of the dam. This comparison indicates the origin and source of the COPIs in the sediments may be located upstream of the Site rather than solely originating from the Republic Site. The overbank sediment quality upstream of the dam is similar to that downstream of the dam, indicating that the origin and source of the contaminants in the overbank deposits may also be located upstream of the Site rather than solely originating from the Republic Site. As discussed in the RFI, surface water quality in the EBNC has been identified in historical studies by the OEPA as impaired (OEPA Division of Surface Water documents entitled *Ohio 2004 Integrated Water Quality Monitoring and Assessment Report* dated March 30, 2004 and *Ohio 2006 Integrated Water Quality Monitoring and Assessment Report* Approved by U.S. EPA on May 1, 2006). The "impaired" designations have been assigned to both upstream and downstream areas of the Republic Site. The OEPA studies have also stated that water quality remains constant or slightly improves downstream of the Site as compared to upstream of the Site. These findings indicate the origin and source of the contaminants in the surface water, sediments, overbank sediments, and fish may be located upstream of the Site.

During a semi-annual meeting on June 7, 2007, Republic presented their position that they were not responsible for all of the COPIs contained in the sediments behind the dam. USEPA acknowledged that others likely contributed to the COPIs in sediment, but that Republic would be required to propose corrective measures to address, at least in part, COPIs detected in

sediment. The following paragraphs summarize Republic's activities to further evaluate sediment.

Republic opted to not perform a Tier II BERA for the in-stream sediments due to the very high cost and the conclusion that the BERA would not likely result in a definitive conclusion concerning the sources of the COPIs found in the sediments. Republic opted to further evaluate potential upstream contributors to the COPIs detected, estimate the total volume of sediment located behind the dam, and further delineate concentrations of COPIs in the sediments, to provide additional information to better assess the potential sediment impacts behind the dam.

3.4.1 History of Republic Ownership of the Canton Hot Rolled Bar Mill

In December 2003, Republic acquired the Canton Plant located at 2633 8th Street NE in Canton, Ohio. Earlier in the Canton Plant's ownership history, the Canton Plant was part of a larger facility owned by Republic Technologies International, LLC. (RTI) Following RTI's Chapter 11 bankruptcy filing in 2001, an investment group formed Republic Engineered Products, LLC (Republic LLC) and acquired those portions of the larger facility that today comprise Republic's Canton Plant. As part of the Bankruptcy court-approved acquisition by Republic LLC, which took place in 2002, Republic LLC agreed to continue RCRA corrective action initiated by the previous owner, but only as to property acquired by Republic LLC. The U.S. Department of Justice agreed that Republic LLC was not responsible for RCRA corrective action relative to properties, materials and land located outside the new property boundaries of the Canton Plant. The same arrangement carried forward when, following Republic LLC's own Chapter 11 bankruptcy filing in October 2003, another investment group formed Republic and acquired the assets of Republic LLC (including the Canton Plant). Thus, Republic has no responsibility for RCRA corrective action for COPIs on or originating from those properties, materials and land located outside the property boundaries of the Canton Plant as those boundaries exist today.

3.4.2 History of Sediments in EBNC

EBNC sediments located behind the dam at Republic and in near-field upstream depositional zones (i.e., approximately up to 1,700 feet upstream of the dam) contain a number of metals and chemical compounds at levels that do not give rise to significant human health risks. The Human Health Risk Assessment submitted as Appendix N to the RFI (March 2007) indicates the lifetime incremental cancer risk to an adult recreator exposed to sediments of the EBNC to be 4.9 x 10^{-5} and the noncancer risk HI to be 0.03. There are no upstream dams, impediments or significant sediment traps in the EBNC. Consequently, the EBNC dam at Republic has been collecting sediments from upstream since it was constructed more than 80 years ago. Sediment contamination downstream of the EBNC dam at Republic is not considered significant considering potential human health and ecological risks.

To the best of Republic's knowledge, the sediments behind the dam have never been remediated. Sediments have been accumulating behind the EBNC dam over an estimated period of at least 80 years. This represents a substantial period of time when wastewater discharges and disposal of solid wastes were essentially unregulated before enactment of environmental laws during the 1970s and 1980s (i.e., Clean Water Act, RCRA).

Less than half of Republic's property is located upstream of the EBNC dam (see Figure 1). This represents well less than 1% of the EBNC drainage area upstream of the EBNC dam (see also Figure 8, basin map). Republic is one of many active and former industrial and municipal dischargers located in the EBNC drainage upstream of the dam. Appendix D lists 62 active and former industrial and municipal wastewater dischargers, toxic release facilities and hazardous waste generators located upstream of the EBNC dam at Republic). It is highly likely some of these facilities contributed to sediment contamination behind the EBNC dam located at Republic.

Contamination in EBNC sediments does not pose significant human health risks when evaluated by standard USEPA HHRA protocols and levels of COPIs are not high when compared to concentrations of COPIs at other contaminated sediment sites. However, ecological risks have

been derived using USEPA's ecological risk assessment protocols. The presence and concentrations of the following COPIs drive the ecological risk assessment:

- Cyanide
- PCBs
- Chromium
- Lead
- Nickel
- Zinc
- Oil, PAHs

Although historic operations at the Republic facility may have contributed certain COPIs to the sediments located behind the EBNC dam, Republic believes the COPIs driving the ecological risk assessment are likely attributable wholly or in large part to other upstream industrial and municipal sources discussed below and noted in Figure 8 and Appendix D.

- Cyanide: There have been no steel manufacturing or steel finishing operations at Republic that would either use or generate cyanide. Cyanide was generated in former byproduct coke-making and blast furnace operations that were terminated in 1956 and 1974, respectively. Republic has no responsibility for those operations. There are also exposed piles of blast furnace flue dust located on property adjacent to Republic owned by Jeffries Paving and Trucking Co. Those dust piles potentially could contribute cyanide through surface runoff.

- PCBs: PCBs in sediments behind the EBNC dam are possibly the result of operations at Ohio Transformer, a former PCB transformer refurbishing facility located in Louisville, Ohio (now Magnetek), as well as other upstream sources that used PCBs. Magnetek is located approximately four miles upstream from Republic and the EBNC dam. This is supported by data showing PCB contamination downstream of Louisville and upstream of Republic, and the basin-wide PCB fish consumption advisory.

- Chromium and Nickel: OEPA water quality studies of the EBNC published in 1994 show elevated concentrations of chromium and nickel at Louisville downstream of the J&L Specialty Steel facility located in Louisville. OEPA reported concentrations of chromium and nickel in the EBNC water column upstream of Louisville were at background levels (OEPA, July 15, 1994). J&L Specialty Steel connected its process wastewater dischargers to the City of Canton sewerage system as of 2000.

- Lead: Lead is a component of electric arc furnace flue dust generated at Republic. Lead contamination of surface soils is common in many urban areas and industrial settings. Such contamination is attributable, in part, to more than 50 years of use of leaded gasoline in automobiles. Leaded gasoline was first introduced in commerce during the 1920s when tetraethyl lead was added to enhance the octane rating of automobile gasoline. EPA gradually phased out lead in most gasolines from 1973 to 1986 from 2 to 3 grams per gallon to less than 0.1 grams per gallon, (http://www.epa.gov/OMS/regs/fuels/additive/lead/pr-lead.txt). Thus, runoff from the EBNC basin upstream of the dam likely contributed lead to the sediments that accumulated behind the dam. Runoff from piles of blast furnace flue dust noted above also could be sources of lead to the EBNC. Municipal and industrial point sources located upstream of the EBNC dam other than Republic are also likely contributors.

- Zinc: Republic does not use zinc as a raw material in its operations. The automotive industry introduced one-sided galvanized (zinc-coated) steels during the mid 1970s to retard corrosion, and has gradually increased galvanized steel use since. Today most body panels on most automobiles manufactured for use in the North American are galvanized on one or both sides. Given the typical life cycle of automobiles, zinc has been a component of electric arc furnace flue dust generated in the United States, probably at significant levels beginning during the early to mid 1980s and increasing in concentration thereafter. Concentrations in EAF dust at Republic are now in the range of 16 per cent. EAF dust is regulated as a listed hazardous waste under RCRA and the on-site handling of EAF dust at Republic and offsite disposal have been regulated strictly, thus minimizing the potential for releases of lead and zinc. Other potential sources of

zinc to EBNC sediments are the former blast furnace operations noted above, the stored piles of blast furnace flue dust noted above; zinc released from corrugated galvanized storm drains; zinc released from galvanized roofing panels; and, municipal and industrial point sources other than Republic located upstream of the EBNC dam.

- Oils and PAHs: OEPA records show the Conrail Maintenance of Way Shop (aka Norfolk Southern) was a source of diesel fuel and oil discharges to the EBNC and caused contamination of groundwater with diesel fuel. There were and are other possible municipal, commercial, industrial and household sources of oils and PAHs upstream of the EBNC dam.

3.4.3 Post RFI In-Stream Sediment Volume Investigation

Republic conducted a survey of the sediment thickness in the stream from the dam east beyond the point where the stream flows onto Republic property. The thickness of sediment was measures by hand-probing at almost 400 locations with a rod coupled with GPS coordinate collection. The results of the survey indicate that approximately 4,300 cubic yards of sediment is located behind the dam. Table 3 shows the volume distribution among selected segments of the stream.

3.4.4 Post RFI In-Stream Sediment Quality Investigation

Additional investigation activities were conducted in August and September 2007 along the portion of Nimishillen Creek that bisects the facility (Figure 9). As part of investigation activities, 11 composite sediment samples (and 2 duplicate samples) were collected from selected segments of the stream and submitted for analytical analysis of volatile organic compounds, semi-volatile compounds, PCBs, metals and inorganics (cyanide and sulfides).

Sediment samples were obtained in the same manner as previous samples collected during the RFI. The investigation included 11 stream segments (identified as SDC-001 through SDC-011). Four core samples were collected within each segment and composited into one sample that was

sent to the laboratory for analysis of the same analytical parameters as previous sediment samples (e.g. Appendix IX, minus dioxins, furans, pesticides and herbicides). Table 4 presents the 2007 sediment analytical data. Appendix B presents the analytical laboratory reports for the 2007 sediment data. Table 5 summarizes the analytical data for any COPI that was detected in at least one of the eleven sediment samples (or duplicate samples). Sampling locations and associated stream segments are illustrated on Figure 9.

The 2007 analytical data were compared to human health and ecological screening values. In the absence of available human health sediment screening values, the USEPA Region 9 Residential PRGs (where the carcinogens were adjusted to represent a risk level of $1x10^{-5}$ and noncarcinogens an HI of 0.1) were selected as the human health screening values. The ecological screening values are the USEPA Region 5 RCRA Ecological Screening Values. If a screening value was not available from this source, then screening values from the National Oceanic Atmospheric Administration (NOAA) or USEPA Region 3 BTAG Freshwater Sediment Screening Benchmark values were used. The selected human health and ecological screening values are presented and referenced accordingly in Table 5. Table 5 also presents a sample by sample comparison of the screening values. As shown in Table 5, several COPIs exceeded the selected human health and ecological screening values including volatiles, PAHs, PCBs, metals and inorganics.

The total mass of each COPI exceeding either a human health or ecological screening value was calculated for each stream segment as shown in Table 6. Table 7 summarizes the total mass by COPI. The COPI contributing the largest total mass is zinc with a total mass of 4,986 lbs and the COPI contributing the smallest total mass is acetone with a total mass of 0.035 lbs. The percent contribution of total mass of each COPI for each stream segment is presented in Table 8. As shown on Table 8, stream segments SDC-001, SDC-004, SDC-005, and SDC-006 contain the largest mass of PAHs, stream segments SDC-001 and SDC-005 contain the largest mass of PCBs, and stream segment SDC-001 contains the largest mass for the majority of the metals and inorganics.

A toxicity weighted mass factor for each stream segment was calculated following the procedures discussed in Section 3.1.2. This approach relates the mass of a chemical to toxicity.

As discussed in Section 3.1.2, in order to calculate a toxicity weighted mass factor, it was necessary to first determine relative toxicity factors for each COPI. Relative toxicity factors were calculated relative to the risk driving chemical, which in this instance was cyanide. Table 9 presents the relative toxicity factors for each COPI. Note that relative toxicity factors were calculated for only those chemicals that exceeded an ecological screening value in the portion of the EBNC that bisects the facility.

The next step was to calculate a toxicity weighted mass factor for each of the 11 stream segments. As described in Section 3.1.2, this was done by multiplying the mass of the chemical in a particular stream segment by the relative toxicity factor. Table 9 presents the toxicity weighted mass factors for each COPI in each stream segment. Table 10 presents a summary of the toxicity weighted mass factors by stream segment.

As presented in Table 10, stream segment SDC-001 contained the highest toxicity weighted mass factor followed by SDC-002. Stream segment SDC-011 contained the lowest toxicity weighted mass factor.

Stream segment SDC-001 represents an approximate distance of 100 feet upstream of the dam. As shown on Table 10, this segment contains approximately 15% of the total sediment volume of and 60% of the total toxicity of all 11 stream segments.

3.4.5 Post RFI Overbank Sediment BERA

In response to USEPA's request for further evaluation of the ecological risk due to overbank deposits, USEPA, Republic, and CEC met at the site on November 5, 2008, to observe the conditions where overbank deposits are located at and near the site and to agree on the scope of the additional evaluation of ecological risk due to COPIs in the overbank deposits. Based on that meeting, Republic conducted a focused Tier 2 baseline ecological risk assessment (Baseline

Ecological Risk Assessment Report dated March 2009, included in Appendix E). The objective of the BERA was to provide quantitative estimates of the potential ecological effects that may potentially result from exposure to chemicals detected in the overbank soils/sediments located adjacent and downstream of the Site.

The BERA evaluated 10 overbank soil/sediment samples and a duplicate (EBNC-OB1 through EBNC-OB10 and EBNC-Dup-OB1) collected during the RFI and an additional 10 soils/sediment samples, designated as OB-11 through OB-19 and OB-11 DUP (Duplicate), collected on November 25, 2008 in response to USEPA's request at the November 5, 2008 site meeting.

In general, the BERA found that the overbank sediments had an environmental hazard quotient (EHQs) greater than one and the individual EHQs for the COPIs are similar when comparing the upstream to downstream results.

On August 27, 2009, the USEPA submitted comments to Republic on the Baseline Ecological Risk Assessment (BERA) for portions of the EBNC and the CMP proposal for creek sediment. The comment letter requested, based on the BERA, that an over-bank "hotspot" removal of COPIs be considered, if practicable. The Comment Letter also stated that the removal activities should be balanced with potential effects to the floodplain from the proposed activities. The following sample locations with EHQ > 1 are on Republic property: OB-3, OB-7, OB-9, and OB-11 through OB-19. Of these, sample locations OB-3, OB-9, and OB-11 through OB-19 were not considered practicable for possible hotspot removal efforts. Location OB-7 had the highest concentrations of PAHs relative to the other overbank sediment locations. Additionally, this location is accessible and can be excavated with only limited damage or disruption to the ecological habitat along the EBNC. Additional details on this additional evaluation are presented in the Response to Comments in USEPA Letter Dated August 27, 2009 - Baseline Ecological Risk Assessment – Overbank Deposits dated November 2, 2009, which is included in Appendix E.

Therefore, the overbank deposit at location OB-7 will be included in the further discussion of corrective measures relating to EBNC sediment.

3.4.6 Orange Staining near Outfall 011

During USEPA's November 5, 2008 site visit, orange stained sediments were observed near Outfall 011. Republic collected a sample of the orange precipitate on September 22, 2009, and submitted the sample for TAL Metals, TCL-SVOCs, and Oil & Grease analysis. The analytical results were compared to the Human Health screening criteria and ecological screening criteria as shown on the table submitted via email on December 9, 2009 and included in Appendix E. None of the parameters were detected at a concentration that exceeded the human health screening criteria. Arsenic, chromium as chromium III and nickel were detected at a concentration that exceeded the ecological screening criteria.

Therefore, the orange staining will be included in the further discussion of corrective measures relating to EBNC sediment.

4.0 IDENTIFICATION, SCREENING, AND DEVELOPMENT OF CORRECTIVE MEASURE PROPOSAL

The objective of the proposed corrective measures is to mitigate the potential threat to human health and the environment posed by exposure to COPIs. The corrective measures were evaluated based on viability to mitigate unacceptable risk over extended periods, ease of implementation, cost and operation & maintenance (O&M) requirements. The corrective measures evaluated for each SWMU/AOC are summarized in Table 11 with an overview of the evaluation presented in Table 12.

Protection of human health and the environment and compliance with waste management standards are discussed with each corrective measure. Media cleanup standards are achieved through risk-derived standards detailed in Section 3.1 of this Report. Source control is also addressed for each SWMU and AOC.

4.1 APPLICABLE TECHNOLOGIES

The technologies that were evaluated to assess the viability of achieving the corrective measure objectives include no further action, work place and institutional controls, excavation, and pathway elimination via slag or asphalt cap. A description of each corrective measure follows.

4.1.1 No Further Action

A no further action approach will maintain the SWMU or AOC in its current state without the need to implement methods to controls exposures. This option would be utilized for SWMUs or AOCs where it is established that protection of human health and the environment is attained without further action. This would apply to SWMUs and AOCs where the source of release is controlled or eliminated, the risk assessment is below the risk-based standards, and/or there were no COPI detected above surface or subsurface soils screening levels. Waste management

activities are not applicable to this technology since there will be no waste generated during implementation of this alternative.

4.1.2 Institutional and Work Place Controls

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Institutional controls play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

An EC will be utilized as a legal control device and work place controls (WPC) will be utilized as an administrative control. Both control types will be utilized to control exposure routes to industrial and construction workers as necessary to facilitate reducing the risk each would occur under the assumptions posed under the risk assessment portion of the RFI.

The EC will be used to document portions of the Site that have post remediation maintenance, monitoring, and institutional and work place control requirements in accordance with the Final Decision and Response to Comments document as well as the Post-Remediation Care Plan that will be included in the Final Remedy Construction Completion Report required by the Order. The land use restrictions, groundwater use restrictions, environmental monitoring requirements, and description of controls included in the EC and deed restriction will be designed prevent unacceptable risks to human health and the environment.

WPC are administrative programs, policies, practices, procedures, and permits that are implemented to mitigate the risk to workers by the potential environmental risks. Republic currently has an existing workplace health and safety program, Safety Management System (SMS) documents and site permit requirements. These programs will be revised to include information on the areas of the Site that have greater potential environmental risks.

Attainment of the cleanup standards by controlling the risk exposure would result in the protection of human health. Waste management activities are not applicable to the use of work

place and institutional controls since there will be no waste generated during implementation of these alternatives. A detailed description of the work place and institutional controls follows and is divided into controls associated with exposure to surface soils, subsurface soils, and groundwater.

4.1.2.1 Surface

Republic currently has practices and procedures in-place to mitigate the risk to industrial workers and construction workers due to the exposure to surface soils. The vast majority of the calculated risks that exceed the target risk are the result of metals contained in the raw materials and final products at the Site including iron, manganese, and lead. Republic employees are educated about the risks of these materials during the hiring process and through Republic's employee safety program. The education program will be expanded to include information on the areas of the Site that contain elevated levels of COPIs.

The primary COPIs are not readily absorbed through the skin so ingestion is the primary pathway that needs to be addressed with inhalation being a minor contributor. The inhalation pathway is controlled through Republic's existing dust control program that includes speed limits on unpaved roads and application of water spray to roads and unvegetated areas as required. Several practices are currently in place to control the ingestion pathway. Republic provides break rooms that employees use to each lunch and take breaks. Republic also provides locker rooms for employees to shower, wash, and to conduct other personal hygiene maintenance. Republic employees are educated about the risks of the metal COPIs during the hiring process and through Republic's hazardous communication program. The education program will be expanded to include information on:

- Areas of the Site that contain elevated levels of COPIs,
- Importance of personal hygiene including washing hands prior to eating, drinking, or smoking, and
- Wearing appropriate personal protective equipment (PPE)

4.1.2.2 Subsurface

In addition to the existing workplace health and safety program, Republic will utilize the existing work practices to mitigate the risks due to exposure to subsurface soils. Republic will modify existing Safety Management System (SMS) documents and site permit requirements to mitigate the risk due to exposure to subsurface soils. These documents include:

- Corporate Procedure Excavating and Trenching (SMS 2.18)
- Excavation and/or Concrete Cutting Authorization Permit (SHD 20)
- Guidelines for Completing Excavation Authorization Permit (SMS 6.20)
- Worker Health &Safety Practices During Intrusive Activities

4.1.2.3 Groundwater

Work Place and Institutional Controls

In addition to the existing workplace health and safety program, Republic will utilize the existing work practices to mitigate the risks due to exposure to groundwater. Republic will modify existing Safety Management System (SMS) documents and site permit requirements to mitigate the risk due to exposure to groundwater. These documents include:

- Corporate Procedure Excavating and Trenching (SMS 2.18)
- Excavation and/or Concrete Cutting Authorization Permit (SHD 20)
- Guidelines for Completing Excavation Authorization Permit (SMS 6.20)
- Worker Health &Safety Practices During Intrusive Activities

Samples of these documents are included as Appendix C.

A deed restriction will also be used as an institutional control to establish future use of the property to industrial use, prohibiting the use of site groundwater and requiring WPC be

implemented to protect construction workers who may be exposed to groundwater in the future. An EC will be used to require that all institutional and work place controls continue to be instituted and documented. The EC establishing limits on site groundwater use will also include a provision which prohibits well drilling for certain purposes.

4.1.3 Pathway Elimination

Pathway elimination will be achieved through the use of a slag aggregate or asphalt cap. Pathway elimination is a remediation technology known to be effective in controlling exposure routes and therefore reducing risk exposure. Pathway elimination refers to various types of material placed between the contaminated material and any direct exposure route. Though effective for controlling direct exposure and hydrogeologic processes, it restricts future use of the area and will require maintenance. Pathway elimination can be protective of human health and the environment as long as it remains in place and is properly maintained. Pathway elimination can be alone or in combination with other corrective measure alternatives to meet the risk based cleanup standards. Small amounts of waste may be generated during the installation of a capping system. The waste management activities are discussed below in association with soil excavation.

A more detailed explanation of each type of pathway elimination evaluated follows.

4.1.3.1 Soil/Slag Aggregate Cap

The use of a soil/slag cap would consist of grading the impacted area and installing two feet of soil/slag backfill. Dependent upon location and intended use the area, the cap may be covered with six inches of topsoil and vegetated.

Several SWMUs/AOCs contain and/or are adjacent to structures, such as railroads or buildings that may require excavation to an extent that would facilitate placing a cap without compromising the use of the structure and maintaining proper drainage. Any soil excavation relative to installing the cap would be conducted in accordance with the procedures in Section

4.1.4 (Soil Excavation) of this document. O&M of the cap would consist of inspection, mowing, fertilization and reseeding of vegetated covers, and the replacement and re-grading of the soil/slag cover.

4.1.3.2 Asphalt Cap

The use of an asphalt cap would consist of grading the Site or excavating up to 2 feet of soil to accommodate the cap. Any soil excavation relative to installing the cap would conform to the procedure and standards as laid out in Section 4.1.4 (Soil Excavation) of this document. Following the excavation or grading, a slag subbase would be placed and compacted. An asphalt course would be added consisting of a binder course and a wearing course. The thickness of the subbase, binder course, and wearing course will be designed to suit the use of the area. The minimum pavement section would consist of 12 inches of subbase, 2 inches of binder course, and 0.5 inch wearing course. Maintenance of the asphalt cap, at a minimum, would include inspection, and repair of cracks and damages to the asphalt. Periodical resealing of the asphalt layer may also be required.

4.1.4 Soil Excavation

Soil excavation is an absolute corrective measure, where contaminated material is removed and transported to permitted off-site treatment and/or disposal facilities. Long term protection of human health and the environment can be demonstrated through the removal of contaminated media until the area meets the risk-based standards. Partial excavation used in conjunction with other corrective measures such as WPC or capping can also be used to demonstrate protection of human health and the environment.

The generation of fugitive emissions may occur during operations and will require engineering and safety controls, although it is unlikely to be necessary given the moisture content of the materials encountered during the investigative phase. The fugitive emission controls will require both source control measures and specific waste management activities. Source control measures can be addressed with proper work practices such as the use of PPE and dust suppression. Waste

management activities would require specific material handling procedures. The excavated material will be handled in designated areas only. Potentially impacted material will be segregated from material that is judged to be unimpacted. Confirmation samples will be taken to verify whether contaminated media above cleanup standards is present or absent. The contaminated media would be transported off-site to a permitted waste facility.

The extent of excavation would be determined using data collected through soil sampling conducted during previous phases of investigation, or through confirmation sampling conducted at the boundaries of excavation. Surface excavation is considered as the removal of the top two feet of material.

O&M would only be required if excavation is used in conjunction with another corrective measure. The cost of the excavation alternative is affected by the composition and volume of the media as well as the distance to the nearest disposal facility with the required permits.

4.1.5 Sediment Removal

Sediment removal is an absolute corrective measure, where contaminated material is removed and transported to permitted off-site treatment and/or disposal facilities. Long term protection of human health and the environment can be demonstrated through the removal of contaminated media until the area meets the risk-based standards. Partial excavation used in conjunction with other corrective measures can also be used to demonstrate protection of human health and the environment.

The generation of fugitive emissions may occur during operations and will require engineering and safety controls, although it is unlikely to be necessary given the moisture content of the materials encountered during the investigative phase. The fugitive emission controls will require both source control measures and specific waste management activities. Source control measures can be addressed with proper work practices such as the use of PPE and dust suppression. Waste management activities would require specific material handling procedures. The excavated material will be handled in designated areas only. Potentially impacted material will be segregated from material that is judged to be unimpacted. The designated waste handling areas

would have to be bermed to contain and collect free liquids removed with the sediments. The removed sediment would be analyzed to determine if it can be spread onsite or would require transportation off-site to a permitted waste facility.

The extent of excavation would be as discussed in Section 5.27 (East Branch Nimishillen Creek). The cost of the excavation alternative is affected by the composition and volume of the media as well as the distance to the nearest disposal facility with the required permits.

4.1.6 Sediment Capping/Cover

Application of clean materials to impacted sediments is an additional alternative for remediation. This alternative was not evaluated beyond an initial considered alternative due to the depth of measured sediment accumulation in the EBNC. Existing sediments and water depths (<1 foot), along with the channel section, would likely cause any applied material to be eroded during heavy rainfall and flash flood events.

4.1.7 Compliance Groundwater Monitoring:

Republic has selected the proposed corrective measures to meet the third tier (final cleanup goal) of USEPA's groundwater cleanup policies to protect and restore groundwater to its maximum beneficial use. As documented in the RFI, groundwater monitoring has shown that there is no groundwater migrating offsite containing COPIs at concentrations exceeding their respective Maximum Contaminant Levels (MCLs) and Secondary MCLs (SMCLs). Additionally, the groundwater migration modeling discussed above showed that no groundwater migrating into the East Branch of Nimishillen Creek (EBNC) contains COPIs at concentrations exceeding the appropriate OEPA water quality standards. Therefore, the site has not prevented offsite groundwater quality from meeting its beneficial use.

Sampling events at MW-26 detected total chromium above the MCL during four out of five sampling events and detected antimony above the MCL during the February 2006 sampling event. Sampling events at MW-40 detected either total and/or dissolved arsenic during four out

of five sampling events. These are the only exceedances of the MCLs at Republic's downgradient property boundary that are not clearly attributable to offsite sources. As documented in the Environmental Indicators (EI) Report, Republic has achieved attainment of the "Migration of Contaminated Groundwater Under Control" Environmental Indicator for current human exposures. As discussed in Section 3.3 above, modeling of groundwater fate and transport in the vicinity of MW-26 and MW-40 indicated that groundwater discharging to EBNC from the Site will not exceed the respective USEPA Region V Ecological Screening Levels. Therefore, it is reasonable to conclude that groundwater discharging from the Site to EBNC is not currently impacting surface water and sediments in EBNC.

The proposed confirmatory groundwater monitoring program will not address areas where groundwater contamination has been shown to be migrating onto the Republic site. Specifically, those areas are:

- Chlorinated VOCs exceedances detected at MW-46 and MW-57 located at the western end of the Site, and
- VOC, metals, and cyanide exceedance detected at MW-58, which is located along the property boundary between the boiler house and the dam.

Republic proposes to perform a confirmatory groundwater monitoring program to reaffirm that the soil and groundwater remedies will continue to be protective of human health and ecological receptors after the remedies are completed. In general, Republic proposes annual monitoring of those perimeter monitoring wells for COPIs that have exceeded the risk based human health and ecological criteria in or upgradient of the perimeter well. The annual monitoring will be performed for up to 5 years after the proposed corrective measures are implemented with annual reports submitted to USEPA containing the information presented in previous groundwater monitoring reports for the site. Republic may request an earlier termination of this confirmatory groundwater monitoring program. The same sampling and analytical procedures and methods as used in the previous monitoring at the site will be used, with the exception that Level II laboratory reports will be provided instead of Level IV reports. The goal of the program will be to demonstrate that no exceedances of risk based human health and ecological criteria are

present. The specific wells and analytes proposed for inclusion in the confirmatory monitoring program are:

Monitoring Well	Proposed Analyses	Rationale
MW-26	T&D RCRA Metals and Antimony	Previous exceedance at well
MW-29	T&D RCRA Metals and TCL-SVOCs	Previous exceedance at well
MW-40	T&D RCRA Metals and TCL-VOCs	Previous arsenic exceedance at well; Previous VOC Exceedance at upgradient well MW-32
MW-41	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-45R	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-52	T&D RCRA Metals	Previous metals exceedances at upgradient wells.
MW-53	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-54	T&D RCRA Metals	Previous arsenic exceedance at well.
MW-61	T&D RCRA Metals	Previous metals exceedances at upgradient wells.

Notes:

T&D = Total and Dissolved. The RCRA(Resource Conservation and Recovery Act) list of metals include: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium & Silver.

TCL-SVOCs = Target Compound List - Semivolatile Organic Compounds

TCL-VOCs = Target Compound List - Volatile Organic Compounds

5.0 EVALUATION AND RECOMMENDATION OF FINAL CORRECTIVE MEASURE PROPOSAL

This section presents a brief description of the historical operations, associated COPIs, calculated risk, the corrective measures evaluated, and the recommended corrective measure for each SWMU, AOC or TA. The recommendation for the corrective measures includes a justification for the selection or dismissal of each corrective measure alternative. The approximate limit of the recommended corrective measure is presented on Figure 10. A general description of the evaluated corrective measures is included in Section 4.0 of this CMP. The corrective measures evaluated for each SWMU/AOC are summarized in Table 11 with an overview of the evaluation presented in Table 12.

As discussed in Section 3.0, The following SWMUs and AOCs were determined to not have a calculated potential risk exceeding the standard of risk for this Site and, therefore, remedial alternatives were not evaluated as part of this CMP:

- SWMU 8 - Ingot Inoculation Baghouse Dust Containerized Storage Area
- SWMU 12 - Empty Drum Storage Area #2
- SWMU 30 - Johnson's Pond
- SWMU 32 - Waste Pickle Liquor Sumps
- SWMU 35 - Water Quality Control Center (WQCC)
- SWMU 43 - Mobile Repair Shop Waste Oil Tank
- SWMU 44 - Heat Treatment Waste Oil Decanter Tank & Storage Tank
- SWMU 45 - Machine Shop Waste Oil Storage Tank
- SWMU 47 - Old Vertical Caster Treatment Plant
- SWMU 50 - Interior Solids Drop Station/Melt Shop #4
- SWMU 58 - Pickling Operations Mist Suppression System
- SWMU 62 - Metallurgical Lab Hood Exhaust System
- AOC 81 - Diesel/Fuel Oil UST - Heckett Building
- AOC 83 - Diesel/Fuel Oil UST - Southeast Corner of #4 Melt Shop

- AOC 88 - Heckett Maintenance Garage Area
- AOC 93 - Mobile Repair Shop Salvage Yard
- AOC 94 - Mobile Repair Shop Area
- AOC 99 - Machine Shop Trench
- SWMU 104 - Old 8-inch Mill Day Tank
- SWMU 105 - Met Lab Waste Acid Tank
- AOC 107 - Former UST Locations Adjacent to Former Plant Truck Scales
- AOC 108 - Former 8-inch Mill Etch House HCL Storage Tank
- AOC 110 - Former Surface Impoundment Area
- AOC 110b - #6 Boilerhouse
- AOC 112 - Former Process Impacts at Bar/Coil Pickle Areas
- SWMU 114 - "Old" N&T Repair Shop
- AOC 116 - Sample Location BM-SB-18-1U
- AOC 117 - Former Coke Battery

During negotiation with USEPA, Republic agreed to evaluate remedial activities at SWMU 66 and AOC 111 even though the HHRA indicated the calculated potential risk for each area was below the standard of risk for this Site.

The following subsections discuss the remaining SWMUs and AOCs, which are subject to the corrective measure evaluation process and are, therefore, included in Tables 11 and 12.

5.1 SWMU 3 - HECKETT SLAG & BYPRODUCT PROCESSING AREA

The Slag & Byproduct Processing Area is an active area where sorting, sizing and staging of the steel-making slag occurs pending sale as a construction aggregate. This area was previously leased by a third-party contractor, Harsco Metals Group, Ltd. (formerly Heckett). The State of Ohio broadly excludes "slag and other substances that are not harmful or, …. inimical to public health" from the definition of solid waste (Ohio Administrative Code §3745-27-01(S)(24)).

OEPA also requires that the processing, stockpiling, and storage of steel/blast furnace slag meet applicable environmental regulations pertaining to dust control and storm water runoff.

The risk based factors for TA No. 1, which includes SWMU 3, are the HI for the ingestion of iron and manganese by the construction worker for both surface and subsurface soils. The corrective measures evaluated for SWMU 3 are no further action, WPC (surface and subsurface), excavation, or the addition of a soil/slag cap.

No further action would not be protective of human health and the environment and therefore was not selected.

Excavation was dismissed because the material is considered a valuable commodity, not a waste.

WPC will be protective of human health and the environment. The primary risk drivers in this area are iron and manganese via the ingestion pathway. Employees that work in this area are inside heavy equipment with enclosed cabs or other vehicle with enclosed cabs. These existing work practices reduce human exposures to below the assumptions in the risk calculations. Employee training, including personal hygiene, washing of hands prior to eating, drinking, or smoking will serve to greatly reduce, if not eliminate, the risk posed by iron and manganese to construction workers. Contractors retained to perform work in this area will be provided with a summary of the analytical data and be required to prepare a health and safety plan to mitigate risks to their employees.

The placement of a soil/slag cap is not feasible due to the nature of the ongoing activity in the area, which would continuously damage the soil cap by heavy equipment traffic and by excavations required to extract the product. The soil cap alternative as an independent corrective measure would not be protective of human health for the construction worker in subsurface soils.

The recommended corrective measure for SWMU 3 is the institution of WPC. The scope of the WPC program at the Republic site is included as Appendix C.

5.2 SWMU 9 - WASTE OIL DRUM STORAGE AREA # 1

SWMU 9 is currently active for accumulation of drums for disposal (non-hazardous and hazardous waste). This area has a concrete containment area in-place and with no visible cracks of the floor or curbing. The samples assigned to this SWMU did not exceed secondary screening levels. However, this SWMU/AOC was evaluated as part of TA No. 2, which exceeded the risk based criteria for the target BLL for the construction worker's potential exposure to lead in surface and subsurface soils.

The corrective measures evaluated for SWMU 9 as part of TA No. 2 are no further action and WPC (surface and subsurface).

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the BLL for the TA below 10 µg/dL.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 9 is the institution of WPC for surface and subsurface soils as a matter of consistency for the TA.

5.3 SWMU 13 - HECKETT WASTE OIL DRUM ACCUMULATION AREA

SWMU 13 is currently active and part of the on-going maintenance activities performed by Heckett. There are no drains to the outside area or obvious damage to the concrete. The COPI above secondary screening levels associated with SWMU 13 is manganese. The risk based driving factors for TA No. 1, which includes SWMU 13, are the HI for the ingestion of iron and manganese by the construction worker for both surface and subsurface soils.

The corrective measures evaluated for SWMU 13 are no further action, WPC (surface and subsurface), excavation, and the addition of a soil/slag cap.

No further action would not be protective of human health and the environment and therefore was not selected.

Excavation was dismissed because the material is a valuable commodity, not a waste.

WPC will be protective of human health and the environment. The primary risk drivers in this area are iron and manganese via the ingestion pathway. Employees that work in this area are inside heavy equipment with enclosed cabs or other vehicle with enclosed cabs. Additionally, management of slag in Ohio requires compliance with dust suppression and stormwater control regulations. Existing work practices and compliance with applicable environmental regulations reduce human exposures to below the assumptions in the risk calculations. Employee training, including personal hygiene, washing of hands prior to eating, drinking, or smoking will serve to greatly reduce, if not eliminate, the risk posed by iron and manganese to construction workers. Outside Contractors retained to perform work in this area will be provided with a summary of the analytical data and be required to prepare a health and safety plan to mitigate risks to their employees.

The placement of a soil/slag cap is not feasible due to the nature of the ongoing activity in the area, which would continuously damage the soil cap by heavy equipment traffic and by excavations required to extract the product. The soil cap alternative also would not be protective of human health for the construction worker in subsurface soils.

The recommended corrective measure for SWMU 13 is the institution of WPC.

5.4 SWMU 14 - INGOT INOCULATION DUST COLLECTION BAGHOUSE

SWMU 14 was previously inactive, but has been in use as the FlexCast Baghouse since about mid-2006. The baghouse controls emissions from material handling activities at the FlexCast

refining operation and emissions from the caster when casting leaded steel. No visible damage to the concrete or visible staining of soils in the surrounding area has been observed. The risk based driving factors for TA No. 10, which includes SWMU 14, are the HI for the ingestion of iron and manganese by the construction worker in surface soils and a BLL for the construction worker exposed to lead in the surface soil.

The corrective measures evaluated for SWMU 14 are no further action, WPC for surface soil, soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for surface soils would be protective of human health and the environment, but would result in leaving the lead impacted surface soil in place.

The addition of a soil/slag cap would be protective of human health and the environment, but would also result in leaving the lead impacted surface soil in place and would require ongoing O&M.

Soil excavation would provide a permanent solution by removing lead impacted soils from the Site. Given the relatively small size of the impacted area, soil excavation is also feasible.

The recommended corrective measure for SWMU 14 is excavation of the lead impacted surface soils and WPC for surface soil containing iron. Surface excavation of lead impacted soils would require the removal of a 120 square foot (6 foot by 20 foot) area with confirmatory samples collected from the north and south walls of the excavation. The western limit of the excavation will extend to the #4 Melt Shop and the eastern limit of the excavation will extend to the concrete pad below the baghouse. Hand excavation may be required due to the limited accessibility to the area. Contractors retained to perform work in this area will be provided with a summary of the analytical data and be required to prepare a health and safety plan to mitigate risks to their employees.

5.5 SWMU 22 - MILL SCALE STAGING AREA

Historical operations at SWMU 22 consisted primarily of mill scale management activities. Currently, mill scale is staged in this area until sufficient quantities are available for sale. The risk based driving factors for TA No. 3, which includes SWMU 22, are the HIs for the ingestion of iron and manganese in surface soils by the construction worker.

The corrective measures evaluated for SWMU 22 are No Further Action, WPC (for surface soil), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for surface soil exposures would be protective of human health and the environment by reducing the exposure of construction workers to surface soils.

A soil/slag cap would not be protective of human health since the receptor of concern is the construction worker, whose activities could include excavation through the cap. Additionally, installation and maintenance of a cap over the area would be economically infeasible with the large area involved and the fact that active operations in the area would damage a soil cap.

Surface excavation would be protective of human health and the environment by eliminating the source. However, soil excavation is not economically feasible with the large area involved.
The recommended corrective measure for SWMU 22 is the institution of WPC based on SWMU 22 being an active mill scale and slag staging area where the COPIs responsibly for exceeding the risk based standards are the metals found among the staged material itself.

5.6 SWMU 36 - 8-inch MILL SCALE PIT & ASSOCIATED SKIMMER

SWMU 36 is the former scale pit and associated skimmer for the 8-inch Mill. In 1996, under the Canton Plant Improvement Program (CPIP) program, the scale pit was taken out of service. The

scale was removed, the pit was cleaned, and the concrete structure was broken up and left in the pit. The area was then top-graded with clean slag or asphalt pavement and is currently used as a truck access roadway and parking area. The samples assigned to this SWMU did not exceed secondary screening levels. However, the individual SWMUs associated with TA No. 7 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's potential exposure to iron and lead in subsurface soils.

The corrective measures evaluated for SWMU 36 as part of TA No. 7 are no further action and subsurface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC will alter the assumptions utilized in the risk assessment portion of the RFI to aid in reducing the HI and BLL for the TA below target levels.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 36 is the institution of WPC for subsurface soils as a matter of consistency for the TA.

5.7 SWMU 37 - 8-inch MILL OIL STORAGE TANK

SWMU 37 is the former AST used for the storage of waste oil for the 8-Inch Mill. In 1996, under the CPIP program, the 8-inch Mill Oil Storage Tank was taken out of service. The oil from the tank was transferred and processed with the other waste oils from the plant. The piping and tank were cleaned, dismantled and cut into scrap. A contractor purchased the scrap and transported the scrap off-site. The risk based driving factors for TA No. 7, which includes SWMU 37, are the HI for the ingestion of iron by the construction worker in subsurface soils and BLL for the construction worker exposed to subsurface soils.

The corrective measures evaluated for SWMU 37 are no further action, WPC for subsurface soil and an asphalt cap.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for subsurface soil exposures would be protective of human health and the environment by reducing the exposure of construction workers to subsurface soils.

An asphalt cap would eliminate the potentially complete exposure pathways under normal operating conditions. However, the use of an asphalt cap as a standalone remedy would not reduce the calculated potential non-carcinogenic risk and blood lead level concentrations for a construction worker, whose assumed activities would require penetrating the cap. Under normal operating conditions, an asphalt cap would eliminate potential exposure pathways to industrial workers and reduce the potential for leaching and migration of metals in the slag aggregate.

The recommended corrective measure for SWMU 37 is the use of the existing asphalt cap and the institution of subsurface WPC.

5.8 SWMU 38 - 12-inch MILL SCALE PIT

SWMU 38 is currently used as a waste/byproduct management area for draining/decanting wet byproducts and wastes (e.g. wet scale, grease & dirt). The free liquids drain into the scale pit and the "dry" material can be loaded out for proper disposal. SWMU 38 was previously used as the Scale Pit for the former 12-inch Rolling Mill. Recirculated water, waste oil, and scale were the primary wastes generated when the former 12-inch Rolling Mill was operating. This area was part of the proposed VRM actions at the New Bar Mill Complex. The proposed VRM was to empty, clean and pressure wash the scale pit. However, the proposed VRM was not performed because the new Bar Mill was not constructed. The surface soil samples assigned to this SWMU did not exceed secondary screening levels. SWMU 38 was evaluated with SWMUs 39 and 40 as Target Area (TA) No. 4. These three SWMUs would more accurately be described as three

pieces of equipment associated with a single SWMU being the scale pit and associated ASTs used to temporarily store oil and oily water recovered from the scale pit. During the RFI, a decision had to be made to assign the various samples to one of the identified SWMUs while in reality all of the samples assigned to SWMUs 38, 39, and 40 represent conditions in one small area. The COPI concentrations detected in the samples assigned to SWMU 40 require further evaluation of TA No. 4 due to the exceedance of the target HI for the construction worker's potential exposure to arsenic and iron in surface soils.

The corrective measures evaluated for SWMU 38 as part of TA No. 4 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to aid in reducing the HI for the TA below target levels.

The recommended corrective measure for SWMU 38 is no further action. However, the recommended corrective measure for SWMU 40 (the design and installation of an improved material processing area incorporating an asphalt cap measuring approximately 50 feet by 50 feet) was proposed to prevent the current waste/byproduct management area at SWMU 38 from releasing COPIs into the environment and to eliminate the direct contact exposure pathway to COPIs currently present in the surface soil.

5.9 SWMU 39 - 12-inch MILL OIL DECANTER TANK

SWMU 39 is the 12-inch Rolling Mill Oil Decanter Tank. This area was part of the proposed VRM actions at the New Bar Mill Complex. However, the proposed VRM was not performed because the new Bar Mill was not constructed. None of the samples obtained in this area were assigned to SWMU 39. SWMU 39 was evaluated with SWMUs 38 and 40 as Target Area (TA) No. 4. These three SWMUs would more accurately be described as three pieces of equipment associated with a single SWMU being the scale pit and associated ASTs used to temporarily

store oil and oily water recovered from the scale pit. During the RFI, a decision had to be made to assign the various samples to one of the identified SWMUs while in reality all of the samples assigned to SWMUs 38, 39, and 40 represent conditions in one small area. The COPI concentrations detected in the samples assigned to SWMU 40 require further evaluation of TA No. 4 due to the exceedance of the target HI for the construction worker's potential exposure to arsenic and iron in surface soils..

The corrective measures evaluated for SWMU 39 as part of TA No. 4 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to aid in reducing the HI for the TA below target levels.

The recommended corrective measure for SWMU 39 is no further action in addition to the implementation of the recommended corrective measures at SWMU 40 as discussed in Section 5.10.

5.10 SWMU 40 - 12-inch MILL OIL STORAGE TANK

SWMU 40 consists of an AST inside of a secondary containment. Operations began in this area in 1978. Waste oil is the primary waste in SWMU 40. SWMU 40 was evaluated with SWMUs 38 and 39 as Target Area (TA) No. 4. These three SWMUs would more accurately be described as three pieces of equipment associated with a single SWMU being the scale pit and associated ASTs used to temporarily store oil and oily water recovered from the scale pit. During the RFI, a decision had to be made to assign the various samples to one of the identified SWMUs while in reality all of the samples assigned to SWMUs 38, 39, and 40 represent conditions in one small area. The COPI concentrations detected in the samples assigned to SWMU 40 require further evaluation of TA No. 4 due to the exceedance of the target HI for the construction worker's potential exposure to arsenic and iron in surface soils.

The corrective measures evaluated for SWMU 40 are no further action, WPC, an asphalt cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC would be protective of human health and the environment. The WPC instituted would also have to be designed to reduce the potential for future contamination.

An asphalt cap would be protective of human health and the environment by eliminating the potential exposure pathway. The asphalt cap would also have to be designed to reduce the potential for future contamination.

Surface excavation would be protective of human health and the environment by eliminating the source. However, surface excavation would not reduce the potential for future contamination due to ongoing activities in the area.

The recommended corrective measure for SWMU 40 is the design and installation of an improved material processing area incorporating an asphalt cap measuring approximately 50 feet by 50 feet to prevent the current waste/byproduct management area at SWMU 38 from releasing COPIs into the environment in the future and to eliminate the direct contact exposure pathway to COPIs currently present in the surface soil. The location of the proposed asphalt cap could more accurately be described as being located at SWMU 38 because it is adjacent to the scale pit, not the 12-inch Mill Oil Storage Tank.

5.11 SWMU 46 - HECKETT WASTE OIL STORAGE TANK

SWMU 46, the Heckett Waste Oil Storage Tank, is an AST located on the north side of the Heckett Maintenance Garage. It is used for the temporary storage of waste oils generated by operations within the Heckett Maintenance Building. Waste oils are pumped from the tank on an as-needed basis and sent off-site for processing. Soil samples assigned to this SWMU did not

exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's exposure to iron and manganese in surface soils and arsenic, iron, and manganese in subsurface soils.

The corrective measures evaluated for SWMU 46 as part of TA No. 1 are no further action and WPC (surface and subsurface).

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 46 is the institution of WPC for surface and subsurface soils as a matter of consistency for the TA.

5.12 SWMU 48 - #3 MELT SHOP BAGHOUSE

SWMU 48 consists of the baghouse used to control emissions from electric arc furnaces and an Argon Oxygen Decarburization (AOD) vessel in the #3 Melt Shop. It encompasses approximately 11,550 square feet of area (33 ft by 350 ft) located west of the #3 Melt Shop. The #3 Melt Shop Baghouse operations began in 1976 and ceased operation in 2001. Primary wastes in this SWMU are electric arc furnace (EAF) dust and baghouse bags. The risk based driving factors for TA No. 9, which includes SWMU 48, are the HI for the ingestion of iron and manganese by the construction worker for surface soils and a BLL for the construction worker exposed to lead in surface soil. The lead impacted soil appears to be limited to the area around the fan bases. In September 2008, Republic conducted additional delineation of lead in surface soil at this SWMU using handheld X-ray fluorescence (XRF) spectrometry technology to better define the limits of lead impacted soil and to refine estimated costs. The additional delineation

of lead in surface soil at this SWMU resulted in reducing the area of lead impacted soils exceeding the calculated site-specific lead concentration of 1,115 mg/kg to approximately 50 feet by 320 feet in plan dimension and is approximately 1 foot deep.

The corrective measures evaluated for SWMU 48 are WPC (for surface soil), soil/slag cap, an asphalt cap and surface excavation.

WPC for exposure to surface soils will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI and BLL for the TA below target levels and therefore would be protective of human health. However, WPC controls for surface soils would result in leaving the lead impacted surface soil in place and exposed.

Installation of a soil or asphalt cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. WPC in the form of a modified Health and Safety Plan used in conjunction with the slag cap would be protective of human health. The cap would serve to reduce surface exposure to potential receptors while WPC would reduce the construction worker's exposure to surface soils during earth disturbance activities.

Surface excavation would be protective of human health and the environment.

The recommended corrective measure for SWMU 48 is a combination of the excavation of lead impacted surface soil and WPC to reduce potential exposures to iron and manganese in remaining surface soils.

5.13 SWMU 49 - #4 MELT SHOP BAGHOUSE

The #4 Melt Shop Baghouse, located west of the #4 Melt Shop, encompasses approximately 25,350 square feet (97.5 foot by 260 foot). The area under and surrounding the baghouse is paved with concrete and/or asphalt. A building that accommodates rail or truck service encloses the current dust load-out area. The risk based driving factor for TA No. 9, which includes

SWMU 49, is the HI for the ingestion of iron and manganese in surface soil by the construction worker.

The corrective measures evaluated for SWMU 49 are WPC (surface), soil/slag cap, an asphalt cap, and surface excavation.

WPC would be protective of human health and the environment but would not reduce the potential for contamination caused by ongoing activities in the area.

Installation of a soil or asphalt cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. However, installation of a cap would reduce the potential for future contamination of underlying soils in the area.

Surface excavation would be protective of human health and the environment. However, the fact that the COPI of concern is iron does not justify the capital cost nor would excavation reduce the potential for future contamination of underlying soils in the area.

The recommended corrective measure for SWMU 49 is the institution of WPC. for surface soils. Additionally, proper work practices will be employed to prevent future contamination of the area. The work practices will include operating and maintaining the baghouse and waste loading areas in a manner that will to reduce the potential for accidental releases as well as promptly cleaning up any accidental releases that may occur.

5.14 SWMU 51 - INGOT INOCULATION FUME EVACUATION SYSTEM

SWMU 51, now in use as the FlexCast Fume Evacuation System, is part of emissions control system that includes SWMU 14. The emissions control system has been used to evacuate emissions from material handling at the FlexCast refining operation and emissions from the caster when casting leaded steels since about mid-2006. Previously, SWMU 51 and SWMU 14 were part of the Ingot Inoculation Fume Evacuation System that was used for the capture and

control of particulate emissions from the addition of lead to molten steel prior to casting. This area includes the induced draft fan and metal building enclosure that surround the fan. The fan and the fume evacuation system were removed from service in 1999 and placed back into service in about mid-2006. EAF dust is the primary waste in this area. The risk based driving factors for TA No. 10, which includes SWMU 51, are the HI for the ingestion of iron and manganese by the construction worker in surface soils and a BLL for the construction worker exposed to lead in surface soils.

The corrective measures evaluated for SWMU 51 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for exposure to surface soils will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI and BLL for the TA below target levels and therefore would be protective of human health. However, WPC controls for surface soils would result in leaving the lead impacted surface soil in place and exposed.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, there is current activity in the area that would result in damage to a soil/slag cap.

Surface excavation would be protective of human health and the environment by removing the source.

The recommended corrective measure for SWMU 51 is a combination of the excavation of lead impacted surface soil and WPC to reduce potential exposures to iron in surface soils. Surface excavation of lead impacted soils would require the removal of a 500 square foot (20 foot by 25 foot) area with confirmatory samples.

5.15 SWMU 52 - EXTERIOR SOLIDS DROP STATION/#4 MELT SHOP

SWMU 52 is the former #4 Melt Shop Exterior Solids Drop Station that consisted of a 5 cubic yard roll-off. It was used to collect solid materials too heavy for the transfer velocity within the duct of the #4 Melt Shop Baghouse. The duct work and drop station were removed in 1999. The area is currently used for staging materials and for maintenance activities. The risk based driving factors for TA No. 10, which includes SWMU 52, are the HI for the ingestion of iron and manganese by the construction worker in surface soils and a BLL for the construction worker exposed to lead in surface soils.

The corrective measures evaluated for SWMU 52 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for exposure to surface soils will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI and BLL for the TA below target levels and therefore would be protective of human health.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, there is current activity in the area that would result in damage to a soil/slag cap.

Surface excavation would be protective of human health and the environment by removing the source.

The recommended corrective measure for SWMU 52 is the institution of WPC.

5.16 SWMU 53 - OLD BAGHOUSE #4 MELT SHOP

SWMU 53, the former #4 Melt Shop Baghouse, was used to control emissions from the EAFs in the #4 Melt Shop between 1968 and 1982. EAF dust was the primary waste in this area. The baghouse structure was removed over the last ten years. The risk based driving factors for TA No. 9, which includes SWMU 53, are the HI for the ingestion of iron and manganese by the construction worker for surface soils and a BLL for the construction worker exposed to lead in surface soils.

The corrective measures evaluated for SWMU 53 are WPC (surface), soil/slag cap, an asphalt cap and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC for exposure to surface soils will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI and BLL for the TA below target levels and therefore would be protective of human health. However, WPC controls for surface soils would result in leaving the lead impacted surface soil in place and exposed.

Installation of a soil or asphalt cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, there is current activity in the area that would result in damage to a soil/slag cap.

Surface excavation would be protective of human health and the environment by removing the source. However, the capital costs to excavate the entire area would be very high. A potential hot spot removal was considered for lead at this SWMU. The highest concentration of lead encountered was in sample 53-SS7 (20,300 mg/kg). This sample was obtained from the floor of a depression around a ventilation shaft and access manhole to the high voltage (32,000 volt)

electrical supply tunnel to the melt shop. Excavation in this area could result in damage to the utilities, and therefore was rejected.

The recommended corrective measure for SWMU 53 is a combination of the installation of a soil/slag cap with an asphalt cap used for the portion of the area that receives vehicle traffic and WPC to reduce the exposures to construction workers. Several footings and a few of the structural steel supports on the parcel remain in-place. Grading over the entire area and a minor amount of excavation may be required to facilitate the placement of a cap. The minimum pavement section installed for the required access routes would conceptually consist of 6 inches of subbase, 4 inches of binder course, and 2 inch wearing course. There are buildings and structures in the area that have been constructed to match existing grades. In order to maintain access to these areas, soil excavation to a depth equal to the thickness of the proposed cap or pavement section will have to be performed around these structures. Republic proposes to spread the excavated material during subgrade leveling activities in this area prior to cap placement. This excavation is not intended to address potential risk, but rather is a necessary design detail for the proposed cap for the area. The recommended corrective measure is expected to include approximately 41,000 sq. ft.

5.17 SWMU 59 - #3 SLAB GRINDER BAGHOUSE AT #4 STEEL CONDITIONING

As described in Table 1, SWMU 59 consisted of a grinding dust collection system and associated roll-off boxes that collected grinding dust generated from the slab grinding operations in the #4 Steel Conditioning Building. The grinding dust collection operations began in 1979 and were shut down in 2002. The area surrounding the baghouse consists of asphalt and concrete pavement. Small piles of dust have been visually observed in the area below the baghouse. The risk based driving factors for SWMU 59 is the calculated BLL for the construction worker exposed to lead in surface soils.

The corrective measures evaluated for SWMU 59 are WPC (surface), soil/slag cap, and surface excavation.

WPC for exposure to surface soils will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the BLL for the TA below target levels and therefore would be protective of human health. However, WPC controls for surface soils would result in leaving the lead impacted surface soil in place and exposed.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the source.

The recommended corrective measure for SWMU 59 is excavation of lead impacted surface soil. This excavation has been partially completed as an IM as previously discussed. The confirmation samples taken at the extent of the IM excavation exceeded 1,100 mg/kg lead on the north wall. An additional 10 feet of soil will be removed along the north wall and a confirmation sample obtained. Excavation will continue as necessary until confirmation sample results provide an acceptable calculated BLL.

5.18 SWMU 60 - TORCH CUT BAGHOUSE AT #4 STEEL CONDITIONING

As described in Table 1, SWMU 60 consists of the baghouse used to control emissions from the torch cut operations in #4 Steel Conditioning. These baghouse operations began in 1979 and ceased to exist in 2002 when #4 Steel Conditioning was shut down. The risk based driving factors for TA No. 5, which includes SWMU 60 is the HI for the ingestion of manganese in surface soil by the construction worker.

The corrective measures evaluated for SWMU 60 are WPC (surface), soil/slag cap and surface excavation.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the source, but is not economically justifiable.

The recommended corrective measure for SWMU 60 is the institution of WPC.

5.19 SWMU 61 - #1 ROUND GRINDER AND #2 SLAB GRINDER AT #4 STEEL CONDITIONING

SWMU 61 consists of the two baghouses used to control emissions from the #1 Round Grinder and the #2 Slab Grinder operations in #4 Steel Conditioning. These baghouses ceased operating in 2002 with the shutdown of #4 Steel Conditioning. Soil samples assigned to this SWMU did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the exceedance of the target HI for the construction worker's exposure to surface soil.

The corrective measures evaluated for SWMU 61 as part of TA No. 5 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 61 is the institution of surface WPC as a matter of consistency for the TA.

5.20 SWMU 64 - HECKETT SLAG SCREENING OPERATION

SWMU 64 is located in the southwestern portion of SWMU 3. It is comprised of approximately 1.5 acres and consists of a slag screening and processing operation. Historical operations at SWMU 64 consisted primarily of the segregation of slag. However, other mill waste known or suspected to have been managed at SWMU 64 includes refractory brick. Currently, slag processing operations include slag quenching, air cooling, crushing, metal recovery, and slag aggregate screening, sizing, and storage for later sale. The risk based driving factors for TA No. 1, which includes SWMU 64, are the HI for the ingestion of iron and manganese in surface soil and arsenic, iron, and manganese in subsurface soils by the construction worker.

The corrective measures evaluated for SWMU 64 are no further action, WPC (surface and subsurface), a soil/slag cap, and surface excavation.

No further action would not be protective of human health and the environment and therefore was not selected.

WPC would be protective of human health and the environment by reducing the construction worker's potential exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, ongoing activities in the area would result in damage to the cap.

Surface excavation would be protective of human health and the environment by removing the source, but is not economically feasible given the large surface area.

The recommended corrective measure for SWMU 64 is the institution of WPC. This recommendation is based on SWMU 64 being an active slag processing area where the COPIs responsible for exceeding the risk based standards are the metals found in the slag material itself.

5.21 SWMU 65 - HECKETT REFUSE COLLECTION AREA

SWMU 65 consists of the refuse collection operations conducted by Heckett. Roll-off containers are in-place for collection of trash and maintenance waste from the area. None of the samples obtained in this area were assigned to SWMU 65. However, the individual SWMUs/AOCs associated with TA No. 1 require further evaluation due to the exceedance of the target HI for the construction worker's exposure to iron and manganese in surface and arsenic, iron and manganese in subsurface soils.

The corrective measures evaluated for SWMU 65 as part of TA No. 1 are no further action and WPC (surface and subsurface).

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

The recommended corrective measure for SWMU 65 is the institution of WPC for surface and subsurface soils as a matter of consistency for the TA.

5.22 SWMU 66 - TUB AND ASSOCIATED TRENCH (INCLUDES BORING LOCATION 46-GPS)

SWMU 66 consists of a heating tub and the associated trench formerly used for the inspection of stainless cast slabs. This is an inactive area in which buildings have been demolished. No visual evidence of obvious soil staining has been observed. The risk based driving factors for TA No.

2, which includes SWMU 66 is the calculated BLL for a construction worker exposed to lead in both surface and subsurface soils. During negotiation with USEPA, Republic agreed to evaluate remedial activities at SWMU 66 to address PCB=impacted surface soil even though the HHRA indicated the calculated potential carcinogenic risk for the area was below the standard of risk for this Site. During the field reconnaissance to evaluate USEPA's request to consider excavation of the PCB impacted soil, Republic observed that placement of a cap around boring GP-46 to reduce exposure to lead in surface soil (which was the CM recommended in the initial CMP) would be difficult to achieve while maintaining access to building entrances located nearby. The XRF was used to further delineate the lead levels in this area.

The corrective measures evaluated for SWMU 66 are WPC (surface and subsurface), a soil/slag cap, and surface excavation.

WPC would be protective of human health by reducing the construction worker's exposures, but would leave lead impacted surface soils exposed to the environment.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, ongoing activities in the area would result in damage to the cap. WPC in the form of a modified Health and Safety Plan used in conjunction to the slag cap would be protective of human health. The cap would serve to reduce surface exposure to potential receptors while WPC would reduce the construction worker's exposure to surface soils during earth disturbance activities.

Surface excavation would be protective of human health and the environment by removing the surface source, but would require another corrective measure to address subsurface soils.

The recommended corrective measure for SWMU 66 is the combination of a surface excavation with WPCs. The proposed surface excavation will consist of two targeted hot spot removals to a depth of one foot. The excavations measure approximately 30 feet by 30 feet at boring 66-B4 to address PCB-impacted surface soil and 10 feet by 10 feet at boring location GP-46 to address

lead-impacted surface soil. WPC to reduce the potential exposures to construction workers are also recommended for the SMWU. The cost of excavating the material ($20,000 to $48,000) is dependent on whether the material is disposed of as non-hazardous or hazardous, respectively.

5.23 SWMU 70 - FORMER WASHOUT PAD

This former concrete washout pad was used for steam cleaning of equipment and machinery. This is an inactive area due to the shutdown of #4 Steel Conditioning in 2002. Only a concrete pad and a small pile of debris remain in the area. Soil samples assigned to this SWMU did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 5 require further evaluation due to the exceedance of the target HI for the construction worker's exposure to manganese in surface soil.

The corrective measures evaluated for SWMU 70 as part of TA No. 5 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 70 is the institution of surface WPC as a matter of consistency for the TA.

Therefore, the recommended corrective measure for SWMU 70 is the institution of WPC for surface soils.

5.24 SWMU 75 - ROLL-OFF CONTAINER STAGING AREA WEST OF #4 STEEL CONDITIONING

SWMU 75 was a roll-off container previously used to store the used baghouse bags and grinder dust generated by the #1 Round Grinder and the #2 Slab Grinder baghouses (SWMU 61). This is an inactive area due to the shutdown of #4 Steel Conditioning in 2002. Only a concrete pad and a small pile of debris remain in the area. The risk based driving factor for TA No. 5, which includes SWMU 75, is the HI for the ingestion of manganese by the construction worker in surface soils.

The corrective measures evaluated for SWMU 75 are WPC (surface), a soil/slag cap, and surface excavation.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified because the COPI is manganese.

The recommended corrective measure for SWMU 75 is the institution of WPC.

5.25 SWMU 76b - EAF DROPOUT CHAMBER SOLIDS ROLL-OFF CONTAINERS

SWMU 76b is an area where roll-off containers were used to temporarily store the dropout chamber solids material generated by the #9 EAF operations (SWMU 49). The container management operations began in 1998 and ceased in 1999 with the removal of the exterior solids drop station. The container and the exterior solids drop station are no longer in-place. The risk

based driving factors for TA No. 10, which includes SWMU 76b, are the HI for the ingestion of iron and manganese by the construction worker in surface soils.

The corrective measures evaluated for SWMU 76b are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified because the COPI is iron.

The recommended corrective measure for SWMU 76b is the institution of WPC.

5.26 AOC 80 - LOCOMOTIVE FUELING STATION

AOC 80 is the former Locomotive Fueling Station. This AOC was formerly used for the fueling of locomotives with diesel fuel. When in operation, the area consisted of an AST situated on a pedestal support that elevated the tank and dispenser to a height facilitating re-fueling operations. Fueling operations were discontinued in 1996 and the tank was removed. Soil samples assigned to this AOC did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to surface soils.

The corrective measures evaluated for AOC 80 as part of TA No. 3 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this AOC did not exceed secondary screening levels the recommended corrective measure for AOC 80 is the institution of surface WPC as a matter of consistency for the TA.

5.27 AOC 87c - LEAKING DRUM/SAMPLE LOCATION BM-GS-5-1UA

During the RCRA Facility Assessment, this area contained two empty drums lying on their sides. The drums are no longer in-place. The risk based driving factors for TA No. 6, which includes AOC 87c, is the HI for the ingestion of iron by the construction worker in surface soils.

The corrective measures evaluated for AOC 87c are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified because the COPI is iron.

The recommended corrective measure for AOC 87c is the institution of WPC.

5.28 AOC 90 - MELT SHOP SCRAP YARD

AOC 90 is comprised of approximately 13 acres consisting of scrap management operations. Historical and current operations at AOC 90 consist primarily of staging scrap metal in support of facility operations. No mill wastes are known to or suspected to have been managed at AOC 90. This area is an active area for staging scrap metal used in steel production. The risk based driving factors for TA No. 3, which includes AOC 90, are the HIs for the ingestion of iron and manganese in surface soil by the construction worker.

The corrective measures evaluated for AOC 90 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap. Additionally, the ongoing activities in the area would damage the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the high capital cost renders this option infeasible.

The recommended corrective measure for AOC 90 is the institution of WPC.

5.29 AOC 95 - FORGE AREA FUELING STATION

AOC 95 consists of a former diesel fuel AST, a secondary containment, and a dispenser. The AOC area serves as a fueling station for facility equipment. The tank, formerly situated within a concrete secondary containment structure, was taken out of service in November 2003. It was cleaned and rendered unusable in April 2004. The tank was subsequently used as scrap. A concrete pad abuts the containment area adjacent to the former dispenser. The risk based driving factors for AOC 95 is the HI for the ingestion of manganese in surface soil by the construction worker.

The corrective measures evaluated for AOC 95 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified since the COPI is manganese.

The recommended corrective measure for AOC 95 is the institution of WPC.

5.30 AOC 97 - SOLVENT COLLECTION TANK HECKETT GARAGE

AOC 97, a Solvent Collection Tank, is located at the Heckett Garage Area. AOC 97 is comprised of a 3-foot by 5-foot by 4-foot open-top tank utilized as a parts washer. The parts

washer is fully enclosed and the interior of the building has a concrete slab floor. Soil samples assigned to this AOC did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 1, including AOC 97, require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to surface and subsurface soil.

The corrective measures evaluated for AOC 97 as part of TA No. 1 are no further action and WPC (surface and subsurface).

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this AOC did not exceed secondary screening levels the recommended corrective measure for AOC 97 is the institution of WPC for surface and subsurface soils as a matter of consistency for the TA.

5.31 SWMU 101 - CANTON BLOOM CAST FACILITY LMF BAGHOUSE AREA

SWMU 101 consists of the baghouse used to control emissions from the ladle metallurgy facility (LMF) operations in the Canton Bloom Cast Facility and the two roll-off containers used to collect the baghouse dust. Soil samples assigned to this SWMU did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA No. 10 require further evaluation due to the exceedance of the target HI and the target BLL for the construction worker's exposure to lead in surface soil.

The corrective measures evaluated for SWMU 101 as part of TA No. 10 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI and BLL for the TA below target levels.

Although samples assigned to this SWMU did not exceed secondary screening levels, the recommended corrective measure for SWMU 101 is the institution of surface WPC as a matter of consistency for the TA.

5.32 SWMU 102 - CANTON BLOOM CAST FACILITY CASTER SCALE PIT AREA

SWMU 102 is the concrete-lined scale pit for the caster and rolling mill located in the Bloom Cast Facility. This is an active operation area that receives re-circulated water, waste oil and scale. The scale is removed from a pit and staged on a concrete pad. Scale drag-out has been observed at unpaved areas surrounding the mill scale pile pad. The risk based driving factors for TA No. 11, which includes SWMU 102, is the HI for the ingestion of iron by the construction worker in surface soils.

The corrective measures evaluated for SWMU 102 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified since the COPI is iron.

The recommended corrective measure for SWMU 102 is the institution of WPC.

5.33 SWMU 103 - CANTON BLOOM CAST FACILITY ROLLING MILL SCALE PIT AREA

SWMU 103 is the concrete-lined scale pit for the caster and rolling mill located in the Bloom Cast Facility. This is an active operation area that receives re-circulated water, waste oil and scale. The scale is removed from a pit and staged on a concrete pad. Scale drag-out has been observed at unpaved areas surrounding the mill scale pile pad. The risk based driving factors for TA No. 11, which includes SWMU 103, is the HI for the ingestion of iron in surface soils by the construction worker.

The corrective measures evaluated for SWMU 103 are no further action, WPC (surface), soil/slag cap and surface excavation.

No further action would not be protective of human health and the environment.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the surface source, but the capital cost is not justified since the COPI is iron.

The recommended corrective measure for SWMU 103 is the institution of WPC.

5.34 AOC 109 - FORMER UST LOCATION

AOC 109, a former UST location, is located west of AOC 80 in the Melt Shop Scrap Yard. The leaded gasoline storage and fueling operations in AOC 109 were discontinued in 1980. The tank was removed prior to 1988. No visible indications of the location of this tank exist. The risk based driving factors for AOC 109 are the HIs for the ingestion of iron and manganese in surface soil by the construction worker. None of the samples obtained in this area were assigned to AOC 109. However, the individual SWMUs/AOCs associated with TA No. 3 require further evaluation due to the exceedance of the target HI for the construction worker's exposure to surface soil.

The corrective measures evaluated for AOC 109 as part of TA No. 3 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

The recommended corrective measure for AOC 109 is the institution of surface WPC as a matter of consistency for the TA.

5.35 AOC 111 - PCB SOIL IMPACTS AT SOUTH END OF 12-INCH MILL BUILDING REHEAT FURNACE

AOC 111 is the aboveground hydraulic oil tank associated with the hydraulic systems for the former 12" Bar Mill. Hydraulic oils were stored in the tanks and used for the makeup to the hydraulic system reservoirs. AOC 111 does not exceed the risk-based standards and corrective measure alternatives are not assessed for this AOC. During negotiation with USEPA outlined in correspondences attached as Appendix E, Republic agreed to evaluate remedial activities at AOC

111 to address PCB-impacted surface soil even though the HHRA indicated the calculated potential carcinogenic risk for the area was below the standard of risk for this Site.

The recommended corrective measure for AOC 111 is the excavation of surface soils and replacement of the existing asphalt cover. The proposed excavation measures approximately 50 feet by 50 feet. The CM will consist of removing the existing asphalt pavement, excavating soil to a depth of 2 feet, backfilling the excavation with compacted slag, and replacement of the asphalt pavement. The estimated cost to perform this CM is $62,000.

5.36 AOC 113 - RAILROAD TIES/RAILROAD SPOIL AREA

AOC 113, the Railroad Ties/Railroad Spoil Area, is located along the northern limits of the Site just south of EBNC. This area has been utilized to accumulate used railroad ties and ballasts from maintenance activities on the in-plant rail lines. Railroad ties and railroad ballast are accumulating and encroaching on the bank of EBNC. The risk based driving factors for TA No. 3, which includes AOC 113, are the HI for the ingestion of iron and manganese in surface soil by the construction worker.

The corrective measures evaluated for AOC 113 are no further action, WPC (surface), and surface excavation.

No further action would not be protective of human health and the environment.

WPC would be protective of human health and the environment by reducing the construction worker's exposures.

Installation of a soil cap alone would not be protective of human health and the environment because the receptor of interest is a construction worker, whose assumed activities would include penetrating the cap.

Surface excavation would be protective of human health and the environment by removing the source.

The recommended corrective measure for AOC 113 is the institution of surface WPC and execution of general housekeeping by removing the accumulated debris.

5.37 AOC 115 - SAMPLE LOCATION BM-GS-6-1UA

This sample was collected during the Phase II Site Assessment of the VRM study conducted for the proposed New Bar Mill Complex. It was collected west of the Non-Destructive Testing portion of the 12-inch Bar Mill. Soil samples assigned to this AOC did not exceed secondary screening levels. However, the individual SWMUs/AOCs associated with TA 6 require further evaluation due to the exceedance of the target HI for the construction worker's potential exposure to iron in surface soils.

The corrective measures evaluated for AOC 115 as part of TA No. 6 are no further action and surface WPC.

No further action would not aid in reducing the TA calculated risk below acceptable levels and therefore was not selected.

The institution of WPC, in general, will alter the assumptions utilized in the risk assessment portion of the RFI to reduce the HI for the TA below target levels.

Although samples assigned to this AOC did not exceed secondary screening levels the recommended corrective measure for AOC 115 is the institution of surface WPC as a matter of consistency for the TA.

5.38 EBNC

As discussed in Section 3.4 and based on the available data, Republic believes the COPIs from the Site operations represent only a small fraction of the COPIs detected in the EBNC sediment. However, in accordance with the negotiations with USEPA, Republic proposes to perform a limited sediment removal action that extends from the dam to a point approximately 500 feet upstream of the dam. As shown on Table 3, approximately 59% of the sediment volume in the pool behind the dam is located within 500 feet upstream of the dam. Table 8 presents the percentages of mass for each COPI within each stream segment as well as the percentage of mass for each COPI within 500 feet upstream of the dam. A review of Table 7 shows that excavation of sediment within 500 feet upstream of the dam will remove approximately 91% of the total mass loading from the COPIs and approximately 93% of the toxicity (Table 10).

Figure 9 of this CMP shows the thickness of sediment present and to be removed in the area of the proposed corrective measure. Visual observation of the sediments being dredged will be used to determine when the removal activities have reached the natural stream bed. No confirmation samples will be collected.

Republic proposes to sample and analyze the removed sediment and associated liquids to determine the proper disposal method. Sediments will be removed to predetermined limits and confirmation samples will not be obtained. The estimated cost of the proposed 500 feet of sediment removal is approximately $365,000.

In addition to the in-stream sediment removal activities, Republic proposes to conduct a targeted hot spot excavation around sample location OB-7. The proposed surface excavation is estimated to measure approximately 10 feet by 10 feet by 1 foot deep to address PAH-impacted overbank sediment deposits. The excavation will continue until obviously impacted soil, as identified in the field through visual observation or aided by field testing procedures, has been removed. One confirmation sample will then be collected from each excavation wall and the excavation floor and submitted to the laboratory for PAH analyses. Based on the results of the initial confirmation samples, the excavation will be expanded until the concentrations of PAHs detected

in the confirmation samples do not result in an unacceptable risk. Once the calculated potential risk meets the project goals, the excavation will be backfilled with slag. The estimated cost of this corrective measure is $5,000.

The orange staining near Outfall 011 will also be removed to the visible limits of staining. The estimated cost of this corrective measure is $2,000.

5.39 SITEWIDE GROUNDWATER

As stated in the RFI, selected groundwater samples were found to contain metals, VOCs, and/or SVOCs at concentrations above their respective screening criteria.

The corrective measures evaluated for sitewide groundwater are no further action, monitored natural attenuation, and workplace and institutional controls.

No further action would not aid in reducing the sitewide groundwater calculated risk below acceptable levels and therefore was not selected.

Monitored natural attenuation (MNA) would aid in reducing the sitewide groundwater calculated risk below acceptable levels over time as natural attenuation factors reduce COPI concentrations in the groundwater. MNA will also ensure that groundwater with a calculated risk above acceptable levels is not migrating offsite. However, MNA alone would not reduce the sitewide groundwater calculated risk for construction workers below acceptable levels in the short term. Therefore MNA was not selected as a standalone remedy but has been selected as one part of the remedy.

Institutional controls (deed restriction, WPC, and EC) would aid in reducing sitewide groundwater calculated risk below acceptable levels by eliminating potential exposure pathways. A deed restriction will limit future use of the property to industrial use thereby eliminating non-industrial exposure scenarios, prohibit the use of site groundwater thereby eliminating potential ingestion and direct contact exposure pathways to industrial workers, and require WPC be

implemented to protect construction workers who may be exposed to groundwater in the future thereby eliminating the ingestion and direct contact pathways to construction workers. An EC will be used to require that all institutional and work place controls continue to be instituted and documented. Republic's opinion is that additional governmental controls such as well drilling restriction will not be necessary due to the institutional controls consisting of a deed restriction and EC.

The recommended corrective measure for sitewide groundwater is a combination of workplace and institutional controls as well as a confirmatory groundwater sampling program. Republic has selected the proposed corrective measures to meet the third tier (final cleanup goal) of USEPA's groundwater cleanup policies to protect and restore groundwater to its maximum beneficial use. As documented in the RFI, groundwater monitoring has shown that there is no groundwater migrating offsite containing COPIs at concentrations exceeding their respective Maximum Contaminant Levels (MCLs) and Secondary MCLs (SMCLs). Additionally, the groundwater migration modeling discussed above showed that no groundwater migrating into the East Branch of Nimishillen Creek (EBNC) contains COPIs at concentrations exceeding the appropriate OEPA water quality standards. Therefore, the site has not prevented offsite groundwater quality from meeting its beneficial use.

Sampling events at MW-26 detected total chromium above the MCL during four out of five sampling events and detected antimony above the MCL during the February 2006 sampling event. Sampling events at MW-40 detected either total and/or dissolved arsenic during four out of five sampling events. These are the only exceedances of the MCLs at Republic's downgradient property boundary that are not clearly attributable to offsite sources. As documented in the Environmental Indicators (EI) Report, Republic has achieved attainment of the "Migration of Contaminated Groundwater Under Control" Environmental Indicator for current human exposures. As discussed in Section 3.3 above, modeling of groundwater fate and transport in the vicinity of MW-26 and MW-40 indicated that groundwater discharging to EBNC from the Site will not exceed the respective USEPA Region V Ecological Screening Levels.

Therefore, it is reasonable to conclude that groundwater discharging from the Site to EBNC is not currently impacting surface water and sediments in EBNC.

The proposed confirmatory groundwater monitoring program will not address areas where groundwater contamination has been shown to be migrating onto the Republic site. Specifically, those areas are:

- Chlorinated VOCs exceedances detected at MW-46 and MW-57 located at the western end of the Site. and
- VOC, metals, and cyanide exceedance detected at MW-58, which is located along the property boundary between the boiler house and the dam.

Republic proposes to perform a confirmatory groundwater monitoring program to reaffirm that the soil and groundwater remedies will continue to be protective of human health and ecological receptors after the remedies are completed. In general, Republic proposes annual monitoring of those perimeter monitoring wells for COPIs that have exceeded the risk based human health and ecological criteria in or upgradient of the perimeter well. The annual monitoring will be performed for up to 5 years after the proposed corrective measures are implemented with annual reports submitted to USEPA containing the information presented in previous groundwater monitoring reports for the site. Republic may request an earlier termination of this confirmatory groundwater monitoring program. The same sampling and analytical procedures and methods as used in the previous monitoring at the site will be used, with the exception that Level II laboratory reports will be provided instead of Level IV reports. The goal of the program will be to demonstrate that no exceedances of risk based human health and ecological criteria are present. The specific wells and analytes proposed for inclusion in the confirmatory monitoring program are:

Monitoring Well		Proposed Analyses	Rationale
MW-	26	T&D RCRA Metals and Antimony	Previous exceedance at well
MW-	29	T&D RCRA Metals and TCL-SVOCs	Previous exceedance at well
MW-	40	T&D RCRA Metals and TCL-VOCs	Previous arsenic exceedance at well; Previous VOC Exceedance at upgradient well MW-32
MW-	41	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-	45R	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-	52	T&D RCRA Metals	Previous metals exceedances at upgradient wells.
MW-	53	T&D RCRA Metals and TCL-VOCs	Previous Metals and VOC Exceedances in upgradient soils.
MW-	54	T&D RCRA Metals	Previous arsenic exceedance at well.
MW-	61	T&D RCRA Metals	Previous metals exceedances at upgradient wells.

Notes:

T&D = Total and Dissolved. The RCRA(Resource Conservation and Recovery Act) list of metals include: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium & Silver.

TCL-SVOCs = Target Compound List - Semivolatile Organic Compounds

TCL-VOCs = Target Compound List - Volatile Organic Compounds

The workplace and institutional controls will generally consist of the workplace controls outlined in Appendix C, a deed restriction restricting future land use to industrial and prohibiting the use of site groundwater and an EC requiring that all institutional and work place controls continue to be instituted and documented. It is Republic's opinion is that additional governmental controls such as well drilling restriction will not be necessary due to the institutional controls consisting of a deed restriction and EC. The estimated cost of the proposed remedy for the first five years is approximately $142,000.

6.0 PUBLIC INVOLVEMENT PLAN

Republic will provide this Revised CMP to the public repository in accordance with the PIP. Once USEPA selects the corrective measures, USEPA will issue the Proposed Final Corrective Measures, which will include a public notice and Statement of Basis, for public comment. USEPA will respond to any relevant comments received via the Final Decision and Response to Comments document, which will specify the final decision as to the approved Corrective Measures to be implemented.

7.0 SCHEDULE

A schedule for implementing the recommended corrective measures is presented on Table 13. The schedule assumes certain timeframes for USEPA actions, which are necessary predicates prior to implementation by Republic of the final corrective measures, and are subject to Republic's dispute resolution rights under the Order. Recognizing that the Order calls for completion of the corrective measures construction activities within one year of USEPA's selection of the final corrective measures, to the extent practicable, the proposed schedule contemplates completion of the SWMU/AOC corrective measures (i.e., caps, covers, excavations) during the 2011 construction season. The proposed schedule further contemplates completion of the EBNC-related corrective measures during the second construction season following USEPA's selection of final corrective measures. Republic does not believe that it is practicable to complete both sets of activities during a single construction season, particularly with the need for competitive bidding and design work for the EBNC sediment removal, and in light of the ongoing difficult economic climate that makes it necessary as a practical matter to spread the costs of the final remedy work over two calendar years.