

TIME-CRITICAL REMOVAL ACTION REPORT

*Former Kaiser Smelter Site
Mead, Spokane County, Washington*

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***Appendices listed are provided as separate PDF files.**

LIST OF ACRONYMS

ACM	asbestos-containing material
AST	aboveground storage tank
CFR	Code of Federal Regulations
COCs	contaminants of concern
CP	Command Post
CTP	coal tar pitch
CY	cubic yards
DOT	Department of Transportation
DU	Decision Unit
E&E	Ecology & Environment, Inc.
Ecology	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
ERRS	Emergency and Rapid Response Services
HASP	Health and Safety Plan
HBM	hazardous building materials
HEPA	high-efficiency particulate air
ID	identification
IRS	IRS Environmental, Inc.
KACC	Kaiser Aluminum and Chemical Company
KAIC	Kaiser Aluminum Investment Company
LBP	lead-based paint
LF	linear feet
Mag	Magnesia
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/m ³	milligrams per cubic meter
MOU	memorandum of understanding
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OSC	On-Scene Coordinator

LIST OF ACRONYMS (CONTINUED)

OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCBs	Polychlorinated Biphenyls
PCM	Phase Contrast Microscopy
PDF	portable document format
pg/L	picograms per liter
PHC	petroleum hydrocarbon
PLM	Polarized Light Microscopy
POLREPS	Pollution Reports
PPE	personal protective equipment
ppm	parts per million
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Act
RML	Removal Management Levels
RSE	Removal Site Evaluation
SAP	Sampling and Analysis Plan
SEMS	Superfund Enterprise Management System
Site	Former Kaiser Smelter Site
SCRIBE	Scribe Environmental Sampling Data Management System
ft ²	square feet
SOP	Standard Operating Procedures
SSDMP	Site-Specific Data Management Plan
START	Superfund Technical Assessment and Response Team
SVOC	Semivolatile Organic Compounds
TAL	Target Analyte List
TAT	turnaround time
TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time-Critical Removal Action
TO	Task Order
TRC	TRC Consultants, Inc

LIST OF ACRONYMS (CONTINUED)

Tri-Star	TriStar North, Inc.
TSCA	Toxic Substance Control Act
TSI	thermal system insulation
UST	underground storage tank
VOC	volatile organic compounds
WAC	Washington Administrative Code
WESTON®	Weston Solutions, Inc

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) tasked Weston Solutions, Inc. (WESTON®), the Superfund Technical Assessment and Response Team (START) under contract No. 68HE0720D0005 and Task Order (TO) No. 68HE0721F0003, to provide technical support and documentation of Time-Critical Removal Action (TCRA) activities conducted at the Former Kaiser Smelter Site (Site) located in Mead, Spokane County, Washington. The Superfund Enterprise Management System (SEMS) Identification (ID) for the Site is WAN001020091.

The former smelter facility was constructed by the Defense Plant Corporation and began operations in 1942 during World War II. The property was purchased in 1946 by Kaiser Aluminum & Chemical Company (KACC) and began smelting operations the same year. KACC ceased smelting operations in 2000. The KACC smelter facility occupies approximately 167 acres and consists of numerous abandoned industrial buildings. The following is a summary of pertinent events and agency actions preceding the TCRA:

- In 2000, KACC ceased smelting operations and in the process, abandoned significant quantities of hazardous smelting materials used during smelting operations and hazardous building materials (HBM) used to construct facility structures.
- In 2014, Spokane Recycling Company, LLC (current owner) acquired the smelter facility and stormwater conveyance outfall parcel located north of the facility. The facility stormwater conveyance system terminates within the outfall parcel where it discharges into Deadman Creek.
- On March 6, 2019, EPA received a formal written request for assistance from Washington Department of Ecology (Ecology) and the Spokane Regional Clean Air Agency (Spokane Clean Air) concerning the release of polychlorinated biphenyls (PCBs), asbestos and other contaminants from the KACC smelter facility.
- In May 2019, START completed a Removal Site Evaluation (RSE) based on the March 6, 2019 request for assistance from Ecology and Spokane Clean Air. The RSE assessed the presence, concentrations, and migration pathways of hazardous substances at the KACC smelter facility to determine risks of exposure to human health and the environment. The RSE identified significantly elevated concentrations of PCB Aroclor 1268 and numerous other hazardous substances within the migration pathway that exceeded regulatory action levels. The migration pathway identified at the smelter facility includes the stormwater

conveyance system that connects to the off-Site settling ponds, which discharges to the outfall at Deadman Creek (Ecology & Environment, Inc. [E&E], 2019).

- EPA issued an Action Memorandum on May 28, 2020, which authorized completion of a TCRA at the Site to mitigate threats posed to human health and the environment from the ongoing release of hazardous substances identified in the 2019 RSE (EPA, 2020).

The following Decision Units (DUs) were selected to characterize areas of the Site for removal activities:

- DU-1 activities completed by EPA included the removal of an estimated 318,494 square feet (ft²) of Robertson Siding and 112 Robertson Ventilators from the Site. Approximately 5,940 ft² of asbestos-containing floor tiles were removed from the Site. Two 20,000-gallon boiler tanks with “mag” insulation were abated.
- DU-2 activities completed by EPA included the removal of asbestos-containing material (ACM) thermal system insulation (TSI)-covered piping and, ACM roofing material. Approximately 14,416 linear feet (LF) of ACM TSI piping were removed from the Site and disposed of off-site. Approximately 97 tons of ACM roofing material were removed and disposed of off-site. ACM was disposed of at a facility licensed to accept ACM.
- DU-3 activities completed by EPA included the removal of various waste pile materials. A total of approximately 3,388 cubic yards (CY) of green coke containing elevated concentrations of several Polycyclic Aromatic Hydrocarbon (PAHs) were removed and disposed of at the Graham Road landfill facility in Medical Lake, Washington as solid waste. Approximately 1,184 CY of asbestos-containing green coke, which was characterized under the WT02¹/ACM material profile, were removed during the TCRA, and disposed of at the Chemical Waste Management landfill facility in Arlington, Oregon. Approximately 1,932 CY of green coke, profiled under the WT02¹ profile, were removed from Building 52 and disposed of at the Chemical Waste Management landfill. A total of 3,616 CY of reacted ore containing PCBs were transported and disposed of at the Graham Road landfill. Contaminated sediment and debris from 37 catch basins were removed and disposed of during the TCRA.
- A total of 5,596 chemical containers were inventoried, profiled, and removed from the Site using the First Step Hazard Categorization process.

Some potential sources of contamination were not addressed under the scope of this TCRA. Alumina, a synthetically produced aluminum oxide from partially refined aluminum ore, was found around the Site in locations associated with ore handling. Approximately 10,555 CY of

¹ WT02 is assigned to waste material meeting Washington State regulatory thresholds for “toxic dangerous waste.”

alumina and 1,726 CY of “mixed alumina²”, were collected and stockpiled inside Building 32. A small section of Robertson Siding on an interior wall in Building 44, protected from exterior weathering, was left in place to avoid demolishing the building. Short sections of ACM TSI piping in secured locations protected from weathering remained in place in the Guard Shack (Building 37), in the Site caretaker’s residence (Building 45), and in an underground vault in the Building 60/58 Courtyard. Three to four underground storage tanks (USTs), which appeared to contain remnant oily sludge and/or water, also remained in the Building 60/58 Courtyard vault. The coal tar pitch (CTP) aboveground storage tanks (ASTs) contained approximately 37 CY of remnant solidified product. The hatch to the AST was secured to prevent further leakage. Underground vaults and passages in the vicinity of current or former Buildings 54, 54A, 56 and 300 may contain residual accumulations of green coke that could not be recovered. A large, insulated duct, covered in an asbestos-containing flashing, remains on the Site west of Building 56. Other unconfirmed potential sources of contamination remaining on-site may include lead-based paint (LBP) on the numerous remaining buildings, isolated areas of contaminated soil, debris in stormwater drains that were not cleaned during this TCRA, and transformer oil in the decommissioned pipes near Building 1A and in the ASTs and piping near Building 1A and Building 1. Additionally, there is potential for PCB-contaminated soils in this area of the Site.

START prepared this report to describe the technical scope of work completed under the TCRA carried out by EPA on the portion of the Site owned by Spokane Recycling Company, LLC property (Parcel #36165.9016). This report does not cover removal activities carried out concurrently on the portion of the Site owned by Kaiser Aluminum Investment Company (KAIC) property (Parcel #36096.9603), which included the removal of impacted sediment in the stormwater system, including the settling ponds on the undeveloped parcel. Removal activities on the KAIC property are documented in a separate report submitted by KAIC to EPA under a separate EPA Action Memorandum and Settlement Agreement. The EPA On-Scene Coordinator (OSC) was Brooks Stanfield.

² “Mixed alumina” is a field term used to describe alumina that was mixed with soil and other material on the ground surface.

1 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked Weston Solutions, Inc. (WESTON®), the Superfund Technical Assessment and Response Team (START) under contract No. 68HE0720D0005 and Task Order (TO) No. 68HE0721F0003, to provide technical support and documentation during Time-Critical Removal Action (TCRA) activities conducted at the Former Kaiser Smelter Site (Site) located in Mead, Spokane County, Washington. A Site Location Map is provided as Figure 1-1. The Superfund Enterprise Management System (SEMS) Identification (ID) for the Site is WAN001020091.

This report has been prepared to describe the technical scope of work completed during the Former Kaiser Smelter Site TCRA carried out by EPA on the portion of the Site owned by Spokane Recycling Company, LLC from July 2020 through December 2020. This report does not cover activities on the portion of the Site owned by Kaiser Aluminum Investment Company (KAIC), which included the removal of impacted sediment in the stormwater system, including the settling ponds on the undeveloped parcel. Removal activities on the KAIC property are documented in a separate report submitted by KAIC to EPA under a separate EPA Action Memorandum and Settlement Agreement.

1.1 PROJECT OBJECTIVES

The primary objective of this TCRA was to eliminate the threat to public health, welfare, and the environment, as related to criteria set forth in 40 *Code of Federal Regulations (CFR) §300.415(b)*, posed by a release of the Site-related contamination including polychlorinated biphenyls (PCBs), asbestos-containing material (ACM), polyaromatic hydrocarbons (PAHs), and metals present at the Site.

This TCRA was initiated based on the findings of the 2019 Removal Site Evaluation (RSE) report (E&E, 2019). The 2019 RSE was completed following a formal written request for assistance from Washington Department of Ecology (Ecology) and Spokane Regional Clean Air Agency (Spokane Clean Air) concerning the release of PCBs, ACM, and PAHs. The concerns regarding the Site as outlined in the May 28, 2020 EPA Action Memorandum included: 1) quantity and types of contaminants present that are highly toxic to humans and ecosystems; 2) building conditions and

illegal trespassing, including an increase in homeless encampments on the property, which are likely to result in exposure; 3) threat of fire or explosion, particularly because the property currently does not have water service available to fight fires; 4) migration of hazardous substances, such as PCBs and metals, into waterways that are already heavily challenged by these contaminants; and 5) a current owner that is failing to meet basic regulatory requirements.

1.2 SCOPE OF WORK

The START scope of work for the Kaiser TCRA included conducting perimeter air sampling and particulate monitoring during removal action activities; collecting bulk asbestos, soil, and sediment samples from various locations, and other suspected waste material containing possible hazardous constituents; subcontracting laboratory analyses; conducting data validation and data management; and maintaining Site documentation. START also provided written, digital, and cost documentation of removal action activities.

Additional START removal activities included:

- Developing a Site-Specific Sampling and Analysis Plan (SAP), Site-Specific Data Management Plan (SSDMP), and Health and Safety Plan (HASP).
- Identifying, estimating volume, and conducting various waste pile and liquid sampling to characterize and develop appropriate waste profiles based on Toxicity Characteristic Leaching Procedure (TCLP), fish bioassay tests, and PCB, PAH, and metals content.
- Collecting bulk asbestos samples from selected building materials within the Site to quantify asbestos content.
- Documenting the removal of material by the Emergency Rapid Response Services (ERRS) contractors from the Site Decision Units (DUs) including Robertson Siding, Robertson Ventilators, ACM Thermal Systems Insulation (TSI), and waste piles identified throughout the Site.
- Providing community involvement support as directed by the EPA OSC.
- Conducting First Step Hazard Categorization on numerous miscellaneous containers for eventual bulking and ultimate waste disposal at an EPA-approved facility.
- Performing an internal Site Safety Audit and serving as Site Safety Officer.
- Preparing a Final Removal Action Report.

ERRS contractors were responsible for the removal of identified hazardous substances at the Site and transportation to EPA-approved disposal facilities, while maintaining engineering controls to minimize off-Site migration of Site contaminants. ERRS removal and disposal activities included: DU-1 Roberson Siding; DU-2 ACM TSI Pipe Wrap from building roofing structures and rafters in the buildings; and DU-3 various waste piles. Other areas of concern addressed during the TCRA included solidified coal tar pitch (CTP) solids, and various chemical containers located throughout the Site. ERRS was responsible for profiling hazardous materials identified at the Site and disposing them at EPA approved disposal facilities, decontamination of equipment, dust controlling, and Site security, maintenance, and restoration.

1.3 REPORT FORMAT

This TCRA Report has been organized as follows:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Actions Taken
- Section 4 – Analytical Methodology Data Validation
- Section 5 – Summary of Actions Taken
- Section 6 – References

Figures, tables, and appendices referred to in this document are presented as separate portable document format (PDF) files.

2 SITE BACKGROUND

Information regarding the Site location and description, Site history, and summary of previous investigations are included in the following subsections.

2.1 SITE LOCATION AND DESCRIPTION

Site Name:	Former Kaiser Smelter
SEMS Identification Number:	WAN001020091
SSID	10RK
Tax Parcel Number	36165.9016
Latitude:	47.755202
Longitude:	-117.378674
Legal Description:	Township 26N, Range 43E, Section 10
County:	Spokane County
Site Owners:	Spokane Recycling, LLC

The Former Kaiser Smelter Site is located at 2111 East Hawthorne Road in Mead, Spokane County, Washington. A Site Area Map is included as Figure 2-1. The vicinity of the Site is comprised of a mix of residential, educational, commercial, and industrial development. Shiloh Hills Elementary School is located 0.3 mile southwest of the Site and North Spokane RV Campground is located less than 0.2 mile due west of the Site. There are multiple, active commercial properties nearby, including a Costco Wholesale store, each located less than 0.25 miles from the Site. An estimated 1,220 residents live within a 1-mile radius of the Site. The closest residence sits 0.25 miles northwest of the Site. The nearest surface water body is Deadman Creek, which is located approximately 1.5 miles north of the Site's industrial buildings. Deadman Creek is a tributary of the Little Spokane River, which flows into the Spokane River.

The Site includes three separate tax parcels owned by two distinct owners. The first parcel covers approximately 167 acres and includes the former aluminum smelter facility and industrial buildings. The facility parcel (Parcel #36165.9016) is owned by Spokane Recycling Company, LLC and is zoned for heavy industrial use. This parcel contains dozens of large industrial buildings associated with aluminum production, administrative buildings, a network of stormwater catch

basins, sumps, aboveground storage tanks (ASTs), and a rail spur. The former facility's catch basins and storm sewer system collect and divert stormwater northward through a half-mile-long underground aqueduct from the facility to a pair of settling ponds, referred to as the upper pond and lower pond. The ponds are located on a second 405-acre undeveloped parcel owned by KAIC (Parcel #36096.9603). At the northern end of the lower pond, water is conveyed from the pond outlet to a second subsurface pipe northward, approximately 1.25 miles, to a third parcel owned by Spokane Recycling Company, LLC (Parcel #36033.0111), where an effluent outfall discharges the stormwater into Deadman Creek.

The facility parcel and the outfall parcel (located to the north by Deadman Creek) were sold following the close of Kaiser Aluminum & Chemical Company's (KACC's) operations. The current owner, Spokane Recycling Company, LLC, acquired the facility and outfall parcels in 2014. The undeveloped 405-acre parcel with the settling ponds was originally acquired by KACC from the United States of America in 1976 while the company still owned and operated the smelter. The parcel was not sold with the facility parcel and outfall parcel but rather was transferred to Kaiser Aluminum Fabricated Products in 2006 and then later transferred to KAIC in 2010. As part of the sale of the plant and outfall parcels in 2004, KACC granted an easement to the purchaser to provide ongoing access to the stormwater aqueducts and settling ponds located on the 405-acre undeveloped parcel.

Prior to EPA's TCRA, many of the facility buildings were clad with Robertson Siding, a coated sheet metal siding material that contains asbestos and PCBs (E&E 2019). Contaminants of concern (COCs) at the Site and in the transmitted stormwater included asbestos, PCBs, semivolatile organic compounds (SVOCs), petroleum hydrocarbons (PHCs), and metals. A Site Plan is presented as Figure 2-2.

2.2 SITE HISTORY

The former smelter facility was constructed by the Defense Plant Corporation, which began plant operations in 1942, during World War II. The property was purchased in 1946 by KACC, who operated the facility from 1946 until the company ceased smelting operations in 2000. A portion of the former smelter facility property was placed on the National Priorities List (NPL) in 1983. The NPL site, known as the Kaiser Aluminum – Mead Works Potliner Superfund Cleanup Site

(Parcel #36165.9013), is owned by a trust that is responsible for carrying out a long-term remedy that is being overseen by Ecology. The 50-acre NPL site consists of spent potliner solid waste, a 25-acre wet scrubber sludge bed, and a plume of groundwater contaminated with cyanide and fluoride, which flows in a northwest direction and away from the Site. Since the 50-acre portion was listed on the NPL, Ecology has overseen the consolidation of potliner waste into one pile, the covering of the pile with an engineered cap, and the maintenance of a system of sumps and piping around the pile. In October 2020, the installation of a groundwater pump and treatment system was completed with oversight from Ecology to address contaminated groundwater flowing from the pile. No records indicate that environmental data was available, or considered, for purposes of including other components of the facility within the scope of the original NPL listing.

The facility parcel and the outfall parcel (located to the north by Deadman Creek) have been sold together to three separate owners since 2004, following the close of KACC operations.

2.3 PREVIOUS INVESTIGATIONS

In June 2010, environmental consultant Landau Associates (Landau) conducted a due diligence investigation on behalf of Commercial Development Corporation, Inc. A June 2010 investigation, completed by Landau, stated that a due diligence investigation of the property was conducted on behalf of a potential buyer by an environmental firm, TRC Consultants, Inc (TRC) in April 2010. TRC reported that the PCBs Aroclor-1248 and/or 1260 were present in several soil and sediment samples. Additionally, Galbestos³ siding present on facility buildings contained both PCBs and asbestos. Galbestos is an industry name trademarked by the H.H. Robertson Company for metal sheeting with asbestos felt on both sides, coated with either bitumen or polyester resin. The findings of the June 2010 Landau and April 2010 TRC investigations are summarized within the RSE report (E&E, 2019).

During the Landau investigation, sediment samples were collected from lined catch basins near the potline buildings, the clarifier pond, and the two settling ponds. All samples collected contained detectable concentrations of the PCB Aroclor-1268. Landau also collected samples of the Robertson Siding, which contained the PCB Aroclor-1268. Subsequent sampling activities

³ EPA would later determine that siding at the facility fell under a similar but separate trademark called “Robertson Siding.”

performed by Ecology's National Pollutant Discharge Elimination System (NPDES) program starting in March 2018 confirmed the presence of PCBs in sediments in stormwater catch basins, the two settling ponds, and in water flowing from the stormwater outlet into Deadman Creek. Ecology reported total PCB concentrations in surface water as high as 236,000 picograms per liter (pg/L) detected at the stormwater outfall to the settling ponds, while surface water concentrations in the lower settling pond were approximately 44,300 pg/L. PCB concentrations in surface water collected at the outfall to Deadman Creek were detected at 7,460 pg/L, which is several orders of magnitude greater than applicable water quality standards for total PCBs in surface water.

In September 2018, EPA conducted a Site walk and observed numerous potential sources of contamination which included: extremely deteriorated Robertson Siding on numerous structures, unsecured ASTs labeled CTP, potential ACM TSI on facility pipes, and unknown drums/containers and material piles within the Green Mill Building. Several unsecured electrical transformers were observed inside the Rectifier Building. Numerous sediment-laden runoff pathways were observed leading directly from the deteriorating structures to facility stormwater drains. The stormwater drains convey stormwater to the settling ponds which eventually discharges to the outfall at Deadman Creek.

In May 2019, EPA and START conducted a RSE to assess the presence, concentrations, and migration pathways of hazardous substances to determine risks of exposure. The RSE included an assessment of the Robertson Siding on the facility buildings, the migration pathway of PCBs, potential asbestos containing ACM TSI on facility piping, piles containing waste materials and former products, reacted ore, coal tar ASTs, and transformers. Due to the on-going release of hazardous substances, including PCBs, PAHs, and asbestos, EPA completed an Action Memorandum on May 28, 2020 to address exposure risk to the public and the environment. The Action Memorandum was subsequently amended on September 15, 2020. Table 2-1 summarizes the ownership history and agency actions at the Kaiser Smelter Facility:

Table 2-1 Kaiser Smelter Facility Timeline

Year	Event Description
1942	Defense Plant Corporation constructs the smelter facility and begins smelting operations.
1946	KACC acquires facility and begins smelting operations.
1983	Kaiser Aluminum Mead Works Potliner portion of the property was placed on the NPL and is currently undergoing remedial actions.
2000	KACC ceases smelting operations and abandons significantly large quantities of hazardous substances.
2004	CDC Mead, LLC acquired the 167-acre former smelter property and outfall parcel from KACC. KACC granted an easement for ongoing access to the facility stormwater conveyances, settling ponds and outfall parcel.
2006	The 405-acre parcel with the two settling ponds was transferred to Kaiser Aluminum Products.
2010	The 405-acre parcel with two settling ponds was transferred to KAIC.
2012	NMC Mead, LLC acquired the smelter facility and outfall parcel from CDC Mead, LLC.
2014	Spokane Recycling Company, LLC acquires the smelter facility and outfall parcel from NMC Mead, LLC.
March 2019	Ecology and Spokane Clean Air issue formal letter requesting assistance from EPA concerning release of hazardous substances from the former Kaiser Smelter Facility.
May 2019	EPA/START completes RSE and identifies significantly elevated concentrations of hazardous substances throughout the smelter facility and migration pathway to Deadman Creek.
May 2020	EPA issues Action Memorandum requesting Approval to Complete TCRA.
July 2020	Removal operations for the Former Kaiser Smelter Facility TCRA begin.
December 2020	Removal operations for the Former Kaiser Smelter Facility TCRA are completed.

3 ACTIONS TAKEN

The project team, which consisted of EPA, ERRS, and START, conducted the TCRA from July 2020 through December 2020.

START provided written and photographic documentation, monitored daily on-Site weather conditions, performed sampling, and conducted perimeter air sampling and monitoring throughout the removal action. Beginning in November 2020, START initiated container sampling, field hazard categorization analysis, and research to aid in the disposal of up to 1,700 containers of unknown chemical contents on Site. The field hazard categorization information was provided to EPA and ERRS to determine appropriate Department of Transportation (DOT) categories for bulking and disposal purposes. The Site logbooks are included as Appendix A and digital photographs are provided as Appendix B.

3.1 COMMUNITY INVOLVEMENT

EPA coordinated closely with Ecology while developing plans and scope of the TCRA. Near the end of the TCRA, EPA and Ecology finalized and signed a Memorandum of Understanding (MOU) to document the cooperative relationship between EPA and Ecology. The MOU is intended to protect human health and the environment after completion of the EPA-led TCRA and outlines post-removal Site controls and ongoing roles and responsibilities for the Site between the two agencies. In addition to Ecology, EPA coordinated with the Spokane Clean Air and the Spokane County Health District before and during the TCRA.

EPA oversaw the cleanup of the settling ponds and stormwater conveyance system located north of the Site, which was carried out by KAIC under a separate Action Memorandum and Settlement Agreement. EPA, Ecology, and KAIC participated in weekly planning meetings to discuss plans and progress of the settling pond and stormwater system beginning on August 8, 2020 and continuing through November 2020. EPA attended a presentation made by KAIC to the Spokane River Toxics Taskforce on December 2, 2020, reporting on the cleanup project for the stormwater system.

One active business (Mountain Fabricators) is located at the Site. Mountain Fabricators is a metal fabrication business that occupies Building 136B near the eastern Site boundary. EPA coordinated removal activities with Mountain Fabricators to reduce impacts to their operations whenever activities were planned within the vicinity of Building 136B. The proprietors of Mountain Fabricators provided the EPA with information regarding smelter operations at the Former Kaiser Smelter facility.

EPA also coordinated with TriStar North, Inc, (Tri-Star) a company preparing to lease a portion of the Site from Spokane Recycling Company, LLC to build and operate a rail car butane loading facility. TriStar was concerned whether the TCRA operations would have an impact on the existing rail spurs at the Site. EPA communicated on several occasions with TriStar to gain a complete understanding of their concerns and worked with ERRS to develop strategies to prevent damage to rail spurs when cleanup activities required crews to work in their vicinity. EPA also coordinated with TriStar about a planned fire water system test.

A container vending company, Pods, had a conex storage/staging operation on the Site adjacent to Hawthorne Road, east of the TCRA Command Post (CP). EPA coordinated with this vendor regarding EPA, ERRS, and START activities and equipment in the CP area to ensure that the TCRA had little or no impact on Pods' operations.

EPA undertook the following additional actions to communicate and coordinate with the affected community:

- A publicly accessible project website was created (response.epa.gov/kaisersmelter) where reports, photos, and other materials documenting EPA actions at the Site were routinely posted.
- The OSC prepared Pollution Reports (POLREPS) bi-weekly during field operations, which summarized Site activities and project progress and distributed them via email to agency partners, property owners, and other key stakeholders.
- Two project Fact Sheets were generated by a Community Involvement Coordinator: one announcing the initiation of the TCRA project and the other reporting its completion. Fact sheets were posted to the project website and mailed to over 2,000 nearby residents and business owners.
- Three public notices were published in the local newspaper announcing the availability of the Administrative Record, the opportunity for the public to provide comments on the

Settlement Agreement with Spokane Recycling Company, LLC, and a separate opportunity for the public to provide comments on a Prospective Purchaser Agreement with TriStar North, Inc.

- EPA issued a press release on July 22, 2020, announcing the initiation of cleanup operations.
- EPA's Public Information Officer and OSC participated in several interviews with local media outlets, leading to three media reports related to the TCRA.
- EPA and Ecology collaborated on the creation of a publicly available video providing aerial footage of the Site and cleanup work using an Unmanned Aircraft System.
- A project Story Map was created and made publicly available on the project website.

3.2 PRELIMINARY REMOVAL ACTIVITIES

EPA, START, and ERRS participated in virtual planning meetings to coordinate and plan upcoming TCRA activities. In addition to planning for the removal activities, START and ERRS prepared COVID-19 plans to prevent contraction and spread of COVID-19 illness among workers. Plans included safe work practices and recommendations for on-site activities and off-Site, non-working periods.

Prior to the TCRA mobilization, EPA began working with START and ERRS in preparation for field work. ERRS set up subcontract agreements with specialized team members, including but not limited to McGillivray Environmental, LLC, a general environmental cleanup contracting firm from Osburn, Idaho; Northwest Demolition and Dismantling, Inc. (Northwest Demolition), a specialty structural demolition, environmental cleanup company based in Tigard, Oregon; and IRS Environmental of Washington, Inc. (IRS), an asbestos abatement contracting company from Spokane, Washington. ERRS also arranged for rental equipment and facilities, waste disposal, engineering services, and other needed support services.

START prepared a SAP, SSDMP, and submitted an equipment list to EPA's Emergency Response Logistics Center contractor. START set up an operational geospatial viewer to assist with data collection and documentation. START also set up two web-based Story Map applications, one to track contaminated materials removed during the TCRA, and one to serve as an after-action deliverable documenting EPA Site activities.

Prior to starting field operations, a Site walk of the entire facility was completed to become familiar with the myriad chemical and physical hazards present throughout the Site. Air sampling and perimeter monitoring procedures were reviewed to ensure asbestos abatement and other cleanup activities were compliant with Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAP), and Washington Administrative Code (WAC) regulations, as it pertains to air pollution sources such as fugitive dust.

Construction and demolition machinery and supplies were delivered to the Site and staged. ERRS began setting up temporary office trailers near the western Hawthorne Road entrance into the Site. One trailer each was designated for EPA, ERRS, and START to promote distancing and reduce potential for person-to-person COVID-19 transmission. In addition to the trailers, ERRS rented Conex boxes for secure on-Site equipment and material storage. ERRS arranged for internet service and rented a diesel generator for temporary power to the trailers until a connection to the local power grid was installed. Temporary outhouse and handwashing stations, with weekly service, were located near the CP. Additional facilities and handwashing stations were positioned at locations near work zones, and these were moved by the ERRS crew as the work zones changed to maintain facilities convenient to work locations. Multi-passenger utility vehicles were provided to facilitate moving command staff and equipment around the Site.

3.3 HEALTH AND SAFETY

Health and Safety Plans (HASPs) were developed by START and ERRS prior to mobilizing to the Site. START assisted EPA with developing a consolidated Site HASP that incorporated the ERRS and START HASPs, and included the following elements:

- Safety and health risk or hazard analysis
- Employee training assignments
- Personal protective equipment (PPE)
- Medical surveillance requirements
- Air monitoring, personnel monitoring, and environmental sampling
- Site control measures
- Decontamination procedures

- Emergency response plan
- Confined space entry procedures
- Spill containment program
- Project-specific COVID-19 prevention requirements

Before field operations began, the removal team reviewed the Site HASP and walked the entire Site to ensure that all personnel from EPA, START, ERRS, and ERRS' subcontractors were familiar with the Site and aware of hazardous conditions, including contaminated materials as well as the many physical hazards present at the Site. The Site HASP was reviewed and refined by the TCRA team during the first days on Site to mitigate hazards identified on Site.

Chemical and physical hazards were present throughout the Site. Many of the Site buildings were in a dilapidated condition with overhead hazards, trip/slip/fall hazards, and poor lighting. There were various deep, unmarked pits inside and outside buildings; asbestos; and trip and fall hazards.

Other Site hazards included deep, unmarked pits associated with the aluminum smelting process. EPA directed ERRS to place warning tape around these areas as a visible barrier and warning to Site personnel. Concrete barriers were used to prevent workers and heavy machinery from falling into vaults. Elevated work surfaces created another Site hazard for personnel removing ACM TSI and other materials. ERRS personnel followed OSHA and State of Washington regulations relevant to ladders and manlift equipment.

The Site HASP included special provisions to prevent the transmission and spread of COVID-19, a major safety concern during the TCRA because of the global pandemic. These provisions included Interim EPA COVID-19 Health and Safety Guidelines; protocols for daily worker health status and temperature screening; a COVID-19 job hazard analysis; and a Site visitor COVID-19 questionnaire. The Site HASP included a form to report suspected or confirmed COVID-19 cases.

On-site COVID-19 prevention requirements included face coverings and social distancing. Daily all-hands safety meetings were conducted outdoors at the CP with attendees spaced 6 feet apart, or more. EPA, START, and ERRS/ERRS' subcontractor personnel each completed their organizations' daily COVID-19 screening form, and had their body temperature measured at the morning safety briefing to ensure no one showed symptoms of COVID-19.

Handwashing/sanitizing facilities were provided at locations convenient to the CP and the daily work locations. Site workers were coached and reminded of the required protocols and prevention measures such as wearing face coverings, wiping down equipment and work areas with sanitizer, avoiding handshakes and similar contact, and social distancing.

Additional off-site provisions reduced social contact and potential COVID-19 transmission. These provisions included driving separate vehicles, staying at a local hotel with in-room kitchens to avoid dine-in restaurants, and encouraging workers to practice social distancing, wear face coverings, and other prevention measures.

During the TCRA, there were no reported cases of COVID-19 among Site workers. One OSHA recordable incident occurred when a worker injured their finger.

3.4 DECISION UNIT 1 - ROBERTSON SIDING REMOVAL

3.4.1 Siding Removal Approach

ERRS began removing Robertson Siding on July 31, 2020, starting on the eastern end of Building 34, along the southern side of the building. The removal team, consisting of EPA, ERRS and START, began with a demonstration and trial of the planned removal techniques. The removal methods were evaluated based on control of visible fugitive dust emissions, the availability of DustTrak air monitors, and on the efficiency of the panel removal.

The initial step in the removal process was clearing detritus, which consisted of loose sediment and debris, from the outside ground surface within 20 feet from the buildings to remove PCB and ACM originating from the Robertson Siding on the buildings that had accumulated on the ground surface. The ERRS ground preparation crew performed a gross removal of the detritus while wetting the material to limit dust emissions and placed the detritus into lined waste bins. In locations where catch basins were present, workers placed geotextile drain filters in the catch basins to prevent detritus from entering the drainage system. As a final preparation step, ERRS laid plastic sheeting to contain material that fell to the ground during panel removal. An exclusion zone was designated and delineated with warning tape. Only approved workers equipped with appropriate PPE and respiratory protection entered the exclusion zone. Workers followed

decontamination procedures in a designated “decontamination zone” as they exited the exclusion zone.

The demolition crew followed the ground preparation crew, using a water mister machine that produced a fine spray of water/mist to wet the Robertson Siding. The water mister was fixed to a small skid steer loader that allowed the operator to elevate the equipment off the ground while allowing the operator to maneuver and aim the water mist onto the appropriate location. An additional worker used a hose with a spray nozzle to accurately direct water spray onto the panel removal location.

The demolition crew had a standard-length boom excavator and a long-reach boom excavator. However, rather than standard excavation buckets, each excavator was equipped with either hydraulic shears or grasping claws referred to as a “grapple”. The shears and grapple were fitted with water hose attachments that directed a water spray onto the building panels. Operators grasped an edge or corner of a panel, and slowly peeled back panels until they were pulled free from the building. The removed panels were either placed directly into a lined waste bin, or temporarily staged on plastic, on the ground, until a waste bin was available. A water hose attached to the excavator boom was used for dust suppression.

After the lined waste bins were filled, asbestos-certified ERRS workers with appropriate PPE wrapped the waste load using an enveloping technique to encase the waste within the bin with two separate layers of “6-millimeter” plastic sheeting and an additional internal liner to prevent punctures. Filled and wrapped bins were sealed and hauled off-site to the designated disposal facility. After disposal, the bins were returned to the Site and were once again pre-lined with plastic.

A key point learned from the demonstration removal area on Building 34 was that a large amount of the dry, dusty debris from decades of industrial operations was present on the panels and within the metal flashings of the building. Preventing fugitive dust emissions from the panel removal operation required constant application of carefully aimed water spray by workers. Furthermore, warm weather and dry, dusty Site conditions required the removal team to implement dust prevention practices, including restricting vehicle travel to designated routes, and using a water truck to moisten the travel routes.

Demolition excavators equipped with hydraulic shears were used to remove Robertson Siding panels whenever possible to maximize worker safety. In order to use demolition excavators to access hard-to-reach sections of buildings, portions of building walls and roof sections had to be removed to facilitate access. A portion of the roof of Building 32 was removed to access panels and vents Buildings 32A and 32F, and to allow access to the Ore Bridge. Part of the western portion of the elevated Ore Bridge was removed in sections, and Robertson Siding panels were stripped from the removed sections at ground level. Removing those sections of the Ore Bridge allowed for equipment access to the higher sections of the Ore Bridge and to Building 57. ERRS subcontracted an engineering contractor to provide guidance for the safe removal of the Ore Bridge.

Piping and other equipment was removed to access the courtyard areas between Buildings 55, 58, and 60, as well as portions of walls within the buildings, for access to Robertson Siding. Metal and other inert, non-ACM demolition materials were left on the ground near the buildings where the materials originated.

When Robertson Siding panels could not be removed with the demolition excavators due to limited access, panels were removed manually by crews using pneumatic shears and hand tools. Buildings 55, 58, and 60 each had a roof-top vent with vertical, siding-clad walls that ran the length of each building which were not accessible to the high reach excavator. The roof vent on Building 55 was determined to be constructed of a non-coated material instead of Robertson Siding and was left in place. Siding that formed the walls of roof vents of Buildings 58 and 60 were constructed using Robertson Siding and these panels were removed by hand with crews cutting tabs and attaching a cable to the panels, which were subsequently lowered to the ground with the excavator.

The removal team observed small amounts of sections of some buildings that appeared to be a different material than typical Robertson Siding. Some of the panels were identified as aluminum siding with a painted black coating and thus, were left in place. Within the interior of Building 57, a different type of steel siding was identified. The siding was similar to the Robertson Siding but with a different corrugation pattern. START collected three bulk samples from an interior wall inside Building 57 for Polarized Light Microscopy (PLM) asbestos and PCB analysis which confirmed that, while the material did not contain asbestos, it did contain total PCBs at

concentrations upwards of 32.1 milligrams per kilogram (mg/kg) and thus was removed and disposed of with the Robertson Siding. A summary of analytical results is presented in Table 3-1.

A total of 318,494 square feet (ft²) of Robertson Siding was removed and disposed of at the Graham Road landfill facility in Medical Lake, Washington. Figure 3-1 depicts the locations and quantities of Robertson Siding ACM removed.

3.4.2 Robertson Ventilator Removal

During the TCRA, the removal team noted cylindrical ventilator units on the roofs of several buildings on Site that were constructed of sheet metal and had a coating similar in color and texture to the Robertson Siding coating. The ventilators had manufacturer's placards labeled *Robertson Ventilators*.

START collected six bulk samples (including one field duplicate) taken from vents on top of Buildings 32, 52, 55, and 56. Samples included material from both the main body of selected ventilators and the flanges connecting the ventilator units to the roof structure for PLM asbestos and PCB analysis to assist EPA in developing appropriate waste profiles for disposal. The analytical results indicated the presence of asbestos (chrysotile) ranging in concentration from 20% to 25%. Two samples collected from Building 32 and Building 56 reported total PCBs above the Toxic Substance Control Act (TSCA) regulatory limit of 50 mg/kg. A summary of analytical results is presented in Table 3-2.

A total of 112 Robertson Ventilators were identified on the following buildings:

- Building 1 (55 ventilators)
- Building 32 (4 ventilators)
- Building 32A (1 ventilator)
- Building 34 (17 ventilators)
- Building 36 (2 ventilators)
- Building 44 (7 ventilators)
- Building 48 (2 ventilators)
- Building 49 (7 ventilators)

- Building 54 (10 ventilators)
- Building 56 (6 ventilators)
- Building 68 (1 ventilator)

ERRS removed the Robertson Ventilators and flanges using a high reach excavator. A second crew, equipped with an articulated manlift basket to access the roof, removed the flange assemblies using pneumatic shears and manual tools. At each location where a ventilator was removed, there would be an opening in the roof to the building interior. In most cases, repairing roof openings where ventilators had been removed was not deemed necessary if the buildings were already open to the weather. The roof openings in Building 44 were covered to prevent weather deterioration to the building. ERRS covered the openings by securing sheathing over the holes. The 55 roof openings in Building 1 were not covered due to the amount and the overall poor condition of the building. The openings would allow precipitation to enter Building 1 into the second story, which was a concern due to ACM vinyl floor tiles discovered in that location. The assessment and removal of these tiles are discussed in Section 3.4.4 of this report.

ERRS removed 112 roof ventilators containing ACM and PCB and disposed of them at the Graham Road landfill. Figure 3-2 illustrates the locations and number of roof ventilators removed.

3.4.3 Building 32A Magnesia (Mag) Boiler Tank Insulation

While removing Robertson Siding from Building 32A, two boiler tanks with asbestos-containing Magnesia (Mag) insulation were identified. Since exterior siding panels of Building 32A were removed, the asbestos-containing Mag would be exposed to weathering. To prevent the deterioration of the material and the release of asbestos fibers from this highly friable form of ACM, EPA directed ERRS to remove the Mag insulation. ERRS erected a temporary enclosure around the boiler tanks with scaffolding and plastic sheeting. Negative air machines equipped with high-efficiency particulate air (HEPA) filters were operated to maintain pressure within the containment less than the outside ambient pressure to prevent the release of asbestos fibers. Following abatement of the insulation, clearance air samples were collected from inside of the enclosure and fiber concentrations were below Washington State clearance criteria which allowed for the removal of the temporary enclosure. The ACM boiler insulation was removed and disposed

of at the Graham Road landfill. The final abatement report was prepared by ERRS and provided as a separate deliverable to EPA.

3.4.4 Vinyl Floor Tile

The vinyl floor tiles (measuring 9-inches by 9-inches) identified inside Building 1 on the second (upper) floor, were sampled to verify the presence of asbestos. The floor tiles were observed to be deteriorating, often already loose from the floor and scattered in piles throughout Building 1. START collected four samples, including one duplicate sample, of the 9-inch square tiles and associated mastic adhesive. Laboratory analytical results for the bulk samples indicated the floor tiles contained 4% chrysotile. Laboratory analytical results for the mastic indicated it was non-ACM. Table 3-3 summarizes the results of the vinyl floor tile sampling activities.

As outlined in Section 3.4.2 of this report, the removal of Robertson Ventilators from the roof of Building 1 left openings that exposed the tiles to moisture and weathering, making them prone to deterioration. Because of the increased potential for deterioration and asbestos fiber release, EPA directed ERRS to remove the ACM floor tiles. ERRS removed the tiles using hand tools. Approximately 5,940 ft² of tiles were removed and disposed of as ACM waste at the Graham Road landfill.

3.5 DECISION UNIT 2 - THERMAL SYSTEMS INSULATION (TSI) REMOVAL

EPA tasked START to identify buildings and exterior areas with ACM TSI using historical documents and field observations to estimate the quantity of ACM TSI. START personnel made visual observations throughout each building on the Site and developed a table of the quantity of ACM TSI by location. The table was used by the removal team to plan and schedule removal operations.

ERRS prioritized removal of ACM TSI piping based on the timing and logistics of other removal operations. The removal of ACM TSI piping occurred prior to the removal of Robertson Siding in certain locations to allow clearer access and to reduce risk of worker exposure. ACM TSI Piping located in enclosed, interior buildings that did not interfere with other Site operations was prioritized last.

EPA removed the majority of known ACM TSI piping on-site, except for a few selected locations. Spokane Recycling Company, LLC requested that short segments of ACM TSI piping within Buildings 37 and 45 remain in place to avoid demolition of buildings in active use by the owner. EPA evaluated the condition of this insulation and observed the residual segments of ACM TSI in these buildings to be in good condition, were located in buildings that were secure, and were protected from weather. EPA opted to leave in place approximately 6 linear feet (LF) of ACM TSI piping in Building 37 and approximately 12 LF of piping in Building 45. Additionally, ACM TSI piping was identified in an underground vault, within the courtyard between Buildings 58 and 60. Three to four underground storage tanks (USTs) were also present in the vault. Due to the nature of the confined space and potential hazards, EPA elected to leave approximately 5 to 10 LF of ACM TSI piping in place in the vault. A concrete ecology block was placed over the vault door to prevent unauthorized access to the underground vault and potential exposure to asbestos fibers.

ERRS used a series of manlifts, ladders, and other means to access piping for ACM TSI removal. Prior to removal, ERRS cleared the surrounding area of debris and obstructions. This included removing debris on the ground, interior drop ceilings if present, vegetation, and building sections or components that interfered with access or otherwise impeded the removal work. After an area was cleared, a team prepped the ACM TSI piping for removal. The piping removal preparations included wrapping the ACM TSI piping with plastic sheeting secured with tape and placing glove bags along segments of pipe selected for cutting. The glove bags allowed workers to expose sections of pipe while simultaneously containing the removed ACM TSI inside the glove bags. Care was taken to ensure that ACM TSI surrounding areas of exposed pipe was contained in plastic sheeting and taped. Once a segment of pipe was encapsulated and prepared for cutting, a team of workers cut the pipe segments at the exposed areas using a reciprocating saw and staged the segments for disposal.

In Building 34, one of the ACM TSI pipes was discovered to contain a small amount of residual oil. ERRS was careful to check subsequent sections of pipe to minimize the potential for spilled oil.

Building 49 was in poor condition prior to the TCRA. Structural beams had failed, and the roof and ceiling in a portion of the building were collapsed. The removal team reviewed available

documentation on the building and conducted visual inspections to determine that the damaged portion did not contain TSI piping. After consulting a structural engineer, ERRS demolished the eastern, collapsed portion of Building 49 allowing workers to safely access and remove ACM TSI piping in the undamaged portion of the building. A small, interior, brick room in the northwestern section of Building 32 was demolished to provide access to ACM TSI piping.

START collected two bulk ACM TSI samples for PLM analysis to aid EPA in determining appropriate disposal from an 8-foot-diameter pipe located in Building 36 and Building 60. Analysis of the bulk flashing samples, described as yellow/white insulation, reported chrysotile asbestos at concentrations of 5% and 8%. No ACM was detected in three fire brick samples collected for ACM analyses. A summary of analytical results is presented in Table 3-4.

A total of 14,416 LF of ACM TSI was removed and disposed of at the Graham Road landfill. Figure 3-3 provides the locations and quantities of ACM TSI removed.

3.6 DECISION UNIT 3 – WASTE PILE REMOVAL

Decision Unit 3 consisted of various waste piles located throughout the Site which included green coke, green coke mixed with CTP, green coke mixed with ACM, solidified CTP associated with three ASTs, reacted ore, alumina and alumina mixed with other materials (mixed alumina). The material piles were either removed based on characterization of the materials as hazardous / solid waste or secured at the Site to prevent exposure to weather and off-site migration. Final material pile volume estimates provided in this report were determined by comparing field measurements of the piles to the number of truckloads of materials hauled by ERRS. The types of materials inventoried within DU3 are described as follows:

- **Green coke** is commonly known in industrial applications as raw or “green” petroleum coke because it is unprocessed. Green coke is mixed with CTP and baked in ovens to produce anodes which are then used to smelt aluminum in the reduction area of the smelting facility. Building 52, the Green Mill Building, is where green coke was processed prior to use in smelting operations (E&E, 2019). Green coke was discovered in several buildings stored as piles or within coke ovens.
- **Coal tar pitch (CTP)** is a byproduct from steel production which is used to produce anodes for aluminum smelting. CTP was formerly stored in the three CTP ASTs located in the tank farm near the northwestern portion of the Site (E&E 2019). The centrally located AST

was observed to have an open access port in the bottom of the tank with solidified CTP spilling out into the secondary containment of the tank farm prior to being resecured by ERRS during removal activities.

- **Reacted ore** is aluminum oxide ore that has been processed via smelting and captured by an air filter system prior to being fully processed. Reacted ore was stored throughout DU3 in supersacks and / or piled inside / outside of buildings. Reacted ore was sampled and found to contain PCBs.
- **Alumina** is a partially refined alumina ore product composed primarily of alumina oxide and is used to produce aluminum through the smelting process. Mixed alumina is alumina that has been “mixed” with soil and / or sediment through exposure to the elements and ground contact. The alumina and mixed alumina piles were discovered in a large loading yard located between Building 1 and Building 34. The alumina was previously stored in steel silos constructed on top of concrete structures used as hoppers for truck loading. However, prior to the start of the TCRA, the steel silos had been mostly demolished for scrap metal, which allowed the alumina to spill out within the vicinity of the former silo structures, leaving the alumina exposed to the elements.

START assessed the entire Site for green coke. Green coke was identified in Building 52, Building 53, former Building 54, former Building 300, and in several supersacks located throughout the Site.

A total of 6,504 CY of green coke, 1,184 CY of green coke mixed with CTP and ACM waste, and 3,316 CY of reacted ore were removed as part of DU3. In addition, 10,558 CY of alumina and 1,726 CY of “mixed alumina” were placed in secured stockpiles inside Building 32. Figure 3-4 provides the location of the waste piles removed and/or stockpiled and secured onsite.

Several reacted ore piles were identified on-site, including two piles in Building 32, one pile in Building 34, one pile in Building 25BS, one in Building 35, and one pile located outside of Building 32A. EPA learned through generator knowledge that reacted ore was aluminum oxide ore that went through the smelting process but was captured by the facility’s system of air ventilation and filters before it could be fully processed. Reacted ore was sampled by START and found to contain PCBs. Table 3-5 provides a summary of waste material piles removed as part of DU3.

Table 3-5 Waste Material Removed as part of DU3

Material	Waste Designation	Location	Volume (Cubic Yards)
Green Coke	WT02	Building 52	1,932
Green Coke mixed with Coal Tar Pitch	WT02/ACM	Buildings 52 and 54	1,184
Green Coke	Solid waste	Building 52	1,932
Green Coke	Solid waste	Building 53	1,388
Green Coke	Solid waste	Building 300	68
Reacted Ore	Solid waste	Buildings 25BS (outside), 32, 35, 34	3,616

Notes:

ACM = asbestos containing material

WT02 = WT02 is assigned to waste materials meeting Washington State regulatory thresholds for “toxic dangerous waste.”

Solid waste = Waste materials meeting Washington State regulatory thresholds to be disposed of as solid waste.

Table 3-6 summarizes material piles that were stockpiled and/or secured on Site:

Table 3-6 Material Stockpiled and Secured On-Site

Material	Waste Designation	Stockpiled or Secured Location	Volume (Cubic Yards)
Alumina	Solid waste	Stockpiled in Building 32, southern portion	10,555
Mixed Alumina	Solid waste	Stockpiled in Building 32, northern portion	1,726
Solidified Coal Tar Pitch	WT02	Hatch re-secured on centrally located AST	37

Notes:

AST = aboveground storage tank

WT02 = WT02 is assigned to waste materials meeting Washington State regulatory thresholds for “toxic dangerous waste.”

Solid waste = Waste materials meeting Washington State regulatory thresholds to be disposed of as solid waste.

3.6.1 Waste Pile Characterization and Disposal

START collected and submitted material samples from waste piles identified throughout the Site for laboratory analysis for the purpose of waste characterization during the TCRA. Laboratory analytical results from the RSE (E&E, 2019) were also used to characterize materials for disposal. Samples were submitted and analyzed for TCLP Volatile Organic Compounds (VOC), SVOCs and metals to determine appropriate disposal requirements. Samples were also submitted for target analyte list (TAL) metals and total SVOCs to further characterize the waste materials.

START also utilized Acute Fish Toxicity Testing (fish bioassay) to evaluate disposal requirements for alumina and mixed alumina as Washington Dangerous Waste or solid waste. Washington State disposal regulations require evaluating a waste material for toxicity (WAC 173-303-100 [5]) and persistence (WAC 173-303-100 [6]) to determine if the material was Dangerous Waste. Washington State regulates toxic criteria wastes that are lethal to fish or animals (Washington Administrative Code Chapter 173-303).

The disposal of waste piles was based on Washington toxic criteria waste designations which are coded WT01 or WT02, depending on the concentration of toxic constituents. There are two methods to determine if a waste is WT01 or WT02 Washington toxic waste, either by comparing sample results to an approved toxicity database (referred to as the book designation method) or through a laboratory fish bioassay test. Using analytical data from the 2019 RSE and additional data from the 2020 TCRA, START evaluated persistence and toxicity of each waste pile. According to WAC 173-303-100, if the book designation and bioassay data do not agree, then fish bioassay data will be used to designate a waste (i.e., the bioassay results will dictate the Washington waste designation). Waste piles were disposed of at two distinctive landfills licensed to accept either solid waste or WT02 toxic material as designated by State of Washington regulatory requirements.

- Solid waste was disposed of at the Graham Road landfill in Medical Lake, Washington.
- WT02 toxic material and ACM was transported to and disposed of at the Chemical Waste Management landfill in Arlington, Oregon.

3.6.2 Green Coke Waste

EPA directed START to estimate green coke waste pile volumes in Building 52, the vertical coke ovens in Building 53, and former Building 54. ERRS planned removal logistics activities based on the estimated volumes. Within Building 52, there were 16 piles of green coke-like material, varying slightly in appearance. EPA, ERRS and START personnel toured Buildings 52, 53 and 54 with a representative from Kaiser who was familiar with the smelting process, the various waste material, and the material handling practices at the smelter. The Kaiser representative used technical knowledge of facility operations to assist with identifying material piles and designating them for removal.

START collected five composite samples from the green coke piles, including three samples from material in Building 52, one sample from material in Building 56/58/60, and one sample from material in Building 53. The five composite samples were analyzed for TCLP VOCs, SVOCs, and metals to determine if the material was characterized as Hazardous Waste as defined in the *Code of Federal Regulations* 40 CFR Part 261, or Dangerous Waste as defined by Chapters 173-303 of the State of WAC. Although samples indicated the waste piles contained elevated concentrations

of several hazardous substances the results of the TCLP analyses indicated that the five composite samples did not designate as federal Hazardous Waste or state Dangerous Waste. A summary of Waste Disposal and TCLP Sample Results is included in Table 3-7.

An additional seven composite samples (including one duplicate sample) of green coke waste were collected from Building 52 and outside of Building 54. These samples were analyzed for SVOCs and TAL metals, the results of which were compared to EPA Industrial Soil Removal Management Levels (RMLs). Two samples from Building 52 (WP-GC-06 and WP-GC-07) reported benzo(a)pyrene at concentrations above the EPA RML of 210,000 micrograms per kilogram ($\mu\text{g/kg}$) and Washington State's toxicity criteria for WT02 Dangerous Waste. A summary of results is presented in Table 3-8.

Green coke that did not exceed federal Hazardous Waste or state Dangerous Waste, was designated as Solid Waste, and was disposed of at the Graham Road landfill in Medical Lake, Washington. This included waste piles from the northern section of Building 52, and material from inside the oven pit slots of Building 53.

Material that exceeded criteria for WT02 Dangerous Waste was transported and disposed of at the Chemical Waste Management landfill in Arlington, Oregon. This included remaining material from Building 52 as determined by book calculation based off analytical data.

Asbestos-containing green coke material removed from the footprint of the former Building 53 was characterized as WT02/ACM Dangerous Waste and was disposed of at the Chemical Waste Management landfill in Arlington, Oregon.

Several piles of loose material and debris were collected and disposed of by ERRS. These piles included two waste streams. Material collected east of Building 56 was disposed of as WT02 Dangerous Waste. Material collected west of Building 56 was disposed of as WT02/ACM Dangerous Waste.

3.6.3 Coal Tar Pitch

Solidified CTP waste was identified in Building 52 and Building 54, the latter of which had been demolished prior to the TCRA. An access port near the bottom of the central AST had been

removed from the tank, and a small amount of solidified CTP (less than 1 CY) had spilled from the tank to the concrete surface of the secondary containment. ERRS removed the spilled coal tar pitch and bolted the access port door onto the AST to prevent further spillage of the remaining CTP from the tank. ERRS used a combination of a skid steer loader and hand crews with manual tools to collect the coal tar pitch material from Building 52 and former Building 54. START compared the CTP results from the 2019 RSE (E&E, 2019) against the Washington State disposal regulations for toxicity and persistence using the Washington Administrative Code (WAC 173-303-100 [5]) and WAC 173-303-100 [6]), respectively. The comparison resulted in the material being designated as Washington State WT02 Dangerous Waste. The CTP waste that was classified as a green coke and coal tar mix was also designated as a Washington State WT02 Dangerous Waste. The material was consolidated and disposed of off-site at the Chemical Waste Management landfill in Arlington, Oregon.

3.6.4 Reacted Ore Piles

Reacted ore piles were observed outside Buildings 32, 34, and 35, and in Building 25BS. START collected five grab samples (including two duplicate samples) from the reacted ore piles for TCLP SVOCs, TAL metals, cyanide, and fluoride analysis to assist EPA in developing appropriate waste profiles for disposal purposes. TCLP sample results, as shown on Table 3-9, indicated that the material was determined non-hazardous as defined in the *Code of Federal Regulations* 40 CFR Part 261. Sample results showing total concentrations of SVOCs and TAL metals are presented in Table 3-10 and indicate that cyanide, fluoride, SVOC, and TAL metal constituent concentrations did not exceed the EPA Industrial Soil RMLs. This material, however, did contain PCBs and thus was consolidated and disposed of off-site at the Graham Road landfill in Medical Lake, Washington. In addition to reviewing results from analysis of TAL metals conducted during the 2019 RSE, Acute Fish Toxicity Testing (fish bioassay) was completed on alumina and mixed alumina material samples to determine disposal requirements. Results from TAL metals analysis showed no exceedances of EPA Industrial Soil RMLs. Results of the fish bioassay testing indicated that the alumina and mixed alumina materials were not designated as WT02 waste and could be disposed of as solid waste. The alumina / mixed alumina piles were removed from the loading yard and placed in the northern and southern sections of Building 32 to protect the material from contact with the elements and potential off-site migration.

3.6.5 Alumina and Mixed Alumina Piles

Large quantities of alumina and mixed alumina were discovered exposed to the elements and piled around demolished silos formerly used to store the alumina. The demolished alumina storage silos are located in a former loading yard between Building 1 and Building 34. The storage silos were demolished at an unknown time prior to the TCRA. Results from TAL metals analysis performed during EPA's 2019 RSE showed no exceedances of EPA Industrial Soil RMLs, however concentrations indicated that the material could be hazardous and could carry a WT02 Dangerous Waste designation based on comparison of sample results to Washington State toxicity book designation calculations. However, subsequent fish bioassay testing of alumina material samples indicated that the material did not exceed toxicity thresholds and could be disposed of as solid waste. Results of the fish bioassay supersede Washington State book calculations for the purpose of determining waste designations and were thus used to determine handling of the alumina material piles. Considering the results of the metals analysis and fish bioassay it was determined that the alumina piles would remain on-Site and could be stored in secured locations.

ERRS excavated alumina from the alumina silos using excavators equipped with buckets, loaded it into dump trucks, and moved it to a designated stockpile in the southern portion of Building 32 where it would be protected from the weather. The alumina in the upper portion of the alumina piles had a bright white appearance, whereas the material toward the lower extents of the alumina piles had a slightly darker, grayish coloration. The gray material was separated from the remaining alumina and was referred to as "mixed alumina" because its darker color appeared to be a result from contact with soil, stormwater, and other materials on the ground surface. Mixed alumina was found to contain total PCBs at a concentration of 3.63 mg/kg, well below the EPA RML of 94 mg/kg. The mixed alumina was stockpiled separately in the northern section of Building 32. ERRS placed ecology blocks around each completed stockpile. A summary of analytical results are included in Tables 3-11 and 3-12.

3.7 OTHER WASTE MATERIALS IDENTIFIED AND REMOVED DURING THE TCRA

3.7.1 Transformer Oil AST and Piping

START identified potential sources of transformer oil in pipes located in Building 1B and in an AST near Building 38. EPA discovered that many of the oil pipelines had been cut and the oil removed prior to the TCRA; however, some oil remained in abandoned pipelines. START performed Chlor-N-Oil field tests on transformer oil. Due to the limitations of the field tests, the oil was either classified as above or below 50 parts per million (ppm) PCBs and segregated accordingly into labeled drums. START collected a six oil samples including one duplicate samples for additional laboratory PCB analysis. Laboratory results of all oil samples were reported below 50 mg/kg. A summary of results is included in Table 3-13. ERRS consolidated the oil in labeled drums and staged them for transport for off-site disposal by Clean Harbors, Inc.

3.7.2 Mercury Lamps/PCB Ballasts

Lamps and ballast fixtures were found in buildings throughout the Site. Labels on these fixtures indicated that the lamps contained mercury, and the ballasts were likely to contain, or have once contained, PCBs. Lamps and ballasts found in Buildings 32, 54, and 56 impeded removal of Robertson Siding and ACM TSI. These lamps and ballasts were removed, consolidated in appropriate waste containers, and were disposed of off-site.

3.7.3 Catch Basin Cleanout

EPA tasked ERRS with cleaning selected catch basins to remove sediment that could potentially have high concentrations of PCBs, PAHs, and asbestos. The targeted catch basins were located near and downstream of the Robertson Siding removal zone. ERRS arranged for the targeted catch basins to be cleaned by jet-rodding⁴ drainages and collecting the sediments with industrial vacuum trucks. Thirty-seven catch basins were cleaned during the TCRA, as depicted in Figure 3-5. The

⁴ Jet-rodding is a high-pressure washing technique that uses water to clean out subsurface drainages and sewage systems.

sediment and debris recovered from the storm drains were disposed of off-site with the green coke/ACM waste material.

3.7.4 Supersacks

There were several supersacks⁵ containing waste material found in various locations around the Site. There were approximately fifteen supersacks of reacted ore and approximately five supersacks of green coke. Each supersack contained about 1.5 CY of material. START located, identified, and labeled each of the sacks found on the Site. ERRS used a forklift to transfer and add each of the sacks to the appropriate waste stream for off-site disposal.

3.7.5 Building 49 Roofing

As discussed previously, Building 49 was damaged prior to the TCRA. It was also determined that the collapsed roof contained asbestos. ERRS demolished the eastern portion of the building to allow for safe access to the remaining portion of the building. The roofing material was removed using wet methods and placed into covered and lined bins before being transported off-site to the Graham Road Landfill in Medical Lake, Washington. Approximately 97 tons of roofing material was removed and disposed of off-site. ERRS subcontracted an engineering contractor to provide guidance for the demolition of Building 49.

3.7.6 First Step Hazard Categorization of Chemical Containers

During the TCRA activities, numerous waste containers of various chemicals, in labeled and unlabeled containers, were observed in locations throughout the Site. To eliminate the potential for chemical releases to the environment through spillage, vandalism, deterioration of the chemicals or containers, or other means, EPA tasked START and ERRS to identify and consolidate containers. Containers were consolidated into Buildings 44, 45, and 46. Many of the containers were unlabeled and would require sampling and testing to evaluate their contents.

To assist with disposal, EPA tasked START with categorizing the wastes by both DOT category and site-specific disposal classifications. START further categorized containers by researching

⁵ Supersacks are fabric bags for bulk materials commonly used in industrial applications.

available Safety Data Sheets for labeled containers and by sampling and testing 135 unknown materials using the First Step⁶ Hazard Categorization system. In total, START sorted 5,596 known and unknown chemical containers and created an inventory list with disposal categories of each container or container type. START inventoried and relocated the liquid materials from Building 45 to Building 44 and staged solid non-DOT-regulated chemicals on pallets in Building 45. The container inventory and an observation summary report was provided to EPA and ERRS. The containers were removed from the Site by ERRS for disposal and recycling. START chemical inventory observation report is included in Appendix C.

3.7.7 Insulated Flume Pipe

One large, insulated flume pipe, formerly used as part of a negative pressure system for smelter operations, traverses the Site above the roofs of several buildings. The flume pipe begins at the western end of Building 53 and terminates at a series of induction fans located near ground level adjacent to Building 36. Laboratory analysis of bulk samples of the insulation, and a tar-like black flashing material holding the insulation together, indicated that the flashing is ACM, and the rest of the material is none-ACM. The black flashing material was not considered friable at the time of the TCRA. Most of the insulation remaining on the flume pipe appeared to be intact during the TCRA; however, pieces of the material were intermittently discovered on the ground. Whenever ERRS encountered the black coated insulation on the ground it was disposed of as ACM. Any future plans involving impacts to the flume pipe should include proper handling and disposal of ACM. The location of the insulated flume pipe is shown on Figure 2-2. Analytical results are provided in Table 3-4.

3.8 AIR MONITORING DATA

Real-time air monitoring was conducted to evaluate and document if dust suppression efforts were adequate during ERRS removal operations. The air monitoring approach included the use of DustTrak stationary air monitors to measure real-time air particulate concentrations. Three to four air monitoring stations with DustTrak II Aerosol Monitor instruments were placed at selected

⁶ First Step Hazard Categorization is a series of field tests that may include a combination of visual observations and recording chemical characteristics, including: presence or absence of water, pH, cyanide, sulfides, explosivity, corrosivity, oxidizers, flammability of solid and liquid materials, or other analyses.

locations to surround the active work zone(s). DustTrak air monitors were also used to supplement the stationary sample stations and to evaluate real-time particulate concentrations at selected locations, such as within the active work zones. Figure 3-6 shows the air monitoring locations. A summary of perimeter air sample results is included on Table 3-14.

START used the VIPER⁷ system to collect real-time monitoring results from the deployed DustTrak instrumentation. The DustTrak monitoring stations were connected to a VIPER unit that transmitted readings at three second intervals via a cellular connection to EPA servers. Users with access to the server could remotely monitor particulate levels at each air monitoring station. The VIPER system included an alert function that would notify EPA, ERRS and START when particulates exceeded the site-specific action level of 0.150 milligrams per cubic meter (mg/m³).

The operation of the air monitoring stations, and the real-time alarms were used to monitor dust generation and to adjust work practices and/or dust suppression efforts to reduce exposure. During the removal action, except for a period from September 12 through September 18, 2020, the daily average air particulate concentrations were below the Site particulate action levels. Occasional brief exceedances above the action level occurred and were generally attributed to either: dust generated when building panels or other components were disturbed, vehicular traffic on the Site, or windy conditions disturbing the dusty ground around the work area. The conditions were addressed immediately by the removal crew by adding water to the work area, pre-wetting the panels to be removed, and/or wetting the roads and ground surface in the Site work area with a water truck.

During the period from September 12 through September 18, 2020, numerous wildland fires burning in Washington, Oregon, and California resulted in extremely smoky conditions across the northwestern United States. The smoky conditions during this period were reflected in DustTrak particulate monitoring readings, which ranged as high as 0.681 mg/m³ for the daily average at one air monitoring station on September 14, 2020. The DustTrak readings observed during this period were consistent with area particulate concentrations reported by the Washington Smoke Information website, <https://wasmoke.blogspot.com>, accessed March 3, 2021. During the period

⁷ VIPER is network-based communications system designed to enable real time transmission of data from field sensors to servers to provide data management, analysis, and visualization.

there were recommendations from state and regional agencies to shelter indoors. However, since all the outdoor workers at the Site were equipped with respirators, EPA elected to continue Site work during the period. DustTrak monitoring data results are provided as Appendix D.

3.9 POST-REMOVAL REMAINING WASTE MATERIALS AND OTHER ENVIRONMENTAL CONCERNS

ACM remains in structures throughout the Site. Remaining ACM includes various building materials such as roofing, flooring, interior surface materials, glues, mastics, etc. The TCRA did not include a Site asbestos survey. Previous investigations have been conducted at the Site and are a source of information on ACM remaining at the Site.

The majority of Robertson Siding was removed during the TCRA except for a portion left on the interior, western wall of Building 44. This section of Robertson Siding was evaluated by EPA to be in good condition and not subjected to exterior weathering. Removal of this siding would have caused significant damage to a building that otherwise appeared to be structurally intact.

There is ACM TSI piping remaining inside the Guard Shack - Building 37 (approximately 6 LF of ACM TSI piping) and the Site caretaker's residence - Building 45 (approximately 12 LF of piping). Since this ACM TSI was observed to be in good condition and within secured buildings protected from the weather, EPA opted to leave the material in place at the owner's request. There is approximately 5 to 10 LF of ACM TSI piping remaining in an underground vault in the Building 58/60 Courtyard. Three to four USTs were also present in this vault. Due to the hazard presented by the confined space and the secure nature of the vault, EPA elected to leave the ACM TSI piping and tanks in place in the vault. The tanks were estimated to be about 6 feet in diameter and 10 feet in length. The tanks appeared to contain water with 3 to 4 inches of oily sludge at the bottom. A concrete ecology block was placed over the vault door to prevent unauthorized access.

The TCRA removal team looked at a previous Site asbestos report and visually inspected buildings to identify ACM TSI piping. Although robust efforts were made to inventory all ACM TSI on the property, there may be additional ACM TSI piping that was not identified during Site reconnaissance or removed during the TCRA.

There may be residual transformer oil in the ASTs and piping near Building 1A and Building 1. Additionally, there is potential for PCB-contaminated soils in this area of the Site.

The CTP ASTs contain solidified CTP. The lower hatch to the central tank, which had been removed from the tank prior to the TCRA, was replaced and bolted shut by ERRS. EPA estimates that the volume of solidified CTP contained in the ASTs is 37 CY.

There are numerous painted surfaces in the remaining buildings and based on the age of the facility, may contain LBP and areas of soil contamination.

A large black insulated duct is located west of Building 56. The duct is elevated and covered with flashing. START sampled the duct and laboratory results indicated the insulation layer was identified as mineral wool does not contain asbestos. However, the flashing material contains 8% chrysotile asbestos.

The alumina and mixed alumina piles stored in the northern and southern portions of Building 32 contain trace concentrations of hazardous substances. START collected samples of alumina and mixed alumina and submitted them for fish bioassay testing. Results of the fish bioassay testing indicated that the alumina and mixed alumina could be disposed of as solid waste which led to the decision that the materials could be stored on-site in a secured location.

Mercury lamps and PCB containing ballasts were removed to allow access for the removal of ACM TSI piping and Robertson Siding. Mercury lamps and PCB containing ballasts remain in areas of buildings that did not obstruct EPA removal activities.

Accessible piles of green coke and CTP waste were removed wherever possible; however, undiscovered pockets of residual green coke and CTP material likely remain in subgrade vaults that EPA was not able to safely access.

The potential for contamination of surface soils likely persists through the smelter facility due to impacts from former smelting operations and degradation of hazardous building materials.

4 ANALYTICAL METHODOLOGY DATA VALIDATION

The Former Kaiser Smelter TCRA was conducted in general accordance with the START August 2020 SAP and START November 2020 SAP. The activities conducted for these tasks are described as follows:

- Sample Analysis and Data Reporting
- Data Validation
- Data Storage

4.1 SAMPLE ANALYSES AND DATA REPORTING

Air, soil, and bulk asbestos samples collected during the removal action were analyzed by EMSL Analytical, Inc. in Cinnaminson, New Jersey, for the following:

- Air samples were analyzed by National Institute for Occupational Safety and Health (NIOSH) Method 7400, Issue 2, 8/15/92 – Phase Contrast Microscopy (PCM).
- Soil and sediment samples were analyzed for asbestos by CARB Method 435, Bulk Asbestos - PLM, 400-point count.
- Solid/bulk samples were analyzed for asbestos as follows: EPA Method 600/R-93/116–Asbestos (bulk) by PLM.

Soil, sediment, surface water, and waste samples were analyzed by Environmental Monitoring and Technologies, Inc. in Des Plaines, Illinois, for the following:

- PCB – EPA Method SW8082A/SW3510
- SVOCs – EPA Method SW8270D/SW3510
- Metals – SW6010C/SW3050
- Mercury – SW7471B/SW3050
- TCLP VOCs – SW1311/SW8260B/SW5030/SW1311
- TCLP SVOCs – SW1311/SW8270D/SW3510/SW1311
- TCLP Metals – SW6010C/SW3015/SW1311
- TCLP Mercury – SW7470A/SW1311
- Total Solids – SM2540G

- Cyanide – Method SW9014 / SW9010B
- Fluoride – Method SW9056A

START collected three waste samples for Dangerous Waste Characterization Acute Fish Toxicity Testing. The samples were submitted to Eurofins located in Tacoma, Washington. Eurofins subcontracted with Rainier Environmental, located in Tacoma, Washington. Rainier Environmental completed the toxicity testing following the *Washington State Department of Ecology Publication 80-12*.

4.2 DATA VALIDATION

START completed data validation following the EPA Region 10 ERU Standard Operating Procedures (SOP) 144E (Analytical Data Validation) and in accordance with the EPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (2009) and *USEPA Contract Laboratory Program National Functional Guidelines for Data Review* (most recent version), where applicable to the analyses performed. Commercial laboratory data validation was performed by a START chemist. Asbestos data received a Stage 1 evaluation (S1VM). The commercial laboratory data received a minimum of Stage 2B evaluation (90% S2BVM) and 10% of the data received a minimum of a Stage 4 evaluation (10% S4VM).

The following qualifiers were used in data validation:

- J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because Quality Control (QC) criteria limits were not met.
- R = The sample results are rejected (analyte may or may not be present) due to gross deficiencies in QC criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.
- U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ = The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Any variances from the Quality Assurance/Quality Control (QA/QC) objectives are summarized in the START data validation summary reports.

Asbestos air and bulk samples submitted to EMSL and data validation summary report are included in Appendix E. EMT laboratory data reports and data validation is included in Appendix F. Eurofins laboratory report and associated data validation summaries are included in Appendix G. Samples collected and submitted to Rainer Environmental laboratory are presented in Appendix H.

4.3 DATA STORAGE

A standard data management system included the use of bound field logbooks, Site photographs, sample management and tracking procedures, document control, and inventory procedures for both laboratory data and field measurements. Scribe Environmental Sampling Data Management System (SCRIBE) was used to create chain-of-custody forms and labels. SCRIBE was also used to manage and track sample information for samples submitted to laboratories. The SCRIBE file has been published to SCRIBE.net under Project ID 4097.

5 SUMMARY OF ACTIONS TAKEN

At the completion of the TCRA activities conducted at the Former Kaiser Smelter Site, located in Mead, Spokane County, Washington, EPA accomplished the following:

- An estimated 318,494 ft² of Robertson Siding and 112 Robertson Ventilators were removed from the Site.
- Approximately 5,940 ft² of asbestos-containing floor tiles were removed from the Site.
- A total of 5,596 chemical containers were inventoried, profiled, and removed from the Site.
- Over 720 CY of general rubbish and debris were removed and disposed of off-site.
- Approximately 14,416 LF of ACM TSI piping were removed from the Site and disposed.
- Approximately 97 tons of ACM roofing material were removed and disposed of off-site.
- Approximately 3,388 CY of non-toxic green coke were removed and disposed of from the Site.
- Approximately 1,184 CY of asbestos-containing green coke, which was characterized under the WT-02/ACM material profile, were removed from the Site.
- Approximately 1,932 CY of green coke, profiled under the WT02 profile, were removed from the Site.
- A total of 3,616 CY of reacted ore were removed and disposed of from the Site.
- Contaminated sediment and debris from 37 catch basins were removed and disposed of from the Site.
- Approximately 10,555 CY of alumina and 1,726 CY of mixed alumina were collected, stockpiled, and secured inside Building 32.

6 REFERENCES

Ecology and Environment, Inc. (E & E), November 2019, *2019 Removal Site Evaluation Report, Former Kaiser Smelter Site, Mead, Washington.*

E & E, August 2020, *Former Kaiser Smelter TCRA Sampling and Analysis Plan, Former Kaiser Smelter Site, Mead, Washington.*

U.S. Environmental Protection Agency (EPA), May 2020, *Time-Critical Removal Action at Former Kaiser Smelter Site, Mead, Washington Action Memorandum.*

Table 3-1
Summary of Analytical Results
Robertson Siding Material Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 57	Bldg 57	Bldg 57
EPA Sample ID					20081259	20081260	20081261
Field Sample ID					RS-BM-01	RS-BM-02	RS-BM-03
Date					8/24/2020	8/24/2020	8/24/2020
Matrix					Bulk	Bulk	Bulk
Analyte	CAS No.	Units	AL	Type	FS	FS	FS
PCBs (SW8082A)							
Aroclor 1016	12674-11-2	mg/Kg	NP		3.87 U	3.82 U	3.99 U
Aroclor 1221	11104-28-2	mg/Kg	NP		7.75 U	7.64 U	7.98 U
Aroclor 1232	11141-16-5	mg/Kg	NP	--	2.58 U	2.55 U	2.66 U
Aroclor 1242	53469-21-9	mg/Kg	NP	--	2.58 U	2.55 U	2.66 U
Aroclor 1248	12672-29-6	mg/Kg	NP	--	16.5	25.2	15.8
Aroclor 1254	11097-69-1	mg/Kg	NP	--	2.58 U	2.55 U	2.66 U
Aroclor 1260	11096-82-5	mg/Kg	NP	--	3.87 U	3.82 U	3.99 U
Aroclor 1268	11100-14-4	mg/Kg	NP	--	5.95	6.88	7.44
Total PCB ⁽¹⁾	1336-36-3	mg/Kg	50	--	22.5	32.1	23.2
PLM - Asbestos							
Asbestos (Chrysotile)	132207-32-0	%	1	--	ND	ND	ND
Asbestos (total)	1332-21-4	%	NP	--	NAD	NAD	NAD
PLM - Non-Asbestos							
Mica	Mica	%	NP	--	5	5	5
NonAsbestos Fibrous	NAF	%	NP	--	95	95	95

Notes

Detected results are in bold type.

⁽¹⁾ The regulatory unit for PCB concentrations in any substance pursuant to TSCA Regulations

-- = Not Applicable

% = percent

AL = Action Level

CAS = Chemical Abstracts Service

FS = Field Sample

mg/Kg = milligrams per kilogram

NAD = No asbestos Detected

ND = Not detected

NP = Not published

PCBs = Polychlorinated Biphenyls (PCBs), EPA Method 8082A by GC/ECD

PLM = Polarized Light Microscopy

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-2
Summary of Analytical Results
Robertson Ventilator Material Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 32	Bldg 52	Bldg 55	Bldg 55	Bldg 56	Bldg 56
EPA Sample ID					20081302	20081303	20081270	20081271	20081301	20081304
Field Sample ID					RS-BM-07	RS-BM-08	RS-BM-04	RS-BM-05	RS-BM-06	RS-BM-09
Date					9/11/2020	9/11/2020	9/8/2020	9/8/2020	9/11/2020	9/14/2020
Matrix					Bulk	Bulk	Bulk	Bulk	Bulk	Bulk
Analyte	CAS.NO	Units	AL	Type	FS	FS	FS	FD	FS	FS
PCBs (SW8082A)										
Aroclor 1016	12674-11-2	mg/Kg	NP	--	58.6 U	14.8 U	0.15 UJ	0.198 UJ	14.7 U	15 U
Aroclor 1221	11104-28-2	mg/Kg	NP	--	58.6 U	14.8 U	0.3 U	0.397 U	14.7 U	15 U
Aroclor 1232	11141-16-5	mg/Kg	NP	--	58.6 U	14.8 U	0.15 U	0.198 U	14.7 U	15 U
Aroclor 1242	53469-21-9	mg/Kg	NP	--	58.6 U	14.8 U	0.15 U	0.198 U	14.7 U	15 U
Aroclor 1248	12672-29-6	mg/Kg	NP	--	58.6 U	14.8 U	0.15 U	0.198 U	14.7 U	15 U
Aroclor 1254	11097-69-1	mg/Kg	NP	--	58.6 U	14.8 U	0.15 U	0.198 U	14.7 U	15 U
Aroclor 1260	11096-82-5	mg/Kg	NP	--	58.6 U	14.8 U	0.15 UJ	0.198 UJ	14.7 U	15 U
Aroclor 1268	11100-14-4	mg/Kg	NP	--	71 J	42.7 J	1.48	1.73	83.6 J	20.4 J
Total PCB ⁽¹⁾	1336-36-3	mg/Kg	50	--	71 J	42.7 J	1.48	1.73	83.6 J	20.4 J
PLM - Asbestos										
Asbestos (Chrysotile)	132207-32-0	%	1	--	20	20	20	20	25	20
Asbestos (total)	1332-21-4	%	NP	--	20	20	20	20	25	20
PLM - Non-Asbestos										
Cellulose	CELL	%	NP	--	10	10	ND	ND	10	10
Glass	Glass	%	NP	--	ND	ND	10	10	ND	ND
NonAsbestos Fibrous	NAF	%	NP	--	70	70	70	70	65	70

Notes

Detected results are in bold type.

Yellow Highlight above Action Level

-- = Not Applicable

⁽¹⁾ The regulatory unit for PCB concentrations in any substance pursuant to TSCA Regulations

% = percent

AL = Action Level

CAS = Chemical Abstracts Service

FD = Field Duplicate

FS = Field Sample

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte.

mg/Kg = milligrams per kilogram

ND = Not detected

NP = Not published

PCBs = Polychlorinated Biphenyls (PCBs), EPA Method 8082A by GC/ECD

PLM = Polarized Light Microscopy

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-3
Summary of Analytical Results
Vinyl Floor Tile Bulk Samples - Building 1
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Analyte Group								PLM - Asbestos		PLM - Non-Asbestos
Analyte								Asbestos (Chrysotile)	Asbestos (total)	NonFibrous
CAS.NO								132207-32-0	1332-21-4	NF
Units								%	%	%
Asbestos Containing Material AL								1	NP	NP
EPA Sample ID	Field Sample ID	Date	Material	Site Area	Sample Description	Layer Description	Type	--	--	--
20081331	TSI-BM-004	9/28/2020	Floor Tile	Bldg 1	9"x9" tile	Mastic	FS	ND	NAD	100
						Tile (Green)	FS	4	4	96
20081332	TSI-BM-005	9/28/2020	Floor Tile	Bldg 1	9"x9" tile	Mastic	FS	ND	NAD	100
						Tile (Green)	FS	4	4	96
20081333	TSI-BM-006	9/28/2020	Floor Tile	Bldg 1	9"x9" tile	Mastic	FS	ND	NAD	100
						Tile (White)	FS	4	4	96
20081334	TSI-BM-007	9/28/2020	Floor Tile	Bldg 1	Duplicate of 20081332	Mastic	FD	ND	NAD	100
						Tile (Green)	FD	4	4	96

Notes

Detected results are in bold type.

Yellow Highlight above Action Level

-- = Not Applicable

% =

AL = Action Level

CAS = Chemical Abstracts Service

FD = Field Duplicate

FS = Field Sample

NAD = No asbestos Detected

ND = Not detected

NP = Not published

PLM = Polarized Light Microscopy

Table 3-4
Summary of Analytical Results
TSI Piping and Fire Brick Bulk Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Analyte Group						PLM - Asbestos		PLM - Non-Asbestos			
Analyte						Asbestos (Chrysotile)	Asbestos (total)	Glass	Min. Wool	NonAsbestos Fibrous	NonFibrous
CAS.NO						132207-32-0	1332-21-4	Glass	Mwool	NAF	NF
Units						%	%	%	%	%	%
Asbestos Containing Material AL						1	NP	NP	NP	NP	NP
EPA Sample ID	Field Sample ID	Date	Material	Site Area	Layer Description	--	--	--	--	--	--
20081352	TSI-BM-012	12/7/2020	TSI Piping	TSI-BM	Flashing	5	5	ND	ND	ND	95
					Insulation	ND	NAD	95	ND	ND	5
20081353	TSI-BM-013	12/7/2020	TSI Piping	TSI-BM	Flashing	8	8	ND	ND	ND	92
					Insulation	ND	NAD	ND	95	ND	5
20081357	TSI-BM-014	12/10/2020	Brick	TSI-BM	Brick	ND	NAD	ND	ND	100	ND
20081358	TSI-BM-015	12/10/2020	Brick	TSI-BM	Brick	ND	NAD	ND	ND	100	ND
20081359	TSI-BM-016	12/10/2020	Brick	TSI-BM	Brick	ND	NAD	ND	ND	100	ND

Notes

Detected results are in bold type.

Yellow Highlight above Action Level

-- = Not Applicable

% = percent

AL = Action Level

CAS = Chemical Abstracts Service

NAD = No asbestos Detected

ND = Not detected

NP = Not published

PLM = Polarized Light Microscopy

TSI = Thermal System Insulation

Table 3-7
Summary of Analytical Results
Green Coke Waste Samples (TCLP)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52	Bldg 52	Bldg 52	Bldg 53	Bldgs 56/58/60
Material					Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
Date					8/31/2020	8/31/2020	8/31/2020	8/31/2020	8/31/2020
EPA Sample ID					20081265	20081266	20081267	20081269	20081268
Field Sample ID					WP-GC-01	WP-GC-02	WP-GC-03	WP-GC-05	WP-GC-04
Analyte	CAS.NO	Units	TCLP	Type	FS	FS	FS	FS	FS
TCLP Metals									
Arsenic	7440-38-2	mg/L	5	--	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Barium	7440-39-3	mg/L	100	--	0.0838	0.0809	0.125	0.02 U	0.153
Cadmium	7440-43-9	mg/L	1	--	0.00588	0.00675	0.004 U	0.342	0.0318
Chromium	7440-47-3	mg/L	5	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Lead	7439-92-1	mg/L	5	--	0.04 U	0.04 U	0.04 U	0.04 U	0.746
Mercury	7439-97-6	mg/L	0.2	--	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Selenium	7782-49-2	mg/L	1	--	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Silver	7440-22-4	mg/L	5	--	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
TCLP SVOCs (SW8270D)									
1,4-Dichlorobenzene	106-46-7	mg/L	7.5	--	0.0082 U	0.0078 U	0.0081 U	0.0083 U	0.0094 U
2,4,5-Trichlorophenol	95-95-4	mg/L	400	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
2,4,6-Trichlorophenol	88-06-2	mg/L	2	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
2,4-Dinitrotoluene	121-14-2	mg/L	0.13	--	0.0082 U	0.0078 U	0.0081 U	0.0083 U	0.0094 U
2-Methylphenol	95-48-7	mg/L	200	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
3 & 4-Methylphenol	84989-04-8	mg/L	NP	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
Cresols, Total	1319-77-3	mg/L	200	--	0.0165 U	0.0156 U	0.0162 U	0.0167 U	0.0188 U
Hexachlorobenzene	118-74-1	mg/L	0.13	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
Hexachlorobutadiene	87-68-3	mg/L	0.5	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
Hexachloroethane	67-72-1	mg/L	3	--	0.0041 U	0.0039 U	0.004 U	0.0042 U	0.0047 U
Nitrobenzene	98-95-3	mg/L	2	--	0.0025 U	0.0023 U	0.0024 U	0.0025 U	0.0028 U
Pentachlorophenol	87-86-5	mg/L	100	--	0.0824 U	0.0781 U	0.0808 U	0.0835 U	0.0939 U
Pyridine	110-86-1	mg/L	5	--	0.0412 U	0.1 U	0.1 U	0.0417 U	0.0469 U

Table 3-7
Summary of Analytical Results
Green Coke Waste Samples (TCLP)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52	Bldg 52	Bldg 52	Bldg 53	Bldgs 56/58/60
Material					Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
Date					8/31/2020	8/31/2020	8/31/2020	8/31/2020	8/31/2020
EPA Sample ID					20081265	20081266	20081267	20081269	20081268
Field Sample ID					WP-GC-01	WP-GC-02	WP-GC-03	WP-GC-05	WP-GC-04
Analyte	CAS.NO	Units	TCLP	Type	FS	FS	FS	FS	FS
TCLP VOCs (SW8260B)									
1,1-Dichloroethene	75-35-4	mg/L	0.7	--	0.04 U	0.04 U	0.1 U	0.1 U	0.1 U
1,2-Dichloroethane (EDC)	107-06-2	mg/L	0.5	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	106-46-7	mg/L	7.5	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Butanone (MEK)	78-93-3	mg/L	200	--	0.004 U	0.004 U	1 U	1 U	1 U
Benzene	71-43-2	mg/L	0.5	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride	56-23-5	mg/L	0.5	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chlorobenzene	108-90-7	mg/L	100	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chloroform	67-66-3	mg/L	6	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene (PCE)	127-18-4	mg/L	0.7	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Trichloroethene (TCE)	79-01-6	mg/L	0.5	--	0.04 U	0.04 U	0.1 U	0.1 U	0.1 U
Vinyl chloride	75-01-4	mg/L	0.2	--	0.04 U	0.04 U	0.1 U	0.1 U	0.1 U

Notes

Detected results are in bold type.

Yellow highlight indicates a result that exceeds at least one of the listed screening levels.

— = Not Applicable

CAS = Chemical Abstracts Service

EPA = United States Environmental Protection Agency

mg/L = milligrams per Liter

NP = Not published

SVOCs = Semi-Volatile Organic Compounds, EPA Method 8270D by GC/MS

Metals = EPA Method 6010C (ICP-AES) and 7471 (CVAA)

TCLP = Toxicity Characteristic Leaching Procedure (40 CFR 261.24) Regulatory Level

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

VOC = Volatile Organic Compounds, EPA Method 8260B GC/MS

Table 3-8
Summary of Analytical Results
Green Coke Waste Samples (Totals)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52					Former Bldg 54	
Date					9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020
EPA Sample ID					20081317	20081318	20081319	20081320	20081321	20081322	20081323
Field Sample ID					WP-GC-06	WP-GC-07	WP-GC-08	WP-GC-09	WP-GC-10	WP-GC-11	WP-GC-12
Analyte	CAS.NO	Units	RML ⁽¹⁾ Industrial Soil	Material	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
				Type	FS	FS	FS	FS	FS	FS	FD
SVOCs (SW8270D)											
1,2,4-Trichlorobenzene	120-82-1	ug/Kg	260000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
1,2-Dichlorobenzene	95-50-1	ug/Kg	9300000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
1,3-Dichlorobenzene	541-73-1	ug/Kg	NP	--	1500 U	9170 U	300 U	15.6 U	16 U	1200 U	1510 U
1,4-Dichlorobenzene	106-46-7	ug/Kg	1100000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
2,4,5-Trichlorophenol	95-95-4	ug/Kg	82000000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2,4,6-Trichlorophenol	88-06-2	ug/Kg	820000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2,4-Dichlorophenol	120-83-2	ug/Kg	2500000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2,4-Dimethylphenol	105-67-9	ug/Kg	16000000	--	3000 U	18300 U	599 U	31.2 U	32 U	2410 U	3010 U
2,4-Dinitrophenol	51-28-5	ug/Kg	1600000	--	30000 U	183000 U	5990 U	312 U	329 U	24100 U	30100 U
2,4-Dinitrotoluene	121-14-2	ug/Kg	740000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
2,6-Dinitrotoluene	606-20-2	ug/Kg	150000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2-Chloronaphthalene	91-58-7	ug/Kg	60000000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2-Chlorophenol	95-57-8	ug/Kg	5800000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
2-Methylnaphthalene	91-57-6	ug/Kg	3000000	--	1870 J	9170 U	466 J	92.9	83.3	803 J	836 J
2-Methylphenol	95-48-7	ug/Kg	41000000	--	501 U	3060 U	99.8 U	5.2 U	5 U	402 U	502 U
2-Nitroaniline	88-74-4	ug/Kg	8000000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
2-Nitrophenol	88-75-5	ug/Kg	NP	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
3 & 4-Methylphenol	84989-04-8	ug/Kg	NP	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
3,3'-Dichlorobenzidine	91-94-1	ug/Kg	510000	--	6010 U	36700 U	1200 U	62.4 U	65 U	4820 U	6020 U
3-Nitroaniline	99-09-2	ug/Kg	NP	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/Kg	66000	--	40100 U	245000 U	7990 U	416 U	438 U	32100 U	40100 U
4-Bromophenyl-phenylether	101-55-3	ug/Kg	NP	--	1500 U	9170 U	300 U	15.6 U	16.4 U	1200 U	1510 U
4-Chloro-3-methylphenol	59-50-7	ug/Kg	82000000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
4-Chloroaniline	106-47-8	ug/Kg	1100000	--	1500 U	9170 U	300 U	15.6 U	16 U	1200 U	1510 U
4-Chlorophenyl-phenylether	7005-72-3	ug/Kg	NP	--	1500 U	9170 U	300 U	15.6 U	16 U	1200 U	1510 U
4-Nitroaniline	100-01-6	ug/Kg	3300000	--	2000 U	12200 U	399 U	20.8 U	21.9 U	1610 U	2010 U
4-Nitrophenol	100-02-7	ug/Kg	NP	--	40100 U	245000 U	7990 U	416 U	438 U	32100 U	40100 U
Acenaphthene	83-32-9	ug/Kg	45000000	--	41900	45900	4170	889	867	4390	9030
Acenaphthylene	208-96-8	ug/Kg	NP	--	534 J	6110 U	126 J	12.8 J	15.7 J	803 U	1000 U
Anthracene	120-12-7	ug/Kg	230000000	--	114000	132000	6880	2130	2000	7310	10400
Azobenzene as 1,2-Diphenylhydrazine	103-33-3	ug/Kg	2600000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U

Table 3-8
Summary of Analytical Results
Green Coke Waste Samples (Totals)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52					Former Bldg 54	
Date					9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020
EPA Sample ID					20081317	20081318	20081319	20081320	20081321	20081322	20081323
Field Sample ID					WP-GC-06	WP-GC-07	WP-GC-08	WP-GC-09	WP-GC-10	WP-GC-11	WP-GC-12
Analyte	CAS.NO	Units	RML ⁽¹⁾ Industrial Soil	Material	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
				Type	FS	FS	FS	FS	FS	FS	FD
Benzidine	92-87-5	ug/Kg	1000	--	80100 U	489000 U	16000 U	832 U	876 U	64300 U	80300 U
Benzo(a)anthracene	56-55-3	ug/Kg	2100000	--	847000	12200	42900	18200	15700	53700	64500
Benzo(a)pyrene	50-32-8	ug/Kg	210000	--	1100000	245000	42900	19500	19900	68700	82600
Benzo(b)fluoranthene	205-99-2	ug/Kg	2100000	--	1390000	1480000	64900	31200	26900	93400	103000
Benzo(g,h,i)perylene	191-24-2	ug/Kg	NP	--	708000	797000	35300	12500	13900	50400	57300
Benzo(k)fluoranthene	207-08-9	ug/Kg	21000000	--	397000	510000	24900	9590	8920	34800	41100
Benzoic acid	65-85-0	ug/Kg	3300000000	--	40100 U	245000 U	7990 U	147 J	438 U	32100 U	40100 U
Benzyl alcohol	100-51-6	ug/Kg	82000000	--	1500 U	9170 U	300 U	15.6 U	16.4 U	1200 U	1510 U
Bis(2-chloroethoxy)methane	111-91-1	ug/Kg	2500000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
Bis(2-chloroethyl)ether	111-44-4	ug/Kg	100000	--	40100 U	245000 U	7990 U	416 U	438 U	32100 U	40100 U
Bis(2-chloroisopropyl)ether	108-60-1	ug/Kg	47000000	--	40100 U	245000 U	7990 U	416 U	438 U	32100 U	40100 U
Bis(2-ethylhexyl)phthalate	117-81-7	ug/Kg	16000000	--	12000 U	73400 U	2400 U	125 U	131 U	10700 J	10800 J
Butyl benzyl phthalate	85-68-7	ug/Kg	120000000	--	3000 U	18300 U	599 U	31.2 U	32 U	2410 U	3010 U
Carbazole	86-74-8	ug/Kg	NP	--	154000	183000	6290	2730	2710	7070	8330
Chrysene	218-01-9	ug/Kg	210000000	--	944000	1010000	47300	23100	18300	66400	74000
Dibenzo(a,h)anthracene	53-70-3	ug/Kg	210000	--	160000	6110	7750	2960	2960	11500	13400
Dibenzofuran	132-64-9	ug/Kg	1200000	--	19100	22200	1230	550	392	1580 J	1510 J
Diethyl phthalate	84-66-2	ug/Kg	660000000	--	12000 U	73400 U	2400 U	125 U	131 U	9640 U	12000 U
Dimethyl phthalate	131-11-3	ug/Kg	NP	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
Di-n-butyl phthalate	84-74-2	ug/Kg	82000000	--	3000 U	18300 U	599 U	31.2 U	32 U	2410 U	3010 U
Di-n-octyl phthalate	117-84-0	ug/Kg	8200000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
Fluoranthene	206-44-0	ug/Kg	30000000	--	1360000	1470000	61700	33900	26400	80400	89100
Fluorene	86-73-7	ug/Kg	30000000	--	40400	12200	2040	832	738	2170	2940
Hexachlorobenzene	118-74-1	ug/Kg	96000	--	1000 U	6110 U	200 U	10.4 U	11 U	803 U	1000 U
Hexachlorobutadiene	87-68-3	ug/Kg	530000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
Hexachlorocyclopentadiene	77-47-4	ug/Kg	7500	--	40100 U	245000 U	7990 U	416 U	438 U	32100 U	40100 U
Hexachloroethane	67-72-1	ug/Kg	460000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/Kg	2100000	--	781000	858000	38000	13500	14400	53600	61800
Isophorone	78-59-1	ug/Kg	160000000	--	1500 U	9170 U	300 U	15.6 U	16 U	1200 U	1510 U
Naphthalene	91-20-3	ug/Kg	590000	--	2000 J	12200 U	779	177	138	1200 J	1570 J
Nitrobenzene	98-95-3	ug/Kg	1300000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
N-Nitrosodimethylamine	62-75-9	ug/Kg	3400	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U

Table 3-8
Summary of Analytical Results
Green Coke Waste Samples (Totals)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52					Former Bldg 54	
Date					9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020
EPA Sample ID					20081317	20081318	20081319	20081320	20081321	20081322	20081323
Field Sample ID					WP-GC-06	WP-GC-07	WP-GC-08	WP-GC-09	WP-GC-10	WP-GC-11	WP-GC-12
Analyte	CAS.NO	Units	RML ⁽¹⁾ Industrial Soil	Material	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
				Type	FS	FS	FS	FS	FS	FS	FD
N-Nitrosodi-n-propylamine	621-64-7	ug/Kg	33000	--	3000 U	18300 U	599 U	31.2 U	32 U	2410 U	3010 U
N-Nitrosodiphenylamine	86-30-6	ug/Kg	47000000	--	1000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
Pentachlorophenol	87-86-5	ug/Kg	400000	--	30000 U	183000 U	5990 U	312 U	329 U	24100 U	30100 U
Phenanthrene	85-01-8	ug/Kg	NP	--	671000	738000	37000	18200	13700	43700	45100
Phenol	108-95-2	ug/Kg	250000000	--	2000 U	12200 U	399 U	20.8 U	21 U	1610 U	2010 U
Pyrene	129-00-0	ug/Kg	23000000	--	1290000	1350000	7990	29700	24900	91100	100000
TAL Metals(SW6010C/SW7471B)											
Aluminum	7429-90-5	mg/Kg	1100000	--	521	783	377	154	72800	3180	3780
Antimony	7440-36-0	mg/Kg	470	--	0.968 UJ	1.02 UJ	0.968 UJ	1.02 UJ	1.06 UJ	1.46 J	1.67 J
Arsenic	7440-38-2	mg/Kg	300	--	0.968 U	1.02 U	0.968 U	1.02 U	1.06 U	2.03	2.23
Barium	7440-39-3	mg/Kg	220000	--	3.54 J	4.75 J	7.78 J	3.97 J	45.5 J	221 J	443 J
Beryllium	7440-41-7	mg/Kg	2300	--	0.0968 J	0.168	0.0798 J	0.0434 J	8.97	1.62	1.89
Cadmium	7440-43-9	mg/Kg	980	--	0.397	0.389	0.0411 J	0.24	0.0532 U	2.44	3.15
Calcium	7440-70-2	mg/Kg	NP	--	152	272	150	146	4490	1740	2850
Chromium	7440-47-3	mg/Kg	NP	--	1.22 J	2.65 J	1.35 J	1.97 J	2.83 J	14.6 J	15.9 J
Cobalt	7440-48-4	mg/Kg	350	--	0.484 UJ	0.275 J	0.225 J	0.23 J	0.524 J	1.51 J	1.92 J
Copper	7440-50-8	mg/Kg	47000	--	1.93	23.1	2.72	2.67	6450	42.4	33.5
Iron	7439-89-6	mg/Kg	820000	--	537	1140	422	287	3990	15400	17300
Lead	7439-92-1	mg/Kg	800	--	11.8 J	18.6 J	1.12 J	2.2 J	47.1 J	538 J	682 J
Magnesium	7439-95-4	mg/Kg	--	--	35.5	53.7	42	26.7	207	422	494
Manganese	7439-96-5	mg/Kg	26000	--	7.44 J	26.6 J	3.7 J	2.23 J	35.6 J	81.8 J	95.8 J
Mercury	7439-97-6	mg/Kg	46	--	0.059 U	0.059 U	0.058 U	0.058 U	0.06 U	0.056 U	0.059 U
Nickel	7440-02-0	mg/Kg	22000	--	5.07 J	16 J	8.76 J	28.1 J	110 J	31.1 J	34 J
Potassium	7440-09-7	mg/Kg	NP	--	17.7 J	35.2 J	16.9 J	11.3 J	474 J	212 J	273 J
Selenium	7782-49-2	mg/Kg	5800	--	1500 UJ	1.02 U	300 UJ	1.02 UJ	1.06 UJ	0.954 UJ	0.059 UJ
Silver	7440-22-4	mg/Kg	5800	--	0.968 U	0.333	0.968 U	1.02 U	0.38	0.587	0.515
Sodium	7440-23-5	mg/Kg	NP	--	557	552	367	235	39700	1370	1280
Thallium	7440-28-0	mg/Kg	12	--	0.968 UJ	1.02 UJ	0.968 UJ	1.02 UJ	1.06 UJ	0.056 UJ	0.059 UJ
Vanadium	7440-62-2	mg/Kg	5800	--	14.2	39.8	24.1	41	57.2	97.4	103
Zinc	7440-66-6	mg/Kg	350000	--	20.9 J	54.5 J	22.8 J	19.8 J	75.2 J	341 J	602 J

Table 3-8
Summary of Analytical Results
Green Coke Waste Samples (Totals)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 52					Former Bldg 54	
Date					9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020	9/17/2020
EPA Sample ID					20081317	20081318	20081319	20081320	20081321	20081322	20081323
Field Sample ID					WP-GC-06	WP-GC-07	WP-GC-08	WP-GC-09	WP-GC-10	WP-GC-11	WP-GC-12
Analyte	CAS.NO	Units	RML ⁽¹⁾ Industrial Soil	Material	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke	Green Coke
				Type	FS	FS	FS	FS	FS	FS	FD

Notes:

⁽¹⁾ Removal Management Levels (RMLs) for industrial soil are based on a 10-4 risk level for carcinogens and a Hazard Quotient of 1 for non-carcinogens.

Screening levels from EPA Regional Removal Management Levels for Chemicals (May 2020) are risk-based concentrations derived from standardized equations combining exposure assumptions with toxicity data from the Superfund program's hierarchy.

Detected results are in bold type.

Highlighted cells indicates results that exceed at least one of the listed RMLs.

— = Not Applicable

mg/Kg = milligrams per kilogram

ug/Kg = micrograms per kilogram

CAS = Chemical Abstracts Service

FD = Field Duplicate

FS = Field Sample

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

NP = Not published

SVOCs = Semi-Volatile Organic Compounds, EPA Method 8270D by GC/MS

TAL Metals = Target Analyte List Metals, EPA Method 6010C (ICP-AES) and 7471 (CVAA)

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-9
Summary of Analytical Results
Reacted Ore Samples (TCLP, Anions, Wet Chemistry)
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 25	Bldg 25	Bldg 34	Bldg 34	Bldg 35
Material					Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore
Date					9/23/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
Sample ID					20081325	20081327	20081326	20081328	20081324
Field Sample ID					WP-RO-02	WP-RO-04	WP-RO-03	WP-RO-05	WP-RO-01
Analyte	CAS.NO	Units	TCLP	Type	FS	FD	FS	FD	FS
TCLP Metals									
Arsenic	7440-38-2	mg/L	5	--	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Barium	7440-39-3	mg/L	100	--	0.0683	0.106	0.187	0.15	0.0568
Cadmium	7440-43-9	mg/L	1	--	0.0005 U	0.0005 U	0.0601	0.0802	0.0562
Chromium	7440-47-3	mg/L	5	--	0.01 U	0.01 U	0.0322	0.0334	0.01 U
Lead	7439-92-1	mg/L	5	--	0.001 U	0.001 U	0.0585	0.0947	0.001 U
Mercury	7439-97-6	mg/L	0.2	--	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Selenium	7782-49-2	mg/L	1	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Silver	7440-22-4	mg/L	5	--	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
TCLP SVOCs (SW8270D)									
1,4-Dichlorobenzene	106-46-7	mg/L	7.5	--	0.0096 U	0.009 U	0.0097 U	0.009 U	0.0085 U
2,4,5-Trichlorophenol	95-95-4	mg/L	400	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
2,4,6-Trichlorophenol	88-06-2	mg/L	2	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
2,4-Dinitrotoluene	121-14-2	mg/L	0.13	--	0.0096 U	0.009 U	0.0097 U	0.009 U	0.0085 U
2-Methylphenol	95-48-7	mg/L	200	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
3 & 4-Methylphenol	84989-04-8	mg/L	NP	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
Cresols, Total	1319-77-3	mg/L	200	--	0.0192 U	0.0179 U	0.0194 U	0.0181 U	0.017 U
Hexachlorobenzene	118-74-1	mg/L	0.13	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
Hexachlorobutadiene	87-68-3	mg/L	0.5	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
Hexachloroethane	67-72-1	mg/L	3	--	0.0048 U	0.0045 U	0.0048 U	0.0045 U	0.0043 U
Nitrobenzene	98-95-3	mg/L	2	--	0.0029 U	0.0027 U	0.0029 U	0.0027 U	0.0026 U
Pentachlorophenol	87-86-5	mg/L	100	--	0.0962 U	0.0895 U	0.0968 U	0.0903 U	0.085 U
Pyridine	110-86-1	mg/L	5	--	0.0481 U	0.0448 U	0.0484 U	0.0451 U	0.0425 U
Wet Chemistry									
Cyanide	57-12-5	mg/Kg	NP	--	7.04	10.3	0.496 J	0.712 J	0.852 U
Anions by Ion Chromatography									
Fluoride	16984-48-8	mg/Kg	NP	--	3230	2490	621	596	577

Note

Detected results are in bold type.

Yellow highlight indicates a result that exceeds at least one of the TCLP regulatory levels.

-- = Not Applicable

CAS = Chemical Abstracts Service

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

mg/L = milligrams per Liter

mg/Kg = milligrams per kilogram

SVOCs = Semi-Volatile Organic Compounds, EPA Method 8270D by GC/MS

Metals = EPA Method 6010C (ICP-AES) and 7471 (CVAA)

TCLP = Toxicity Characteristic Leaching Procedure (40 CFR 261.24) Regulatory Level

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Cyanide by Method 9014B

Fluoride by Method 9056A

Table 3-10
Summary of Analytical Results
Reacted Ore Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

					Building	Bldg 25	Bldg 25	Bldg 34	Bldg 34	Bldg 35
					Material	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore
					Date	9/23/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
					EPASample ID	20081325	20081327	20081326	20081328	20081324
Analyte	CAS.NO	Units	RML ⁽¹⁾	Field Sample ID	WP-RO-02	WP-RO-04	WP-RO-03	WP-RO-05	WP-RO-01	
				Type	FS	FD	FS	FD	FS	
SVOCs (SW8270D)										
1,2,4-Trichlorobenzene	120-82-1	ug/Kg	260000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
1,2-Dichlorobenzene	95-50-1	ug/Kg	9300000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
1,3-Dichlorobenzene	541-73-1	ug/Kg	NP	--	15.2 U	15.1 U	15.2 U	15.3 U	NA	
1,4-Dichlorobenzene	106-46-7	ug/Kg	1100000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
2,4,5-Trichlorophenol	95-95-4	ug/Kg	82000000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2,4,6-Trichlorophenol	88-06-2	ug/Kg	820000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2,4-Dichlorophenol	120-83-2	ug/Kg	2500000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2,4-Dimethylphenol	105-67-9	ug/Kg	16000000	--	30.4 U	30.3 U	30.3 U	30.5 U	NA	
2,4-Dinitrophenol	51-28-5	ug/Kg	1600000	--	304 U	303 U	303 U	305 U	NA	
2,4-Dinitrotoluene	121-14-2	ug/Kg	740000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
2,6-Dinitrotoluene	606-20-2	ug/Kg	150000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2-Chloronaphthalene	91-58-7	ug/Kg	60000000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2-Chlorophenol	95-57-8	ug/Kg	5800000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
2-Methylnaphthalene	91-57-6	ug/Kg	3000000	--	15.2 U	15.1 U	16.2 J	5.09 J	NA	
2-Methylphenol	95-48-7	ug/Kg	41000000	--	5.06 U	5.04 U	5.05 U	5.09 U	NA	
2-Nitroaniline	88-74-4	ug/Kg	8000000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
2-Nitrophenol	88-75-5	ug/Kg	NP	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
3 & 4-Methylphenol	84989-04-8	ug/Kg	NP	--	20.3 U	20.2 U	20.2 U	8.48 J	NA	
3,3´-Dichlorobenzidine	91-94-1	ug/Kg	510000	--	60.8 U	60.5 U	60.6 U	61.1 U	NA	
3-Nitroaniline	99-09-2	ug/Kg	NP	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
4,6-Dinitro-2-methylphenol	534-52-1	ug/Kg	66000	--	405 U	404 U	404 U	407 U	NA	
4-Bromophenyl-phenylether	101-55-3	ug/Kg	NP	--	15.2 U	15.1 U	15.2 U	15.3 U	NA	
4-Chloro-3-methylphenol	59-50-7	ug/Kg	82000000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA	
4-Chloroaniline	106-47-8	ug/Kg	1100000	--	15.2 U	15.1 U	15.2 U	15.3 U	NA	
4-Chlorophenyl-phenylether	7005-72-3	ug/Kg	NP	--	15.2 U	15.1 U	15.2 U	15.3 U	NA	
4-Nitroaniline	100-01-6	ug/Kg	3300000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA	
4-Nitrophenol	100-02-7	ug/Kg	NP	--	405 U	404 U	404 U	407 U	NA	
Acenaphthene	83-32-9	ug/Kg	45000000	--	10.1 U	10.1 U	70.4	19.3 J	NA	
Acenaphthylene	208-96-8	ug/Kg	NP	--	10.1 U	10.1 U	8.42 J	6.78 J	NA	

Table 3-10
Summary of Analytical Results
Reacted Ore Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 25	Bldg 25	Bldg 34	Bldg 34	Bldg 35
Material					Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore
Date					9/23/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
EPASample ID					20081325	20081327	20081326	20081328	20081324
Analyte	CAS.NO	Units	RML ⁽¹⁾	Field Sample ID	WP-RO-02	WP-RO-04	WP-RO-03	WP-RO-05	WP-RO-01
				Type	FS	FD	FS	FD	FS
Anthracene	120-12-7	ug/Kg	230000000	--	15.2 U	15.1 U	104	85.1	NA
Azobenzene as 1,2-Diphenylhydrazine	103-33-3	ug/Kg	2600000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA
Benzidine	92-87-5	ug/Kg	1000	--	810 U	807 U	809 U	814 U	NA
Benzo(a)anthracene	56-55-3	ug/Kg	2100000	--	13.5 J	12.8 J	2500	1420	NA
Benzo(a)pyrene	50-32-8	ug/Kg	210000	--	16.9 J	17.2 J	1270	854	NA
Benzo(b)fluoranthene	205-99-2	ug/Kg	2100000	--	35.8	39.7	12100	8490	NA
Benzo(g,h,i)perylene	191-24-2	ug/Kg	NP	--	17.6 J	20.2 J	2630	2230	NA
Benzo(k)fluoranthene	207-08-9	ug/Kg	21000000	--	12.8 J	15.8 J	2570	1640	NA
Benzoic acid	65-85-0	ug/Kg	3300000000	--	405 U	404 U	404 U	407 U	NA
Benzyl alcohol	100-51-6	ug/Kg	82000000	--	15.2 U	15.1 U	8.76 J	12.6 J	NA
Bis(2-chloroethoxy)methane	111-91-1	ug/Kg	2500000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA
Bis(2-chloroethyl)ether	111-44-4	ug/Kg	100000	--	405 U	404 U	404 U	407 U	NA
Bis(2-chloroisopropyl)ether	108-60-1	ug/Kg	47000000	--	405 U	404 U	404 U	407 U	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/Kg	16000000	--	122 U	121 U	754	827	NA
Butyl benzyl phthalate	85-68-7	ug/Kg	120000000	--	30.4 U	30.3 U	30.3 U	30.5 U	NA
Carbazole	86-74-8	ug/Kg	NP	--	4.39 J	4.37 J	171	136	NA
Chrysene	218-01-9	ug/Kg	210000000	--	27	29.6	7200	4560	NA
Dibenzo(a,h)anthracene	53-70-3	ug/Kg	210000	--	15.2 U	15.1 U	983	819	NA
Dibenzofuran	132-64-9	ug/Kg	1200000	--	15.2 U	15.1 U	68.4	39	NA
Diethyl phthalate	84-66-2	ug/Kg	660000000	--	122 U	121 U	121 U	122 U	NA
Dimethyl phthalate	131-11-3	ug/Kg	NP	--	10.1 U	10.1 U	50.9	57.3	NA
Di-n-butyl phthalate	84-74-2	ug/Kg	82000000	--	30.4 U	30.3 U	181	164	NA
Di-n-octyl phthalate	117-84-0	ug/Kg	8200000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
Fluoranthene	206-44-0	ug/Kg	30000000	--	28 J	29.9 J	3380	3060	NA
Fluorene	86-73-7	ug/Kg	30000000	--	10.1 U	10.1 U	53.9	14.9 J	NA
Hexachlorobenzene	118-74-1	ug/Kg	96000	--	10.1 U	10.1 U	10.1 U	10.2 U	NA
Hexachlorobutadiene	87-68-3	ug/Kg	530000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
Hexachlorocyclopentadiene	77-47-4	ug/Kg	7500	--	405 U	404 U	404 U	407 U	NA
Hexachloroethane	67-72-1	ug/Kg	460000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/Kg	2100000	--	21.6 J	20.5 J	3020	2510	NA

Table 3-10
Summary of Analytical Results
Reacted Ore Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 25	Bldg 25	Bldg 34	Bldg 34	Bldg 35
Material					Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore
Date					9/23/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
EPASample ID					20081325	20081327	20081326	20081328	20081324
Analyte	CAS.NO	Units	RML ⁽¹⁾	Field Sample ID	WP-RO-02	WP-RO-04	WP-RO-03	WP-RO-05	WP-RO-01
				Type	FS	FD	FS	FD	FS
Isophorone	78-59-1	ug/Kg	160000000	--	15.2 U	15.1 U	15.2 U	15.3 U	NA
Naphthalene	91-20-3	ug/Kg	590000	--	6.08 J	8.07 J	53.6	20.4 U	NA
Nitrobenzene	98-95-3	ug/Kg	1300000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
N-Nitrosodimethylamine	62-75-9	ug/Kg	3400	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
N-Nitrosodi-n-propylamine	621-64-7	ug/Kg	33000	--	30.4 U	30.3 U	30.3 U	30.5 U	NA
N-Nitrosodiphenylamine	86-30-6	ug/Kg	47000000	--	20.3 U	20.2 U	20.2 U	20.4 U	NA
Pentachlorophenol	87-86-5	ug/Kg	400000	--	304 U	303 U	303 U	305 U	NA
Phenanthrene	85-01-8	ug/Kg	NP	--	11.8 J	11.1 J	1240	926	NA
Phenol	108-95-2	ug/Kg	250000000	--	20.3 U	20.2 U	34 J	40 J	NA
Pyrene	129-00-0	ug/Kg	23000000	--	21.9 J	23.5 J	1900	1420	NA
TAL Metals(SW6010C/SW7471B)					NP				
Aluminum	7429-90-5	mg/Kg	1100000	--	243000	152000	152000	172000	NA
Antimony	7440-36-0	mg/Kg	470	--	1.01 U	1 U	1 U	1.01 U	NA
Arsenic	7440-38-2	mg/Kg	300	--	1.01 U	1 U	1 U	1.01 U	NA
Barium	7440-39-3	mg/Kg	220000	--	33.6	54.4	108	99.2	NA
Beryllium	7440-41-7	mg/Kg	2300	--	12	15.8	13.3	12.3	NA
Cadmium	7440-43-9	mg/Kg	980	--	0.0503 U	0.0501 U	0.263	0.116 J	NA
Calcium	7440-70-2	mg/Kg	NP	--	7670	10100	16200	13500	NA
Chromium	7440-47-3	mg/Kg	NP	--	10.5	9.12	17.4	14.4	NA
Cobalt	7440-48-4	mg/Kg	350	--	0.643	0.661 J	2.24	1.94	NA
Copper	7440-50-8	mg/Kg	47000	--	43.6	40.3	795	772	NA
Iron	7439-89-6	mg/Kg	820000	--	14100	13200	18700	15200	NA
Lead	7439-92-1	mg/Kg	800	--	1.01 U	1 U	1 U	48.4	NA
Magnesium	7439-95-4	mg/Kg	NP	--	671 J	819 J	1230	1170	NA
Manganese	7439-96-5	mg/Kg	26000	--	92.4	59.4	101	93.4	NA
Mercury	7439-97-6	mg/Kg	46	--	0.057	0.056 U	0.059 U	0.058 U	NA
Nickel	7440-02-0	mg/Kg	22000	--	31.6	31.8	176	159	NA
Potassium	7440-09-7	mg/Kg	NP	--	728	1050	916	895	NA
Selenium	7782-49-2	mg/Kg	5800	--	1.01 U	1 U	1 U	1.01 U	NA

Table 3-10
Summary of Analytical Results
Reacted Ore Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 25	Bldg 25	Bldg 34	Bldg 34	Bldg 35
Material					Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore	Reacted Ore
Date					9/23/2020	9/23/2020	9/23/2020	9/23/2020	9/23/2020
EPASample ID					20081325	20081327	20081326	20081328	20081324
Analyte	CAS.NO	Units	RML ⁽¹⁾	Field Sample ID	WP-RO-02	WP-RO-04	WP-RO-03	WP-RO-05	WP-RO-01
				Type	FS	FD	FS	FD	FS
Silver	7440-22-4	mg/Kg	5800	--	1.01 U	1 U	0.809 J	0.754 J	NA
Sodium	7440-23-5	mg/Kg	NP	--	89000	93200	60000	67900	NA
Thallium	7440-28-0	mg/Kg	12	--	1.01 U	1 U	1 U	1.01 U	NA
Vanadium	7440-62-2	mg/Kg	5800	--	123 J	134 J	32	33.1	NA
Zinc	7440-66-6	mg/Kg	350000	--	339	427	227	225	NA
Wet Chemistry									
Cyanide	57-12-5	mg/Kg	150	--	7.04	10.3	0.496 J	0.712 J	0.852 U
Anions by Ion Chromatography									
Fluoride	16984-48-8	mg/Kg	47000	--	3230	2490	621	596	577

Notes:

⁽¹⁾ Removal Management Levels (RMLs) for industrial soil are based on a 10⁻⁴ risk level for carcinogens and a Hazard Quotient of 1 for non-carcinogens.

Screening levels from EPA Regional Removal Management Levels for Chemicals (May 2020) are risk-based concentrations derived from standardized equations combining exposure assumptions with toxicity data from the Superfund program's hierarchy.

Detected results are in bold type.

Highlighted cells indicates results that exceed at least one of the listed RMLs.

— = Not Applicable

mg/Kg = milligrams per kilogram

ug/Kg = micrograms per kilogram

CAS = Chemical Abstracts Service

FD = Field Duplicate

FS = Field Sample

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

SVOCs = Semi-Volatile Organic Compounds, EPA Method 8270D by GC/MS

TAL Metals = Target Analyte List Metals, EPA Method 6010C (ICP-AES) and 7471 (CVAA)

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Cyanide by Method 9014B

Flouride by Method 9056A

Table 3-11
Summary of Analytical Results
Alumina, Mixed Alumina, Reacted Ore TCLP Samples And Fish Toxicity Test
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Alumina	Bldg 32	ReactedOre
Matrix					Alumina	Mixed Alumina	Solid
Date					10/7/2020	12/3/2020	10/7/2020
EPA Sample ID					20081336	20081351	20081335
Field Sample ID					WP-RO-07	WP-AI-01	WP-RO-06
Analyte	CAS.NO	Units	TCLP	Type	FS	FS	FS
TCLP Metals							
Arsenic	7440-38-2	mg/L	5	--	NA	0.04 U	NA
Barium	7440-39-3	mg/L	100	--	NA	0.0991	NA
Cadmium	7440-43-9	mg/L	1	--	NA	0.0152	NA
Chromium	7440-47-3	mg/L	5	--	NA	0.096	NA
Lead	7439-92-1	mg/L	5	--	NA	0.0509	NA
Mercury	7439-97-6	mg/L	0.2	--	NA	0.0004 U	NA
Selenium	7782-49-2	mg/L	1	--	NA	0.04 U	NA
Silver	7440-22-4	mg/L	5	--	NA	0.004 U	NA
TCLP SVOCs (SW8270D)							
1,4-Dichlorobenzene	106-46-7	mg/L	7.5	--	NA	0.0092 U	NA
2,4,5-Trichlorophenol	95-95-4	mg/L	400	--	NA	0.0046 U	NA
2,4,6-Trichlorophenol	88-06-2	mg/L	2	--	NA	0.0046 U	NA
2,4-Dinitrotoluene	121-14-2	mg/L	0.13	--	NA	0.0092 U	NA
2-Methylphenol	95-48-7	mg/L	200	--	NA	0.0046 U	NA
3 & 4-Methylphenol	84989-04-8	mg/L	NP	--	NA	0.0046 U	NA
Cresols, Total	1319-77-3	mg/L	200	--	NA	0.0185 U	NA
Hexachlorobenzene	118-74-1	mg/L	0.13	--	NA	0.0046 U	NA
Hexachlorobutadiene	87-68-3	mg/L	0.5	--	NA	0.0046 U	NA
Hexachloroethane	67-72-1	mg/L	3	--	NA	0.0046 U	NA
Nitrobenzene	98-95-3	mg/L	2	--	NA	0.0028 U	NA
Pentachlorophenol	87-86-5	mg/L	100	--	NA	0.0924 U	NA
Pyridine	110-86-1	mg/L	5	--	NA	0.0462 U	NA
Standard Fish Toxicity Test							
Dangerous Waste Designation ⁽¹⁾	DWD	Toxicity	NP	--	Non-Toxic	Non-Toxic	Non-Toxic

Notes

⁽¹⁾ Washington State Department of Ecology Dangerous Waste Regulations, Chapter 173-303 WAC Method 80-12

Detected results are in bold type.

Yellow highlight indicates a result that exceeds at least one of the TCLP Regulatory Levels.

— = Not Applicable

CAS = Chemical Abstracts Service

EPA = United States Environmental Protection Agency

mg/L = milligrams per Liter

SVOCs = Semi-Volatile Organic Compounds, EPA Method 8270D by GC/MS

Metals = EPA Method 6010C (ICP-AES) and 7471 (CVAA)

TCLP = Toxicity Characteristic Leaching Procedure (40 CFR 261.24) Regulatory Level

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-12
Summary of Analytical Results
Mixed Alumina PCB Sample
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Building					Bldg 32
Date					12/3/2020
EPA Sample ID					20081351
Field Sample ID					WP-AI-01
Matrix					Mixed Alumina
Analyte	CAS.NO	Units	AL	Type	FS
PCBs (SW8082)					
Aroclor 1016	12674-11-2	mg/Kg	NP	--	0.0627 U
Aroclor 1221	11104-28-2	mg/Kg	NP	--	0.125 U
Aroclor 1232	11141-16-5	mg/Kg	NP	--	0.0627 U
Aroclor 1242	53469-21-9	mg/Kg	NP	--	0.0627 U
Aroclor 1248	12672-29-6	mg/Kg	NP	--	0.0627 U
Aroclor 1254	11097-69-1	mg/Kg	NP	--	0.0627 U
Aroclor 1260	11096-82-5	mg/Kg	NP	--	0.0627 U
Aroclor 1262	37324-23-5	mg/Kg	NP	--	0.0627 U
Aroclor 1268	11100-14-4	mg/Kg	NP	--	3.63
Total PCB ⁽¹⁾	1336-36-3	mg/Kg	50	--	3.63

Notes

Detected results are in bold type.

-- = Not Applicable

⁽¹⁾ The regulatory unit for PCB concentrations in any substance pursuant to TSCA Regulations

AL = Action Level

CAS = Chemical Abstracts Service

FS = Field Sample

mg/Kg = milligrams per kilogram

PCBs = Polychlorinated Biphenyls (PCBs), EPA Method 8082A by GC/ECD

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-13
Summary of Analytical Results
Transformer Oil and AST Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Date					11/21/2020	11/21/2020	11/21/2020	11/21/2020	11/21/2020	11/21/2020
Sample ID					20081342	20081343	20081344	20081345	20081346	20081347
Field Sample ID					DR-TO-01	DR-TO-02	DR-TO-03	DR-TO-04	DR-TO-05	DR-TO-06
Analyte	CAS.NO	Units	AL	Type	FS	FD	FS	FS	FS	FS
PCBs (SW8082A)										
Aroclor 1016	12674-11-2	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1221	11104-28-2	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1232	11141-16-5	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1242	53469-21-9	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1248	12672-29-6	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1254	11097-69-1	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1260	11096-82-5	mg/Kg	NP	--	1.3 U	1.2 U	2.7	0.89 J	1.3 U	1.2
Aroclor 1262	37324-23-5	mg/Kg	NP	--	1.3 U	1.2 U	1.1 U	1.1 U	1.3 U	1.2 U
Aroclor 1268	11100-14-4	mg/Kg	NP	--	0.21 J	0.2 J	1.1 U	1.1 U	1.3 U	1.2 U
Total PCB ⁽¹⁾	1336-36-3	mg/Kg	50	--	0.21 J	0.2 J	2.7	0.89 J	1.3 U	1.2

Notes

Detected results are in bold type.

-- = Not Applicable

⁽¹⁾ The regulatory unit for PCB concentrations in any substance pursuant to TSCA Regulations

% = percent

AL = Action Level

CAS = Chemical Abstracts Service

FD = Field Duplicate

FS = Field Sample

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

mg/Kg = milligrams per kilogram

NP = Not published

PCBs = Polychlorinated Biphenyls (PCBs), EPA Method 8082A by GC/ECD

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Table 3-14
Summary of Analytical Results
Perimeter Air Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Analyte							Asbestos and other Fibers
CAS NO.							AOF
Units							Fibers/cc
Action Level							0.01
EPA Sample ID	Field Sample ID	Building	Location	Work Performed/ Location	Date	Volume (L)	Results
20081003	RS-AIR-PT-003	Bldg 34	2020-07-30 SB6640	Bldg 34	7/30/2020	1027.3	0.0026 U
20081004	RS-AIR-PT-004	Bldg 34	2020-07-30 SB6639	Bldg 34	7/30/2020	1009.5	0.0027 U
20081008	RS-AIR-PT-008	Bldg 34	RS-AIR-008	Bldg 34	7/31/2020	3702.8	0.0007 U
20081009	RS-AIR-PT-009	Bldg 34	RS-AIR-009	Bldg 34	7/31/2020	4472.7	0.0007
20081013	RS-AIR-PT-013	Bldg 34	2020-08-01 SB6640	Bldg 34	8/1/2020	4675.6	0.0032
20081014	RS-AIR-PT-014	Bldg 34	2020-08-01 SB6639	Bldg 34	8/1/2020	4348.5	0.0007
20081019	RS-AIR-PT-019	Bldg 34	RS-AIR-019	Bldg 34	8/1/2020	3502.8	0.0008
20081027	RS-AIR-PT-027	Bldg 34	2020-08-03 SB6639	Bldg 34	8/3/2020	5778.9	0.0005
20081028	RS-AIR-PT-028	Bldg 34	2020-08-03 SB6638	Bldg 34	8/3/2020	6097.4	0.0005
20081029	RS-AIR-PT-029	Bldg 34	2020-08-03 SB6640	Bldg 34	8/3/2020	5360.7	0.0006
20081030	RS-AIR-PT-030	Bldg 34	2020-08-03 SB6641	Bldg 34	8/3/2020	4811.7	0.0008
20081038	RS-AIR-PT-038	SB6640	2020-08-04 SB6640	SB6640	8/4/2020	5952.2	0.0005 U
20081039	RS-AIR-PT-039	SB6639	2020-08-04 SB6639	SB6639	8/4/2020	5663.8	0.0005 U
20081040	RS-AIR-PT-040	SB6638	2020-08-04 SB6638	SB6638	8/4/2020	4071.6	0.0007 U
20081048	RS-AIR-PT-048	Bldg 24	2020-08-05 SB6639	SB6639, western end of bldg 24 (southern side)	8/5/2020	6180.1	0.0004 U
20081049	RS-AIR-PT-049	Bldg 34	2020-08-05 SB6638	SB6638, eastern end of Bldg 34, northern side	8/5/2020	4328.4	0.0006 U
20081050	RS-AIR-PT-050	Bldg 34	2020-08-05 SB6640	SB6640 eastern end of Bldg 34, southern side	8/5/2020	5182.3	0.0005 U
20081052	RS-AIR-PT-052	Bldg 34	2020-08-06 SB6640	SB6640 north of Bldg 34, western end	8/6/2020	5724	0.0007
20081053	RS-AIR-PT-053	Bldg 34	2020-08-06 SB6638	SB6638 north of Bldg 34, eastern end	8/6/2020	5281.7	0.0005 U
20081054	RS-AIR-PT-054	Bldg 34	2020-08-06 SB6639	SB6639 south of Bldg 34, eastern end	8/6/2020	5284	0.0006
20081056	22052-001	Bldg 34	2020-08-06 Bldg34	IRS Area Air Sample, Bldg 34 E side, N Ext Wall, upwind	8/6/2020	798.6	0.0034 U
20081057	22052-002	Bldg 34	2020-08-06 Bldg34	IRS Area Air Sample, Bldg 34 E side, N Ext Wall, downwind	8/6/2020	625.9	0.0043 U
20081058	22052-007	Bldg 34	2020-08-06 Bldg34	IRS Area Air Sample, Bldg 34 E side, N Ext Wall, upwind	8/6/2020	772.2	0.0035 U
20081059	22052-008	Bldg 34	2020-08-06 Bldg34	IRS Area Air Sample, Bldg 34 E side, N Ext Wall, downwind	8/6/2020	594.4	0.0045 U
20081068	RS-AIR-PT-056	Bldg 34	2020-08-07 SB7535	SB7535, Bldg 34	8/7/2020	5525.7	0.0005 U
20081069	RS-AIR-PT-057	Bldg 34	2020-08-07 SB6638	SB6638, Bldg 34	8/7/2020	5830.1	0.0005 U
20081070	RS-AIR-PT-058	Bldg 34	2020-08-07 SB6640	SB6640, Bldg 34	8/7/2020	5466.4	0.0005 U
20081071	RS-AIR-PT-059	Bldg 34	2020-08-07 SB6639	SB6639, Bldg 34	8/7/2020	4173.9	0.0006 U
20081082	RS-AIR-PT-061	Bldg 34	2020-08-08 SB6640	SB6640, Bldg 34	8/8/2020	4044.4	0.0007 U
20081083	RS-AIR-PT-062	Bldg 34	2020-08-08 SB6638	SB6638, Bldg 34	8/8/2020	4278.3	0.0006 U
20081084	RS-AIR-PT-063	Bldg 34	2020-08-08 SB6639	SB6639, Bldg 34	8/8/2020	3925	0.0007 U
20081085	RS-AIR-PT-064	Bldg 34	2020-08-08 SB7535	SB7535, Bldg 34	8/8/2020	3566.9	0.0008 U

November 2021

Table 3-14
Summary of Analytical Results
Perimeter Air Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

							Analyte	Asbestos and other Fibers
							CAS NO.	AOF
							Units	Fibers/cc
							Action Level	0.01
EPA Sample ID	Field Sample ID	Building	Location	Work Performed/ Location	Date	Volume (L)	Results	
20081095	RS-AIR-PT-066	Bldg 34	2020-08-10 SB7944	SB7944, West End of Bldg 34, south 300ft	8/10/2020	5641.9	0.0007	
20081096	RS-AIR-PT-067	Bldg 34	2020-08-10 SB6640	SB6640, West End of Bldg 34, north 200 ft	8/10/2020	5920.8	0.0005 U	
20081097	RS-AIR-PT-068	Bldg 34	2020-08-10 SB6638	SB6638, East End of Bldg 34, north 300 ft	8/10/2020	5774.6	0.0009	
20081098	RS-AIR-PT-069	Bldg 34	2020-08-10 SB6639	SB6639, East End of Bldg 34, south 200 ft	8/10/2020	5156.4	0.0005 U	
20081102	22052-032	Bldg 34	2020-08-10 Bldg34	Buring 34, middle of north wall, upwind	8/10/2020	815.1	0.0033 U	
20081103	22052-033	Bldg 34	2020-08-10 Bldg34	Buldg 34, west side of north wall, downwind	8/10/2020	633.8	0.0043 U	
20081109	22052-039	Bldg 34	2020-08-10 Bldg34	Buring 34, middle of north wall, upwind	8/10/2020	831.6	0.0032 U	
20081110	22052-040	Bldg 34	2020-08-10 Bldg34	Buldg 34, west side of north wall, downwind	8/10/2020	625.9	0.0043 U	
20081118	22052-048	Bldg 34	2020-08-11 Bldg34	Bldg 34, North Side near lean-to	8/11/2020	742.5	0.0036 U	
20081124	22052-054	Bldg 34	2020-08-11 Bldg34	Bldg 34, North Side near lean-to	8/11/2020	894.3	0.003 U	
20081134	RS-AIR-PT-071	Bldg 34	2020-08-11 Bldg34	SB7944, West end, bldg. 34, 300' S.	8/11/2020	5252.6	0.0009	
20081135	RS-AIR-PT-072	Bldg 34	2020-08-11 Bldg34	SB6640, West end, bldg. 34, 200' N.	8/11/2020	5663.8	0.0011	
20081136	RS-AIR-PT-073	Bldg 34	2020-08-11 Bldg34	SB6638, East end, Bldg 34, 300' N.	8/11/2020	5679.9	0.0005 U	
20081137	RS-AIR-PT-074	Bldg 34	2020-08-11 Bldg34	SB6639, East end, bldg 34, 300' S.	8/11/2020	5461.4	0.0006	
20081139	RS-AIR-PT-076	Bldg 34	2020-08-11 Bldg34	SB7944, West End of Bldg 34, south 300ft	8/12/2020	4772.5	0.0006 U	
20081140	RS-AIR-PT-077	Bldg 34	2020-08-11 Bldg34	SB6640, West End of Bldg 34, north 300 ft	8/12/2020	4737.2	0.0006 U	
20081141	RS-AIR-PT-078	Bldg 34	2020-08-11 Bldg34	SB6638, East End of Bldg 34, south 300 ft	8/12/2020	4513.2	0.0006 U	
20081142	RS-AIR-PT-079	Bldg 34	2020-08-11 Bldg34	SB6639, East End of Bldg 34, north 200 ft	8/12/2020	4278.9	0.0006 U	
20081159	RS-AIR-PT-081	Bldg 34	2020-08-13 SB7944	W end bldg 34	8/13/2020	5206.272	0.0005	
20081160	RS-AIR-PT-082	Bldg 36	2020-08-13 SB6640	W of bldg 36 by 1000'	8/13/2020	5002.904	0.0005 U	
20081161	RS-AIR-PT-083	Bldg 36	2020-08-13 SB6638	E end bldg 36 300'S	8/13/2020	5020.6385	0.0005 U	
20081162	RS-AIR-PT-084	Bldg 36	2020-08-13 SB6639	E end bldg 36 400'N	8/13/2020	4802.889	0.0006 U	
20081164	22052-080	Bldg 19G	2020-08-13 Building 19G	Building 19G	8/13/2020	752.4	0.0036 U	
20081165	22052-081	Bldg 36	2020-08-13 Building 36	Building 19G	8/13/2020	716.1	0.0038 U	
20081166	22052-084	Bldg 19G	2020-08-13 Building 19G	Building 19G	8/13/2020	947.1	0.0028 U	
20081167	22052-086	Bldg 36	2020-08-13 Building 36	Building 36	8/13/2020	867.9	0.0031 U	
20081179	RS-AIR-PT-086	Bldg 36	2020-08-14 SB6649	1000' W of Bldg 36	8/14/2020	4895.3	0.0006 U	
20081180	RS-AIR-PT-087	Bldg 36	2020-08-14 SB6638	700' E of Bldg 36 and 100' N	8/14/2020	4812.3	0.0006	
20081181	RS-AIR-PT-088	Bldg 36	2020-08-14 SB6639	800' E of Bldg 36 and 200' S	8/14/2020	4809.6	0.0006 U	
20081182	RS-AIR-PT-089	Bldg 52	2020-08-14 SB7944	300' SW of SW corner of Bldg 52	8/14/2020	4248.4	0.0006 U	
20081199	22052-094	Bldg 36	2020-08-14 Alley-way between buildings 36 and 32A	Alley-way between buildings 36 and 32A	8/14/2020	983.4	0.0027 U	

Table 3-14
Summary of Analytical Results
Perimeter Air Samples
Former Kaiser Smelter TCRA
Mead, Spokane County, Washington

Analyte							Asbestos and other Fibers
CAS NO.							AOF
Units							Fibers/cc
Action Level							0.01
EPA Sample ID	Field Sample ID	Building	Location	Work Performed/ Location	Date	Volume (L)	Results
20081200	22052-100	Bldg 36	2020-08-14 Alley-way between buildings 36 and 32A	Alley-way between buildings 36 and 32A	8/14/2020	460.8	0.0058 U
20081203	RS-AIR-PT-091	SB7944	2020-08-15 SB7944		8/15/2020	5099.63	0.0008
20081204	RS-AIR-PT-092	SB6640	2020-08-15 SB6640		8/15/2020	5094.159	0.0005
20081205	RS-AIR-PT-093	SB6638	2020-08-15 SB6638		8/15/2020	5184.915	0.0007
20081206	RS-AIR-PT-094	SB6639	2020-08-15 SB6639		8/15/2020	4783.19	0.0009
20081208	RS-AIR-PT-096	SB7944	2020-08-17 SB7944		8/17/2020	4750.962	0.0006 U
20081209	RS-AIR-PT-097	SB6640	2020-08-17 SB6640		8/17/2020	4687.62	0.0006 U
20081210	RS-AIR-PT-098	SB6638	2020-08-17 SB6638		8/17/2020	4518.23	0.0008
20081211	RS-AIR-PT-099	SB6639	2020-08-17 SB6639		8/17/2020	4513.11	0.0009
20081216	22052-110	Bldg 53	2020-08-15 Building 53	Inside of Building 53 West Side Center	8/15/2020	940.5	0.0029 U
20081274	22052-154	Bldg 32SC	2020-09-03 Bldg32SC	Bldg 32SC North End	9/3/2020	740.9	0.0036 U
20081278	22052-158	Bldg 32A	2020-09-03 Bldg 32A	Bldg 32A - Northwest side of Building in alleyway	9/3/2020	2991.5	0.0009 U
20081280	22052-160	Bldg 32SC	2020-09-03 Bldg32SC	Bldg 32SC North End	9/3/2020	837	0.0032 U
20081283	22052-163	Bldg 32A	2020-09-03 Bldg 32A	Bldg 32A - Northwest side of Building in alleyway	9/3/2020	877.3	0.0031 U
20081295	22052-170	Bldg 32	2020-09-09 Bldg32	Center of Building 32	9/9/2020	688.2	0.0039 U
20081296	22052-172	Bldg 32	2020-09-09 Bldg32	North End of Building 32 Center	9/9/2020	657.2	0.0041 U
20081297	22052-174	Bldg 32	2020-09-09 Bldg32	Centrer of Building 32	9/9/2020	864.9	0.0031 U
20081298	22052-176	Bldg 32	2020-09-09 Bldg32	North End of Building 32 Center	9/9/2020	824.6	0.0033 U
20081311	22052-182	Bldg 32	2020-09-10 Bldg32	Building 32 - Middle Section - TSI Glove Bag and Wrap TSI	9/10/2020	691.3	0.0039 U
20081312	22052-184	Bldg 32	2020-09-10 Bldg32	Building 32,North End - Siding and Roofing Removal, Mechaincal Means	9/10/2020	688.2	0.0039 U
20081313	22052-186	Bldg 32	2020-09-10 Bldg32	Building 32 - Middle Section - TSI Glove Bag and Wrap TSI	9/10/2020	843.2	0.0032 U
20081314	22052-188	Bldg 32	2020-09-10 Bldg32	Building 32,North End - Siding and Roofing Removal, Mechaincal Means	9/10/2020	840.1	0.0032 U
20081315	22052-192	Blank	2020-09-10 Blank	Blank	9/10/2020	691.3	0.0039 U
20081316	22052-193	Blank	2020-09-10 Blank	Blank	9/10/2020	688.2	0.0039 U

Notes

Detected results are in bold type.

Highlighted cells indicate results greater than the action level.

* Analyzed by Phase Contrast Microscopy (PCM) for asbestos and other fibers

EPA = United States Environmental Protection Agency

fibers/cc = fibers per cubic centimeter

L = Liters

OAF = Asbestos and Other Fibers

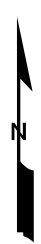
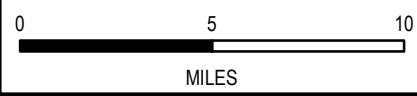


Legend:

● Site Location

Source:
 Background: ESRI World Street Map (2021)
 Inset Background: ESRI Ocean Basemap (2021)

SSID: 10RK
TO No./Subtask No.: 68HE0721F0003





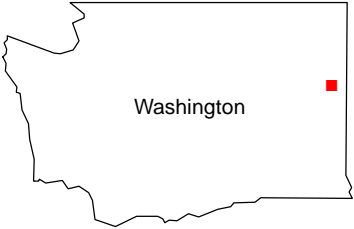
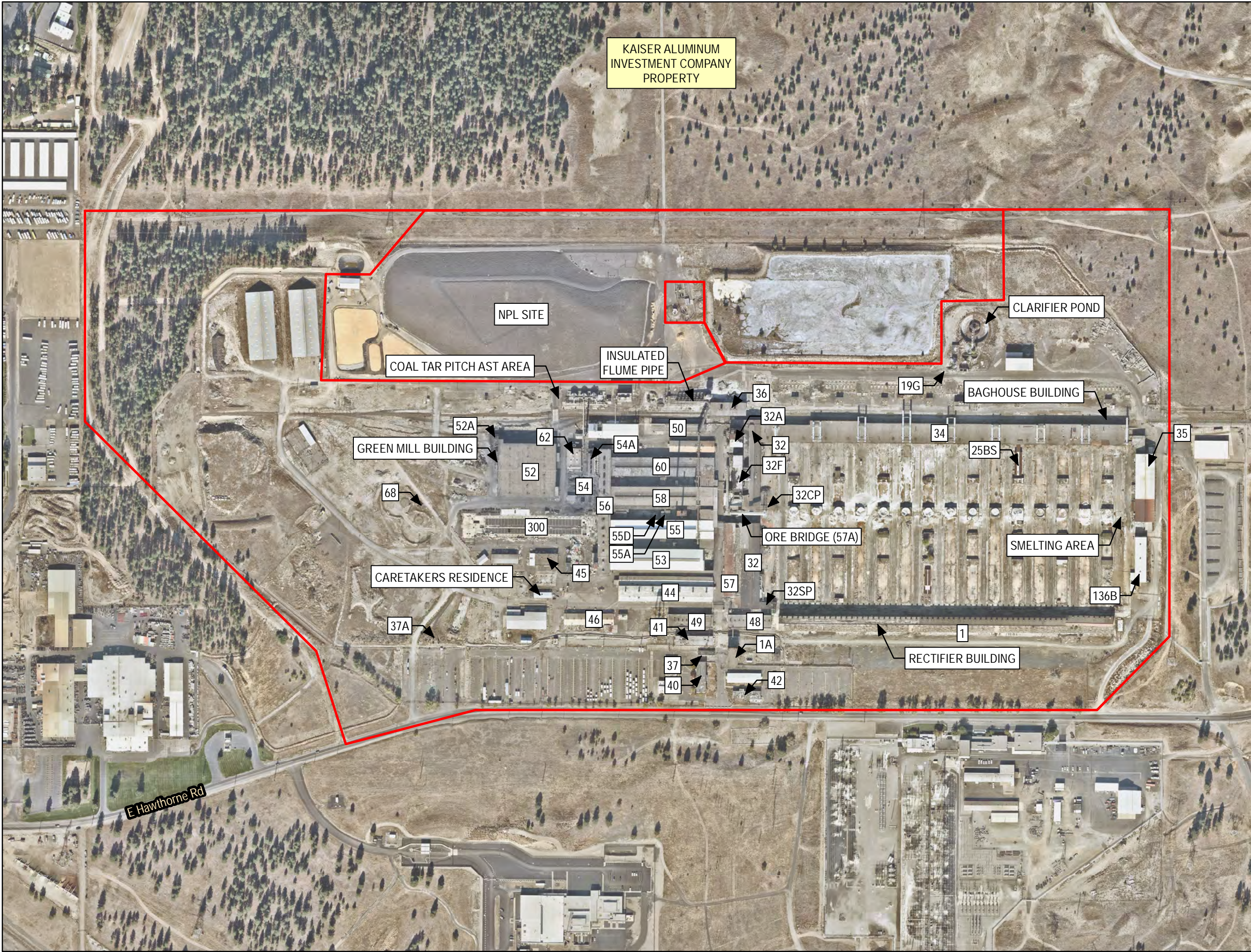
US EPA REGION 10



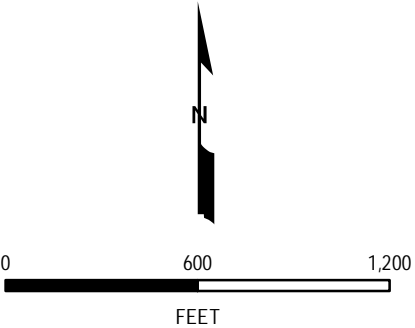
Weston Solutions, Inc.
START V

FIGURE 1-1
SITE LOCATION MAP
 FORMER KAISER SMELTER TCRA
 2111 E HAWTHORNE ROAD
 MEAD, SPOKANE COUNTY, WA

 NOVEMBER 2021



- LEGEND
- 52 Building No.
 - Property Boundary
- NPL Site - Kaiser Aluminum - Mead
Works Potliner Superfund Cleanup Site

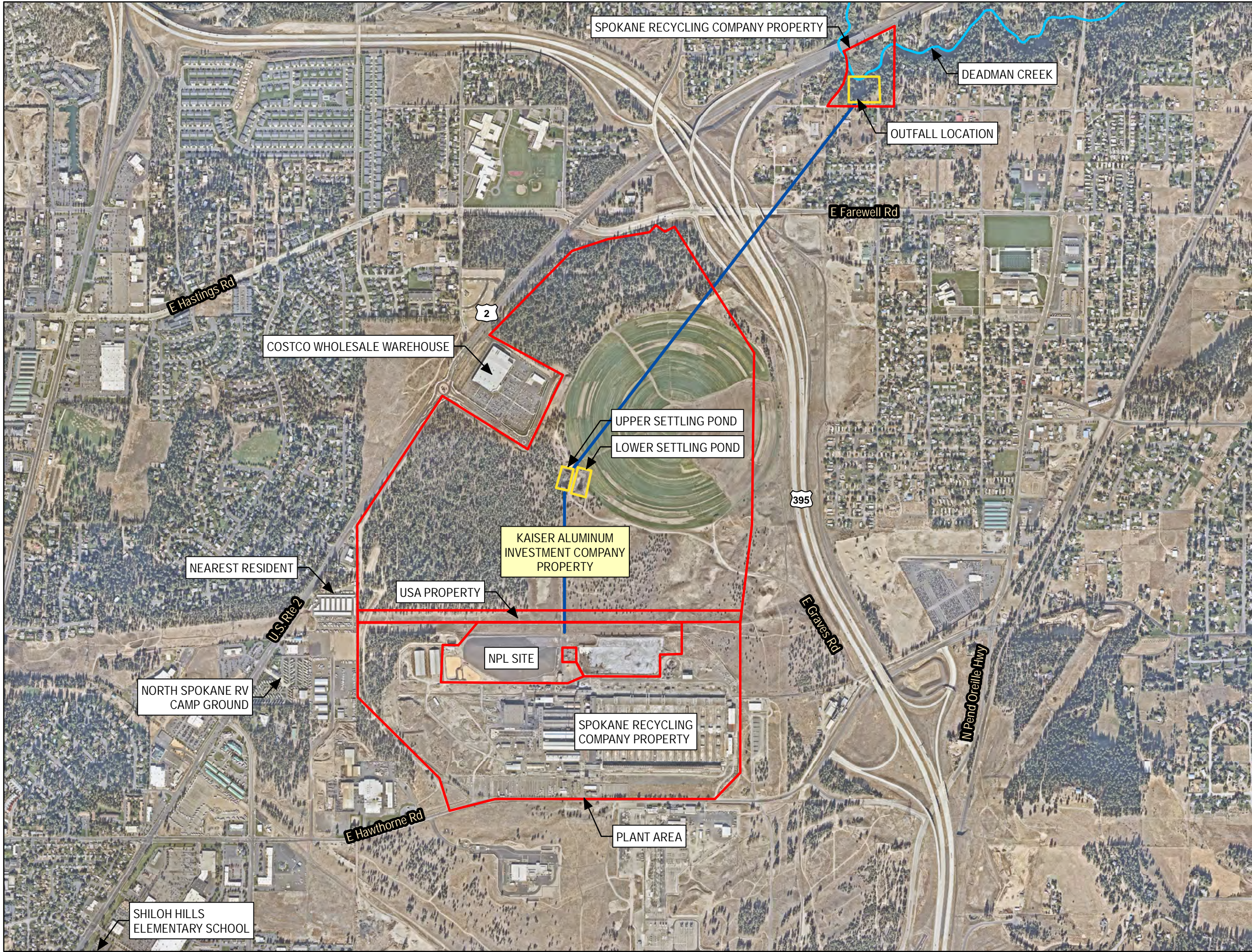


Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021

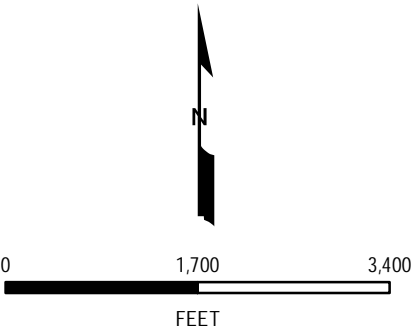
SSID: 10RK
TO No./Subtask No.: 68HE0721F0003



FIGURE 2-2
SITE PLAN
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021



- LEGEND
- Deadman Creek
 - Underground Aqueducts
 - Property Boundary
 - Settling Ponds / Outfall Location



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021
SSID: 10RK
TO No/Subtask No.: 68HE0721F0003

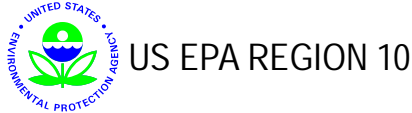
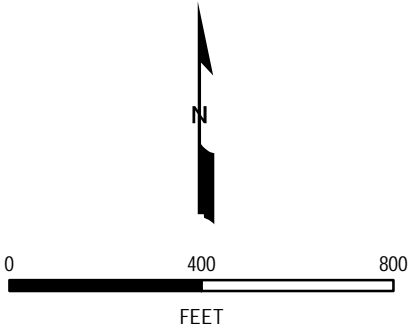


FIGURE 2-1
SITE AREA MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021



- LEGEND
- 52 Building No.
 - Area Where Robertson Siding Identified and Removed (Decision Unit 1)
 - Property Boundary
- NPL Site - Kaiser Aluminum - Mead Works Potliner Superfund Cleanup Site



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021
SSID: 10RK
TO No./Subtask No.: 68HE0721F0003



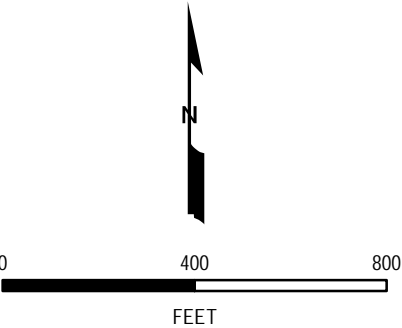
FIGURE 3-1
ROBERTSON SIDING
REMOVAL MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021

Bulding Location	Robertson Siding Removal (sq. ft)	Bulding Location	Robertson Siding Removal (sq. ft)
32	4046	1A	12584
34	90270	32A	13624
36	6860	32CP	390
50	540	32F	2598
52	44989	32SP	1235
53	1710	37F	6850
55	21750	52A	1600
56	1200	55/53	16240
57	21076	56/54	8880
58	24278	57A	684
60	27322	Breezeway	1200
19G	1400	Ore Bridge	7168



- LEGEND
- Robertson Ventilators Removed (Decision Unit 1)
 - 52 Building No.
 - Property Boundary

NPL Site - Kaiser Aluminum - Mead Works Potliner Superfund Cleanup Site



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021
SSID: 10RK
TO No./Subtask No.: 68HE0721F0003



FIGURE 3-2
ROBERTSON VENTILATORS
REMOVAL MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021

Building Location	Robertson Ventilators Removed
54	10
56	6
44	7
48	2
49	7
1	55
34	17
36	2
32A	1
32	4
68	1



Washington

LEGEND

52 Building No.

Area Where Thermal Insulation (TSI) Material Removed (Decision Unit 2)

Property Boundary

NPL Site - Kaiser Aluminum - Mead Works Potliner Superfund Cleanup Site

0 500 1,000

FEET

Source:
Site Boundary: Georeferenced Aerial (ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021

SSID: 10RK
TO No/Subtask No.: 68HE0721F0003

US EPA REGION 10

Weston Solutions, Inc.
START V

FIGURE 3-3
THERMAL SYSTEMS INSULATION
REMOVAL MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021

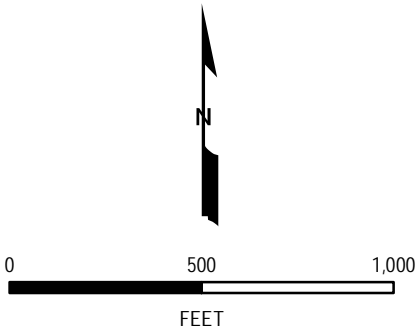
Buliding Location	TSI Insulation Removed (sq. ft)	Buliding Location	TSI Insulation Removed (sq. ft)
32	3003	49	409
32A	174	50	258
32SP	28	55A	30
34	3153	55D	30
37	12	56/54A	747
40	330	57	380
41	886	58	1132
42	230	60	120
44	1296	62	378
45	55	46	58
2 Tank Farm Pipe Bridges	329	48	682
Entrance Pipe Bridge	696	--	--



LEGEND

- Alumina Piles
- 52 Building No.
- Alumina Staging Area
- Green Coke/Coal Tar
- Reacted Ore
- Property Boundary

NPL Site - Kaiser Aluminum - Mead Works Potliner Superfund Cleanup Site



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021

SSID: 10RK
TO No./Subtask No.: 68HE0721F0003

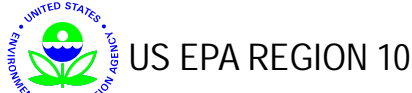
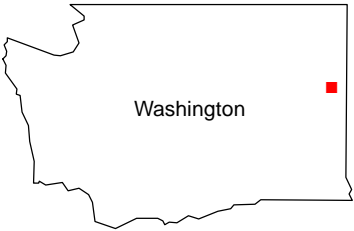


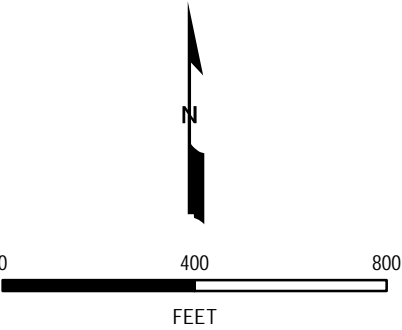
FIGURE 3-4
WASTE PILE REMOVAL MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021

Material	Designation	Location	Volume Removed/ Stockpiled Onsite (CY)
Alumina	Solid Waste	32, South	10558 (Stockpiled)
Mixed Alumina	Solid Waste	32, North	1726 (Stockpiled)
Reacted Ore	Solid Waste	32, 35, 34, 25BS, Outside	3616
Green Coke	Solid Waste	Bldg 52	1932
Green Coke	Solid Waste	Bldg 53	1388
Green Coke	Solid Waste	Bldg 300	68
Green Coke	WT02	Bldg 52	1932
Green Coke/ Coal Tar	WT02/ACM	ASTs, Bldg 54, Bldg 52	1184



- LEGEND
- Cleaned Catch Basin
 - Property Boundary

NPL Site - Kaiser Aluminum - Mead
Works Potliner Superfund Cleanup Site



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021

SSID: 10RK
TO No./Subtask No.: 68HE0721F0003

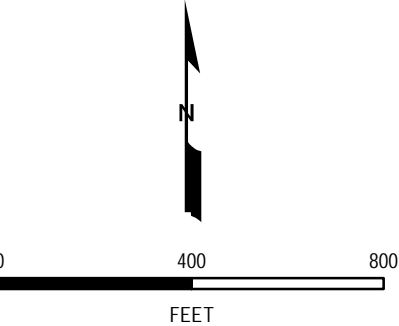


FIGURE 3-5
CATCH BASIN CLEANOUT MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021



- LEGEND
- Air Monitoring Location
 - Building No.
 - Property Boundary

NPL Site - Kaiser Aluminum - Mead
Works Potliner Superfund Cleanup Site



Source:
Site Boundary: Georeferenced Aerial
(ESRI World Imagery 2021)
Background: © Nearmap Imagery, 2021
SSID: 10RK
TO No/Subtask No.: 68HE0721F0003



FIGURE 3-6
AIR MONITORING
LOCATION MAP
FORMER KAISER SMELTER TCRA
2111 E HAWTHORNE ROAD
MEAD, SPOKANE COUNTY, WA
NOVEMBER 2021

APPENDIX B
DIGITAL PHOTOGRAPHS

Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 1	Date: 07/30/2020
Photo Coordinates	
Lat	47.755603
Long	-117.372581
Direction Photo Taken: Southeast	
Description: Site-walk with EPA, ERRS, and START prior to field activities.	



Photo No. 2	Date: 07/30/2020
Photo Coordinates	
Lat	47.755567
Long	-117.370811
Direction Photo Taken: Southeast	
Description: START setting up air monitoring while ERRS completes preparations for Robertson Siding removal demonstration.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
---	---	---

Photo No. 3	Date: 07/30/2020
Photo Coordinates	
Lat	47.755669
Long	-117.370942
Direction Photo Taken: East	
Description: ERRS prepping for Robertson Siding removal demonstration by removing large debris and laying out plastic sheeting.	



Photo No. 4	Date: 07/31/2020
Photo Coordinates	
Lat	47.755689
Long	-117.371253
Direction Photo Taken: Northeast	
Description: ERRS removing first panel of Robertson Siding.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 5	Date: 07/31/2020
Photo Coordinates	
Lat	47.755639
Long	-117.370797
Direction Photo Taken: Northwest	
Description: Robertson Siding removal demonstration using excavator and water mister.	



Photo No. 6	Date: 07/31/2020
Photo Coordinates	
Lat	47.755389
Long	-117.371369
Direction Photo Taken: North	
Description: EPA and START discussing Robertson Siding removal techniques and potential improvements.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 7	Date: 07/31/2020
Photo Coordinates	
Lat	47.755372
Long	-117.370881
Direction Photo Taken: Northwest	
Description: EPA and START discussing Robertson Siding removal techniques during removal of panels.	



Photo No. 8	Date: 07/31/2020
Photo Coordinates	
Lat	47.760433
Long	-117.388358
Direction Photo Taken: Southeast	
Description: View of Command Post located in main parking lot of Kaiser.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 9	Date: 08/01/2020
Photo Coordinates	
Lat	47.755775
Long	-117.373986
Direction Photo Taken: West	
Description: Stormwater drain covered in debris located near Building 34, Bay 18.	



Photo No. 10	Date: 08/01/2020
Photo Coordinates	
Lat	47.7557
Long	-117.372156
Direction Photo Taken: West	
Description: Air monitoring and perimeter air sampling activities.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
11

Date:
08/01/2020

Photo Coordinates

Lat 47.755689

Long -117.371917

Direction Photo Taken:
Northwest

Description:

ERRS improving panel removal techniques.



Photo No.
12

Date:
08/01/2020

Photo Coordinates

Lat 47.755494

Long -117.371575

Direction Photo Taken:
North

Description:

ERRS wrapping waste roll-off bins.



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
---	---	---

Photo No. 13	Date: 08/01/2020
Photo Coordinates	
Lat	47.755556
Long	-117.374275
Direction Photo Taken: North	
Description: Example of detritus and debris covering the ground by Building 34, Bay 17.	



Photo No. 14	Date: 08/01/2020
Photo Coordinates	
Lat	47.755783
Long	-117.375167
Direction Photo Taken: Object	
Description: Close up view of Robertson Siding panels.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 15	Date: 08/01/2020
Photo Coordinates	
Lat	47.755722
Long	-117.375625
Direction Photo Taken: South	
Description: Detritus and debris covering storm drain near Building 34, Bay 10.	



Photo No. 16	Date: 08/01/2020
Photo Coordinates	
Lat	47.755842
Long	-117.375969
Direction Photo Taken: East	
Description: Loosely secured storm drain located near Building 34, Bay 8. Example of common several slip, trip, and fall hazards at the Site.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 17	Date: 08/01/2020
Photo Coordinates	
Lat	47.755822
Long	-117.376419
Direction Photo Taken: South	
Description: Example of typical detritus found on ground throughout Site.	



Photo No. 18	Date: 08/01/2020
Photo Coordinates	
Lat	47.755772
Long	-117.376792
Direction Photo Taken: West	
Description: Storm drain covered with debris located near Building 34, Bay 4.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 19	Date: 08/01/2020
Photo Coordinates	
Lat	47.755722
Long	-117.372986
Direction Photo Taken: West	
Description: ERRS clearing concrete pieces for Robertson Siding removal activities.	



Photo No. 20	Date: 08/01/2020
Photo Coordinates	
Lat	47.755497
Long	-117.372306
Direction Photo Taken: North	
Description: EPA and Northwest Demolition (NWD) discussing field activities.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 21	Date: 08/01/2020
Photo Coordinates	
Lat	47.756242
Long	-117.377564
Direction Photo Taken: South	
Description: One of several examples of graffiti found on structures throughout Site.	



Photo No. 22	Date: 08/01/2020
Photo Coordinates	
Lat	47.756153
Long	-117.375336
Direction Photo Taken: East	
Description: View of northern side of Building 34 prior to site activities.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 23	Date: 08/01/2020
Photo Coordinates	
Lat	47.756553
Long	-117.378478
Direction Photo Taken: Southeast	
Description: Example of reacted ore pile exposed to the elements.	



Photo No. 24	Date: 08/01/2020
Photo Coordinates	
Lat	47.756428
Long	-117.380767
Direction Photo Taken: Object	
Description: Loose coal tar spilling out of AST.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No. 25	Date: 08/01/2020
Photo Coordinates	
Lat	47.7559
Long	-117.381181
Direction Photo Taken: Southeast	
Description: Eastern side of Building 52.	



Photo No. 26	Date: 08/18/2020
Photo Coordinates	
Lat	47.755733
Long	-117.380836
Direction Photo Taken: South	
Description: Robertson Siding removal and dust suppression activities within courtyard of Buildings 58/60.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 27	Date: 08/18/2020
Photo Coordinates	
Lat	47.755506
Long	-117.380103
Direction Photo Taken: Southeast	
Description: Southern wall of Building 60.	

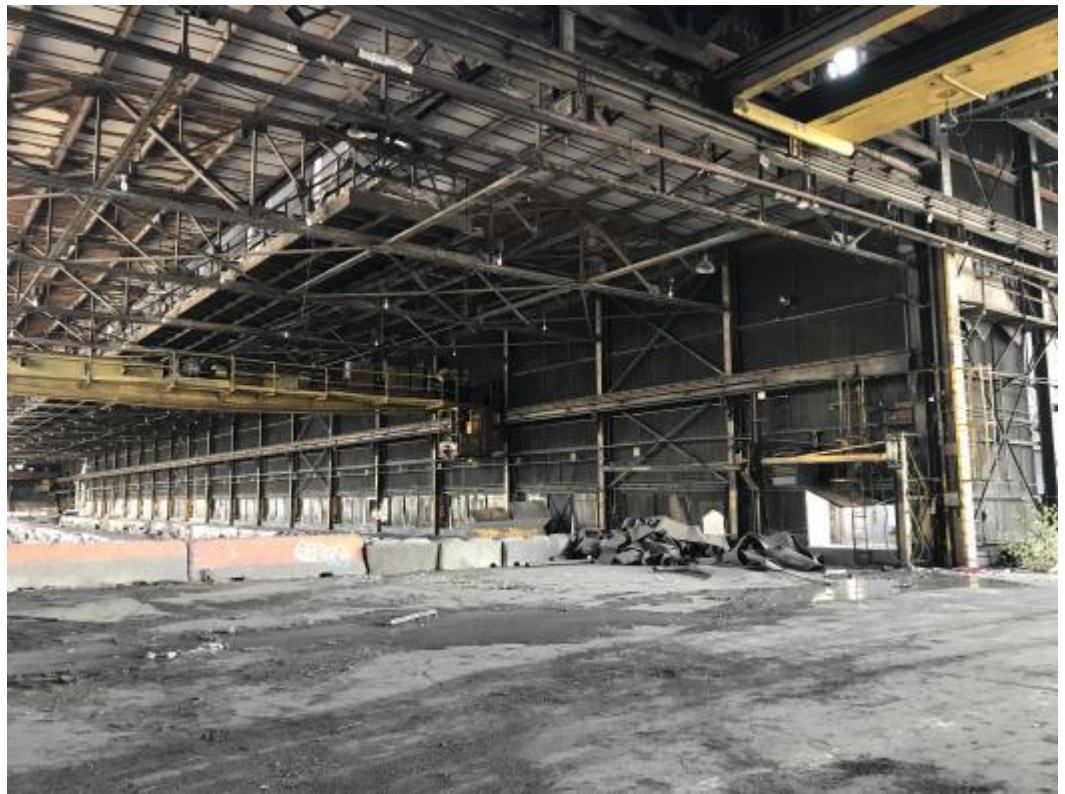


Photo No. 28	Date: 08/18/2020
Photo Coordinates	
Lat	47.755494
Long	-117.380081
Direction Photo Taken: 184.301788375559	
Description: Building 56, facing south.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
29

Date:
08/18/2020

Photo Coordinates

Lat 47.755742

Long -117.3795

Direction Photo Taken:

East

Description:

ERRS decontamination trailer.



Photo No.
30

Date:
08/18/2020

Photo Coordinates

Lat 47.755531

Long -117.378136

Direction Photo Taken:

Southeast

Description:

Robertson Siding removal preparations at Ore Bridge.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
31

Date:
08/18/2020

Photo Coordinates

Lat 47.755925

Long -117.378228

Direction Photo Taken:

North

Description:

Haul truck lined with plastic prior to accepting waste material.



Photo No.
32

Date:
08/18/2020

Photo Coordinates

Lat 47.755547

Long -117.378272

Direction Photo Taken:

Southeast

Description:

Robertson Siding removal activities at Ore Bridge.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
33

Date:
08/18/2020

Photo Coordinates

Lat 47.755081

Long -117.381814

Direction Photo Taken:
Northeast

Description:

Southwestern side of Building 52.



Photo No.
34

Date:
08/19/2020

Photo Coordinates

Lat 47.755353

Long -117.378486

Direction Photo Taken:
North

Description:

Lower half of Ore Bridge.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
35

Date:
08/19/2020

Photo Coordinates

Lat 47.758031

Long -117.381928

Direction Photo Taken:

North

Description:

Interior view of Building 60.

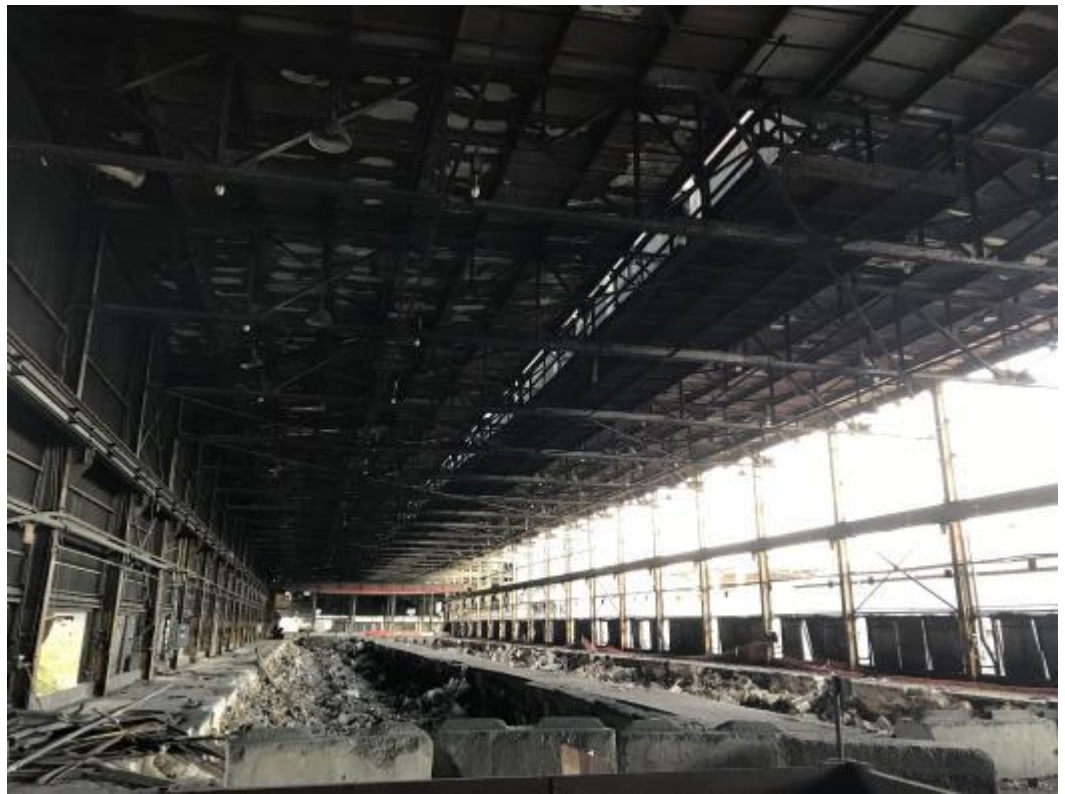


Photo No.
36

Date:
08/19/2020

Photo Coordinates

Lat 47.754947

Long -117.379631

Direction Photo Taken:

East

Description:

Courtyard between Building 55/58 prior to removal activities.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
37

Date:
08/19/2020

Photo Coordinates

Lat 47.755383

Long -117.378303

Direction Photo Taken:
Northwest

Description:

Site-walk with ERRS to discuss Site activities.



Photo No.
38

Date:
08/19/2020

Photo Coordinates

Lat 47.754714

Long -117.378647

Direction Photo Taken:
North

Description:

View of open stormwater catch basin prior to installation of new filter sock and grate.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
39

Date:
08/19/2020

Photo Coordinates

Lat 47.755992

Long -117.37825

Direction Photo Taken:

East

Description:

Water suppression as ERRS removes portion of ore bridge.



Photo No.
40

Date:
08/19/2020

Photo Coordinates

Lat 47.755822

Long -117.378106

Direction Photo Taken:

Southeast

Description:

Portion of Building 57 Robertson Siding panels removed. Lower half of ore bridge removed to access Building 57 panels.



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 41	Date: 08/19/2020
Photo Coordinates	
Lat	47.756581
Long	-117.385283
Direction Photo Taken: Northeast	
Description: Washington State Department of Ecology NPL site located along the northern boundary of the Kaiser TCRA Site.	



Photo No. 42	Date: 08/08/2020
Photo Coordinates	
Lat	47.757253
Long	-117.380256
Direction Photo Taken: South	
Description: View of reacted ore stockpile located within building 25BS prior to removal.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 43	Date: 08/20/2020
Photo Coordinates	
Lat	47.755694
Long	-117.378236
Direction Photo Taken: Northeast	
Description: Robertson Siding removal and dust suppression activities along exterior of Building 32A.	



Photo No. 44	Date: 08/21/2020
Photo Coordinates	
Lat	47.755561
Long	-117.378242
Direction Photo Taken: Northeast	
Description: Building 32A Robertson Siding removal.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
45

Date:
08/21/2020

Photo Coordinates

Lat 47.754178

Long -117.378119

Direction Photo Taken:
Northeast

Description:

Metal corrugated panels along the interior wall of Building 57.



Photo No.
46

Date:
08/21/2020

Photo Coordinates

Lat 47.754833

Long -117.379814

Direction Photo Taken:
Northwest

Description:

Removal of Robertson Siding along northern side of Building 55.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
47

Date:
08/21/2020

Photo Coordinates

Lat 47.755372

Long -117.378106

Direction Photo Taken:
Northeast

Description:

Building 32SC after removal of Robertson Siding.



Photo No.
48

Date:
08/22/2020

Photo Coordinates

Lat 47.752922

Long -117.377594

Direction Photo Taken:
Object / Ground

Description:

Example of used hypodermic needle discovered along sidewalk.



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 49	Date: 08/22/2020
Photo Coordinates	
Lat	47.754303
Long	-117.377289
Direction Photo Taken: East by Northeast	
Description: Site walk with ERRS to observe progress of Site activities.	



Photo No. 50	Date: 08/22/2020
Photo Coordinates	
Lat	47.754458
Long	-117.378189
Direction Photo Taken: Southeast	
Description: ERRS confirming that the corrugated metal panels along interior wall of Building 57 are not Robertson Siding.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No. 51	Date: 08/22/2020
Photo Coordinates	
Lat	47.755069
Long	-117.377411
Direction Photo Taken: West	
Description: View of upper portion of Ore Bridge.	



Photo No. 52	Date: 08/22/2020
Photo Coordinates	
Lat	47.755231
Long	-117.377647
Direction Photo Taken: South	
Description: Overview of Building 32 with vents intact and alumina piles.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
53

Date:
08/22/2020

Photo Coordinates

Lat 47.755328

Long -117.377808

Direction Photo Taken:
Southeast

Description:

View of alumina piles and Building 1 with vents intact.



Photo No.
54

Date:
08/22/2020

Photo Coordinates

Lat 47.755347

Long -117.377786

Direction Photo Taken:
Northeast

Description:

View of Building 32 with vents.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
55

Date:
08/22/2020

Photo Coordinates

Lat 47.755139

Long -117.378175

Direction Photo Taken:

South

Description:

Visible dust from high winds within alleyway between Building 32 and 58.



Photo No.
56

Date:
08/22/2020

Photo Coordinates

Lat 47.754847

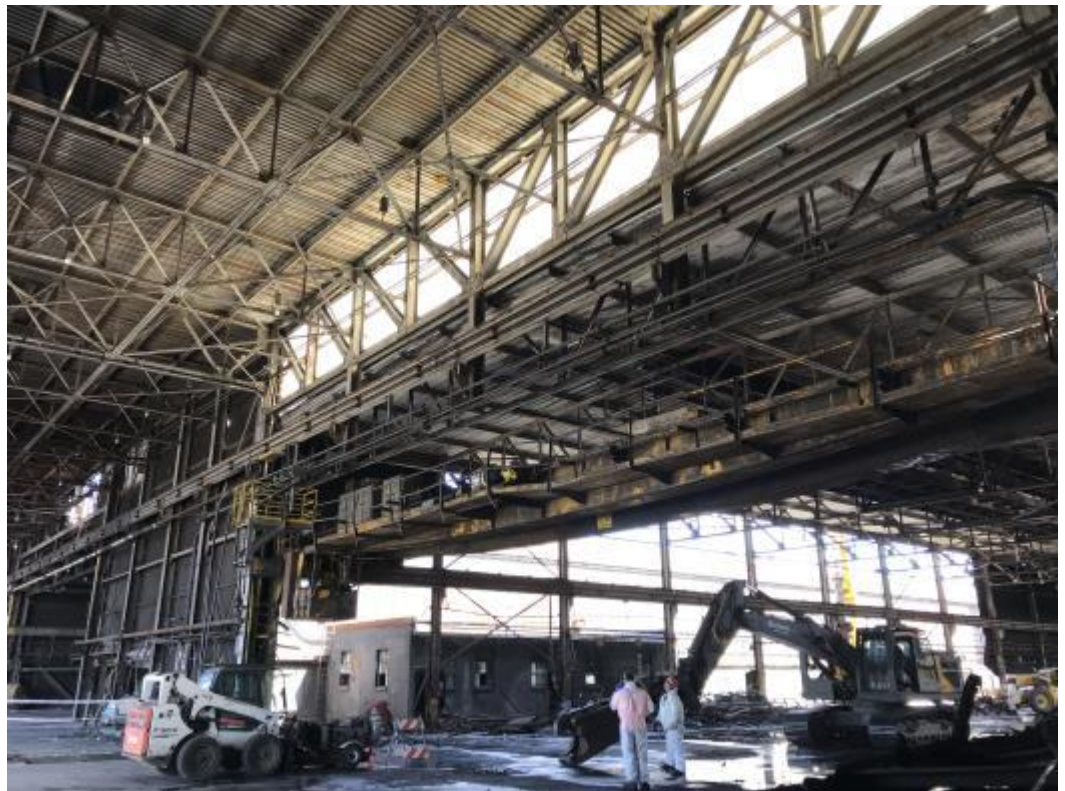
Long -117.380036

Direction Photo Taken:

Southwest

Description:

ERRS determining best way to remove Robertson Siding panels within courtyard of Building 58/55.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
57

Date:
08/24/2020

Photo Coordinates

Lat 47.754325

Long -117.377786

Direction Photo Taken:
Object

Description:

START sampling interior wall of Building 57 Robertson Siding.



Photo No.
58

Date:
08/25/2020

Photo Coordinates

Lat 47.754611

Long -117.378631

Direction Photo Taken:
West

Description:

Removal of Robertson Siding panels along northern and southern walls of Building 55.



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 59	Date: 08/25/2020
Photo Coordinates	
Lat	47.755283
Long	-117.38015
Direction Photo Taken: East	
Description: Courtyard of Building 60/58 prior to removal activities.	



Photo No. 60	Date: 08/25/2020
Photo Coordinates	
Lat	47.755078
Long	-117.380592
Direction Photo Taken: Northwest	
Description: Green coke, ACM material, refuse, and open pits discovered throughout footprint of former Building 54.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
---	---	---

Photo No. 61	Date: 08/25/2020
Photo Coordinates	
Lat	47.754856
Long	-117.380478
Direction Photo Taken: West by Northwest	
Description: Green coke, ACM material, refuse, and open pits discovered throughout footprint of former Building 54.	



Photo No. 62	Date: 08/25/2020
Photo Coordinates	
Lat	47.754558
Long	-117.378783
Direction Photo Taken: North	
Description: Long-reach excavator used to remove panels attached to tall buildings staged within courtyard of Buildings 55/58.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
63

Date:
08/25/2020

Photo Coordinates

Lat 47.754617

Long -117.379381

Direction Photo Taken:
Northeast

Description:

ERRS removing panels in courtyard of Building 55/58, eastern end.

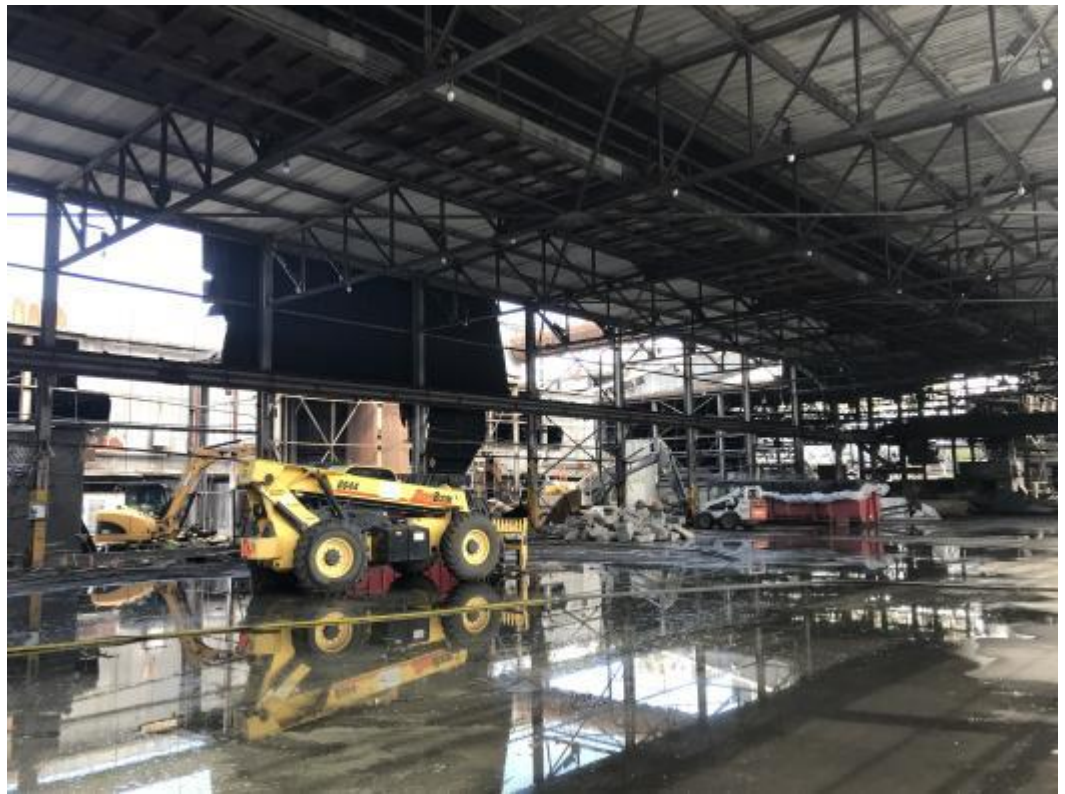


Photo No.
64

Date:
08/25/2020

Photo Coordinates

Lat 47.755122

Long -117.377394

Direction Photo Taken:
North

Description:

EPA and ERRS observing ventilators on Building 32A.



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
---	---	---

Photo No. 65	Date: 08/25/2020
Photo Coordinates	
Lat	47.755092
Long	-117.377914
Direction Photo Taken: East	
Description: Upper portion of Ore Bridge prior to removal activities.	



Photo No. 66	Date: 08/27/2020
Photo Coordinates	
Lat	47.7559
Long	-117.380211
Direction Photo Taken: East by Southeast	
Description: One of two outside pipe bridges that contain ACM TSI piping.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 67	Date: 08/28/2020
Photo Coordinates	
Lat	47.754922
Long	-117.378022
Direction Photo Taken: Northeast	
Description: EPA and ERRS conducting a planning meeting regarding removal of Robertson Siding panels attached to Ore Bridge.	



Photo No. 68	Date: 08/28/2020
Photo Coordinates	
Lat	47.76625
Long	-117.392533
Direction Photo Taken: East	
Description: Interior view of Building 32.	



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Photo No. 69	Date: 08/28/2020
Photo Coordinates	
Lat	47.755542
Long	-117.377389
Direction Photo Taken: Southeast	
Description: View from interior of Building 34 into Potline Area after removal of Robertson Siding.	



Photo No. 70	Date: 08/28/2020
Photo Coordinates	
Lat	47.755672
Long	-117.378525
Direction Photo Taken: West by Southwest	
Description: ERRS creating opening into Courtyard of Building 58/60 to provided improved access for equipment.	



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Photo No. 71	Date: 08/29/2020
Photo Coordinates	
Lat	47.764733
Long	-117.392272
Direction Photo Taken: Up	
Description: Mag tanks exposed to elements after removal of Robertson Siding.	



Photo No. 72	Date: 08/29/2020
Photo Coordinates	
Lat	47.755742
Long	-117.378456
Direction Photo Taken: East	
Description: Mag tanks and asbestos piping exposed to elements after Robertson Siding removal.	



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Photo No. 73	Date: 08/29/2020
Photo Coordinates	
Lat	47.755764
Long	-117.378417
Direction Photo Taken: Object	
Description: Asbestos piping tag from previous inspection.	



Photo No. 74	Date: 08/29/2020
Photo Coordinates	
Lat	47.755328
Long	-117.377869
Direction Photo Taken: North	
Description: Asbestos piping tag from previous inspection.	



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Photo No.
75

Date:
08/29/2020

Photo Coordinates

Lat 47.755803

Long -117.37735

Direction Photo Taken:
Northeast

Description:

View of degrading chemical containers and Robertson Siding along interior wall within the interior of Building 32SC.



Photo No.
76

Date:
08/29/2020

Photo Coordinates

Lat 47.753781

Long -117.376756

Direction Photo Taken:
Northeast

Description:

START inspecting air monitoring station and Viper.



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Photo No. 77	Date: 08/29/2020
Photo Coordinates	
Lat	47.756797
Long	-117.377525
Direction Photo Taken: South	
Description: START inspecting air monitoring station and Viper.	



Photo No. 78	Date: 08/29/2020
Photo Coordinates	
Lat	47.755939
Long	-117.380181
Direction Photo Taken: East	
Description: View of ERRS decontamination trailer.	



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Former Kaiser Smelter TCRA Report

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Project No.
20510.012.011.0008.20

Photo No.
79

Date:
08/29/2020

Photo Coordinates

Lat 47.757042

Long -117.380181

Direction Photo Taken:
North

Description:

Water truck staged for dust suppression prior to removal of ceiling in Building 32.



Photo No.
80

Date:
08/29/2020

Photo Coordinates

Lat 47.755828

Long -117.377617

Direction Photo Taken:
South

Description:

ERRS preparing Building 32 for ceiling removal by clearing the ground of all debris. Pallets of chemical containers and building materials associated with former Kaiser Smelter operations are staged along eastern wall to allow access for removal activities.



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Photo No. 81	Date: 08/29/2020
Photo Coordinates	
Lat	47.756181
Long	-117.379381
Direction Photo Taken: Southeast	
Description: Containers secured with plastic wrap, removed from Building 32SC, and placed in Building 51, out of the way of site activities.	



Photo No. 82	Date: 08/31/2020
Photo Coordinates	
Lat	47.755628
Long	-117.378028
Direction Photo Taken: Southeast	
Description: Long-reach excavator staged prior to removal of panels on Ore Bridge.	



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Former Kaiser Smelter TCRA Report

Site Location:
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Project No.
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Photo No.
83

Date:
08/31/2020

Photo Coordinates

Lat 47.75545

Long -117.37825

Direction Photo Taken:
East by Northeast

Description:

ERRS securing impacted supersacks and removing from Building 32A.



Photo No.
84

Date:
09/01/2020

Photo Coordinates

Lat 47.754575

Long -117.377167

Direction Photo Taken:
North

Description:

Long-reach excavator removing panels on upper portion of Ore Bridge within Potline Area.



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Photo No. 85	Date: 09/01/2020
Photo Coordinates	
Lat	47.754658
Long	-117.377022
Direction Photo Taken: Northwest	
Description: Long-reach excavator removing Robertson Siding panels on upper portion of Ore Bridge within potline area.	



Photo No. 86	Date: 09/01/2020
Photo Coordinates	
Lat	47.754772
Long	-117.376953
Direction Photo Taken: West	
Description: EPA and ERRS discussing removal techniques.	

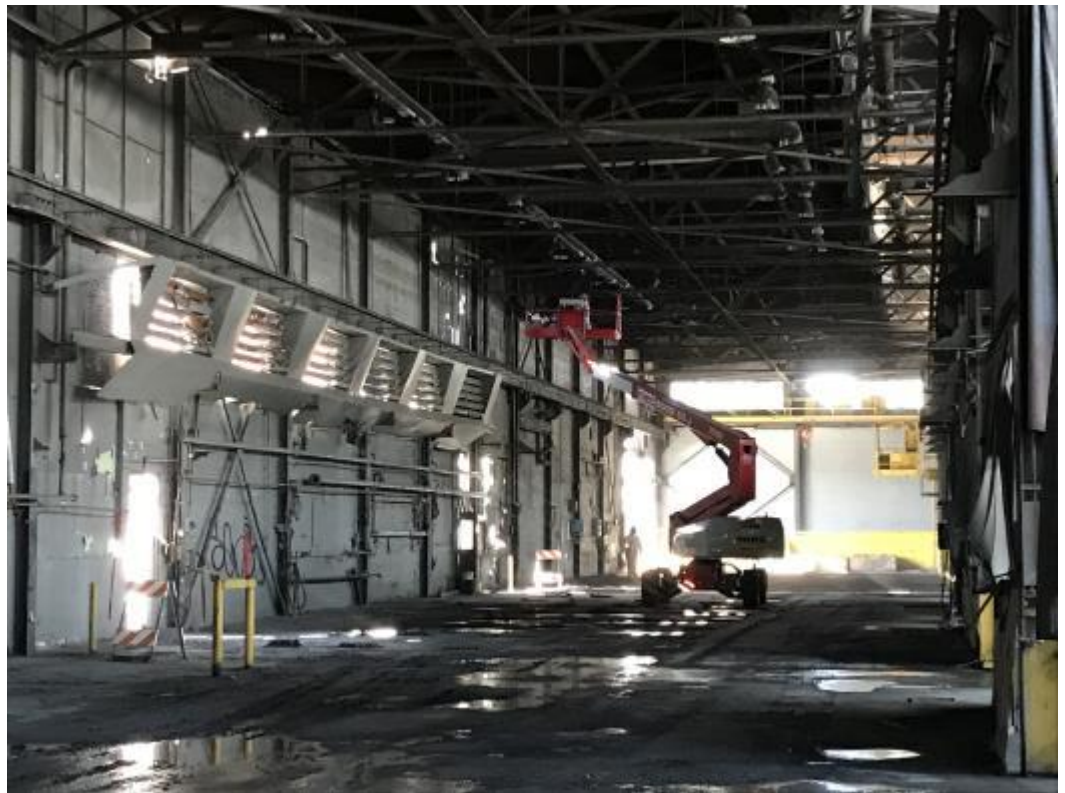


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Photo No. 87	Date: 09/01/2020
Photo Coordinates	
Lat	47.755275
Long	-117.377906
Direction Photo Taken: North	
Description: ERRS beginning removal of Robertson Siding along Building 32SC.	



Photo No. 88	Date: 09/01/2020
Photo Coordinates	
Lat	47.755128
Long	-117.377608
Direction Photo Taken: North by Northwest	
Description: ERRS removing mercury vapor lamps and PCB ballasts within Building 32 prior to TSI piping removal.	



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Photo No. 89	Date: 09/02/2020
Photo Coordinates	
Lat	47.752803
Long	-117.382233
Direction Photo Taken: North	
Description: Daily health and safety meeting with EPA, START, and ERRS.	



Photo No. 90	Date: 09/02/2020
Photo Coordinates	
Lat	47.754692
Long	-117.380403
Direction Photo Taken: Northwest	
Description: Building 32 prior to removal activities.	



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Photo No. 91	Date: 09/02/2020
Photo Coordinates	
Lat	47.756161
Long	-117.378433
Direction Photo Taken: East	
Description: ERRS staging area prior to ceiling removal in Building 32.	



Photo No. 92	Date: 09/02/2020
Photo Coordinates	
Lat	47.755817
Long	-117.377739
Direction Photo Taken: East by Southeast	
Description: ERRS removing mercury vapor lamps and PCB ballasts within Building 32 prior to TSI piping removal.	



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Photo No. 93	Date: 09/02/2020
Photo Coordinates	
Lat	47.755842
Long	-117.377594
Direction Photo Taken: North	
Description: Mercury vapor lamps staged after removal.	



Photo No. 94	Date: 09/02/2020
Photo Coordinates	
Lat	47.755944
Long	-117.377678
Direction Photo Taken: Object	
Description: Manufacturers tag located on PCB ballasts used with mercury vapor lamps.	



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Photo No.
95

Date:
09/03/2020

Photo Coordinates

Lat 47.753497

Long -117.378267

Direction Photo Taken:
Southeast

Description:

ERRS discussing removal methods for Robertson Siding attached to Building 1A.



Photo No.
96

Date:
09/03/2020

Photo Coordinates

Lat 47.753414

Long -117.3777

Direction Photo Taken:
West

Description:

Water truck performing dust suppression along paved roads.

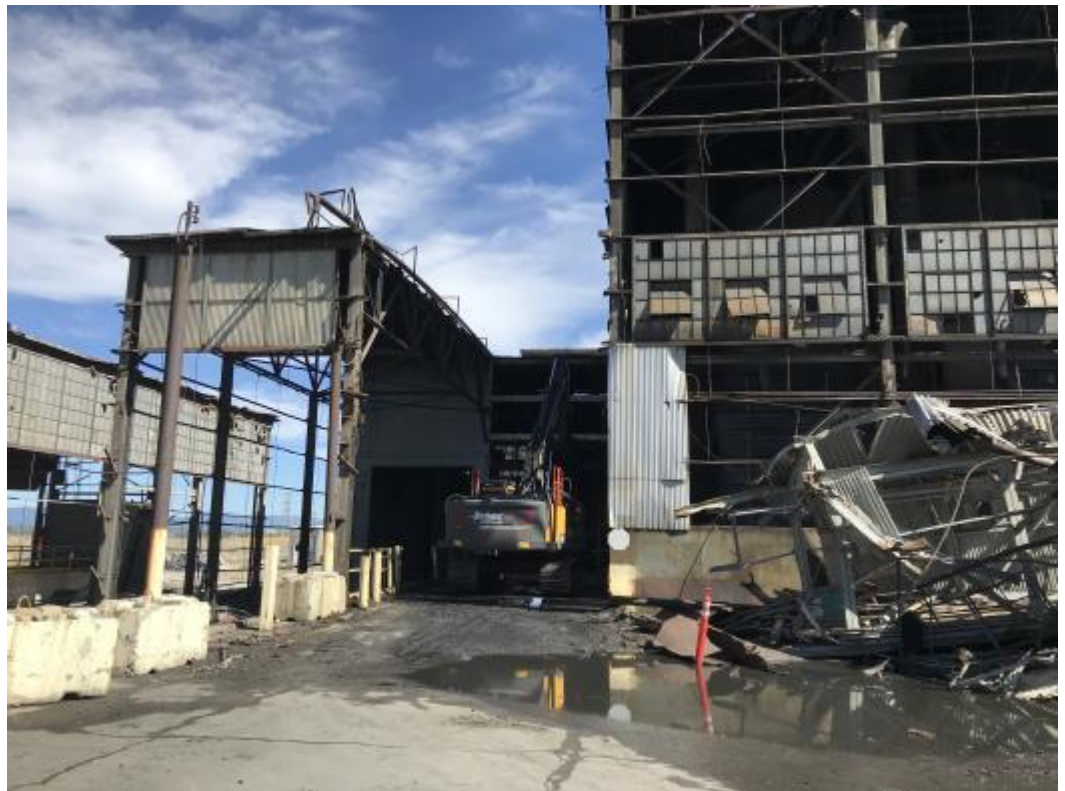


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Photo No. 97	Date: 09/03/2020
Photo Coordinates	
Lat	47.765925
Long	-117.393036
Direction Photo Taken: Southeast	
Description: ERRS performing dust suppression and removing Robertson Siding from Building 1A.	



Photo No. 98	Date: 09/03/2020
Photo Coordinates	
Lat	47.755969
Long	-117.37825
Direction Photo Taken: East	
Description: ERRS beginning ceiling removal within Building 32.	



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Photo No. 99	Date: 09/03/2020
Photo Coordinates	
Lat	47.755908
Long	-117.378394
Direction Photo Taken: East	
Description: ERRS observing ceiling removal at northern entryway to Building 32.	



Photo No. 100	Date: 09/03/2020
Photo Coordinates	
Lat	47.754597
Long	-117.380225
Direction Photo Taken: Northwest	
Description: Robertson Ventilators located on roof of Building 54 prior to removal.	



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Photo No.
101

Date:
09/03/2020

Photo Coordinates

Lat 47.75505

Long -117.380181

Direction Photo Taken:
Northeast

Description:

Horizontal vents along Buildings 55, 58, and 60.



Photo No.
102

Date:
09/04/2020

Photo Coordinates

Lat 47.753483

Long -117.377594

Direction Photo Taken:
Southwest

Description:

Robertson Siding removal along Building 1A.



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Photo No.
103

Date:
09/04/2020

Photo Coordinates

Lat 47.7547

Long -117.380669

Direction Photo Taken:
Northwest

Description:

Open oven pits within footprint of former Building 300.



Photo No.
104

Date:
09/08/2020

Photo Coordinates

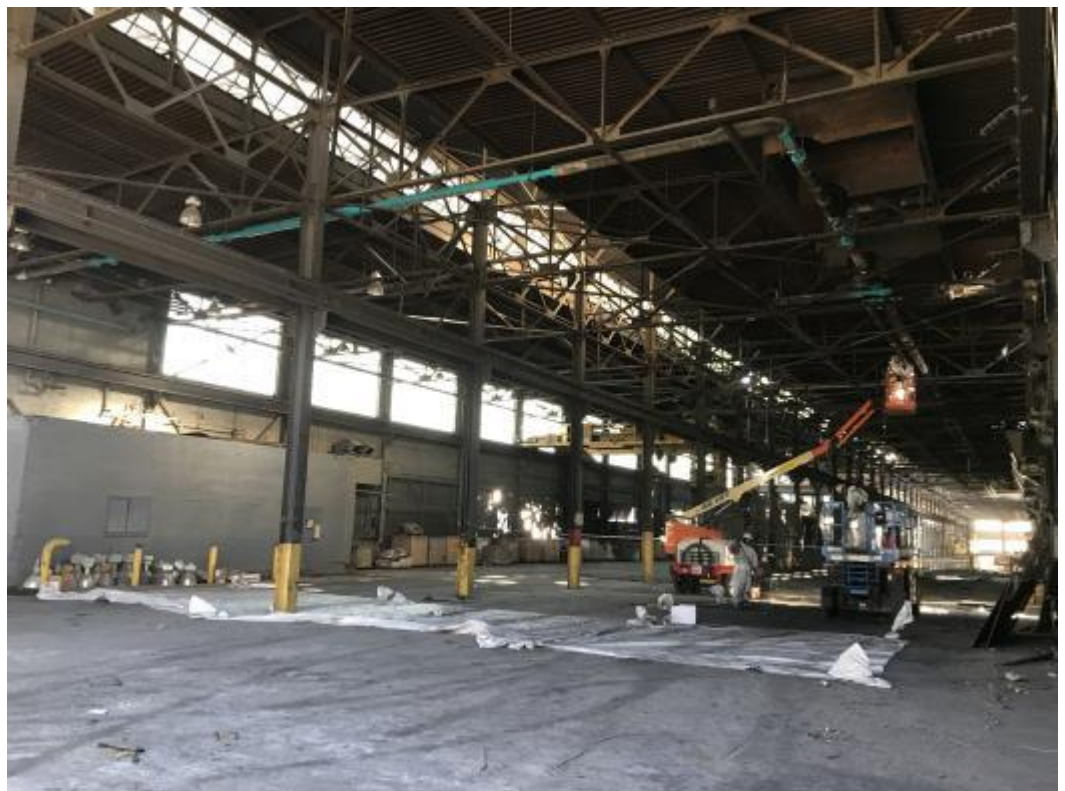
Lat 47.756053

Long -117.377761

Direction Photo Taken:
Southeast

Description:

ERRS prepping ACM TSI piping for removal in Building 32.

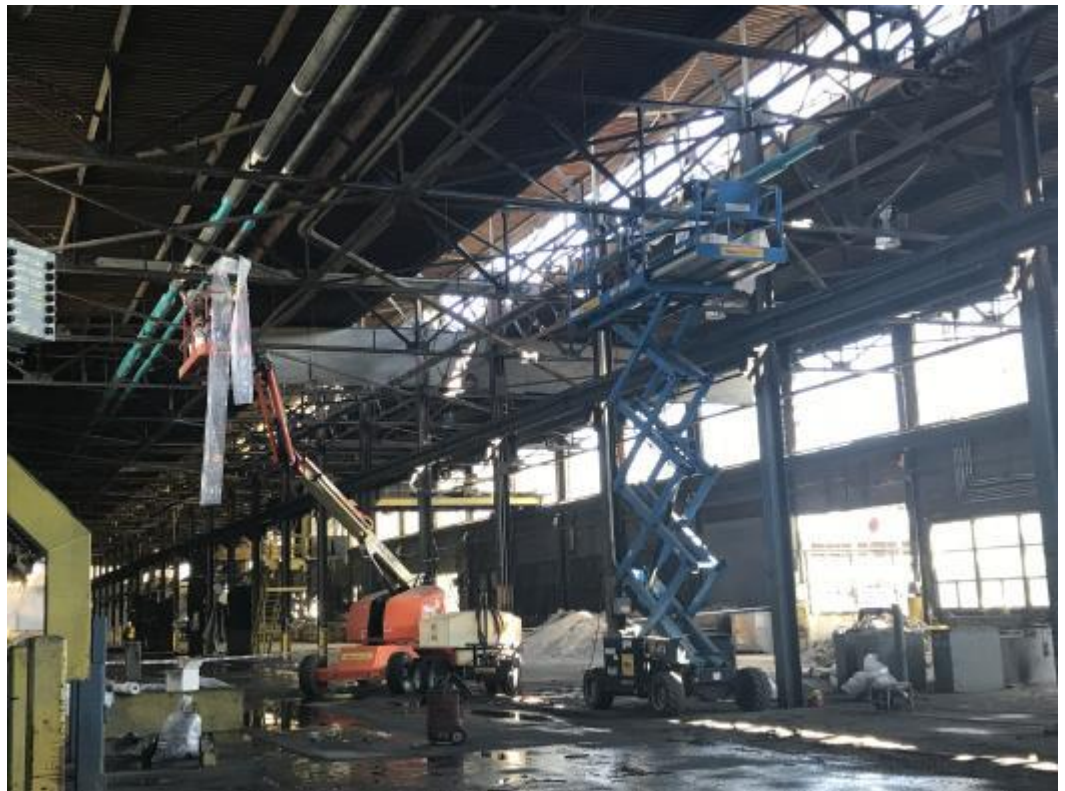


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Photo No. 105	Date: 09/08/2020
Photo Coordinates	
Lat	47.753503
Long	-117.378297
Direction Photo Taken: Southeast	
Description: View of Building 1A after removal of Robertson Siding. ERRS placed chain link fence along southern side of Building 1a and connected it to existing fencing to secure Site.	



Photo No. 106	Date: 09/09/2020
Photo Coordinates	
Lat	47.754722
Long	-117.377525
Direction Photo Taken: Northeast	
Description: ERRS glove-bagging ACM TSI piping for removal in Building 32.	



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Photo No. 107	Date: 09/09/2020
Photo Coordinates	
Lat	47.764533
Long	-117.392547
Direction Photo Taken: South	
Description: ACM TSI piping along ceiling prepared for removal.	



Photo No. 108	Date: 09/10/2020
Photo Coordinates	
Lat	47.754508
Long	-117.381081
Direction Photo Taken: Northwest	
Description: Dust flumes not associated with EPA Site activities are visible from neighboring properties.	



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Photo No. 109	Date: 09/10/2020
Photo Coordinates	
Lat	47.755928
Long	-117.377633
Direction Photo Taken: West	
Description: ERRS testing a removal technique for ACM TSI piping.	



Photo No. 110	Date: 09/10/2020
Photo Coordinates	
Lat	47.756011
Long	-117.377603
Direction Photo Taken: East by Southeast	
Description: ERRS testing a removal technique for ACM TSI piping.	



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Photo No. 111	Date: 09/11/2020
Photo Coordinates	
Lat	47.755975
Long	-117.377594
Direction Photo Taken: Southeast	
Description: START sampling Robertson Ventilators while ERRS is wrapping ACM TSI piping.	



Photo No. 112	Date: 09/23/2020
Photo Coordinates	
Lat	47.75515
Long	-117.380761
Direction Photo Taken: Southeast	
Description: One of several open pits around former Building 54.	



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Photo No. 113	Date: 09/23/2020
Photo Coordinates	
Lat	47.755225
Long	-117.380531
Direction Photo Taken: Southwest	
Description: EPA, START, and ERRS examining former Building 54 area and discussing best cleanup methods.	



Photo No. 114	Date: 09/23/2020
Photo Coordinates	
Lat	47.754897
Long	-117.3807
Direction Photo Taken: West	
Description: Unstable oven pits footprint of former Building 300.	



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Photo No.
115

Date:
09/23/2020

Photo Coordinates

Lat 47.753783

Long -117.378058

Direction Photo Taken:
South by Southwest

Description:

ERRS wrapping TSI pipe runs along Pipe Bridge.



Photo No.
116

Date:
09/23/2020

Photo Coordinates

Lat 47.754547

Long -117.377822

Direction Photo Taken:
North

Description:

TSI pipe runs along ceiling of Building 32 prepped for removal.



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Photo No. 117	Date: 09/25/2020
Photo Coordinates	
Lat	47.753453
Long	-117.3788
Direction Photo Taken: Object	
Description: ACM TSI piping within attic of Building 41.	



Photo No. 118	Date: 09/26/2020
Photo Coordinates	
Lat	47.753753
Long	-117.378417
Direction Photo Taken: Southeast	
Description: ERRS wrapping, glove-bagging, and removing ACM TSI piping along Pipe Bridge.	



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Photo No. 119	Date: 09/26/2020
Photo Coordinates	
Lat	47.753739
Long	-117.378189
Direction Photo Taken: East	
Description: ERRS wrapping, glove-bagging, and removing ACM TSI piping along Pipe Bridge.	



Photo No. 120	Date: 09/28/2020
Photo Coordinates	
Lat	47.755858
Long	-117.377761
Direction Photo Taken: South	
Description: ERRS clearing ground after removal of Building 32 ceiling.	



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Photo No. 121	Date: 09/30/2020
Photo Coordinates	
Lat	47.753583
Long	-117.378228
Direction Photo Taken: West	
Description: Building 49 was discovered to be structurally unstable which, led to the demolition of the roof to prevent collapsing during ACM removal activities.	



Photo No. 122	Date: 09/30/2020
Photo Coordinates	
Lat	47.753667
Long	-117.378564
Direction Photo Taken: Object	
Description: Wooden structural beam broken within Building 49.	



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Photo No. 123	Date: 09/30/2020
Photo Coordinates	
Lat	47.753833
Long	-117.378206
Direction Photo Taken: West	
Description: ERRS removing ACM TSI piping along exterior of Building 44.	



Photo No. 124	Date: 10/01/2020
Photo Coordinates	
Lat	47.765944
Long	-117.39415
Direction Photo Taken: West	
Description: Green coke discovered within northern section of Building 52.	



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Photo No. 125	Date: 10/01/2020
Photo Coordinates	
Lat	47.755425
Long	-117.381133
Direction Photo Taken: West	
Description: 55-gallon drums moved to allow easy access within Building 52.	



Photo No. 126	Date: 10/02/2020
Photo Coordinates	
Lat	47.754856
Long	-117.380439
Direction Photo Taken: Northwest	
Description: ERRS beginning consolidation of green coke in former Building 54.	



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Photo No.
127

Date:
10/02/2020

Photo Coordinates

Lat 47.755072

Long -117.380669

Direction Photo Taken:

North

Description:

ERRS beginning consolidation of green coke in former Building 54.



Photo No.
128

Date:
10/02/2020

Photo Coordinates

Lat 47.755825

Long -117.380644

Direction Photo Taken:

North

Description:

ACM TSI piping prepared for removal along Pipe Bridge.



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Photo No. 129	Date: 10/03/2020
Photo Coordinates	
Lat	47.755286
Long	-117.381097
Direction Photo Taken: Southwest	
Description: Drums contained green coke and coal tar.	



Photo No. 130	Date: 10/03/2020
Photo Coordinates	
Lat	47.755408
Long	-117.38205
Direction Photo Taken: Southwest	
Description: START and ERRS carefully removed lids of 55-gallon drum while using a PID meter. Drums contained green coke and coal tar.	



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Photo No. 131	Date: 10/05/2020
Photo Coordinates	
Lat	47.754856
Long	-117.380478
Direction Photo Taken: Northwest	
Description: ERRS consolidating green coke within former Building 54 and removing ACM TSI piping along Building 62.	



Photo No. 132	Date: 10/05/2020
Photo Coordinates	
Lat	47.7559
Long	-117.381019
Direction Photo Taken: East	
Description: ERRS preparing segments of ACM TSI piping with glove-bags for cutting.	



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Photo No. 133	Date: 10/08/2020
Photo Coordinates	
Lat	47.755592
Long	-117.377936
Direction Photo Taken: Northeast	
Description: Preparation for removal of Mag asbestos on ASTs.	



Photo No. 134	Date: 10/08/2020
Photo Coordinates	
Lat	47.7551
Long	-117.383142
Direction Photo Taken: Northeast	
Description: START marking supersack bags to identify material in bags for proper disposal.	



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Photo No.
135

Date:
10/08/2020

Photo Coordinates

Lat 47.744656

Long -117.378417

Direction Photo Taken:
Southeast

Description:

ERRS vacuuming green coke dust off of beams in Building 52 prior to removal of Robertson Siding.

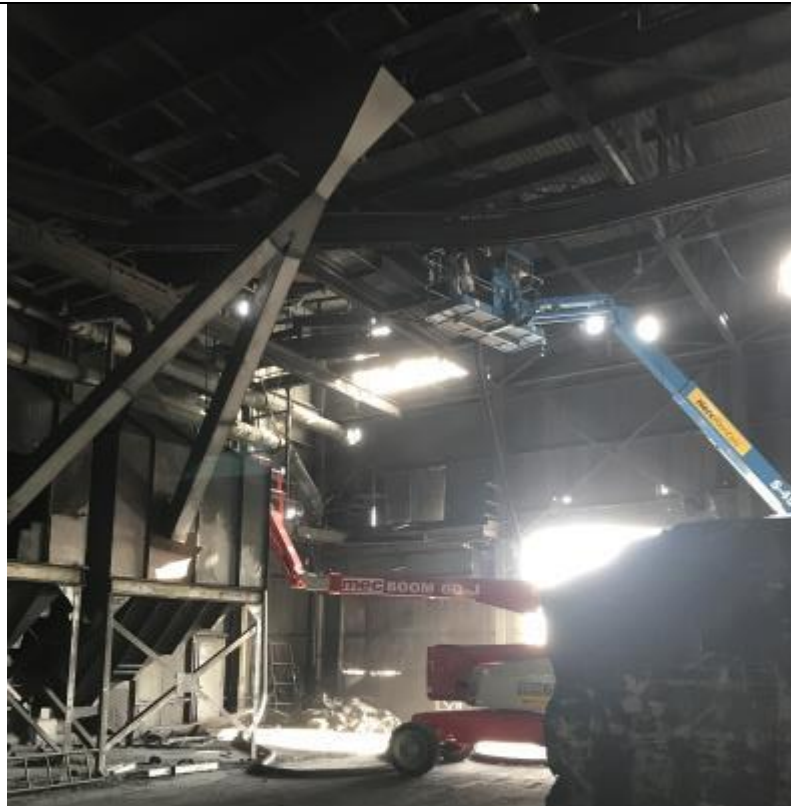


Photo No.
136

Date:
10/14/2020
0

Photo Coordinates

Lat 47.754569

Long -117.381133

Direction Photo Taken:
Object

Description:

START deploying Dusttrak air monitoring station.



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Photo No. 137	Date: 10/14/2020
Photo Coordinates	
Lat	47.756461
Long	-117.383208
Direction Photo Taken: Object	
Description: Dusttrack air monitoring station deployed northwest of Building 52.	



Photo No. 138	Date: 10/15/2020
Photo Coordinates	
Lat	47.756328
Long	-117.380928
Direction Photo Taken: Northeast	
Description: Coal tar pitch AST hazard signage and various containers.	



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Photo No.
139

Date:
10/20/2020

Photo Coordinates

Lat 47.755306

Long -117.379997

Direction Photo Taken:
East

Description:

Location of USTs left in place within the subsurface of Courtyard between Building 60/58.



Photo No.
140

Date:
10/21/2020

Photo Coordinates

Lat 47.753681

Long -117.378569

Direction Photo Taken:
Southeast

Description:

View of Building 49 after removal of roof due to safety concerns regarding structural instability. Roof was demolished to allow safe access to ACM TSI piping.



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Photo No.
141

Date:
10/21/2020

Photo Coordinates

Lat 47.753672

Long -117.378525

Direction Photo Taken:

West

Description:

View of Building 49 after removal of roof due to safety concerns regarding structural instability. Roof was demolished to allow safe access to ACM TSI piping.



Photo No.
142

Date:
10/21/2020

Photo Coordinates

Lat 47.753564

Long -117.378783

Direction Photo Taken:

Object

Description:

Building 49 roofing sampled for bulk asbestos.



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Photo No.
143

Date:
10/21/2020

Photo Coordinates

Lat 47.754689

Long -117.380622

Direction Photo Taken:
North

Description:

ERRS consolidating green coke within former Building 54 and placing ecology blocks around open pits for safety.



Photo No.
144

Date:
10/21/2020

Photo Coordinates

Lat 47.754783

Long -117.380744

Direction Photo Taken:
North

Description:

ERRS removing Robertson Siding panels from Building 52.



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Photo No. 145	Date: 10/21/2020
Photo Coordinates	
Lat	47.754586
Long	-117.380614
Direction Photo Taken: North	
Description: ERRS removing Robertson Siding panels from Building 52 and consolidating green coke within former Building 54.	



Photo No. 146	Date: 10/22/2020
Photo Coordinates	
Lat	47.755025
Long	-117.380989
Direction Photo Taken: Northwest	
Description: ERRS removing Robertson Siding panels from Building 52.	



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Photo No. 147	Date: 10/22/2020
Photo Coordinates	
Lat	47.754947
Long	-117.380889
Direction Photo Taken: Norhteast	
Description: ERRS consolidating green coke within former Building 54 and placing ecology blocks around open pits for safety.	



Photo No. 148	Date: 10/22/2020
Photo Coordinates	
Lat	47.755047
Long	-117.380675
Direction Photo Taken: Southeast	
Description: ERRS consolidating green coke within former Building 54 and placing ecology blocks around open pits for safety.	



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Photo No. 149	Date: 10/22/2020
Photo Coordinates	
Lat	47.755806
Long	-117.380944
Direction Photo Taken: Southeast	
Description: ERRS removing Robertson Siding panels and conducting dust suppression on Building 52.	



Photo No. 150	Date: 10/22/2020
Photo Coordinates	
Lat	47.755844
Long	-117.38115
Direction Photo Taken: Southwest	
Description: Best management practices were used while removing green coke from Building 52. Dust suppression activities also produced access water. A ditch was installed along northern side of Building 52 to collect excess water. After ditch was no longer needed, it was excavated and disposed as WT02 waste.	



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Photo No. 151	Date: 10/22/2020
Photo Coordinates	
Lat	47.755864
Long	-117.381203
Direction Photo Taken: Southeast	
Description: Best management practices were used while removing green coke from Building 52. Dust suppression activities also produced access water. A ditch was installed along northern side of Building 52 to collect excess water. After ditch was no longer needed, it was excavated and disposed as WT02 waste.	



Photo No. 152	Date: 10/22/2020
Photo Coordinates	
Lat	47.755967
Long	-117.381256
Direction Photo Taken: Southwest	
Description: Best management practices were used while removing green coke from Building 52. Dust suppression activities also produced access water. A ditch was installed along northern side of Building 52 to collect excess water. After ditch was no longer needed, it was excavated and disposed as WT02 waste.	



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Photo No. 153	Date: 10/22/2020
Photo Coordinates	
Lat	47.755744
Long	-117.377586
Direction Photo Taken: Northeast	
Description: ERRS preparing ACM TSI piping for removal within Building 32.	



Photo No. 154	Date: 10/22/2020
Photo Coordinates	
Lat	47.755981
Long	-117.378014
Direction Photo Taken: East	
Description: ASTs in 32A after completion of Mag insulation removal.	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
155

Date:
10/24/2020

Photo Coordinates

Lat 47.75525

Long -117.382644

Direction Photo Taken:
325.317016317016

Description:

Removal of Robertson Siding panels on Building 52.



Photo No.
156

Date:
10/27/2020

Photo Coordinates

Lat 47.755725

Long -117.382308

Direction Photo Taken:
Northeast

Description:

ERRS removing interior Robertson Siding panels within Building 52.



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Photo No. 157	Date: 10/29/2020
Photo Coordinates	
Lat	47.753911
Long	-117.380081
Direction Photo Taken: East	
Description: Sorting material within demolished Building 49.	



Photo No. 158	Date: 10/29/2020
Photo Coordinates	
Lat	47.755875
Long	-117.380914
Direction Photo Taken: West	
Description: Interior of Building 52 after removal of green coke.	



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Photo No. 159	Date: 10/29/2020
Photo Coordinates	
Lat	47.755261
Long	-117.376581
Direction Photo Taken: 120.618192698983	
Description: ERRS preparing structures for alumina removal.	



Photo No. 160	Date: 10/30/2020
Photo Coordinates	
Lat	47.756069
Long	-117.376281
Direction Photo Taken: 185.936157151627	
Description: One of several graffiti located throughout site.	



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Photo No. 161	Date: 10/30/2020
Photo Coordinates	
Lat	47.766339
Long	-117.394119
Direction Photo Taken: Southeast	
Description: Example of dust from high winds.	



Photo No. 162	Date: 10/31/2020
Photo Coordinates	
Lat	47.755622
Long	-117.373947
Direction Photo Taken: Northeast	
Description: ACM TSI piping in Building 32 staged for disposal.	



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Photo No. 163	Date: 10/31/2020
Photo Coordinates	
Lat	47.753856
Long	-117.376756
Direction Photo Taken: North	
Description: ERRS removing alumina off structures and consolidating for placement in Building 32.	



Photo No. 164	Date: 11/02/2020
Photo Coordinates	
Lat	47.754753
Long	-117.376336
Direction Photo Taken: West	
Description: ERRS removing alumina from structures and consolidating for placement in Building 32.	



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Photo No. 165	Date: 11/02/2020
Photo Coordinates	
Lat	47.755067
Long	-117.374681
Direction Photo Taken: Northwest	
Description: ERRS removing alumina from structures and consolidating for placement in Building 32.	



Photo No. 166	Date: 11/02/2020
Photo Coordinates	
Lat	47.755414
Long	-117.370889
Direction Photo Taken: Northeast	
Description: ERRS consolidating alumina into Building 32.	



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Photo No. 167	Date: 11/03/2020
Photo Coordinates	
Lat	47.755614
Long	-117.380958
Direction Photo Taken: North	
Description: ERRS continuing vacuuming rafters in Building 52.	



Photo No. 168	Date: 11/03/2020
Photo Coordinates	
Lat	47.755253
Long	-117.375678
Direction Photo Taken: Southeast	
Description: ERRS removing alumina from structures and consolidating for placement in Building 32.	



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Photo No. 169	Date: 11/03/2020
Photo Coordinates	
Lat	47.755356
Long	-117.375739
Direction Photo Taken: Southeast	
Description: EPA, START, and ERRS observing removal of alumina from structures.	



Photo No. 170	Date: 11/03/2020
Photo Coordinates	
Lat	47.755333
Long	-117.375467
Direction Photo Taken: 222.945877109201	
Description: ERRS removing alumina from structures and consolidating for placement in Building 32.	



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Former Kaiser Smelter TCRA Report

Site Location:
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Project No.
20510.012.011.0008.20

Photo No.
171

Date:
11/03/2020

Photo Coordinates

Lat 47.755517

Long -117.370453

Direction Photo Taken:
185.343490607252

Description:

Removal of consolidated reacted ore within Building 35.



Photo No.
172

Date:
11/03/2020

Photo Coordinates

Lat 47.754392

Long -117.377486

Direction Photo Taken:
West

Description:

EPA, START, and ERRS observing alumina piles removed from pot line area and stored in Building 32.



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Site Location:
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Photo No. 173	Date: 11/03/2020
Photo Coordinates	
Lat	47.754392
Long	-117.377486
Direction Photo Taken: Southwest	
Description: Alumina storage in Building 32.	



Photo No. 174	Date: 11/03/2020
Photo Coordinates	
Lat	47.754392
Long	-117.377486
Direction Photo Taken: Northeast	
Description: ERRS top loading alumina in Building 32.	



Project Name:
Former Kaiser Smelter TCRA Report

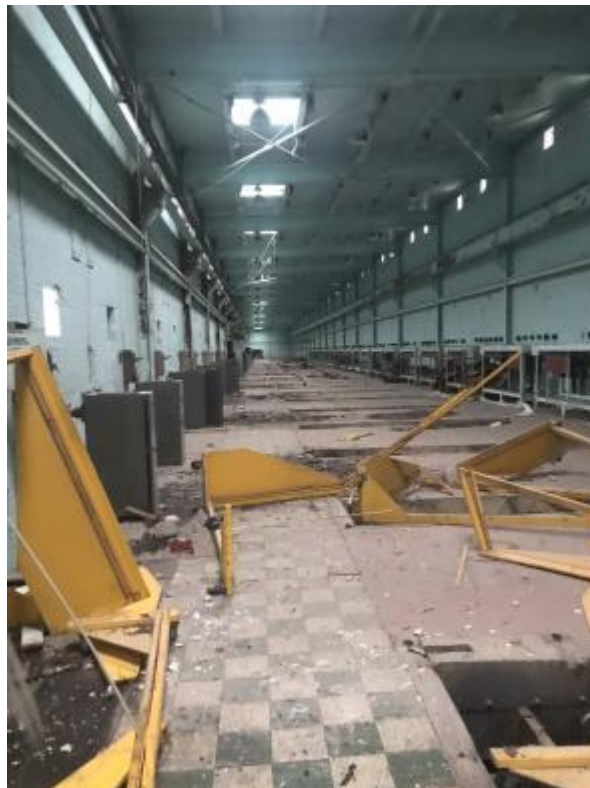
Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No. 175	Date: 11/03/2020
Photo Coordinates	
Lat	47.754406
Long	-117.377564
Direction Photo Taken: West	
Description: ERRS off-loading alumina in Building 32.	



Photo No. 176	Date: 11/05/2020
Photo Coordinates	
Lat	NA
Long	NA
Direction Photo Taken: East	
Description: START reconnaissance of Building 1 after Robertson Ventilator removal.	



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Photo No. 177	Date: 11/10/2020
Photo Coordinates	
Lat	47.754678
Long	-117.379753
Direction Photo Taken: East	
Description: ERRS uses vacuum truck to remove coke from pits in Building 53.	



Photo No. 178	Date: 11/18/2020
Photo Coordinates	
Lat	47.755939
Long	-117.382072
Direction Photo Taken: Southeast	
Description: ERRS cleaning out specified storm drains and jet-rodding connection pipes throughout the site.	



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Site Location:
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Photo No.
179

Date:
11/19/2020

Photo Coordinates

Lat 47.754678

Long -117.379753

Direction Photo Taken:
West

Description:

Oven pits filled with green coke in Building 53.

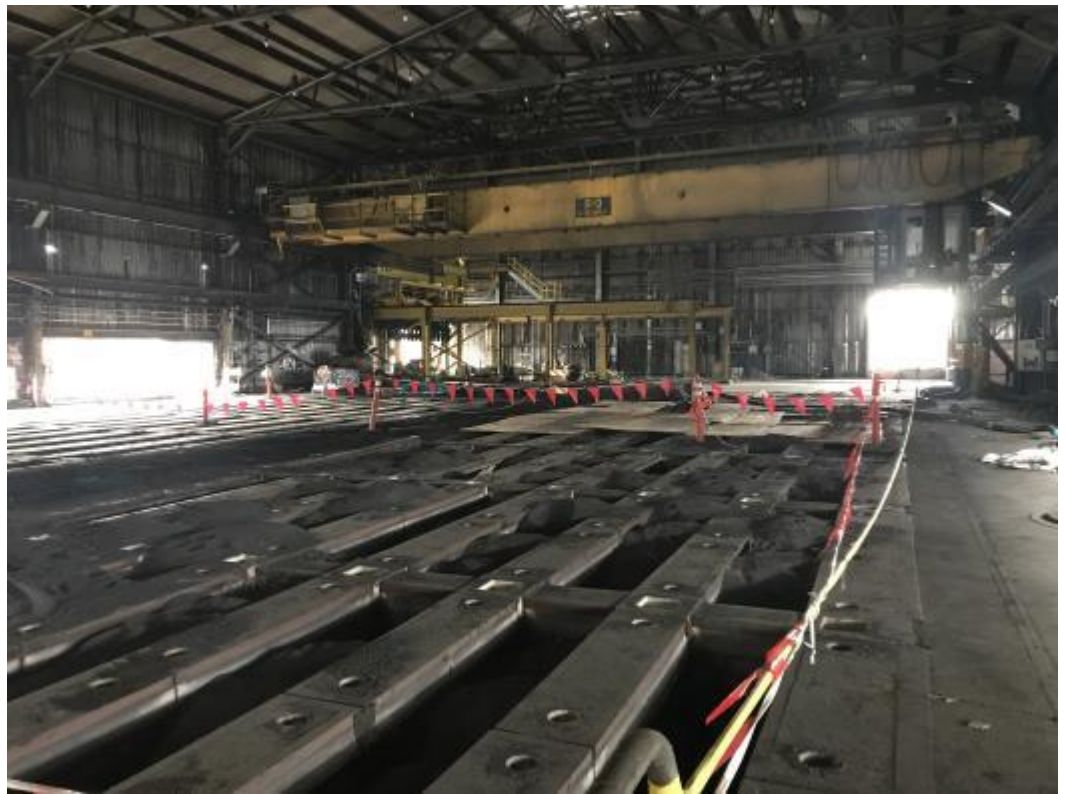


Photo No.
180

Date:
11/19/2020

Photo Coordinates

Lat 47.754636

Long -117.379722

Direction Photo Taken:
Northeast

Description:

ERRS vacuuming green coke from oven pits in Building 53.



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Photo No. 181	Date: 11/19/2020
Photo Coordinates	
Lat	47.755292
Long	-117.372903
Direction Photo Taken: Southeast	
Description: ERRS completing final stages of alumina removal in Potline Area.	



Photo No. 182	Date: 11/19/2020
Photo Coordinates	
Lat	47.755222
Long	-117.372728
Direction Photo Taken: West	
Description: ERRS completing final stages of alumina removal in Potline Area.	



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Photo No. 183	Date: 11/19/2020
Photo Coordinates	
Lat	47.755314
Long	-117.373742
Direction Photo Taken: West	
Description: View of Potline Area post alumina removal.	



Photo No. 184	Date: 11/19/2020
Photo Coordinates	
Lat	47.755419
Long	-117.373511
Direction Photo Taken: Northwest	
Description: View of Building 32 after completion of removal activities.	



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Photo No. 185	Date: 11/19/2020
Photo Coordinates	
Lat	47.753536
Long	-117.37835
Direction Photo Taken: East by Southeast	
Description: Building 1A after completion of removal activities.	



Photo No. 186	Date: 11/19/2020
Photo Coordinates	
Lat	47.75325
Long	-117.3778
Direction Photo Taken: Southeast	
Description: Deactivated pipes in Building 1B discovered to contain remnant transformer oil.	



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Photo No. 187	Date: 11/19/2020
Photo Coordinates	
Lat	47.753231
Long	-117.377647
Direction Photo Taken: Southwest	
Description: Deactivated pipes near Building 1A and AST discovered to contain remnant transformer oil.	



Photo No. 188	Date: 11/20/2020
Photo Coordinates	
Lat	47.753131
Long	-117.377739
Direction Photo Taken: Southwest	
Description: Removal of oil in AST.	



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Photo No. 189	Date: 12/02/2020
Photo Coordinates	
Lat	47.754372
Long	-117.381758
Direction Photo Taken: Northwest	
Description: ERRS vacuuming green coke from oven pits in Building 53.	



Photo No. 190	Date: 12/02/2020
Photo Coordinates	
Lat	47.753628
Long	-117.371253
Direction Photo Taken: East	
Description: ACM 9'x9' tiles in Building 1 prior to removal.	



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Site Location:
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Project No.
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Photo No.
191

Date:
12/04/2020

Photo Coordinates

Lat 47.754836

Long -117.381333

Direction Photo Taken:
Northwest

Description:

Oven pits containing green coke within footprint of former Building 300.



Photo No.
192

Date:
12/05/2020

Photo Coordinates

Lat 47.752667

Long -117.38215

Direction Photo Taken:
East

Description:

Ground surface surrounding Building 49 after ERRS completed clearing activities.



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Photo No. 193	Date: 12/05/2020
Photo Coordinates	
Lat	47.75365
Long	-117.376839
Direction Photo Taken: East	
Description: Removal of ACM 9"x9" tiles in Building 1.	

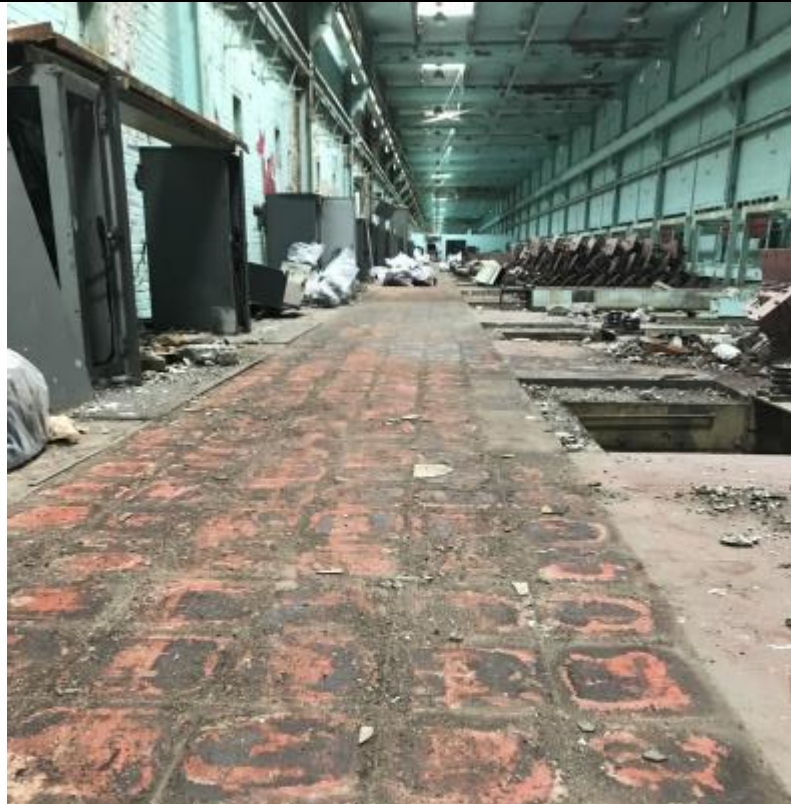


Photo No. 194	Date: 12/05/2020
Photo Coordinates	
Lat	47.753667
Long	-117.376892
Direction Photo Taken: Southwest	
Description: Removal of ACM 9"x9" tiles in Building 1.	



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Photo No.
195

Date:
12/05/2020

Photo Coordinates

Lat 47.75655

Long -117.378547

Direction Photo Taken:
Southeast

Description:

Induction fans for flume systems located within Building 140 cluster.



Photo No.
196

Date:
12/07/2020

Photo Coordinates

Lat 47.754814

Long -117.378006

Direction Photo Taken:
Northeast

Description:

Ore Bridge after removal activities.



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Photo No. 197	Date: 12/07/2020
Photo Coordinates	
Lat	47.7553
Long	-117.377839
Direction Photo Taken: Southeast	
Description: Overview of Ore Bridge, Building 32 and Potline Area after completion of removal activities.	



Photo No. 198	Date: 12/07/2020
Photo Coordinates	
Lat	47.75525
Long	-117.377769
Direction Photo Taken: Southeast	
Description: Overview of Potline Area after alumina removal.	



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Photo No. 199	Date: 12/07/2020
Photo Coordinates	
Lat	47.755614
Long	-117.375053
Direction Photo Taken: Southeast	
Description: Footprint of former Building 54 with ecology blocks placed around open pits.	



Photo No. 200	Date: 12/07/2020
Photo Coordinates	
Lat	47.755614
Long	-117.375053
Direction Photo Taken: 7.76300048828125	
Description: Building 34 after Robertson Siding removal activities completed.	



Project Name:
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Site Location:
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Project No.
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Photo No.
201

Date:
12/08/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
Northwest

Description:

Building 52 after Robertson Siding and green coke removal activities completed.



Photo No.
202

Date:
12/08/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
Southeast

Description:

ERRS installing new coverings over roof openings created during Robertson Ventilator removal.



Project Name:
Former Kaiser Smelter TCRA Report

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Project No.
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Photo No.
203

Date:
12/08/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
Northwest

Description:

ERRS using vacuum truck to remove green coke from ovens in Building 300 area.



Photo No.
204

Date:
12/08/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
Northwest

Description:

Building 1 with vents removed from roof.



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Photo No. 205	Date: 12/08/2020
Photo Coordinates	
Lat	NA
Long	NA
Direction Photo Taken: East	
Description: Building 1 with 9"X9" ACM tile removed from floor.	



Photo No. 206	Date: 12/08/2020
Photo Coordinates	
Lat	47.753894
Long	-117.380408
Direction Photo Taken: East	
Description: EPA, Washington State Department of Ecology, and START Site-walk after majority of removal activities have been completed.	



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Project No.
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Photo No.
207

Date:
12/08/2020

Photo Coordinates

Lat 47.753758

Long -117.377594

Direction Photo Taken:
Northwest

Description:

EPA, Washington State Department of Ecology and START tour alumina storage in Building 32.



Photo No.
208

Date:
12/08/2020

Photo Coordinates

Lat 47.753844

Long -117.377517

Direction Photo Taken:
Northwest

Description:

Alumina storage in Building 32.



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Photo No. 209	Date: 12/08/2020
Photo Coordinates	
Lat	47.75465
Long	-117.377272
Direction Photo Taken: Northwest	
Description: Ore Bridge after removal activities.	



Photo No. 210	Date: 12/08/2020
Photo Coordinates	
Lat	47.754772
Long	-117.377297
Direction Photo Taken: North	
Description: EPA, Washington State Department of Ecology and START tour Potline Area after alumina removal.	



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Photo No. 211	Date: 12/08/2020
Photo Coordinates	
Lat	47.754722
Long	-117.370431
Direction Photo Taken: Northwest	
Description: Building 35 after Reacted Ore removal activities completed.	



Photo No. 212	Date: 12/08/2020
Photo Coordinates	
Lat	47.755567
Long	-117.370567
Direction Photo Taken: Southwest	
Description: Building 35 after Reacted Ore removal activities have been completed.	

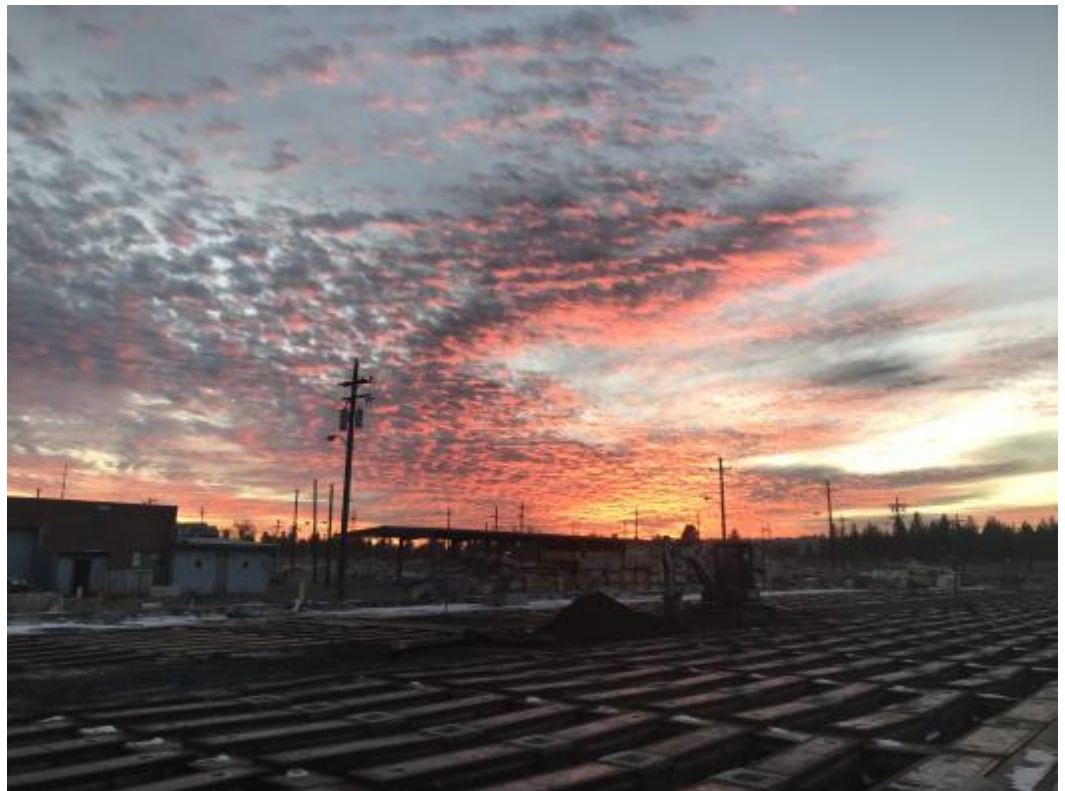


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Photo No. 213	Date: 12/08/2020
Photo Coordinates	
Lat	47.756067
Long	-117.370789
Direction Photo Taken: West	
Description: Northern side of Building 34 after Robertson Siding removal activities completed.	



Photo No. 214	Date: 12/08/2020
Photo Coordinates	
Lat	47.754872
Long	-117.381172
Direction Photo Taken: Southwest	
Description: Green coke removal from central pathway of Building 300 coke ovens.	



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Photo No.
215

Date:
12/09/2020

Photo Coordinates

Lat 47.754908

Long -117.377786

Direction Photo Taken:

South

Description:

Alumina storage within ecology blocks barricade in Building 32.



Photo No.
216

Date:
12/09/2020

Photo Coordinates

Lat 47.754956

Long -117.377708

Direction Photo Taken:

Northeast

Description:

Mixed alumina storage in Building 32.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
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Project No.
20510.012.011.0008.20

Photo No.
217

Date:
12/09/2020

Photo Coordinates

Lat 47.755008

Long -117.377183

Direction Photo Taken:
East

Description:

Former alumina silos and associated structures after removal activities completed.



Photo No.
218

Date:
12/09/2020

Photo Coordinates

Lat 47.755025

Long -117.377189

Direction Photo Taken:
Southwest

Description:

Metal scrap produced during removal activities stored along eastern side of Building 32.



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Photo No. 219	Date: 12/09/2020
Photo Coordinates	
Lat	47.75505
Long	-117.380219
Direction Photo Taken: Southeast	
Description: Overview of roof workings after removal activities completed on centrally located structures.	



Photo No. 220	Date: 12/09/2020
Photo Coordinates	
Lat	47.754619
Long	-117.380072
Direction Photo Taken: West	
Description: Overview of roof workings after removal activities completed on centrally located structures.	



Project Name:
Former Kaiser Smelter TCRA Report

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Photo No.
221

Date:
12/09/2020

Photo Coordinates

Lat 47.754589

Long -117.380189

Direction Photo Taken:
Northwest

Description:

Roof of Building 56 after Robertson Ventilation removal completed.



Photo No.
222

Date:
12/09/2020

Photo Coordinates

Lat 47.754792

Long -117.3806

Direction Photo Taken:
West

Description:

Ecology blocks installed around open pits in Building 56.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
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Project No.
20510.012.011.0008.20

Photo No.
223

Date:
12/09/2020

Photo Coordinates

Lat 47.755028

Long -117.380364

Direction Photo Taken:
Southwest

Description:

Ecology blocks installed around open pits in footprint of former Building 54.



Photo No.
224

Date:
12/09/2020

Photo Coordinates

Lat 47.755264

Long -117.380036

Direction Photo Taken:
Northeast

Description:

Courtyard of Building 60/58 after removal activities completed.



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Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
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Photo No.
225

Date:
12/09/2020

Photo Coordinates

Lat 47.755347

Long -117.380281

Direction Photo Taken:
East by Southeast

Description:

Metal scrap produced during demolition stored inside of Building 56.



Photo No.
226

Date:
12/09/2020

Photo Coordinates

Lat 47.754928

Long -117.380464

Direction Photo Taken:
Southeast

Description:

Open pit filled with water adjacent to west side of Building 56.



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Photo No. 227	Date: 12/09/2020
Photo Coordinates	
Lat	47.755131
Long	-117.381119
Direction Photo Taken: Southeast	
Description: Representative view of paved area near Building 52 and former Building 56 after removal activities completed.	



Photo No. 228	Date: 12/09/2020
Photo Coordinates	
Lat	47.75565
Long	-117.381036
Direction Photo Taken: Northwest	
Description: Floor of Building 52 after removal activities completed.	



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Photo No. 229	Date: 12/09/2020
Photo Coordinates	
Lat	47.755833
Long	-117.380981
Direction Photo Taken: West	
Description: Area north of Building 52 where contaminated soil piles were formerly staged and subsequently removed.	



Photo No. 230	Date: 12/09/2020
Photo Coordinates	
Lat	47.754986
Long	-117.377731
Direction Photo Taken: East	
Description: Potline area after alumina removal activities completed.	



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Photo No. 231	Date: 12/09/2020
Photo Coordinates	
Lat	47.755578
Long	-117.374519
Direction Photo Taken: Northwest	
Description: Southern side of Building 34 after removal activities completed.	



Photo No. 232	Date: 12/09/2020
Photo Coordinates	
Lat	47.755275
Long	-117.374764
Direction Photo Taken: North	
Description: View of southern side of Building 34 and stormwater drains in Potline Area after removal activities completed.	



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Photo No. 233	Date: 12/09/2020
Photo Coordinates	
Lat	47.755792
Long	-117.372825
Direction Photo Taken: South	
Description: Building 34C after removal of Reacted Ore completed.	



Photo No. 234	Date: 12/09/2020
Photo Coordinates	
Lat	47.755867
Long	-117.370811
Direction Photo Taken: West	
Description: Reacted Ore storage area in eastern end of Building 34 after removal activities completed.	



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Photo No. 235	Date: 12/09/2020
Photo Coordinates	
Lat	47.756119
Long	-117.375283
Direction Photo Taken: East	
Description: Condition of railroad tracks after Site activities completed.	



Photo No. 236	Date: 12/09/2020
Photo Coordinates	
Lat	47.756222
Long	-117.377778
Direction Photo Taken: East by Southeast	
Description: Condition of railroad tracks and northern side of Building 34 after completion of removal activities.	



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Photo No. 237	Date: 12/09/2020
Photo Coordinates	
Lat	47.756511
Long	-117.378364
Direction Photo Taken: Southeast	
Description: Footings of former ASTs (ground) located north of Building 36 after removal activities. Deep cavities covered in metal plates surround footings.	



Photo No. 238	Date: 12/09/2020
Photo Coordinates	
Lat	47.756522
Long	-117.378564
Direction Photo Taken: South	
Description: Flume system connecting to air handlers.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 239	Date: 12/09/2020
Photo Coordinates	
Lat	47.756419
Long	-117.380958
Direction Photo Taken: Southeast	
Description: Coal tar pitch ASTs after repairs made to open door in bottom of central AST.	



Photo No. 240	Date: 12/09/2020
Photo Coordinates	
Lat	47.755511
Long	-117.381067
Direction Photo Taken: Southeast	
Description: Location of former asbestos contaminated Green Coke pile after removal completed.	



Project Name: Former Kaiser Smelter TCRA Report	Site Location: Mead, Spokane County, Washington	Project No. 20510.012.011.0008.20
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Photo No. 241	Date: 12/09/2020
Photo Coordinates	
Lat	47.755131
Long	-117.380508
Direction Photo Taken: Northwest	
Description: Panoramic view of Building 54 footprint after Site activities and safety improvements completed.	



Photo No. 242	Date: 12/11/2020
Photo Coordinates	
Lat	47.754172
Long	-117.379867
Direction Photo Taken: South	
Description: Building 35 coke ovens after removal activities completed	



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
243

Date:
11/8/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
South

Description:

Chemical containers discovered throughout the Site are consolidated prior to hazardous categorization by START.



Photo No.
244

Date:
11/8/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
North

Description:

Panoramic view of START hazardous categorization post and sorted chemical containers.



Project Name:
Former Kaiser Smelter TCRA Report

Site Location:
Mead, Spokane County, Washington

Project No.
20510.012.011.0008.20

Photo No.
245

Date:
11/8/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
South

Description:

Chemical containers discovered throughout the Site are consolidated prior to hazardous categorization by START.



Photo No.
246

Date:
11/8/2020

Photo Coordinates

Lat NA

Long NA

Direction Photo Taken:
Northeast

Description:

START performs hazard categorization of chemical containers.



APPENDIX C

CONTAINER INVENTORY OBSERVATION REPORT

Kaiser Time Critical Removal Action Container Inventory Observation Report

PERSONS INVOLVED

Agency/Company	Contact Persons
United States Environmental Protection Agency	Brooks Stanfield – Federal On-Scene Coordinator (OSC)
START – Weston Solutions, Inc	Jim Peterson, David Burford
ERRS – Environmental Quality Management, Inc. (EQM)	Pat Turina, Response Manager

SITE OBSERVATIONS

On November 7, 2020, START arrived on site to sort, inventory, classify, and determining disposal options for miscellaneous chemicals found on the Former Kaiser Smelter site. START was tasked with determining the hazard categories for chemicals abandoned on site using labels, physical observations, SDS research, First Step Hazard Categorization system or any combination thereof. Items were initially collected by START IV and ERRS from around the Kaiser site and placed in the western side of building 44 and building 46. START V gathered containers from buildings 45 and 46 to be classified and sorted into their proper DOT classes.

Building 44 - Northwest Corner

This area contained 12 drums, 7 crates and a number of smaller containers staged. Each staging group was labeled with an ID corresponding to either an inventory code or a DOT hazard class.



Photo 1 - View of the northwest corner of Building 44

Crates containing multiple items were labeled with the DOT class of the items they contained. The crate containing compressed gas cylinders was labeled as DOT 2. Two gray cylinders with red cylinder caps within this crate were suspected by START to be props; however, that could not be confirmed, and the cylinders were documented as DOT 2. The crate labeled 42 E contained 42 fire extinguishers. A single large fire extinguisher was staged in its own crate. All the fire extinguishers identified on site were grouped and inventoried; however, many were pressurized, and will require depressurization prior to disposal. A single 30-gallon drum labeled D010 was staged in the last crate and contains a DOT class 3, flammable solvent.



Photo 2 - Crates with compressed gasses

D030 was in the northwest corner of the building and was determined through visual observation and SDS research to be a non-DOT-regulated lubricant. During initial inspection, the drum appeared to be leaking, but it was later determined to be residue left by another container. A sorbent pad was placed underneath the container to contain the liquid.



Photo 3 – Drum D030 containing lubricant

Six 55-gallon drums were located along the north wall on the west side of building 44, behind the fire extinguisher totes. Drums D006, D007, and D009 had good labels and were categorized as non-DOT regulated by SDS research and visual observations. Drum D008 was determined by First Step Hazard Categorization to be a DOT Class 5.1. D004 and D005

Kaiser Time Critical Removal Action Container Inventory Observation Report

were opened by START and determined by visual observation to be green coke material and can be disposed on site with other site waste.



Photo 4 - Drums containing nonregulated material, a 5.1 oxidizer and green coke material.

Three additional crates pictured below contained fire extinguishers. Crates with large number of fire extinguishers were counted and the quantity labeled on the outside of the crate. All the fire extinguishers identified on site were grouped and inventoried; however, many remained pressurized and will require depressurization before disposal.



Photo 5 - Crates containing fire extinguishers

Drums D013 and D014 were sampled by START and determined to be DOT class 3 by First Step Hazard Categorization. Drum D014 was open and had no lid. The open drums behind Drums D013 and D014 along the wall were visually inspected by START and contained trash and other debris .

Kaiser Time Critical Removal Action Container Inventory Observation Report



Photo 6 - Drums containing DOT 3 Flammable liquids

Twelve cases of liquid activator with “Corrosive” labels were categorized through SDS research as DOT 8A acidic liquids. The yellow cylinder behind the liquid activator pile is a fire extinguisher.



Photo 7 - Boxes of corrosive liquid activator (acidic)

Kaiser Time Critical Removal Action Container Inventory Observation Report

All identified DOT class 3 flammable liquid containers with the exception of the 55-gallon drums were staged together by START. This pile consisted of a variety of container types and sizes. Several five gallon buckets were partially full without lids and would require cautious handling to avoid potential spills of flammable liquids. Unlabeled containers were classified using the First Step Hazard Categorization system. Labeled containers were classified through SDS research and visual observation.



Photo 8 - DOT class 3 containers

The desk along the north wall on the west side of Building 44 contained empty containers and boxes. Other Empty containers were found in a crate near the western garage door of Building 44.



Photo 9 - Empty containers and boxes

Building 44 - Inside North Entrance

This area was the staging area for the following: non-regulated material, DOT Classes 5.1, 5.2, 6, 8A, 8B and 9 and miscellaneous paint containers. These container classes were determined by SDS research or First Step Hazard Categorization.



Photo 10 - Small chemical containers staged next to the north entrance of Building 44

All the non-DOT-regulated chemicals are staged in an area by the north entrance. The disposal pathway was yet to be determined as of the START-V demobilization from the site. Container types, sizes, and integrity varied. Several containers had open tops and were susceptible to spilling.



Photo 11 - Miscellaneous non-regulated materials

Kaiser Time Critical Removal Action Container Inventory Observation Report

All DOT class 9 containers except for 55-gallon drums were staged along the wall by the north entrance. Most of these containers were five-gallon buckets, however there were several smaller containers as well. Visible in front of the area were three boxes containing loose, solid material in the open boxes. The bags were labeled as a respiratory hazard if inhaled. Caution should be used while moving or disposing of the chemicals.



Photo 12 - DOT class 9 containers

A small pile of items near the north entrance, beside the DOT class 9, DOT class 8B, and non-regulated materials, were designated as DOT Class 6 containers.



13 - DOT class 6 containers

Kaiser Time Critical Removal Action Container Inventory Observation Report

The DOT class 8B containers were grouped beside the DOT class 9 chemicals. There was a variety of container types and sizes (the Multi-Clean box is fragile and needs to be handled with caution to avoid a potential spill of corrosive liquid). This pile was located near the north wall near the north entrance.



Photo 14 - DOT class 8B containers (basic)

The DOT class 8A: acidic containers were grouped along the north wall. There were a variety of container types and sizes. Some containers lacked caps and were closed with either a latex glove or duct tape. (These containers require cautious handling avoid spills of corrosive materials. This pile was located along the north wall near the north entrance.



Photo 15 - DOT class 8A containers (acidic)

Kaiser Time Critical Removal Action Container Inventory Observation Report

DOT 5.1 and DOT 5.2 chemicals were grouped together along the north wall next to the north entrance. One of the five-gallon buckets in the 5.1 section did not have a lid and requires cautious handling to avoid a potential spill of oxidizing material. The two 5.2 containers were placed on the bottom right of the cardboard on the side labeled as "5.2".



Photo 16 - DOT class 5.1 and 5.2 oxidizers

Containers identified as DOT non-regulated material in five-gallon buckets were located inside the north door. These containers hold non-hazardous material and may be left on site if deemed appropriate.



Photo 17 - DOT non-regulated materials

Kaiser Time Critical Removal Action Container Inventory Observation Report

A number of paint and paint related materials can be found in near the north entrance of building 44 and were staged by the following categorizations: polyurethane-based paint, latex paint, oil-based paint, unknown/unlabeled paint cans or buckets, high-solvent mixtures, and epoxies/adhesives. The crate next to these piles contained dry or empty paint cans and buckets that may be crushed and disposed of as solid waste.



Photo 18 - Miscellaneous paint containers

Kaiser Time Critical Removal Action Container Inventory Observation Report

Several 55-gallon drums were located east of the north entrance. Most were empty and were indicated as empty with an "E" marked on the drum's side. Drum D020 was determined by START by the label and appearance as DOT Class 3 material. Drums D018, D019, D021 and D022 were determined by START by visual observation and SDS research as DOT non-regulated material. Drums D023, D024, and D025 shown with an orange "H" were also categorized as DOT class 3 as determined by First Step Hazard Categorization.



Photo 19 - Miscellaneous drums

Building 44 - Outside of North Entrance

Outside the north entrance of building 44 were four 55-gallon drums. Drum D027 was determined by First Step Hazard Categorization as DOT Class 3 material, and drums D026 and D028 was categorized by visual observation as DOT non-regulated material (soil cuttings). Drum D029 was categorized by visual observation as green coke.



Photo 20 - One DOT 3 drum, two with green coke, and one with soil cuttings.

Building 44 - West Side

The west side of building 44 contained two crates of containers, 3 pallets with non-regulated solid mortar material, a 55-gallon drum, a pallet of five-gallon buckets, and miscellaneous site waste from lab samples.

The two crates were in the southwest portion of Building 44 near the west entrance. One crate contained fluorescent light bulbs and the other crate contained about 500 aerosol canisters. The aerosol canisters range from empty to full



Photo 21 - Crates containing fluorescent light bulbs and miscellaneous aerosol canisters.

Kaiser Time Critical Removal Action Container Inventory Observation Report

Drum D015 was determined by visual observation to be green coke material and can be disposed with other site waste streams. The pallets of 2-gallon buckets beside and are non-regulated mortar material determined by visual observation and may be left on site. The pallet with the orange spray paint labeled "DOT 9" is class 9 material determined by First Step Hazard Categorization.



Photo 22 - Miscellaneous mortar materials, green coke, and DOT 9 containers

The containers located in the southwest portion of building 44 east of the pallets contained small quantities of process samples collected from materials found elsewhere on site. These containers may be disposed in other site waste streams.



Photo 23 - Lab process samples

Building 45 - Workshop

Building 45 contains approximately 30 pallets of solidified material with legible labels categorized by START-V from SDS research as DOT non-regulated material and may be bulked together and left on site if appropriate.

Building 46 - Garage

Building 46 contained miscellaneous paint and paint related materials and are staged by the following categorizations: polyurethane-based paint, latex paint, oil-based paint, unknown/unlabeled paint cans or buckets, high-solvent mixtures, epoxies/adhesives, and empty paint cans or buckets. Two additional piles of the oil-based and 100% acrylic-based paints were staged separately because they were in good condition, unopened and may be donated or disposed of separately from the other paints.

Summary of Site Actions

- START-V:
 - Inventoried and categorized 5596 containers at the site from buildings 44, 45, and 46.
 - Used the First Step Hazard Categorization method to categorize 135 containers that could not be determined through another method.
 - Staged inventory by DOT class and paint category where possible.
 - Inventoried and relocated all liquid materials from building 45 to building 44. Solid DOT non-regulated chemicals remain on pallets in building 45.

DOT Class Container Summary

Category	Gas	Gel	Liquid	Paste	Sludge	Solid	Wax	Grand Total
2 - Compressed Gases	141							141
2.1 - Flammable Gas	1							1
3 – Flammable and Combustible Liquids			169		13			182
4.1 – Flammable Solids						1		1
5.1 – Oxidizers			6			42		48
5.1 – Oxidizers								
8A – Acidic Corrosive Materials			1					1
5.2 – Organic Peroxides			2					2
6.1 – Poisonous/Toxic Materials			7			1		8
8A – Acidic Corrosive Materials			94			2		96
8B – Basic Corrosive Materials		2	41		1	4		48
9 – Miscellaneous Hazardous Materials		6	103	5	7	61	2	184
Grand Total	142	8	420	5	21	111	2	712

DOT Non-regulated Container Summary

Category	Empty	Gel	Liquid	Paste	Sludge	Solid	Grand Total
0 – Not DOT Regulated	2	49	1231	18	12	2557	3869
Acrylic Paint			73				73
Coke/Carbon/Coal						147	147
Epoxies/Adhesives			116				116
Latex Paint			151				151
Oil Paint			290				290
Polyurethanes			93				93
Solid Paint						47	47
Stains/Solvents			38				38
Unknown Paint			60				60
Grand Total	2	49	2051	18	12	2749	4884