

APPENDIX E

Submittal Data and Review Forms



SUBMITTAL REVIEW

Date: 1/11/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Product Information - Backfill from Offsite Sources

Submittal No. 001

Specification No: Drawing 021 – Earth Materials

Specification Section: C

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The product information for backfill from offsite source is approved (for physical properties and per analytical testing).

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 1/11/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

Aggregate Source Approval Report

Owner: Central Pre-Mix Concrete Co.

Aggregate Source: PS-C-173

Lessee:

Known as: Sullivan Rd. Pit

Located in: SW 1/4 Section 12 T25N R44E

County: Spokane

Remarks:

Mineral Agg. and Surfacing:

Test Date: 03/02/2018

Expiration Date: 03/02/2023

Absorption: 1.36

Apparent Sp. G.: 2.72

Bulk Sp. G. (SSD): 2.659

Bulk Sp. G.: 2.623

Deg: 51

LA: 17

Remarks:

Currently approved as a source of aggregate for:

ATB

Ballast

BST Crushed Cover Stone

BST Crushed Screenings

Crushed Surfacing Base Course

Crushed Surfacing Key Stone

Crushed Surfacing Top Course

Gravel Backfill for Foundation Class A

HMA Other Courses

HMA Wearing Course

Maintenance Rock

Permeable Ballast

Acceptance tests need to be performed as necessary.

Aggregates for Concrete:

Test Date: 11/20/2020

Expiration Date: 11/20/2025

ASR - 14 Day : 0.44

ASR - One Year: 0.037

CCA Absorption: 0.72

CCA Sp.G: 52

Deg: 52

FCA Absorption: 1.52

FCA Organics: 1

FCA Sp. G: 2.656

LA: 14

Remarks: 1-Year ASR test results for Fine Conc. Agg: 0.037% and Coarse Conc. Agg: 0.024% received on 10/20/2020 and will expire on 10/20/2025.

Currently approved for:

Coarse Concrete Aggregates

Fine Concrete Aggregates

Acceptance tests need to be performed as necessary Acceptance tests need to be performed as necessary

Riprap, Quarry Spalls, Rock for Rock Wall, Erosion and Scour Protection:

Test Date:

Expiration Date:

Absorption:

Apparent Sp. G.:

Bulk Sp. G. (SSD):

Bulk Sp. G.:

Deg:

LA:

Remarks:

NOT Approved for:

Quarry Spalls	Riprap	Rock for Erosion and Scour Protection
Rock for Rock Walls	Stone 9-27.3(6)	

Streambed Aggregates: Test Date: 10/20/2015 Expiration Date: 10/20/2020

Absorption: 1.06	Apparent Sp. G.:	Bulk Sp. G. (SSD): 2.664	Bulk Sp. G.:
Deg: 69	LA: 14		

Remarks:

NOT APPROVED AS A SOURCE OF AGGREGATE FOR:

Streambed Aggregate

Gravel Borrow for Structural Earth Walls: Test Date: 10/20/2015 Expiration Date: 10/20/2020

Bulk Sp. G. (SSD): 2.664	Deg: 69	LA: 14
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NOT APPROVED AS A SOURCE OF AGGREGATE FOR:

Gravel Borrow for Str Earth Walls

ALL OTHER PIT RUN MATERIALS:

Project Engineer may request preliminary samples but Aggregate Source Approval is not required.

AGGREGATE MATERIALS NOT REQUIRING ASA APPROVAL :

- Aggregate for Gravel Base 9-03.10
- Gravel Backfill for Foundation Class B 9-03.12(1)B
- Gravel Backfill for Walls 9-03.12(2)
- Gravel Backfill for Pipe Zone Bedding 9-03.12(3)
- Gravel Backfill for Drains 9-03.12(4)
- Gravel Backfill for Drywells 9-03.12(5)
- Backfill for Sand Drains 9-03.13
- Sand Drainage Blanket 9-03.13(1)
- Gravel Borrow 9-03.14(1)
- Select Borrow 9-03.14(2)
- Common Borrow 9-03.14(3)
- Native Material for Trench Backfill 9-03.15
- Foundation Material Class A and B 9-03.17
- Foundation Material Class C 9-03.18
- Bank Run Gravel for Trench Backfill 9-03.19
- Commercial Concrete Aggregate 6-02.3(2)B



CENTRAL PRE-MIX
A CRH COMPANY

Basic Quality Statistical Summary Report

Plant 120_01136-Sullivan AGG
Product 2145 - Builders Sand
Period 09/12/2021 - 09/12/2022

Sieve/Test	Tests	Average	St Dev
3/8" (9.5mm)	9	100.0	0.00
#4 (4.75mm)	9	99.3	0.37
#8 (2.36mm)	9	68.5	5.31
#16 (1.18mm)	9	23.0	2.60
#30 (.6mm)	9	5.9	1.16
#50 (.3mm)	9	1.4	0.52
#100 (.15mm)	9	0.4	0.11
#200 (75µm)	9	0.22	0.044
Pan	9	0.00	0.000





SUBMITTAL REVIEW

Date: 10/19/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Site-Specific Health & Safety Plan (HASP) – Revision 2

Submittal No. 002.C

Specification No: Drawing 020 – Contractor Health and Safety

Specification Section: B

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The resubmittal of the Environmental Health and Safety (EHS) Plan, dated 10/10/2022, is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/19/22

Distribution:

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| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

ENVIRONMENTAL HEALTH & SAFETY PLAN

GrayMar Environmental Services, Inc.
Operations at:
UPRR Trentwood Dross Site
2317 North Sullivan Road
Spokane Valley (Trentwood), Washington
99016

Union Pacific Railroad (UPRR)
Phone: (509) 866-8329
Attn: John DeJong
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Prepared for:

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Written By: Jerome Kryn

Reviewed By: Tim Bussey, Dir H&S (10/10/22)

Date Prepared: September 12, 2022

GrayMar Environmental Services, Inc. Project:
08052022-01

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APPENDICES

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- Figure A - Site Location Map
 - Figure B - Site Footprint (generalization)
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- Appendix B: Chemical Hazard Information
GrayMar COVID Policy/Procedure
GrayMar Accident / Injury Protocol
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- Appendix D: EHSP Forms
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 - Contractor/Subcontractor Distribution of Site Safety Plan Signature Page
 - Daily Site Entry / Exit Signature Log
 - Daily Toolbox / Tailgate Safety Meeting Record
 - Daily Equipment and Site Safety Inspection Report Form
 - Excavation Inspection Checklist
 - Emergency Spill and Discharge Report
 - Woodchipper Use Safety Guidance
 - WA L&I Excavation CP Checklist

1.0 BACKGROUND

1.1 INTRODUCTION

This Environmental Health and Safety Plan (EHSP) presents the health and safety procedures that are intended to guide on-site services to be completed by GrayMar Environmental Services, Inc., (GrayMar), 601 S Pioneer Way, Moses Lake, WA 98837 for the UPRR TDS Trentwood Dross Project (UPRR TDS).

Site Name: Trentwood Dross Site

Site Address: 2317 Sullivan Rd. Spokane Valley, WA 99216

Site Coordinates: LAT: 47.6777265 LONG: -117.1982753

Site Access Road: Access Road is located on the left (west) of Sullivan Rd.

Site Entry and Exit Info: Enter site work area through Kemira facility entrance

Previous land uses: Aluminum metal recovery processing

Site Receptors: Site receptors that maybe impacted by the proposed work are ecological UPRR and its consultant WSP Golder (Golder) will be responsible for soil and groundwater sampling, as well as determination of the extent of excavation required to meet site Cleanup Levels (CUL).

The (EHSP) will be implemented by the GrayMar's Project Manager and Field Health & Safety Officer. Compliance with this plan is required of all GrayMar personnel, subcontractors, and associated third parties at the site. A copy of the plan will be maintained on-site during work activities. All field personnel will review the plan prior to site work and will sign an acknowledgment form indicating that they have reviewed the plan.

The content of the EHSP may be revised and/or amended should additional information become available concerning the hazards present at the site and/or should significant changes occur in the scope of work, operational procedures, site hazards, and hazard control measures. The EHSP may be modified by the Field Health & Safety Officer upon review and approval of the Project Manager or other applicable responsible authority. Any modifications made to the EHSP will be sent to Golder for review and approval. Once the modifications have been approved, all field personnel will be informed of the changes to the plan as they occur.

This EHSP has been prepared for the use of GrayMar and its personnel for the specific activities to be implemented at the site and may be used as a guidance document by trained and experienced GrayMar subcontractors. GrayMar, however, does not guarantee the health or safety of any person entering the site.

All Subcontractors providing services and visitors to the Site must meet all the Environmental Health and Safety (EHS) requirements. The subcontractors and visitors at the project site will be required to review and comply with the provisions of the EHSP. All subcontractors and visitors will sign an acknowledgment form indicating they have reviewed the plan and will comply with its conditions. A sign-in log will be required to be signed by all subcontractors and visitors before access to the site is allowed.

Due to the nature of the hazards present at the site and the remedial activities to be conducted, it is not possible to determine, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the procedures contained in this EHSP will reduce, but will not eliminate, the potential for all injuries at the site. The health and safety guidelines contained in this plan should not be used on another site without prior evaluation by trained health and safety specialists.

1.2 Site Description

The Site is in Spokane County, Washington in the Spokane Valley, within the incorporated limits of the City of Spokane Valley. The physical address of the Site is 2317 North Sullivan Road, Spokane Valley (formerly Trentwood), Washington 99016.

The Site is identified by Ecology as Facility/Site No. 628 in accordance with the MTCA RCW 70.105D and its implementing regulations 173-340 WAC.

The Site is located west of Sullivan Road and north of the Spokane River (Figure 1). In the Agreed Order, the Site is defined “by the extent of contamination caused by the release of hazardous substances.”

Therefore, for the purposes of this EHSP, the Site includes the area where a stockpile of material resulting from aluminum recycling operations. This area, which consists of approximately 9 acres, includes property owned by Union Pacific Railroad Company (UPRR), Pentzer Venture Holdings II, Inc. (Pentzer), and the State of Washington Department of Transportation (WSDOT).

Other property owners in the area include the Washington State Department of Parks and Recreation (Parks) and the City of Spokane Valley.

Land use at the Site is heavy industrial (Zone I-2, per the City of Spokane Valley).

- The nearest residential neighborhood is approximately 1.2 miles south of the Site across Interstate 90. The Spokane Valley Mall is approximately 0.3 miles southwest of the Site across the Spokane River. The Kaiser Trentwood Works (an aluminum rolling mill) is located 0.5 miles northwest of the Site.
- A UPRR rail line is present on the northern boundary of the Site.
- The UPRR property south of the rail line (south parcel) totals approximately 11 acres and includes a large stockpile of material and an industrial facility on land leased from UPRR (described below). UPRR also owns the contiguous property north of the rail line (north parcel).
- The Pentzer property is located immediately adjacent to the west side of the UPRR south parcel. The property south of the UPRR southern parcel is owned by WSDOT.
- The Spokane River is located approximately 350 feet southwest of the UPRR TDS property (beyond the Pentzer and WSDOT properties).
- Kemira Water Solutions, Inc. leases a portion of the UPRR property and operates a facility that manufactures chemical coagulants (polyaluminum chloride (PAX) and

aluminum sulfate (alum)) for use in water and wastewater treatment applications. Raw materials used in the manufacturing process include sulfuric acid, chloride sources (aluminum chloride, hydrochloric acid, etc.), and aluminum sources (alumina hydrate, aluminum metal, and/or alumina cake). Other materials used in the manufacturing process include soda ash, resins, xylene, and isopropyl alcohol. Sulfuric and hydrochloric acid are unloaded from railcars and stored in tanks at this facility.

- Other raw materials are stored in tanks and/or silos. The chemical coagulants are produced in various reactors and the finished products are stored in tanks.

1.3 Site History

Site History Industrial operations on the UPRR TDS property (south parcel) begun in 1979 by the Aluminum Recycling Corporation (ARC), which leased the property from Spokane International Railroad (subsequently merged with UPRR TDS in 1987). In May 1984, ARC filed for reorganization under Chapter 11 and ceased operations at that time (Ecology, 1987).

Following the ARC bankruptcy, Imperial West Chemical (IWC) operated on the UPRR TDS property from 1986 to 1995 and used aluminum dross to make aluminum sulfate. A

A 4.4-acre portion of the current UPRR TDS property was purchased from the WSDOT in 1991 (southern portion of south parcel), and IWC leased both the original UPRR TDS property and the 4.4-acre acquisition from 1995 until 1998

In 1998 Kemwater North America Inc. began leasing the property. Kemiron NW, Inc. took over the lease from Kemwater North America Inc. in 2001. The current tenant, Kemira Water Solutions, Inc., produces industrial water treatment chemicals and does not stockpile or process aluminum dross, or otherwise use the material in the stockpile.

According to Ecology records, aluminum dross was transported to the Site and stockpiled between 1982 and 1991, after which the dross was also stockpiled on a portion of the newly acquired 4.4-acre parcel until 1998. There is no indication of black dross or other by-products associated with aluminum recovery using the smelting process.

A portion of the stockpile is located adjacent to the property, on property which is owned by Pentzer. Pentzer was named a Potentially Liable Person (PLP) by Ecology on December 11, 2009. Information regarding Pentzer's PLP status was brought to Ecology's attention during the public comment period for the Agreed Order. As the Agreed Order between Ecology and UPRR TDS had already been underway, Aluminum Recycling Trentwood Site 4 PASTOR, BEHLING & WHEELER, LLC been negotiated, and the public comment period had expired, UPRR and Ecology agreed to finalize the Agreed Order. Pentzer remains a PLP and has allowed UPRR access to the property for the purposes of the past RI performed on the site but did not participate in the RI/FS.

1.4 Historical Dross Analysis

The Site Hazard Assessment report (Ecology, 2008) included analytical results for a sample of

dross (not identified as black or white dross) submitted by ARC for analysis in September 1983. The sample was found to contain the following Compound Concentration (%):

- Calcium 0.0575
- Sodium 14.15
- Potassium 13.35
- Aluminum 21.4
- Oxides, as Al₂O₃ 40.4
- Chloride 43.0
- Fluoride 0.13
- Nitrides, as NH₃ 1.4
- pH (Standard Units) 10.14
- Soluble Material 64.6

All historical analytical data obtained from Ecology records was from samples collected prior to the 1986 removal of black dross from the Site.

1.5 PHYSICAL SETTING

1.5.1 Elevation

The surface elevation of the upper part of the southern parcel (stockpile area) is approximately 1,985 ft mean sea level (MSL); the elevation of the stockpile itself ranges from approximately 1,988 to 2,030 ft MSL. The surface elevation of the lower part of the southern parcel (at the base of the steep slope south of the stockpile) is approximately 1,965 ft MSL. The elevation of the Spokane River near the Site is approximately 1,920 ft MSL.

1.5.2 Site Description

The stockpile is located on the northern portion of the UPRR TDS property and the eastern portion of the Pentzer property (Figure 2). The stockpile material on both properties was placed there intentionally by Aluminum Recycling Trentwood Site 6, PASTOR, BEHLING & WHEELER, LLC former property users during their occupancy. The stockpile is located on land that is at a higher elevation than the property to the south, which has resulted in stockpile material being transported from the main stockpile to the south by storm water runoff and vehicle traffic. The stockpile is approximately 600 feet long on the north side, 555 feet long on the south side, and 220 feet wide (approximately 4 acres). The depth of the stockpile varies from 5 to 30 feet deep. The stockpile side slopes were estimated to be approximately 1:1 and the total volume of the stockpile estimated to be approximately 57,000 cubic yards. Approximately 8,000 to 10,000 cubic yards of the total volume is estimated to be present on the Pentzer property.

The stockpile contains a mixture of several varied materials based on historical information and visual differences in color and chemical composition. Information obtained during the past RI indicates the stockpile is comprised of two main types of material that are readily identifiable by color. The western portion of the stockpile is made up of grey, fine-grained material that contains high concentrations of aluminum (40,000 – 60,000 mg/Kg) and sulfate (10,000 mg/Kg

– 30,000 mg/Kg). The eastern portion of the stockpile is made up of tan, fine grained material that contains low concentrations of aluminum (< 9.9 mg/Kg)) and higher chloride/salt content (approaching 10,000 mg/Kg or 1%). Throughout this report the term “stockpile” or “dross” is used to refer to the material in the stockpile, regardless of composition (i.e., dross, aluminum sulfate, metallic oxides).

1.5.3 Climate

The Spokane Valley is a semi-arid region that has warm, dry summers and cool, moist winters. Annual rainfall averages 20 inches, with most precipitation occurring from November to March, frequently as snowfall. Snowfall accumulations of one foot or more are frequent in the Spokane area, but the snow usually melts within a few days (Molenaar, 1988). Average temperatures in the area range from 27° F during the winter months to 69° F during the summer months.

Precipitation in the area ranges from less than 1 inch during the months of July, August, and September, slightly more than 2 inches during the months of November and December, and slightly less than 2 inches during January through June (NOAA, 2010). Wind data from Felts Field, located approximately 5 miles west of the Site, indicates that the prevailing wind direction is SW or SSW from November through June and NNE from July through October (Western Regional Climate Center, 2010)

1.5.4 Geology

The surface geology in the Site vicinity consists of Pleistocene-aged glacial flood deposits (Hart Crowser, 2009). The glacial flood deposits consist of poorly to moderately well-sorted, massive to thick-bedded, stratified deposits of boulders, cobbles, pebbles, and sand resulting from multiple episodes of catastrophic outbursts from glacially dammed Lake Missoula. Undifferentiated alluvium and loess deposits may be present along the Spokane River. The top of the bedrock (metamorphic rocks) is at an elevation of approximately 1,700 to 1,750 ft MSL, or at a depth of approximately 250 to 300 feet below grade. Based on observation of subsurface materials collected during the drilling program at the Site, the Site geology is consistent with the scientific literature and descriptions reported in other environmental Aluminum Recycling Trentwood Site.

PASTOR, BEHLING & WHEELER, LLC investigations conducted in the area. A 1 – 2 ft thick surface soil layer was observed across the Site. This soil layer consisted of unconsolidated silt, sand, and gravel. Beneath this surficial soil layer are poorly sorted sandy gravel, gravelly sand, and sand consistent with glacial flood deposits. These soils are typically dark gray and tan, have angular grains, and contain some cobbles and pebbles. Groundwater was observed between 45 and 55 feet below ground surface (bgs).

1.5.5 Groundwater

Groundwater in the vicinity of the Site was previously characterized by Hart Crowser Inc. as part of a Groundwater Remedial Investigation conducted at the adjacent Kaiser Trentwood Facility. The results of the Remedial Investigation were summarized in a report issued in May

2009 and are used as a basis for understanding the groundwater conditions at the UPRR Trentwood Dross Site.

The Pleistocene-aged glacial flood deposits present at the Site are part of a regional aquifer system called the Spokane Valley-Rathdrum Prairie (SVRP) aquifer. The SVRP aquifer is designated as a Sole Source Aquifer by the EPA. The SVRP provides drinking water to approximately 500,000 residents in the region and covers approximately 370 square miles (Hart Crowser, 2009). Near the Site, the aquifer is called the Spokane aquifer, which underlies about 135 square miles in the Spokane River valley. The Spokane aquifer is unconfined and is recharged by surface infiltration, from the Spokane and Little Spokane Rivers, and contribution from the Spokane-Rathdrum Prairie aquifer that is hydraulically connected and located to the east. Groundwater flow in the aquifer is generally to the west, with flow in the vicinity of the Site to the west/southwest (Hart Crowser, 2009).

Groundwater flow in general is influenced by the Spokane and Little Spokane Rivers, which have a close hydraulic connection to the aquifer. The Spokane aquifer is highly permeable and consists of coarse sand, gravel, cobbles, and boulders deposited by historic floods which accounts for the large amount of water storage and high hydraulic conductivity in the aquifer. The thickness of the aquifer varies from relatively thin in the city of Spokane where basalt bedrock approaches the surface, to a thickness of greater than 300 feet near the state border with Idaho. Near the Site, the thickness is estimated to be approximately 200-350 ft, and the groundwater flow velocity approximately 33 feet per day (Hart Crowser, 2009).

During the former RI investigation, groundwater was encountered in the monitoring wells (Figure 3) at a depth of approximately 45-55 ft bgs (Table 1). Groundwater flow is from east to west towards the Spokane River (Figures 4 and 5), which can act as a losing or gaining water body depending on river flow and recent precipitation. The groundwater gradient across the Site is approximately 0.003 ft/ft based on water level data collected during the RI.

1.5.6 Receptors

A past receptor survey was conducted within 500 feet of the Site to identify current or potential land and groundwater users that may constitute a complete receptor pathway. For the purposes of the survey the limits of the stockpile were considered "the Site," and the results of the survey consider all features within the resulting 500-foot boundary.

A water well search was conducted by Banks Environmental Data in May 2010 to identify potential water wells near the Site. Twenty-three water wells were identified within one mile of the UPRR TDS property.

The Aluminum Recycling Trentwood Site well depths range from 78 to 200 feet. Most of the wells are registered for industrial use, though there are several which are registered for domestic and/or irrigation use. During the performance of the most current RI, a physical survey was performed to identify the water wells identified in the water well database search as well as identify any water wells in the area that were omitted from the report. No additional wells were identified during the well search.

1.6 SCOPE OF WORK

GrayMar's general scope of work to be performed on-site is as follows:

The site is the location of an aluminum dross stockpile area that was used as the feedstock for a secondary aluminum metal recovery process. Aluminum recycling is no longer conducted at the property and the dross is considered a waste material. The dross stockpile and adjacent soils impacted with dross constituents at concentrations above remediation levels will be excavated and removed and then transported off-site for disposal at an approved landfill.

Activities will consist of providing construction services, dross and soil excavation, dust control, dross, and soil movement to include off-site truck loading and transportation, on-site soil movement to ensure removal activities are adequate to meet cleanup criteria on the UPRR TDS property and the surrounding Pentzer and WSDOT properties.

Primary hazardous / fatal risk activities include:

- Working on and around heavy equipment
- Truck Traffic both on and off the site
- Working on non-level surfaces with equipment
- Working near overhead utilities
- Working near underground utilities
- Ground stability/ working near excavation greater than 4 feet deep
- Driving to jobsite

Defined Scope of Work per Specifications supplied by UPRR / Golder

1.6.1 Defined Scope of Work

This EHSP covers the following tasks required to complete the Scope of Work.

GrayMar will mobilize the Site locate at 2317 North Sullivan Road just west of North Sullivan Road and north of the Spokane River in Spokane Valley, Washington to complete the following project broken down by multiple tasks per the UPRR request, Golder, and the Washington Department of Ecology as listed below.

The Washington Department of Ecology originally defined four individual alternatives on the approach to cleanup of the site. What was termed "Alternative Number three" was chosen. Alternative Three includes the excavation and disposal the waste from the site at a permitted landfill. The worst waste and contaminated dross / soil will be removed, transported by truck, and disposed of at the Waste Management Landfill at Graham Road in Medical Lake. Because the Spokane River and a recreational trail are near the site, all remaining contaminated soil will be removed from the Pentzer and WSDOT properties and capped on the UPRR property. No deed or use restrictions will be needed for the Pentzer and WSDOT properties. The cap as well as the permanent protective fence would keep people, plants, and wildlife from contacting waste, and would stop wind and water contact and erosion.

The UPRR List of Tasks below is the actual list that GrayMar has provided in our proposal however GrayMar understands and has based the response in this Pre-Project Plan following Golder's Bid Item that Includes Title and Detail as found in their supplied document titled "19119180-TRENTWOOD_MEASUREMENT AND PAYMENT 061322".

We have based this EHS Plan on the following steps as defined by UPRR and Golder.

UPRR'S LIST OF TASKS (FROM UPRR'S ORIGINAL EXCEL SHEET FOR ACTUAL QUOTED NUMBERS)	
1. Mobilization	16. Backfill- Offsite Source
2. Erosion Control - Slit Fencing	17. Ecological Cap
3. Erosion Control - Straw Wattles	18. Containment Berm
4. Erosion Control - Straw Bales	19. Railroad Ditch
5. Erosion Control - Construction Entrance	20. Overflow Channel
6. Street Cleaning	21. Amor Rock Apron
7. Temp Facilities - Office, Sanitary Facilities, etc.	22. Monitoring Well Decommissioning
8. Clearing and Chipping	23. Vehicle Access Gate
9. Tree Removal	24. Security Fence
10. Dross Stockpile Removal	25. Maintenance Gate
11. Shoring Design	26. Reseeding
12. Cont.Soil Removal - Stockpile/Place	27. Tree Planting
13. Cont.Soil Removal - Screen Onsite	28. Demobilization
14. Cont.Soil Removal- Screen Offsite	29. Truck Wheel Wash
15. Backfill - Onsite Stockpile	30. Access Road Improvements

This EHSP covers the following steps that GrayMar will complete based on both the UPRR's and Golder's list of tasks from the supplied document titled "19119180-Trentwood_measurement and payment 061322".

Mobilization - Work includes all activities necessary to prepare for on-site work activities to include:

- GrayMar is currently an active first responder for UPRR and maintains all the necessary training and insurance requirements to perform work on this project.
- Prepare for review by via electronic format the following plans in draft
 - Spill Prevention, Control, and Countermeasure (SPCC)
 - Site-specific Safety and Health Plan (SSHP)
 - Traffic Control Plan
 - Stormwater Pollution Prevention Plan (SWPP)
 - Temporary Erosion and Sediment Control (TESC)
 - GrayMar will obtain all required permits for this task which we are responsible for
- Set up equipment storage area and site parking area. Equipment storage area will be further fenced in to secure and protect equipment at night and over the weekend.
- Setup fueling center and wheel wash area on-site.

- Set up gravel laydown area by temporary office and drag-out area for trucks at the entrance of the site.
- GrayMar will move all equipment to the site to included heavy equipment, safety equipment, storage trailer, and transport equipment required on the site etc.
- All GrayMar personnel not already trained under the UPRR guideline shall receive said training.
- All temporary facilities to include electrical hookup, office trailer, and sanitary facilities to be moved to site.
- All fencing not to being utilized will be removed and stockpiled in the setup Contractor Laydown Area.
- Removing existing ecology block wall and store at direction of construction manager.
- GrayMar has sourced with the local water company a hydrant for non-potable water which will be used for dust control.
- GrayMar understands that the full mobilization to the site must be completed in the most efficient and cost-effective manner and once competed the actual service tasks within this project can be started.

Temporary Erosion Control – Silt Fencing

- GrayMar will provide 1508 linear feet of Silt Fencing and place /maintain as required for temporary erosion control.
- GrayMar will provide 300 linear feet of Straw Wattles per the specs and place /maintain as required for temporary erosion control.
- GrayMar will provide 40 each Straw Bales per the specs and place /maintain as required for temporary erosion control
- The above includes the setting up and maintaining temporary erosion control at the construction entrance as required.
- GrayMar will inspect and maintain / make changes if required, of the Erosion control to meet the approved Stormwater Pollution Prevention Plan (SWPP) and the approved Temporary Erosion and Sediment Control (TESC) for this project.

Street Cleaning

- GrayMar will supply street cleaning throughout the project to ensure sediment does not migrate off-site onto adjacent roadways. Street cleaning will be charged only for actual use of the street cleaning equipment.

Temporary Facilities – Offices, Sanitary, Utilities, etc.

- GrayMar will set up an office trailer along with supplied power and set up sanitary facilities on site.

Temporary Facilities – Truck Wheel Wash

- GrayMar will supply, operate, and maintaining a truck wheel wash over the course of the project.

Temporary Facilities – Vehicle Access Gate

- GrayMar will provide and maintaining vehicle access gate at the location described in the Specifications/drawings

Access Road Improvements

- GrayMar will improve as need and maintain access roads as needed to facilitate construction

Clearing and Chipping

- GrayMar will clear and chip brush and trees less than 6 inches in diameter in excavation areas as shown in the drawings. Total area to be chipped is estimated at 2-acres. Chipping will be stockpiled on site for future use. (See Appendix D for safety/ppe guide)

Tree Removal

- GrayMar will clear and chip brush and trees greater than 6 inches in diameter from excavation areas. Total area to be chipped is estimated at 2-acres. Trunks will be cut into 20-ft sections or other approved length and removing and stockpiling stumps for later use as habitat materials. (See Appendix D for safety/ppe guide)

Dross Stockpile Removal

- GrayMar will excavate, load, and transport for disposal the dross stockpile material. GrayMar will use the WM Graham Road Landfill. Proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized.
- Golder will maintain dust monitoring on site. Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.

Shoring Design

- GrayMar understands and has read the UPRR Guidelines for Temporary Shoring, dated October 25, 2004, if required

Off-Stockpile Contaminated Soil Removal – Stockpile and Place Onsite on UPRR Property

- GrayMar will excavate areas, haul to a defined location and stockpile on site for subsequent placement of material to reach sub-grade elevations required on the UPRR property as approved by the Construction Manager (Golder). All engineering controls, the use of water, will be utilized for dust control to prevent airborne contaminant dispersion. Excavated areas may include coordination with utility providers. UPRR will pay utility concerns. GrayMar understands that excavation may include the use of small equipment under power lines, use of spotters during soil removal, replacing power poles, maintaining

buffer zones around equipment and structures, restoring access roads to minimum standards, and other conditions.

Off-Stockpile Contaminated Soil Removal – Screen and Stockpile Onsite

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed not impacted, by Golder, below agreed-upon clean up levels, and approved \ directed by the construction manager.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process.
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Off-Stockpile Contaminated Soil Removal – Screen and Dispose Offsite

- GrayMar understand that soils removed from areas outside of the dross stockpile may be used as backfill to reach subgrade elevations required on the UPRR property if they are impacted below agreed-upon levels, as approved \ directed by the construction manager.
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Backfill – Onsite Stockpile

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed to be not impacted (below agreed upon clean up levels) as approved by Golder.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process.
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Backfill – Offsite Source

- GrayMar has included and understand that the procurement, loading, hauling, and placement of backfill material from an offsite source is required as part of this project. Backfill from offsite sources shall be non-plastic soil as determined by ASTM D4318 “standard test methods for liquid limit, plastic limit, and plasticity index of soils”, and shall have a maximum particle size of 6 inches and shall have no more than 15% by dry weight of material passing the U.S. No. 200 Sieve.
- At this time there is a potential of 19,000-yards of backfill to be potentially obtained on site through excavation and use. The UPRR Excel Price document calls for pricing out 18,683 yards of backfill. The volume of imported backfill will be based by the difference of available excavated materials onsite and the UPRR requirements.

Ecological Cap

- GrayMar has read and understand the specification that the gravel for the ecological cap shall be angular to sub-angular, sound, hard, durable natural rock conforming to the requirements of WSDOT 9-03.9(2) “permeable ballast”. The Ecological Cap will be the specifications as called out for subgrade, geotextile fabric, “armor rock or quarry squall cover that meet WSDOT requirements
- GrayMar will prepare the subgrade per the specifications as called out in Golder’s documents. The subgrade will be prepared by rolling and compaction with a minimum of

4 passes of a smooth drum vibratory roller with a minimum static weight of 15,000 lbs. such as a CAT CS44, IR SD-70, or similar approved equivalent to achieve a firm and unyielding surface. GrayMar understand that per specification that the subgrade surface must be smooth, flat, and free of ruts and protrusions greater than 0.5 inches. The surface will be protected and maintain to ensure the required surface is met prior to installation of the geotextile cover.

- GrayMar will then install the ecological cap gravel utilizing a single lift, using methods that will not stretch, displace, or damage the underlying geotextile.

Surface Water Drainage – Containment Berm

- GrayMar will design and construct the Containment Berm (est. at 1,150 linear feet in length) for the ecological cap per the specification that will inhibit any drainage of waters from the ecological cap to the surrounding areas. The construction shall follow those as stated in Golder's approved specifications and drawings. The actual measurement of the Containment Berm will be either by survey or actual tape measurement.

Surface Water Drainage – Railroad Ditch

- GrayMar will design and construct the Railroad ditch (est. at 387 linear feet in length) for the collection and proper dispersal of surface water to be diverted around the northwest corner of the capped area along railroad property. The construction shall follow those as stated in Golder's approved specifications and drawings. The actual measurement of the Railroad ditch will be either by survey or actual tape measurement.

Surface Water Drainage – Overflow Channel

- GrayMar will design and construct the Overflow Channel (est. at 22 linear feet in length) for the collection and proper dispersal of surface water should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Overflow Channel would divert the excess water allowing the Ecological Cap to drain so not to damage the containment berm into the Railroad Ditch on the northwest corner of the Ecological Cap. The construction shall follow those as stated in Golder's approved specifications and drawings. The actual measurement of the Overflow Channel will be either by survey or actual tape measurement.

Surface Water Drainage – Armor Rock Apron

- GrayMar will design and construct the Armor Rock Apron at the outlet of the Overflow Channel using gravel/rock that meets the WSDOT specifications as called out by Golder's approved specification and drawing. The Armor Rock Apron is designed in such a way so that the collection and proper dispersal of ground water so no damage is caused to the Overflow Channel should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Armor Rock Apron is located at the based (lower end) of the Overflow Channel. It will assist in the diversion of the excess water without damage to the Overflow channel

allowing excess waters to flow into the Railroad Channel. The actual measurement of the Armor Rock Apron will be either by survey or actual tape measurement.

Monitoring Well Decommissioning

- GrayMar will hire a licensed drilling company to properly decommission four monitor wells on site.... each being 60' by 2" MW-1 thru MW-4. Two wells (MW2 and MW4) are in the dross area to be removed. One (MW-3) is on the Pentzer property in the northwest corner of site, and one (MW-1) appears to be on the Kemira Property on the northeast corner of the site.

Security Fence

- GrayMar has had the Permanent Security fence cost out for installation by multiple licensed fence installation firms utilized the full Golder approved specifications and the two drawing as received from the UPRR site. This is one of the last tasks to be performed by GrayMar towards the end of the project. The fence will not be performed until final grading of the site is complete and approved by the Construction manager (Golder)

Maintenance Gate

- GrayMar will have the Maintenance Gate install in the Permanent Fence per the Golder approved specification as can be found in the specifications and sheet 510 of the Golder drawing as received.

Final Regrading of the Site

- GrayMar will complete the regrading of the site per Golder approved specifications following the regrading plans as found in drawing numbers 220, 221, and 222 supplied with the UPRR request for proposal. Regrading will not be considered complete unless approved by the Construction manager (Golder). GrayMar will further supply a surveyor to ensure all regrading elevations and slopes meet the required specifications. Equipment will be equipped with laser guided level instrumentation.

Reseeding

- GrayMar understands the required re-seeding requirements where up to 5-acres plus will be required to be re-seeded with the required mix. GrayMar will use a licensed firm to hydro-seed the area and understands the requirements that if for any reason the re-seeding doesn't take after a set amount of time GrayMar will be responsible for a second application. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.

Tree Planting

- GrayMar understands that up to 60 trees but per the UPRR cost request. The trees are to be 6' Ponderosa Pine. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.

Demobilization

GrayMar upon completion of the work on sit (Project) will de-mobilize and restore the site to the final required condition based on the approval of the Construction manager (Golder), including but not limited to:

- Removing all equipment, tools, and unused materials from the site.
- Removing and properly disposing of trash, debris, and other waste materials.
- Restoring access roads to at least the service level prior to the project, as determined by the Construction Manager.
- Restoring access to utility features as required by the utility provider.
- Terminating utility connections and removing temporary facilities from the site.
- Submitting of reports, to include any site records, photos, as-built drawings, and any other required documentation.

2.0 KEY PERSONNEL AND RESPONSIBILITIES

2.1 Key Personnel

GrayMar Project Manager..... Michael Gipson
Corporate Health & Safety Director..... Tim Bussey
Competent PersonBob Seitz
Field Health & Safety Officer..... (TBD)

2.2 Project Manager

The Project Manager has primary responsibility for development, implementation, and enforcement of the EHSP. Certain health and safety activities are delegated by the Project Manager to the Field Health & Safety Officer for implementation.

Project Manager responsibilities include and ensure that personnel comply instructed regarding:

- Provisions of the EHSP
- Site hazards and control measures
- Safe work practices
- Emergency procedures
- Ensure that work operations adhere to established health and safety procedures
- Enforce implementation of health and safety requirements
- Be responsible for personal safety and accountable for their behavior
- Correct or protect any unsafe condition or practice and report to proper authority
- Maintain situational awareness
- Work within the limits of physical capabilities.
- Excessive force must not be used to accomplish tasks
- Comply with instructions pertinent to their work responsibilities.

2.3 Field Health & Safety Officer

The Field Health & Safety Officer is responsible for assisting the Project Manager with implementation of the EHSP. The Field Health & Safety Officer has the authority to suspend work any time it is determined that the provisions of the EHSP are not adequate to provide a safe working environment for workers. The Field Health & Safety Officer will consult with the Competent Person & PM should safety considerations not addressed in the EHSP arise.

Maintain infrastructure and equipment, establish documented safety management systems, provide training, and conduct operations in a manner aimed at safeguarding people and property; communicate with employees, contractors, communities, and customers with respect to their roles and responsibilities surrounding area, site, and rail safety. Comply with all applicable laws, regulations, rules and instructions. Respond quickly, effectively, and with care to emergencies, accidents, or incidents in cooperation with authorized government agencies; and undertake appropriate reviews, audits, and evaluations of operations and personnel to measure progress, foster compliance with this policy and continually improve.

The mandatory job briefing must consider existing and potential hazards that might be involved because of:

- Weather,
- Scope of work
- Tools and equipment
- Identify PPE requirements
- Review electronic device use restrictions
- Assign responsibility
- Explain group / individual assignments, while considering abilities and experience
- Be aware of work groups and equipment in work area
- Identify job location
- Verify understanding of safety instructions and assignments

2.4 Competent Person

The Competent Person is responsible for excavation and trenching ops and the preparation of the EHSP and assisting the Project Manager and the Field Health & Safety Officer with implementation of the plan. The Field Health & Safety Officer will consult with the Competent Person should health and safety considerations not addressed in the EHSP arise.

Competent Person responsibilities include:

- Develop site-specific EHSP, monitoring and correcting of the procedures and practices
- Provide excavation technical assistance to the Project Manager and Field Health & Safety Officer (see Appendix D for WA L&I checklist)
- Be responsible for personal safety and accountable for their behavior
- Correct or protect any unsafe condition or practice and report to proper authority
- Maintain situational awareness
- Work within the limits of physical capabilities
- Excessive force must not be used to accomplish tasks
- Comply with instructions pertinent to their work responsibilities

2.5 Site Personnel

Site personnel are responsible for the following:

- Understanding and complying with the EHSP and any additional health and safety instructions
- Observing the **"Buddy System"** during work activities
- Promptly reporting all injuries or illnesses to the Project Manager and/or Field Health & Safety Officer
- Immediately reporting any violations of the EHSP to the Project Manager and/or Field Health & Safety Officer
- Be responsible for personal safety and accountable for their behavior
- Correct or protect any unsafe condition or practice and report to proper authority
- Maintain situational awareness
- Work within the limits of physical capabilities.

- Excessive force must not be used to accomplish tasks
- Comply with instructions pertinent to their work responsibilities.

2.6 Subcontractors

Subcontractors are responsible for understanding and complying with the requirements of the EHSP. All subcontractors allowed on the site will report to the site PM.

GrayMar requires its subcontractors to follow the same safety rules that govern GrayMar & Union Pacific employees - these include, but are not limited to, requirements related to work gear, equipment, and safety conduct, reporting, prohibitions against weapons, drugs & alcohol, and fires. GrayMar is authorized to take any actions necessary to prevent injuries to any person, damage to area property, disruption of operation, and the safety of the public.

GrayMar is responsible for the safety of its personnel, subcontractors, and any vendors or material/delivery drivers working on behalf of us. All personnel must be familiar with and obey all rules, regulations, and instructions applicable to their duties and work location prior to performing work. GrayMar and its subcontractor are responsible for training personnel to be prepared to work in compliance with all applicable standards and requirements.

Subcontractors utilized on this project and covered by this EHS Plan include: (others will be added as needed):

- UPRR TDS's Consultant – Golder WPS
- _____ (Equipment Rental)
- _____ (TBD based on need of PM/Competent Person)

2.7 VISITORS

All non-site workers and visitors must have an authorized GrayMar's approved employee (or their designated representative) to escort them and are responsible for:

- Reading, understanding, and complying with the requirements of the HSP and other applicable health and safety requirements
- Using the required personnel protective equipment (e.g., hard hats, safety boots, etc.).
- Taking reasonable precautions to prevent any incidents.

2.8 SIGN IN

All who work in any part of the secured area must:

- Sign in and out with at Main (Southeast) entrance.
- Record with actual time in and out
- Designate a person responsible for communications (cell phone/radio).
- ALL traffic entering secured area must enter through security the main gate.
- Anyone working beyond check in points must follow access procedures.
- All who visit any part of the secured area must:
- Sign in and out with the Site Safety Officer or Site Project Manager

- Have an escort by authorized representative.

A job briefing must consider existing and potential hazards involved, like:

- Weather, Scope of work; and Tools and equipment
- Identify PPE requirements
- Review electronic device use restrictions
- Assign responsibility
- Explain group / individual assignments, while considering abilities and experience
- Be aware of work groups and equipment in work area
- Identify job location

Specific UPRR Contractor Guidance

Reporting - All cases of personal injury, while on duty or on company property, must be immediately reported to the proper manager and the prescribed form completed. All cases of occupational illness must be immediately reported to the proper manager and the prescribed form completed. Because railroads are required by federal regulations to report injuries and occupational illnesses that meet certain medical treatment criteria, Contractor Personnel must report to their manager any medical treatment they receive that was directly related to their injury or illness, including any follow-up visits.

Personnel must immediately contact the Union Pacific Railroad Response Management Communications Center (RMCC) at 1-888-UPRR COP (877-7267) or local law enforcement authorities to remove trespassers, etc. on company property. All environmental hazards caused by or observed by the contractor should be reported to RMCC and the local Union Pacific manager responsible for the facility as soon as practical. This does not relieve the Contractor of any obligations to properly report injuries in accordance with any laws or regulations (e.g., OSHA requirements).

Washington L&I Specific Responsibilities

Supervisors (PM, Competent Person, Health & Safety Officer) - the safety and health of the employees they supervise is a primary responsibility of the supervisors.

To accomplish this obligation, supervisors will:

- Assure that all safety and health rules, regulations, policies, and procedures are understood and observed.
- Require the proper care and use of all required personal protective equipment (PPE).
- Identify and eliminate job hazards quickly through job safety analysis procedures.
- Inform and train employees on the hazardous chemicals and/or procedures they MAY encounter under normal working conditions or during an emergency.
- Receive and take initial action on employee suggestions, awards, or disciplinary measures.
- Conduct crew/leader meetings the first five minutes of each work shift to discuss safety and health matters and work plans for the workday.
- Conduct walk-around safety inspections at the beginning of each job, and at least weekly

thereafter.

- Train employees (new and experienced) in the safe and efficient methods of accomplishing each job or task as necessary.
- Review injury trends and establish prevention measures.
- Attend safety meetings and actively participate in the proceedings.
- Participate in incident investigations and inspections.
- Promote employee participation in the safety and health program.
- Actively follow the progress of injured workers and display an interest in their rapid recovery and return to work.

3.0 CHEMICAL HAZARD ANALYSIS

3.1 CHEMICAL HAZARDS

The primary chemical hazards to be encountered during site work are:

- Aluminum
- Aluminum Oxide
- Silica, amorphous
- Iron
- Zinc
- Copper
- Manganese
- Magnesium
- Tin
- Nickel
- Chromium Trioxide
- Arsenic
- Barium
- Chromium (Total)
- Mercury

A summary of the health effects, potential routes of entry, and OSHA 8-hour time-weighted average (TWA) & permissible exposure limits (PELs) for the materials which are likely to be encountered during operations at the site are summarized in **Table 1 and Table 2 (Fuels)** with Safety Data Sheets (SDSs) and additional chemical hazard information provided in **Appendix B**.

TABLE 1 Chemical Hazard Information			
COMPOUND	EXPOSURE LIMITS	ROUTE OF EXPOSURE	HEALTH EFFECTS
Aluminum (7429-90-5)	NIOSH REL TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp) OSHA PEL TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	inhalation, skin and/or eye contact	irritation eyes, skin, respiratory system
Aluminum Oxide (1344-28-1)	NIOSH REL TWA 10 mg/m ³ OSHA PEL TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, respiratory system

<p>Silica, amorphous (7440-21-3)</p>	<p>NIOSH REL TWA 10 mg/m³ (total) TWA 5 mg/m³ (resp)</p> <p>OSHA PEL TWA 15 mg/m³ (total) TWA 5 mg/m³ (resp)</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin, respiratory system, pneumoconiosis, cough</p>
<p>Iron (1309-37-1)</p>	<p>NIOSH REL TWA 5 mg/m³</p> <p>OSHA PEL TWA 10 mg/m³</p>	<p>inhalation</p>	<p>Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)</p>
<p>Zinc (7440-66-6)</p>	<p>NIOSH REL Dust: TWA 5 mg/m³ C 15 mg/m³ Fume: TWA 5 mg/m³ ST 10 mg/m³</p> <p>OSHA PEL TWA 5 mg/m³ (fume) TWA 15 mg/m³ (total dust) TWA 5 mg/m³ (resp dust)</p>	<p>inhalation</p>	<p>Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function</p>
<p>Copper (7440-50-8)</p>	<p>NIOSH REL TWA 1 mg/m³ [*Note: The REL also applies to other copper compounds (as Cu) except copper fume.]</p> <p>OSHA PEL TWA 1 mg/m³ [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia</p>
<p>Manganese (7439-96-5)</p>	<p>NISOH REL TWA: 1 mg/m³</p> <p>OSHA PEL TWA: 1 mg/m³ Ceiling: 5 mg/m³</p>	<p>inhalation, skin and/or eye contact</p>	<p>irritation eyes, skin, respiratory system</p>

<p>Magnesium (1309-48-4)</p>	<p>NIOSH REL 10 mg/m³</p> <p>OSHA PEL TWA 15 mg/m³</p>	<p>inhalation, skin and/or eye contact</p>	<p>irritation eyes, nose; metal fume fever: cough, chest pain, flu-like fever</p>
<p>Tin (7440-31-5)</p>	<p>NIOSH REL TWA 2 mg/m³ [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.]</p> <p>OSHA PEL TWA 2 mg/m³ [*Note: The PEL also applies to other inorganic tin compounds (as Sn) except tin oxides.]</p>	<p>inhalation, skin and/or eye contact</p>	<p>irritation eyes, skin, respiratory system; In Animals: vomiting, diarrhea, paralysis with muscle twitching</p>
<p>Nickel (7440-02-0)</p>	<p>NIOSH REL Ca TWA 0.015 mg/m³ [*Note: The REL does not apply to Nickel carbonyl.]</p> <p>OSHA PEL TWA 1 mg/m³ [*Note: The PEL does not apply to Nickel carbonyl.]</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]</p>
<p>Chromium Trioxide (1333-82-0)</p>	<p>NIOSH REL (as Cr): Ca TWA 0.0002 mg/m³ (8- hours)</p> <p>OSHA PEL (as CrO₃): TWA 0.005 mg/m³</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation respiratory system; nasal septum perforation; liver, kidney damage; leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia; eye injury, conjunctivitis; skin ulcer, sensitization dermatitis; [potential occupational carcinogen]</p>
<p>Arsenic (7440-38-2)</p>	<p>NIOSH REL Ca C 0.002 mg/m³ [15-minute]</p> <p>OSHA PEL [1910.1018] TWA 0.010 mg/m³</p>	<p>inhalation, skin absorption, skin and/or eye contact, ingestion</p>	<p>Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]</p>

<p>Barium (7440-39-3)</p>	<p>NIOSH REL TWA 0.5 mg/m³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]</p> <p>OSHA PEL TWA 0.5 mg/m³ [*Note: The PEL also applies to other soluble barium compounds (as Ba) except Barium sulfate.]</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia</p>
<p>Chromium (total) (7440-47-3)</p>	<p>NIOSH REL TWA 0.5 mg/m³</p> <p>OSHA PEL TWA 1 mg/m³ [*Note: The PEL also applies to insoluble chromium salts.]</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin; lung fibrosis (histologic)</p>
<p>Mercury (7439-97-6)</p>	<p>NIOSH REL Hg Vapor: TWA 0.05 mg/m³ [skin] Other: C 0.1 mg/m³ [skin]</p> <p>OSHA PEL TWA 0.1 mg/m³</p>	<p>inhalation, skin absorption, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria</p>
<p>*TBD (if needed)</p>			

TABLE 2 Chemical Hazard Information (FUELS)			
COMPOUND	EXPOSURE LIMITS	ROUTE OF EXPOSURE	HEALTH EFFECTS
FUELS USED ON-SITE			
Lead	<p>ACGIH: 0.05 mg/m³ TWA</p> <p>OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see 29 CFR 1910.1025)</p> <p>CAL-OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see CCR, Title 8, Section 5198)</p> <p>NIOSH: 0.050 mg/m³ TWA; Blood lead level <0.06mg/100 ml of whole blood</p>	Inhalation/ Ingestion/ Dermal	CNS depression; Possible liver and kidney damage; Possible brain damage
Gasoline	300ppm (PEL); 500ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis
Benzene	1.0ppm (PEL); 5.0ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Leukemia; Dermatitis
Toluene	100ppm (PEL); 150ppm (STEL); 500ppm (C)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis
Xylenes	100ppm (PEL); 150 ppm (STEL);	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis

Ethylbenzene	100ppm (PEL); 125ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Dermatitis
Diesel (No. 2 Fuel)	300ppm (PEL); 500ppm (STEL)	Inhalation/ Ingestion/ Dermal	100 mg/m3 TWA Skin - potential significant contribution to overall exposure by the cutaneous route Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis

Table 2 Legend:

- ppm Parts per million parts of air
- mg/m3 Milligrams per cubic meter of air
- TWA 8-hour time-weighted average
- PEL OSHA 8-hour TWA Permissible Exposure Limit
- STEL OSHA 15-minute TWA Short Term Exposure Limit
- C OSHA Ceiling Limit
- S Skin notation (may be absorbed into the body)
- CNS Central nervous system

3.2 PHYSICAL HAZARDS

The primary physical hazards that may potentially be encountered during the UPRR TDS work include:

- Fire/Explosion
- Underground/Overhead utilities
- Excavation Safety
- Heavy Equipment Operation
- Vehicle and Equipment Traffic
- Electrical Equipment
- Noise Exposure
- Heat Stress
- Miscellaneous Physical Hazards

3.2.1 Fire/Explosion

Procedures relating to fire safety for site operations include:

- No smoking in areas where flammable/combustible materials are present.
- Static electricity generating equipment will be bonded/grounded whenever transferring flammable/combustible liquids or when working in areas where flammable/combustible materials are present.
- Portable multi-purpose fire extinguishers will be always maintained on-site, kept fully

charged, inspected monthly, and serviced annually.

- Portable multi-purpose fire extinguishers will be placed within 75 feet of active work areas where flammable/combustible materials are present.
- No hot work without approval by the Project Manager and completion of a "Hot Work Permit"

3.2.2 Underground/Overhead Utilities

Safety precautions to avoid any contact with underground or overhead utilities:

- Coordinate with on-site utility oversight personnel to evaluate and identify all underground utilities will be completed prior to any subsurface activity
- Utility clearance procedures will be implemented for drilling, excavation, and/or other subsurface activity
- The work area will be surveyed for overhead utilities and safety measures will be established prior to bringing cranes, excavators, and other equipment on-site
- Equipment with high overhead projections will not be allowed to operate within a 10-foot radius (minimum distance) of overhead power lines (Note: Overhead high voltage power lines >50,000 volts require additional distance)

3.2.3 Excavation Safety

Excavation activities* will require several precautions to be taken prior to any excavation activity and include the following (as applicable):

- Conduct and/or review utility clearance information and determine the location of overhead and underground utilities prior to excavation
- Delineate areas to be excavated with white paint or other suitable markings
- Determine the exact location of substructures by hand excavation methods if underground substructures are indicated
- Maintain 24-inch excavation zone on exterior walls of any subsurface installation
- Ensure that no construction equipment or personnel come closer than ten (10) feet to an energized overhead high voltage line (Note: Overhead high voltage power lines >50,000 volts require additional distance)
- Barricade, tape off or secure open trenches during non-work periods
- Ensure compliance with all applicable OSHA requirements for installation of trenches and/or excavations deeper than five (5) feet, in which a person is required to descend

***SPECIAL NOTE – WA DOSH Directive 27.30 Excavation Operation Guidelines**
(How a WA-DOSH CSHO observes an excavation)

Safe Access and Egress

1. *Earth Ramp.* An earth ramp sloped at one end of the trench is considered a safe means of egress if employees can walk normally in an upright manner **without assistance** when entering or exiting the trench or excavation. CSHOs should also consider and document the degree of the slope, depth of the excavation, soil and environmental conditions, and the presence of any obstructions in the trench when determining whether the earth ramp can be used for safe access and egress.
2. *Structures.* Provide safe access and egress onto and off structures. Ramps, in Part N, are used to

gain access from one point to another. DOSH considers jumping onto structures or stepping across onto structures located in excavations as unsafe access and egress to or from an excavation. When structures are in the excavation, they become a part of the excavation for which safe access and egress must be provided.

3. *Lifting Equipment.* DOSH does not consider lifting equipment as "other safe means of egress." For example, employees riding in a backhoe bucket to either enter or exit trench excavations, is not "other safe means of egress" for purposes of the standard.

4. *Ladders.* Part J of Chapter 296-155 WAC for providing a stairway, ramp, or ladder when there is a break in elevation of 19 inches or more is not applicable to excavation operations. The excavation standard is clear that a stairway, ramp, or ladder is required when the depth of the excavation is 4 feet or more. Ladders must be set up inside the protective system. If employees go outside of the protective system to access the ladder, the employer is in violation. Ladders cannot be laid topside near the edge of the trench, nor can someone stand at the edge of the trench and withhold the ladder until they think it needs to be provided.

Crossing Over an Excavation

Employees who jump or step across an open excavation or onto a structure within the excavation that is 4 feet or more in depth are in violation.

Sloping

When the employer has elected to protect employees by sloping, the slope cannot be steeper than 1.5H:1V for sloping and benching systems for the design of support systems. DOSH must be able to demonstrate that no support system was used, and the sides of the excavation were steeper than 1.5H:1V.

Shielding/Shoring and Registered Professional Engineers (RPEs)

1. CSHOs are expected to verify and document all the following:

- The protective system being used was designed or approved by a RPE.
- The name of the RPE, or if a firm, the firm's name, the name of the engineer of record who approved the work for the firm, and the registration number.
- The status of the RPE's certification with the Department of Licensing professional engineering section.
- All other aspects of the on-site excavation conditions which the employer indicates are under the direct supervision of an RPE.

2. The CSHO shall determine if the RPE of record is in fact working within a discipline applicable to the excavation work (i.e., it would be inappropriate for an electrical engineer to approve a shoring design for an excavation).

Working Under Loads

1. WAC 296-155-655(5) specifically states, "No employee shall be permitted underneath loads handled by lifting or digging equipment."

2. The standard does not address either of the following situations:

- Employee exposure to caught-in-between or lateral struck-by hazards (from the load) that can be present when an employee is in a trench but not directly under a load.
- Often these hazards can be present when a restricted space limits an employee's movement.
- The hazard of the backhoe itself striking the employee in the trench.

3. Because the hazards described in "2" above are recognized by DOSH and the construction industry to cause serious physical harm or death.

4. To issue a "Safe Place" violation, the CSHO must document the location and proximity of the employee (who is not under the load but is in the trench box) while a backhoe is lowering material such as a section of precast concrete pipe into the trench. Does the employee's location expose him or her to struck-by or caught-in-between hazards? How?

3.2.4 Heavy Equipment Operation

Safety procedures regarding the use of heavy equipment include the following:

- Only experienced personnel will operate excavating equipment on-site
- All equipment will have seat belts, good functioning brakes, and operating backup alarms and horns
- Equipment should be checked at the beginning of each shift to ensure that the following systems/parts are in good working order:
 - Service, emergency, and parking brakes
 - Tires/tracks
 - Horn
 - Steering mechanism
 - Coupling devices
 - Seat belts
 - Operating controls
 - Safety devices
- Excavation work areas will be properly marked and guarded with barriers and/or banner guard to prevent unauthorized personnel entry and to prevent personnel from falling into an uncovered hole
- Workers will be cautioned to look carefully where they walk to avoid moving equipment and to maintain eye contact with heavy equipment operators
- No personnel will be allowed within the swing radius of heavy equipment
- Concurrent operations will be curtailed to prevent workers from being placed in dangerous proximity to moving heavy equipment
- Roll-over protection will be required on moving equipment such as backhoes when working on sloping surfaces which present increased risks of rollover
- Equipment being operated in reverse shall have a reverse signal alarm, or the horn will be sounded while backing up
- Whenever equipment is parked, the parking brake shall be set, and when on inclines, wheels will be chocked
- Parts of machinery such as hoe buckets or truck beds held aloft shall be blocked or cribbed before employees are allowed to work under or between them
- Bulldozer blades, hoe buckets, truck beds and the like will be fully covered or blocked when not in use
- With vehicles, follow proper lock out tag out procedures of disabling machinery that is undergoing repairs or maintenance and relieving stored energy. LOTO helps prevent that machinery from accidentally starting or moving, which could seriously injure the technician/driver performing the service.

3.2.5 Vehicle and Equipment Traffic

Vehicle and equipment traffic precautions include:

- Orange/Yellow reflective roadwork safety vests to be worn by site personnel
- Use of traffic cones, barricade tape, and/or barricades around areas with vehicle traffic

3.2.6 Electrical Equipment

Use of electrical equipment on-site will require the following:

- Personnel working on-site will ensure that all electrical power tools, lighting equipment, etc. to be used are properly grounded
- Personnel will use ground fault circuit interrupters (GFCI), or implement an assured equipment grounding conductor program
- All electrical equipment will be shut down, locked out and tagged out prior to servicing of equipment

3.2.7 Noise Exposure

The operation of heavy equipment and machinery at the site may generate noise levels and will require the following:

- Hearing protection will be used by site personnel whenever noise exposures exceed 85 decibels on the A-weighted scale (dBA) based on an 8-hour TWA.
- Personnel working in the immediate area of operating equipment will use hearing protection (e.g., foam ear plugs)

3.2.8 Heat and Cold Stress

Heat stress is a potential problem since the work activities will take place during the summer months. Daytime temperatures can rise to 100 to 120 Fahrenheit. Possible health problems caused by heat stress include the following:

- Heat stroke. Heat stroke is a response to heat characterized by extremely high body temperature and disturbance of sweating mechanism. Heat stroke is an immediate, life-threatening emergency for which medical care is urgently needed.
- Heat cramps. Heat cramps involve muscular pains and spasms due to loss of salt from the body in sweating or inadequate intake of salt. Heat cramps also may be associated with heat exhaustion.
- Heat exhaustion. Heat exhaustion is a response to heat characterized by fatigue, weakness, and eventually collapse.
- Fainting.
- Heat rash.

Working under extremely hot conditions will most likely affect workers who have not been acclimated to heat. Personnel who have not been given time to adjust to working in the heat should be gradually acclimated to the hot environment before performing stressful work.

To avoid the excessive heat of midday, as much strenuous work as possible should be scheduled for the cooler early morning hours. All project personnel should be given periodic rest periods throughout the course of the workday. The frequency and duration of rest periods should be adequate for the ambient temperature and should be based on the degree of acclimatization of project personnel.

The consumption of alcoholic beverages during prolonged periods of heat can cause additional dehydration and should be avoided. Persons taking certain medications (e.g., medications for blood pressure control, diuretics, or water pills) should consult their physician to determine if any side effects could occur during excessive heat exposure. Daily fluid intake must be sufficient to prevent significant water loss during the workday and over the workweek.

Heat stress precautions and prevention measures include the following:

- ✓ Personnel will be made aware that heat stress can occur during periods of elevated ambient temperatures, moderate to heavy workloads, and when impermeable protective clothing is in use

Personnel will be informed regarding the various forms of heat stress (e.g., heat cramps, heat exhaustion, heat stroke) and the symptoms of exposure which are as follows:

- ✓ Early signs of heat cramps and heat exhaustion are cramps, faintness, dizziness or disorientation, and pale, clammy skin

Heat stroke is an extremely serious medical emergency with sudden onset and symptoms that include dilated pupils, dry and hot skin, loss of consciousness, and convulsions:

- ✓ Initial phases of work activity will be closely monitored to identify personnel who are more susceptible to heat exposure
- ✓ Workers will be responsible for observing each other and themselves for development of heat stress symptoms
- ✓ Personnel will be encouraged to drink generous amounts of electrolyte replacement fluids (even if not thirsty) to prevent dehydration
- ✓ Adequate shelter will be provided to protect personnel from direct sun exposure
- ✓ Sufficient breaks will be provided so that personnel can remove protective clothing and cool down
- ✓ Work/rest regimens will be adjusted as required to avoid heat stress

A heat stress monitoring program will be implemented as needed should elevated ambient temperatures and concurrent use of impermeable protective garments occur.

Personal monitoring allows the assessment of a worker's response to a hot work environment. In addition to visually apparent symptoms, body temperature and heart rate will be monitored to assess a worker's response to heat stress. Body temperature and heart rate should be measured at rest. An increase of 3 degrees Fahrenheit or more will be used as an indicator to reduce work and allow a worker to cool down.

Eating or drinking should not be permitted for 15 minutes prior to obtaining the oral temperature. Thermometer should be retained under the tongue for three to five minutes; breathing should not be through the mouth; thermometers must be protected from air temperatures above 97 degrees.

If there is full recovery, the individual has not been over exposed to heat stress and work can continue. Marginal recovery is an indication that workers are approaching their tolerance level. Workers with no recovery have been overstressed and their workload should be reduced, and

length of rest period increased.

Some symptoms of heat exhaustion are clammy skin, light-headedness, slurred speech, rapid pulse, fatigue, confusion, fainting, and nausea:

- ✓ Take the victim to a cooler, uncontaminated area
- ✓ Remove protective clothing
- ✓ Allow the victim rest with cool water, cold compresses, and/or fanning-AC

Cold Stress

What constitutes cold stress, and its effects can vary across different areas of the country. In regions that are not used to winter weather, near freezing temperatures are considered factors for "cold stress." Increased wind speed also causes heat to leave the body more rapidly (wind chill effect). Wetness or dampness, even from body sweat, also facilitates heat loss from the body. Cold stress occurs by driving down the skin temperature, and eventually the internal body temperature. When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result.

Types of cold stress include trench foot, frostbite, and hypothermia.

Trench foot is a non-freezing injury of the feet caused by prolonged exposure to wet and cold conditions. It can occur in temperatures as high as 60°F if feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet.

Frostbite is caused by the freezing of the skin and tissues. Frostbite can cause permanent damage to the body, and in severe cases can lead to amputation. The risk of frostbite is increased in people with reduced blood circulation and among people who are not dressed properly for extremely cold temperatures.

Hypothermia occurs when the normal body temperature (98.6°F) drops to less than 95° F. Exposure to cold temperatures causes the body to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up the body's stored energy. The result is hypothermia, or abnormally low body temperature. Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40° F) if a person becomes chilled from rain, sweat, or immersion in cold water.

Outdoor workers exposed to cold and windy conditions are at risk of cold stress, both air temperature and wind speed affect how cold they feel. Wind Chill is the term used to describe the rate of heat loss from the human body, resulting from the combined effect of low air temperature, and wind speed. The Wind Chill Temperature is a single value that takes both air temperature, and wind speed into account. For example, when the air temperature is 40°F, and the wind speed is 35mph, the wind chill temperature is 28°F; this measurement is the actual effect of the environmental cold on the exposed skin.

Risk factors for cold stress include:

- Wetness/dampness, dressing improperly, and exhaustion
- Predisposing health conditions such as hypertension, hypothyroidism, and diabetes
- Poor physical conditioning

It is important for employers to know the wind chill temperature so that they can gauge workers' exposure risk better and plan how to safely do the work. It is also important to monitor workers' physical condition during tasks, especially new workers who may not be used to working in the cold, or workers returning after spending some time away from work.

Employers should take the following steps to protect workers from cold stress:

- Schedule maintenance and repair jobs in cold areas for warmer months.
- Schedule cold jobs for the warmer part of the day.
- Reduce the physical demands of workers.
- Use relief workers or assign extra workers for long, demanding jobs.
- Provide warm liquids to workers.
- Provide warm areas for use during break periods.
- Monitor workers who are at risk of cold stress.

Provide cold stress training that includes information about:

- Worker risk
- Prevention
- Symptoms
- The importance of monitoring yourself and coworkers for symptoms
- Treatment
- Personal protective equipment

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures cannot be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Wear appropriate clothing.
- Wear several layers of loose clothing. Layering provides better insulation.
- Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
- When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Make sure to protect the ears, face, hands, and feet in extremely cold weather.
- Boots should be waterproof and insulated.
- Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.)
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of

clothes and a thermos of hot liquid.

- Include a thermometer and chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.

3.2.9 RATTLESNAKE AND STINGING INSECTS (IF APPLICABLE)

Rattlesnake burrows or nests should be watched for during excavation. July, August, and September are the usual months during which baby rattlesnakes are born. These young rattlesnakes are particularly dangerous in that they are unable to rattle to warn an approaching person and will inject all their venom in a single bite. In walking across site areas, care should be taken to avoid bushes, brush, and pockets of boulders where rattlesnakes might be seeking shade.

3.2.10 Miscellaneous Physical Hazards

Miscellaneous physical hazards and safety procedures to be followed will be discussed with personnel in daily safety meetings and may include discussion of the following topics:

- Material handling
- Safe lifting procedures
- Machinery operation
- Housekeeping
- Uneven terrain
- Slip, trip, and fall hazards

Exposure Pathways and Remedial Action Objective

Potential exposure pathways associated with impacted soil are as follows:

Human Health and Ecological

- Dermal contact with stockpile material (current Site workers, trespassers, and construction workers)
- Dermal contact with surface water runoff from the stockpile (current Site workers, trespassers, construction workers, and adjacent off-property users)
- Direct contact with stockpile material and surface water runoff from the stockpile material (flora and fauna)
- Ingestion of stockpile material and surface water runoff (small mammals and birds)
- Ingestion of plants or fauna that have been impacted by the above two pathways (predatory small mammals and birds)

One objective of the UPRR Trentwood dross removal project is to address the risks posed by the dross material and associated impacted soil is to eliminate the potential for ingestion or direct contact of stockpile material, or soil mixed with stockpile material, or stormwater runoff from the stockpile, by human and ecological receptors.

4.0 EXPOSURE MONITORING PLAN

The Field Health & Safety Officer will be responsible for completing exposure monitoring during field operations, as applicable.

4.1 Air Monitoring Action Plan (Real Time Dust Particulate Monitoring)

Real Time Dust Particulate Monitoring – Golder will supply on-site work area and perimeter real time dust monitoring during all working hours on the site.

GrayMar is responsible for dust control and will also maintain visual observation during the operations on site.

4.2 Particulate Sampling*

Real Time Dust Particulate Monitoring – Golder will supply on-site work area and perimeter real time dust monitoring during all working hours on the site. If particulate measurements are significantly high the job will be stopped until the area can be properly wetted to avoid any rise in particulate levels.

***NOTE Sampling Strategy and Protocol (OSHA.gov)**

As part of the walkthrough, identify the:

- *Processes/operations being run*
- *Tasks performed*
- *Materials used/materials employees are exposed to*
- *Work practices used*
- *Exposure controls in place and how effective they appear to be*

Evaluate the chemicals being used. Consider the approximate quantities and utilization rates. For liquids, consider indicators of volatility (e.g., boiling point and vapor pressure). Consider whether handling practices and engineering controls are being used that would increase or decrease exposure. Determine whether exposure is likely to occur as a vapor or an aerosol.

Sample those individuals likely to have the highest workplace exposures (i.e., highest-risk employees) due to the materials and processes with which they work, the conditions in which they work (e.g., distance to exposure source and air movement), the tasks they perform, the frequency of the tasks, and the way in which they perform the tasks (e.g., work habits and employee mobility). For example, in a welding shop, the tall welder who leans over his work may have higher exposures than a shorter welder who is not leaning into the rising plume.

Determine if employees are exposed to more than one chemical, either simultaneously or sequentially.

5.0 SITE CONTROL

Due to the nature of work activities to be conducted at the site, the establishment of formalized work zones (i.e., Exclusion Zone, Contamination Reduction Zone, and Support Zone) will not be required. May use truck wash/track-out-pad to prevent transfer of material off-site.

The GrayMar generated site plan supplied as part of the project requirements will be utilized as the site plan. A hard copy of this plan is available in the GrayMar Project Manager's site office trailer.

5.1 Site Control Procedures

The following procedures will be used to assist in controlling on-site activities:

- Only persons authorized by the Field Health & Safety Officer may excavation work areas and decontamination areas.
- All site personnel will wear the appropriate PPE in work areas
- Site personnel will follow decontamination procedures required by the Field Health & Safety Officer
- Individuals in contaminated and non-contaminated working areas will remain in visual contact with one another ("buddy system")
- For emergency communication, the Project Manager or Field Health & Safety Officer will have a radio, cellular phone, or will locate the nearest available phone to contact essential personnel in the event of an emergency

6.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be required for certain field operations. Based on the potential for contaminant exposures. It is anticipated that Modified-Level D, and Level D protection may be required during the project as described below. All PPE will be inspected by Site personnel prior to use. All used PPE will be disposed of in assigned containers (bags) and disposed of per the RFP with the soil. PPE will not be allowed off of the Site.

6.1 Level D PPE

Level D PPE will consist of the following:

- Standard work clothing
- Nomex® coverall (as required)
- Orange/yellow reflective safety vest (if vehicle traffic)
- Steel-toe safety boots
- Work gloves (as needed)
- Hard hat
- Safety glasses
- Ear plugs (if noise levels >85 dBA)

6.2 Modified-Level D PPE

Modified-Level D PPE will consist of the following:

- Tyvek® or Kleenguard® coverall
- Nomex® coverall (as required)
- Orange/yellow reflective safety vest (if vehicle traffic)
- Steel-toe safety boots
- Gloves, outer (PVC, nitrile, or neoprene)
- Gloves, inner (surgical nitrile, vinyl, or latex)
- Hard hat
- Safety glasses
- Ear plugs (if noise levels >85 dBA)

6.3 Level C PPE

Level C PPE will consist of the following:

- Half-face or full-face air-purifying respirator with organic vapor cartridges filter
- Tyvek® or Kleenguard® coverall
- Orange reflective safety vest (if vehicle traffic)
- Steel-toe safety boots
- Gloves, outer (PVC, nitrile, or neoprene)
- Gloves, inner (surgical nitrile, vinyl, or latex)

- Hard hat (if on the ground)
- Safety glasses
- Ear plugs (if noise levels >85 dBA)

6.4 Respiratory Protection

Respiratory protection will be selected, used, and maintained in accordance with the GrayMar's written health and safety policy for respiratory protection.

Respiratory protection requirements include: (not required currently for site work but should have just in case conditions change)

- The Field Health & Safety Officer will be responsible for ensuring that all the UPRR TDS GrayMar's workers have had required medical examinations, respirator training, respirator fit testing, and required documentation.
- No facial hair that interferes with respirator fit is allowed
- A positive and negative pressure respirator fit check will be completed each time a respirator is put on
- Personnel are responsible for the proper maintenance, cleaning, storage, and use of their respirator as called out in GrayMar's corporate respirator program.
- Whenever respirators are required, no person will remove a respirator in the designated work Zone, or enter these work zones without a respirator
- Personnel using air-purifying respirators must have passed a qualitative fit-test within the past year

7.0 DECONTAMINATION MEASURES

Due to the nature of work activities to be conducted at the site, the establishment of extensive decontamination measures will not be required.

7.1 Personnel Decontamination

Field decontamination whenever leaving the excavation or equipment decontamination area will not be required. Debris dust will be removed from skin using a Hudson sprayer filled with a mild detergent and water. Modification to the decontamination protocol will be made on-site as needed.

The following are basic decontamination procedures will be used as necessary:

- All decontamination will occur at the border of established work areas
- All decontamination that occurs at the border of the established work areas will consist of dual wash-down tubs and a Hudson sprayer. All PPE will be removed at this point and either stored for reuse or containerized for disposal.
- Minimize contact with contaminants to reduce the potential for personal or equipment contamination
- The Field Health & Safety Officer will review decontamination procedures with all personnel required to enter work areas
- Remove contaminated protective clothing when leaving work areas
- Discard disposable protective clothing in appropriately marked containers before leaving the site
- Practice good personal hygiene by washing face, hands, and forearms before eating, drinking, smoking, etc.

7.2 Equipment Decontamination

Equipment will be decontaminated by procedures established by the Field Health & Safety Officer and Project Manager for the UPRR Trentwood Dross Project. A motorized equipment decontamination point will be in the location on the center east area of the site prior to exiting the eastern entrance and egress gate.

8.0 STANDARD SAFETY PROCEDURES

8.1 Standard Work Procedures

Personnel working on the site will always work in a safe manner. This includes, but is not limited to, the following actions:

8.1.1 Health and Safety Plan Review and Documentation

EHSP review and documentation requirements include:

- All personnel entering the site will sign a statement attesting to their having read and understood the EHSP and agreement to follow the Plan
- Workers new to the site must read and sign the EHSP before being allowed to work at the site
- Questions relating to the EHSP will be answered by the Field Health & Safety Officer prior to entering the site
- Personnel will provide Hazwoper training documentation and medical fitness for duty documentation to the Field Health & Safety Officer prior to being allowed to work at the site
- Prior to the start of work, the Field Health & Safety Officer will provide each worker at the site with informal training on project operations and EHSP requirements and will include review of the following topics:
 - Provisions of the EHSP
 - Emergency procedures
 - Decontamination procedures
 - Chemical exposures and safety hazards anticipated
 - Site lay-out and work zone demarcation
 - Buddy system requirements
 - Medical surveillance program
 - Location of emergency medical facilities
 - Procedures for reporting illness/injury
 - Warning signals and evacuation procedures
 - Specific site requirements

8.1.2 General Safe Work Practices

General safe work practices include:

- All workers will obey directives from the Field Health & Safety Officer

- Personnel who do not comply with safety requirements may be immediately dismissed from the site as required by the Project Manager and/or Field Health & Safety Officer
- The Project Manager and/or Field Health & Safety Officer will conduct on-site safety meetings on a daily basis prior to starting work to review work operations and to discuss pertinent site safety topics
- All personnel at the site will work in teams of at least two (2) persons ("buddy system") and visual contact between team members must be maintained
- Drugs, alcohol, and firearms are not allowed at the site
- Equipment problems will be reported to the Field Health & Safety Officer at once
- At least two persons trained in first aid and CPR will be on-site during remediation activities, unless a 911 emergency responder can respond within five (5) minutes to the project site.
- Contact with contaminated surfaces will be avoided whenever possible (do not walk-through puddles, mud, or discolored ground surfaces, and do not kneel on the ground)
- Dust control measures (water spray) will be implemented if excessive dust is observed
- Engines will be shut off while fueling
- Excavators, Cranes, or other equipment with tall booms will not operate within ten (10) feet of an electrical conductor
- All workers are to stay clear of moving equipment, booms, and buckets
- Measures to control dust created during work operations will be implemented and will involve application of water to dusty surfaces to minimize dust generation

8.1.3 Personal Protective Equipment

Standard PPE requirements include:

- PPE is required in the Exclusion Zone as directed by the EHSP or by the Field Health & Safety Officer
- Personnel are responsible for the proper use of all required PPE
- Torn protective clothing or other damaged PPE will be immediately repaired or replaced
- Contaminated PPE will be properly disposed of (as solid waste under the same profile as the impacted soils)

8.1.4 **Sanitation**

Sanitation requirements include the following:

- No food, beverages, tobacco products (smoked or chewed), or cosmetics will be allowed, in contaminated areas, decontamination areas or other potentially contaminated areas
- Eating, drinking, chewing gum or tobacco, and smoking are not allowed except in designated areas
- Good personal hygiene and decontamination practices will be followed at all times
- Site washing facilities will be provided and personnel will be required to wash their hands and face prior to breaks and lunch
- Potable water will be made available for personnel at the job site
- Portable toilets will be provided and used when not otherwise available on-site or within a short travel distance

8.1.5 **Accident Reporting**

Accident reporting requirements include:

- All injuries/accidents, including exposure incidents, will be immediately reported to the Field Health & Safety Officer
- A written report of an accident/incident containing all pertinent information is to be completed and submitted to the Field Health & Safety Officer
- A written report of an accident/incident is to be completed and submitted to the GrayMar's representative on Site within 24-hours of any incident by the Site Field Health & Safety Officer.

8.1.6 **Miscellaneous**

Miscellaneous standard safety procedures include:

- All visitors must have prior approval from the Project Manager or their designee before being admitted to the site
- All visitors must read and acknowledge understanding of the EHSP
- All requests by media or outsiders for information will be referred to the appropriate agency or client representative

8.2 Standard Operating Procedures

GrayMar's has written health and safety policies and procedures that establish protocol for implementation of specific safety programs. Employee compliance with these policies and procedures is mandatory. These policies include the following:

- ✓ Corporate Occupational Health and Safety Program
- ✓ Injury and Illness Prevention Program
- ✓ Personal Level of Protection Program
- ✓ Medical Surveillance Program
- ✓ Hazard Communication Program
- ✓ Permit-Required Confined Space Program
- ✓ Site-Specific Health and Safety Program
- ✓ Respiratory Protection Program
- ✓ Training Program
- ✓ Drug and Alcohol Testing Program

9.0 EMERGENCY RESPONSE PLAN

The following emergency/contingency plan addresses possible site emergencies:

- Prior to each individual excavation at the UPRR TDS Site, the Field Health & Safety Officer will discuss with all personnel the approved escape routes based on the Site Aerial map supplied in the Appendix A, which is posted in the GrayMar's Site truck. Initial planning will include establishing the best means for evacuation from work areas in case of catastrophe. Should an incident occur the Site Safety Officer or Project Manager will be responsible for head counts at a predetermined meeting location based on work areas on the site.
- Personnel will immediately notify and report to the Field Health & Safety Officer and/or Project Manager in the event of any type of site emergency

9.1 Emergency Communications

A portable phone will be available for emergency communications. All work areas will have at least one radio and phone for communication with the Site Safety officer or Manager. The Site radios for GrayMar's personnel will be utilized for notification should an emergency arise.

9.2 Emergency Telephone Numbers/Assistance

An emergency telephone list (**Appendix C**) will be maintained at the site in the event of an emergency. The 911 Emergency Number System will be used for any type of site emergency.

9.3 Response to Fire

In the event of a fire, the following procedures will be implemented:

- In the event of a large fire (beyond immediate control of a small on-site fire extinguisher), personnel will immediately evacuate the work area and reassemble at a pre-determined safe, upwind site location. The fire department will be called using 911 and site personnel will not re-enter the fire area but will wait for the arrival of the fire department.
- In the event of a small fire, trained personnel will use an on-site fire extinguisher for containment.

9.4 Emergency Supplies

Emergency supplies will be immediately available on-site and will include:

- First aid kit
- Portable emergency eyewash and shower
- Supply of clean water
- Portable cooler with drinking water and ice

9.5 Emergency Hospital and Hospital Route Information

Emergency planning will involve selection of an emergency hospital and determination of the route to the hospital. The emergency hospital, location, and route map are provided in **Appendix C**.

9.6 Response to Medical Emergency

In the event of a medical emergency, the following procedures will be implemented:

- Remove the exposed or injured person from immediate danger
- Evacuate personnel from work area until the Field Health & Safety Officer determines that it is safe for work to resume
- Trained on-site personnel will administer first aid or CPR as necessary
- Call for emergency medical assistance by using the 911 emergency number and inform them of the following:
 - Specific directions to the emergency location
 - Phone number from which you are calling
 - Tell what happened
 - Number persons needing help
 - What is currently being done for victim(s)
 - For life-threatening injuries, request instructions from 911 dispatcher as to procedure to be followed
- Decontaminate victim as required by the Field Health & Safety Officer
- A medical emergency involving chemical exposure may require communication between the Field Health & Safety Officer and hospital personnel regarding the chemicals involved.

9.7 Spill and Discharge Control Plan

In the event of a spill or discharge, the following procedure will be implemented:

- In the event of a spill or discharge GrayMar Environmental Services, Inc. will be notified immediately, and an emergency response team will be mobilized to the incident. Call GrayMar Environmental Services, Inc. at (509) 770-4456

9.8 Drivers Hazard Awareness

Drivers will be informed of chemical hazards associated with this project.

10.0 TRAINING

10.1 Hazwoper Training

All personnel at the site must have completed hazardous waste operations (Hazwoper) training as required by the OSHA "Hazardous Waste Operations and Emergency Response" standard (Federal OSHA: 29 CFR 1910.120).

Required Hazwoper training includes the following:

- Worker Training: 40-hours of initial training and 3 days of supervised field experience
- Manager and Supervisors to have: 8-hours of additional manager and supervisor training as required by OSHA
- Refresher Training: 8-hours of refresher training annually

Certificates of successful completion of Hazwoper training are maintained at GrayMar's offices and will be available for examination by regulatory authorities upon request.

10.2 UPRR Required Training

GrayMar understands that everyone on the construction crew is required to take the railroad safety training. All GrayMar employees that are on UPRR property will be eRailsafe verified (a 24-hour training), whether they work within 25 feet of the railroad tracks or not. If work is to be performed within 25 feet of active railroad tracks, employees will also need to be registered in Avetta for Federal Railroad Administration (FRA) compliance standards.

If there is a supplier or subcontractor coming onto site to conduct a short duration task whose work will not require them to work near the railroad tracks, or they can be escorted by trained personnel for the duration of their work on-site (such as a surveyor that may need to work within the 25 foot railroad tracks buffer for a short period of time), then they are not required to take the training

10.3 Daily Safety Meetings

Daily tail-gate safety meetings will be conducted at the beginning of each work shift to discuss operational tasks to be completed and pertinent site safety topics. Meetings are documented and those in attendance are requested to sign meeting forms. A copy of GrayMar daily tailgate is in Appendix D of this EHS Plan

11.0 MEDICAL SURVEILLANCE

11.1 Medical Examinations

GrayMar's medical examinations for field personnel are completed prior to job assignment and annually thereafter. The GrayMar's medical surveillance program has been designed by a board-certified physician run TPA (AOH-WorkCare).

The GrayMar's medical examination protocol consists of the following:

- Medical and occupational history
- Comprehensive physical examination
- Vision test
- Audiometric test
- Pulmonary function test per OSHA 1910.134
- Heavy Metals blood test for Lead, Arsenic, Cadmium, and Mercury per OSHA 1910.1000 series
- Spirometry/PFT
- Urinalysis
- Blood chemistry panel
- Chest X-ray, as needed
- Electrocardiogram, as needed

11.2 Medical Examination Reports

Evidence of a current medical examination in the form of a health status report from the examining physician is maintained at GrayMar's offices and will be available to regulatory personnel upon request.

11.3 Exposure Incident Medical Examinations

If a worker suffers a chemical exposure (or if suspicious symptoms exist):

- A medical evaluation for a chemical exposure incident is mandatory and should be completed as soon as possible, but in no case later than 48 hours after the incident
- The physician will be provided with a list of all suspected chemicals that the worker may have contacted, and any additional information which may aid the physician
- The worker will not be allowed back to work at the site until a fitness for duty statement has been issued by the physician
- Medical surveillance is the analysis of health information to look for problems that may be occurring in the workplace that require targeted prevention. Thus, surveillance serves as a feedback loop to the employer. Surveillance may be based on a single case or sentinel event, but more typically uses screening results from the group of employees being evaluated to look for abnormal trends in health status. Surveillance can also be conducted on a single employee over time. Review of group results helps to identify potential problem areas and the effectiveness of existing

worksite preventive strategies. Services also include the expertise and experience needed to anticipate, evaluate, and control hazards in the federal workplace while also maintaining and improving employee health, productivity, and morale.

12.0 RECORD KEEPING

12.1 Health and Safety Documentation

Various health and safety documents will be maintained by the Field Health & Safety Officer. Health and safety documentation records, as applicable, include the following:

- Training records
- Respirator fit testing forms
- Medical clearance forms
- EHSP review forms
- Daily safety meeting forms
- Safety inspection report forms
- Equipment inspection forms
- Confined space entry permits
- Hot work permits
- Injury and illness forms
- Accident investigation forms
- Exposure monitoring records
- Other health and safety documents

All records are maintained by GrayMar's as required by OSHA.

Applicable EHSP forms are provided in ***Appendix D***.

13.0 COVID-19 (SPECIAL SECTION)

This section provides guidance for construction employers and workers, such as those engaged in earthmoving activities. This guidance supplements the general, interim guidance for all workers and employers of workers with potential occupational exposures to SARS-CoV-2.

Remain alert of changing outbreak conditions, including as they relate to community spread of the virus and testing availability, and implement infection prevention measures accordingly. As states or regions progress through the phases of the Guidelines, you will likely be able to adapt this guidance to better suit evolving risk levels and necessary control measures in your workplaces.

Assess the hazards to which your workers may be exposed; evaluate the risk of exposure; and select, implement, and ensure workers use controls to prevent exposure. The table below describes construction work tasks associated with the exposure risk levels in OSHA's occupational exposure risk pyramid, which may serve as a guide to employers in this sector.

The project at the UPRR TDS site will be considered minimal risk under OSHA. These are tasks that allow employees to remain at least 6 feet apart and involve little contact with the public, visitors, or customers.

Conducting a job hazard analysis can help you to determine whether work activities require close contact (within 6 feet) between workers and clients, visitors, or other members of the public. When a job hazard analysis identifies activities with higher exposure risks, and those activities are not essential, consider delaying them until they can be performed safely (e.g., when appropriate infection prevention measures, as discussed on this page, can be implemented or once community transmission subsides).

Training

Train workers on:

- The signs and symptoms of COVID-19 and an explanation of how the disease is potentially spread, including the fact that infected people can spread the virus even if they do not have symptoms.
- All policies and procedures that are applicable to the employee's duties as they relate to potential exposures to SARS-CoV-2. It is helpful to provide employees with a written copy of those standard operating procedures.
- Information on appropriate social distancing and hygiene practices, including:
 - Avoiding physical contact with others and maintaining a distance of at least 6 feet from customers and other individuals, whenever possible, including inside work trailers.
 - Appropriate cleaning practices (i.e., washing hands frequently with soap and water for at least 20 seconds, or, if soap and water are not immediately available, using alcohol-based hand sanitizer that contains at least 60% alcohol and rubbing hands until they are dry; sanitizing all surfaces workers will touch).
 - The proper way to cover coughs and sneezes following CDC recommendations (i.e.,

- sneezing or coughing into a tissue or into the upper sleeve).
- Alternatives to shaking hands upon entry, and the importance of workers not touching their own faces (mouth, nose, eyes).
- The benefits of driving to work sites or parking areas individually, when possible, without passengers or carpools.
- The types, proper use, limitations, location, handling, decontamination, removal, and disposal of any PPE being used.
- The importance of staying home if they are sick.
- Wearing masks over their noses and mouths to prevent them from spreading the virus.
- The need to continue using other normal control measures, including PPE, necessary to protect workers from other job hazards associated with construction activities.
- Using Environmental Protection Agency-approved cleaning chemicals or that has label claims against the coronavirus for cleaning frequently touched surfaces like tools, handles, and machines.
- The need to report any safety and health concerns.

Implement standard operating procedures and employee training to ensure that, **before entry into areas where construction is ongoing**, workers:

- Request that any individuals under quarantine or isolation who have been diagnosed with COVID-19 or are experiencing signs and/or symptoms of COVID-19 remain physically separated from the worker (e.g., in a different room, on a different level of the home or building, or outside if weather and applicable emergency orders permit) and communicate remotely with the worker (e.g., by cell phone, using internet-based payment systems and electronic signatures to confirm that work was completed).
- Ask individuals in the workplace to wear a cloth or other face covering, if available, and to cover coughs and sneezes.
- Request that shared spaces in the construction area (Office Trailer) have good air flow, such as by turning on an air conditioner or opening windows, weather permitting, consistent with CDC recommended precautions for people in households.

CLOTH FACE COVERINGS IN CONSTRUCTION

CDC recommends wearing cloth face coverings as a protective measure in addition to social distancing (i.e., staying at least 6 feet away from others). Cloth face coverings may be especially important when social distancing is not possible or feasible based on working conditions.

A cloth face covering may reduce the amount of large respiratory droplets that a person spreads when talking, sneezing, or coughing. Cloth face coverings may prevent people who do not know they have the virus that causes COVID-19 from spreading it to others. Cloth face coverings are intended to protect other people—not the wearer.

Cloth face coverings are not PPE. They are not appropriate substitutes for PPE such as respirators (like N95 respirators) or medical facemasks (like surgical masks) in workplaces where respirators or facemasks are recommended or required to protect the wearer.

While wearing cloth face coverings is a public health measure intended to reduce the spread of COVID-19 in communities, it may not be practical for workers to wear a single cloth face covering for the full duration of a work shift (e.g., eight or more hours) on a construction site if they become wet, soiled, or otherwise visibly contaminated during the work shift. If cloth face coverings are worn on construction sites, employers should provide readily available clean cloth face coverings (or disposable facemask options) for workers to use when the coverings become wet, soiled, or otherwise visibly contaminated.

Employers, who determine that cloth face coverings should be worn at a construction site, including complying with state or local requirements for their use, should ensure the cloth face coverings:

- Fit over the nose and mouth and fit snugly but comfortably against the side of the face
- Are secured with ties or ear loops
- Include multiple layers of fabric
- Allow for breathing without restriction
- Can be laundered using the warmest appropriate water setting and machine dried daily after the shift, without damage or change to shape (a clean cloth face covering should be used each day)
- Are not used if they become wet or contaminated; Are replaced with clean replacements, provided by employer, as needed; Are handled as little as possible to prevent transferring infectious materials to the cloth; and Are not worn with or instead of respiratory protection when respirators are needed.

Personal Protective Equipment

Most construction workers are unlikely to need PPE beyond what they use to protect themselves during routine job tasks. Such PPE may include a hard hat, gloves, safety glasses, and a face mask. However, under OSHA's PPE standards for construction (29 CFR 1926 Subpart E), employers must consider whether their hazard and risk assessments, including construction site job hazard analyses, indicate a need for the use of more protective PPE.

Make every effort to protect workers through measures other than PPE. When workers need PPE, employers must comply with OSHA's standards for PPE in construction (29 CFR 1926 Subpart E).

When other control measures are not sufficient to protect workers, equip those who must enter potentially hazardous homes or occupied work sites with adequate supplies of appropriate PPE. PPE ensembles may include gloves, eye protection, and/or face shields.

In limited circumstances, including situations involving close contact (i.e., within 6 feet) with someone with suspected or confirmed COVID-19, respiratory protection may be needed and must be provided by the employer in accordance with the criteria below:

- When respiratory hazards exist, employers must comply with OSHA's Respiratory Protection standard (29 CFR 1910.134). OSHA is providing enforcement flexibility under the standard, see enforcement memoranda.

- When disposable respirators are used, employers must comply with the requirements of OSHA's Respiratory Protection standard (29 CFR 1910.134), including the requirement to train workers to don respirators before entry and to remove and properly dispose of respirators upon exit.

To meet the above precautions GrayMar will daily disinfect all GrayMar managed equipment on site at least once daily. All visitors to the site must meet this section of the EHS plan.

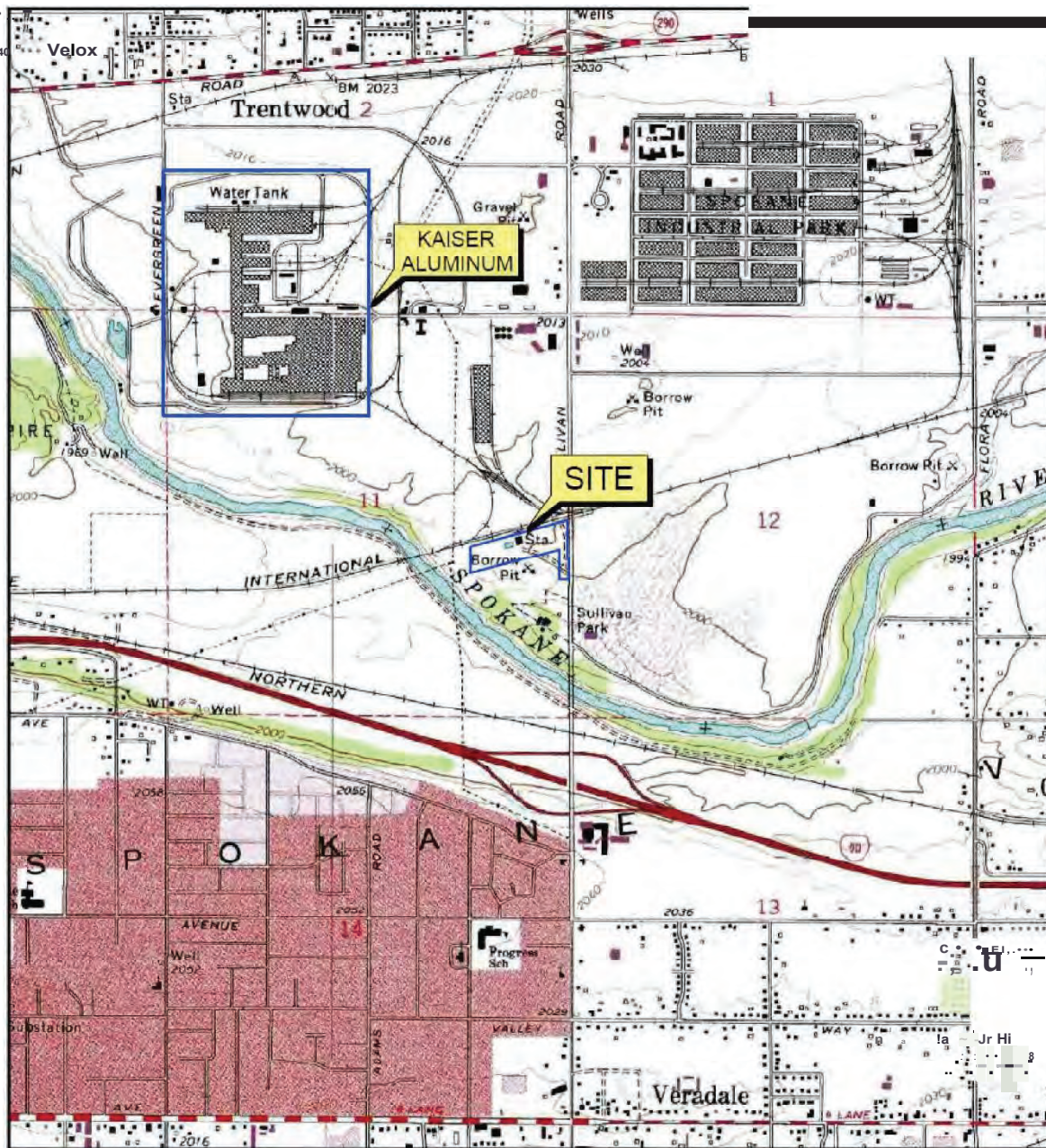
GrayMar will manually disinfect all heavy equipment managed by GrayMar personnel to include all controls, enclosed cabs, and any other ancillary items managed by GrayMar personnel.

GrayMar will manually wipe down and disinfect the office trailer and the porta-johns on site throughout the day as well as utilize a deep fogging unit to further disinfect.

All disinfectant used will meet CDC and USEPA requirements and SDS for this product will be kept on site.

APPENDIX A

FIGURE A - SITE LOCATION MAPS



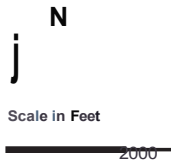
UNION PACIFIC RAILROAD CO.
 ALUMINUM RECYCLING TRENTWOOD SITE
 VERADALE, WASHINGTON

Figure 1
SITE LOCATION MAP

PROJECT: 3171 BY: AJD REVISIONS
 DATE: DEC, 2011 CHECKED: MKW

PASTOR, BEHLING & WHEELER, LLC
 CONSULTING ENGINEERS AND SCIENTISTS

WASHINGTON



Source:
 Base map from <http://www.terragotech.com>, Greenacres, WA
 U.S.G.S. 7.5 minute quadrangle, 1986.



Imagery ©2022 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO, Map data ©2022 200 ft

FIGURE B
- AERIAL

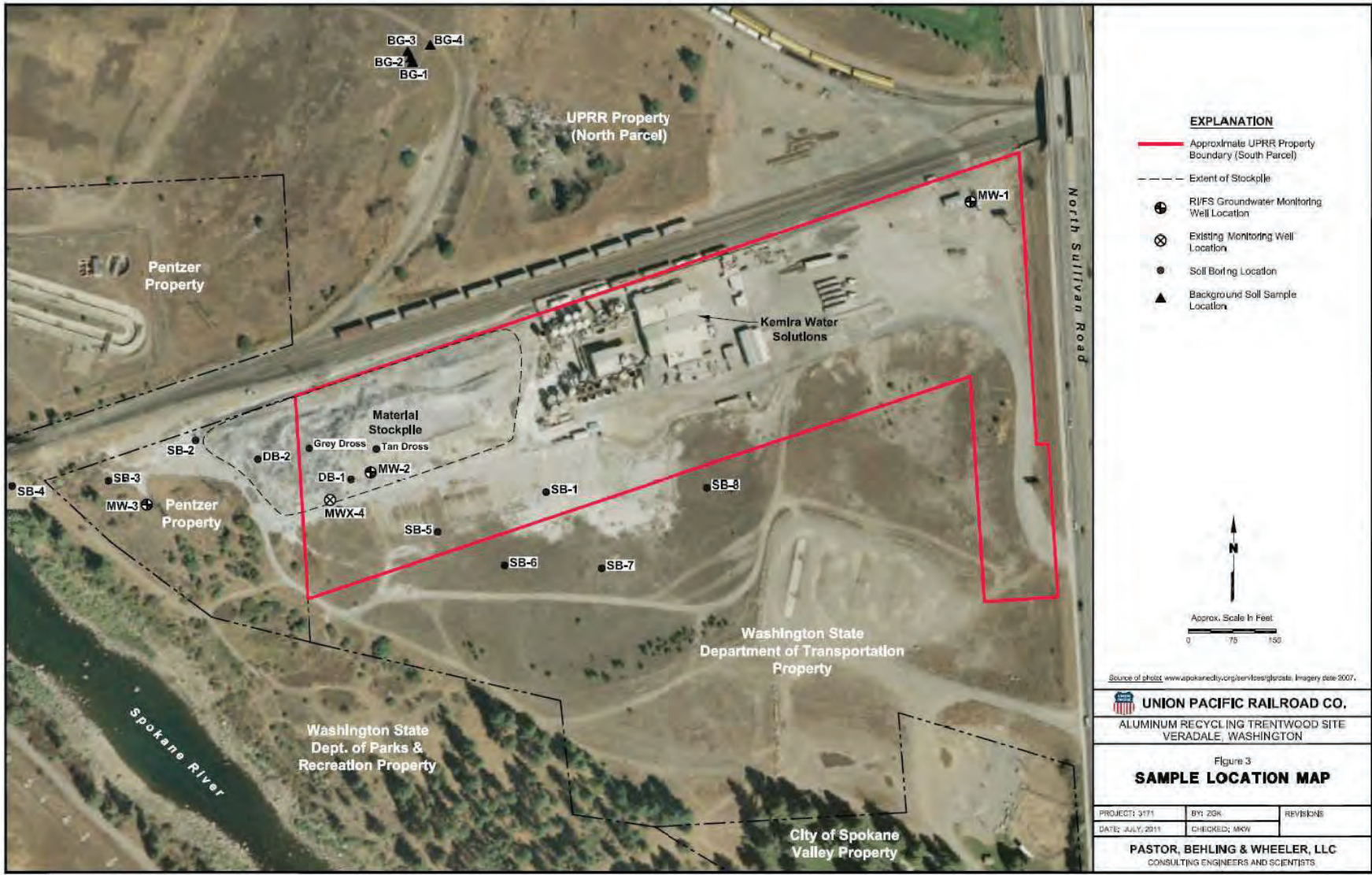


FIGURE C - PROPERTY PARCEL OWNERSHIP DELINEATION

APPENDIX B

CHEMICAL HAZARD INFORMATION

GENERAL PRODUCT INFORMATION (DROSS)

The primary chemical hazards to be encountered during site work are:

- Aluminum
- Aluminum Oxide
- Silica, amorphous
- Iron
- Zinc
- Copper
- Manganese
- Magnesium
- Tin
- Nickel
- Chromium Trioxide
- Arsenic
- Barium
- Chromium (Total)
- Mercury
- FUELS – DIESEL & GASOLINE (compositions & hazards-equipment ops)

HAZARD INFORMATION PROVIDED BY CAMEO CHEMICALS



Chemical Datasheet

ALUMINUM POWDER, UNCOATED



Chemical Identifiers

CAS Number 7429-90-5	UN/NA Number 1396	DOT Hazard Label Dangerous When Wet	USCG CHRIS Code none
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NIOSH Pocket Guide
Aluminum

International Chem Safety Card
ALUMINIUM POWDER

NFPA 704

Diamond	Hazard	Value	Description
3 0 1	Health	0	No hazard beyond that of ordinary combustible material.
	Flammability	3	Can be ignited under almost all ambient temperature conditions.
	Instability	1	Normally stable but can become unstable at elevated temperatures and pressures.
	Special		

(NFPA, 2010)

General Description

A light gray solid. Denser than water. Contact may burn skin, eyes, and mucous membranes. May be toxic by ingestion, inhalation and skin absorption. Used to make other chemicals.

Hazards

Reactivity Alerts

- Strong Reducing Agent
- Water-Reactive
- Pyrophoric

Air & Water Reactions

Highly flammable. Produces flammable gases and heat on contact with water. May ignite on contact with water or moist air.

Fire Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished. Some are transported in highly flammable liquids. Runoff may create fire or explosion hazard. (ERG, 2020)

Health Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause environmental contamination. (ERG, 2020)

Reactivity Profile

ALUMINUM POWDER, UNCOATED is a reducing agent. Reacts very exothermically when mixed with metal oxides and ignited or heated (thermite process). Reacts explosively when mixed with copper oxides and heated [Mellor 5:217-19 1946-47]. Reacts with metal salts, mercury and mercury compounds, nitrates, sulfates, halogens, and halogenated hydrocarbons to form compounds that are sensitive to mechanical shock [Handling Chemicals Safely 1980. p. 135]. Mixtures with ammonium nitrate are used as an explosive. A mixture with powdered ammonium persulfate and water may explode [NFPA 491M 1991]. Heating with bismuth trioxide leads to an explosively violent reaction [Mellor 9:649 1946-47]. Mixtures with finely divided bromates (also chlorates and iodates) of barium, calcium, magnesium, potassium, sodium or zinc can explode by heat, percussion, and friction [Mellor 2:310 1946-47]. Burns in the vapor of carbon disulfide, in sulfur dioxide, sulfur dichloride, nitrous oxide, nitric oxide, or nitrogen peroxide [Mellor 5:209-212 1946-47]. A mixture with carbon tetrachloride exploded when heated to 153°C and also by impact [Chem. Eng. News 32:258 (1954); UL Bull. Research 34 (1945), ASESB Pot. Incid. 39 (1968)]. Mixing with chlorine trifluoride in the presence of carbon results in a violent reaction [Mellor 2 Supp. 1: 1956]. Ignites in close contact with iodine. Three industrial explosions involving a photoflash composition containing potassium perchlorate with aluminum and magnesium powder have occurred [ACS 146:210 1945; NFPA 491M 1991]. React with methyl chloride in the presence of small amounts of aluminum chloride to give flammable trimethylaluminum. Gives a detonable mixture with liquid oxygen [NFPA 491M 1991]. The reaction with silver chloride, once started, proceeds with explosive violence [Mellor 3:402 1946-47]. In an industrial accident, the accidental addition of water to a solid mixture of sodium hydrosulfite and powdered aluminum caused the generation of SO₂, heat and more water. The aluminum powder reacted with the water and other reactants leading to an explosion that killed five workers [Case Study, Accident Investigation: Napp Technologies, presented by John Ferris, Paul Kahn, Mike Marshall, Fourteenth International Hazardous Material Spills Conference]. Particles can become electrostatically charged if swirled, transported by pneumatic means or poured.

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

DO NOT USE WATER OR FOAM.

SMALL FIRE: Dry chemical, soda ash, lime or sand.

LARGE FIRE: DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING METALS OR POWDERS (ALUMINUM, LITHIUM, MAGNESIUM, ETC.): Use dry chemical, DRY sand, sodium chloride powder, graphite powder or class D extinguishers; in addition, for Lithium you may use Lith-X® powder or copper powder. Also, see ERG Guide 170.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. DO NOT GET WATER on spilled substance or inside containers.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so.

POWDER SPILL: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST. (ERG, 2020)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Aluminum:

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Aluminum:

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Breathing: FRESH AIR - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. Other measures are usually unnecessary. (NIOSH, 2022)

Physical Properties

Chemical Formula: Al

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 1220°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 2.7 (NIOSH, 2022)

Boiling Point: 4221°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 27 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

No PAC information available.

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Aluminum (fume or dust)	7429-90-5				313		

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

RELEASE

THEFT

SABOTAGE

Chemical of Interest	CAS Number	Min Conc	RELEASE STQ	Security Issue	Min Conc	THEFT STQ	Security Issue	Min Conc	SABOTAGE STQ	Security Issue
Aluminum (powder)	7429-90-5				ACG	100 pounds	EXP/IEDP			

ACG = a commercial grade.

EXP/IEDP = explosives/improvised explosive device precursors.

(CISA, 2007)

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- A 1-18000
- A 5052H34
- A 6063S
- A 95
- A 95 (METAL)
- A 99
- A 99 (METAL)
- A 999
- A 999V
- A 99N
- AA 15
- AC 0460
- AC 1000
- AC 1003
- AC 2500
- AC 5005
- AIH 30H
- AISIN METAL FIBER
- AL 18000
- ALBO F
- ALCAN 105
- ALCAN 2000
- ALCAN 7100
- ALCAN XI 1391
- ALCOA 2468
- ALCOA 7468
- ALPASTE 0100M
- ALPASTE 0200M
- ALPASTE 0200T
- ALPASTE 0230T
- ALPASTE 0241M
- ALPASTE 0300M
- ALPASTE 0500M
- ALPASTE 0620MS
- ALPASTE 0700M
- ALPASTE 100MS
- ALPASTE 100MSR
- ALPASTE 1100M
- ALPASTE 1100NA



Chemical Datasheet

ALUMINUM OXIDE

Chemical Identifiers

CAS Number

1344-28-1
1302-74-5 (corundum)
12415-34-8 (emery)

UN/NA Number

none

DOT Hazard Label

data unavailable

USCG CHRIS Code

none

NIOSH Pocket Guide

alpha-Alumina

International Chem Safety Card

ALUMINIUM OXIDE

NFPA 704

data unavailable


General Description

White odorless crystalline powder. Water insoluble. Properties (both physical and chemical) vary according to the method of preparation; different methods give different crystalline modifications. The variety formed at very high temperature is quite inert chemically.

alpha-Alumina is the main component of technical grade alumina. Corundum is natural aluminum oxide. Emery is an impure crystalline variety of aluminum oxide. (NIOSH, 2022)

Hazards

Reactivity Alerts

 Known Catalytic Activity

Air & Water Reactions

Insoluble in water.

Fire Hazard

No information available.

Health Hazard

Excerpt from NIOSH Pocket Guide for alpha-Alumina:

Exposure Routes: Inhalation, ingestion, skin and/or eye contact

Symptoms: Irritation eyes, skin, respiratory system

Target Organs: Eyes, skin, respiratory system (NIOSH, 2022)

Reactivity Profile

ALUMINUM OXIDE is chemically amphoteric (behaves as a weak acid in the presence of base and as a weak base in the presence of acid). May act catalytically. May cause the exothermic polymerization of ethylene oxide. May cause the vigorous polymerization of vinyl chloride [MCA SD-75, 1970]. The degree of subdivision of the aluminum oxide may affect the vigor of such reactions.

Belongs to the Following Reactive Group(s)

- Non-Redox-Active Inorganic Compounds

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

No information available.

Firefighting

No information available.

Non-Fire Response

No information available.

Protective Clothing

Excerpt from NIOSH Pocket Guide for alpha-Alumina:

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for alpha-Alumina:

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large

amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: BLOT/BRUSH AWAY - If irritation occurs, gently blot or brush away excess.

Breathing: FRESH AIR - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. Other measures are usually unnecessary.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Al₂O₃

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 3632°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 4 (NIOSH, 2022)

Boiling Point: 5396°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 101.9 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Aluminum oxide; (Alumina) (1344-28-1)	15 mg/m ³	170 mg/m ³	990 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Aluminum oxide (fibrous forms)	1344-28-1				313		

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ALPHA-ALUMINA
- ALUMINA
- ALUMINUM OXIDE
- ALUMINUM OXIDE (FIBROUS FORMS)
- ALUMINUM TRIOXIDE
- CORUNDUM
- EMERY
- IMPURE CORUNDUM
- NATURAL ALUMINUM OXIDE



Chemical Datasheet

SILICA, AMORPHOUS

Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7631-86-9	none	data unavailable	none

NIOSH Pocket Guide
Silica, amorphous

International Chem Safety Card
none

NFPA 704

data unavailable

General Description

Transparent to gray, odorless powder. Irritating to the skin and eyes on contact. Inhalation will cause irritation in the respiratory tract. [Note: Amorphous silica is the non-crystalline form of SiO₂.]

Hazards

Reactivity Alerts

none

Air & Water Reactions

No rapid reaction with air. No rapid reaction with water.

Fire Hazard

No information available.

Health Hazard

Excerpt from NIOSH Pocket Guide for Silica, amorphous:

Exposure Routes: Inhalation, skin and/or eye contact

Symptoms: Irritation eyes, pneumoconiosis

Target Organs: Eyes, respiratory system (NIOSH, 2022)

Reactivity Profile

SILICA, AMORPHOUS is a non-combustible solid. Generally unreactive chemically. Incompatible with fluorine, oxygen difluoride, chlorine trifluoride. Soluble in molten alkalis and reacts with most metallic oxides at high temperature.

Belongs to the Following Reactive Group(s)

- Siloxanes

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

No information available.

Firefighting

No information available.

Non-Fire Response

No information available.

Protective Clothing

Excerpt from NIOSH Pocket Guide for Silica, amorphous:

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Silica, amorphous:

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Breathing: FRESH AIR - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. Other measures are usually unnecessary. (NIOSH, 2022)

Physical Properties

Chemical Formula: SiO2

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 3110°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 2.2 (NIOSH, 2022)

Boiling Point: 4046°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 60.1 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 3000 mg/m3 (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Silica amorphous hydrated (7631-86-9)	18 mg/m3	740 mg/m3	4500 mg/m3

(DOE, 2018)

Regulatory Information**EPA Consolidated List of Lists**

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ACTICEL
- ADELITE 30
- ADELITE A
- ADELITE AD 321
- ADELITE AT 20A
- ADELITE AT 20Q
- ADELITE AT 30
- ADELITE AT 30S
- AEROGEL 200
- AEROSIC



Chemical Datasheet

IRON, [POWDERED]



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7439-89-6	3178	Flammable Solid	none
NIOSH Pocket Guide		International Chem Safety Card	
none		none	

NFPA 704

data unavailable

General Description

A gray lustrous powder. Used in powder metallurgy and as a catalyst in chemical manufacture.

Hazards

Reactivity Alerts

- Strong Reducing Agent
- Known Catalytic Activity
- Water-Reactive
- Pyrophoric

Air & Water Reactions

Highly flammable. May react with water to give off hydrogen, a flammable gas. The heat from this reaction may ignite the hydrogen. The substance is said to be pyrophoric.

Fire Hazard

Excerpt from ERG Guide 133 [Flammable Solids]:

Flammable/combustible material. May be ignited by friction, heat, sparks or flames. Some may burn rapidly with flare-burning effect. Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence. Substance may be transported in a molten form at a temperature that may be above its flash point. May re-ignite after fire is extinguished. (ERG, 2020)

Health Hazard

Excerpt from ERG Guide 133 [Flammable Solids]:

Fire may produce irritating and/or toxic gases. Contact may cause burns to skin and eyes. Contact with molten substance may cause severe burns to skin and eyes. Runoff from fire control or dilution water may cause environmental contamination. (ERG, 2020)

Reactivity Profile

IRON, [POWDERED] is pyrophoric [Bretherick, 1979 p. 170-1]. A strong reducing agent and therefore incompatible with oxidizing agents. Burns in chlorine gas [Mellor 2, Supp. 1:380 1956]. Reacts with fluorine with incandescence [Mellor 13:314, 315, 1946-1947].

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 133 [Flammable Solids]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area for at least 25 meters (75 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 100 meters (330 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 133 [Flammable Solids]:

SMALL FIRE: Dry chemical, CO₂, sand, earth, water spray or regular foam.

LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Fire Involving Metal Pigments or Pastes (e.g. "Aluminum Paste") Aluminum Paste fires should be treated as a combustible metal fire. Use DRY sand, graphite powder, dry sodium chloride-based extinguishers or class D extinguishers. Also, see ERG Guide 170.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Cool containers with flooding quantities of water until well after fire is out. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 133 [Flammable Solids]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material.

SMALL DRY SPILL: With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

LARGE SPILL: Wet down with water and dike for later disposal. Prevent entry into waterways, sewers, basements or confined areas. (ERG, 2020)

Protective Clothing

Excerpt from ERG Guide 133 [Flammable Solids]:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides thermal protection but only limited chemical protection. (ERG, 2020)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from ERG Guide 133 [Flammable Solids]:

Call 911 or emergency medical service. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Move victim to fresh air if it can be done safely. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Removal of solidified molten material from skin requires medical assistance. Keep victim calm and warm. (ERG, 2020)

Physical Properties

Chemical Formula: Fe

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: data unavailable

Vapor Pressure: data unavailable

Vapor Density (Relative to Air): data unavailable

Specific Gravity: data unavailable

Boiling Point: data unavailable

Molecular Weight: data unavailable

Water Solubility: data unavailable

Ionization Energy/Potential: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
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Chemical	PAC-1	PAC-2	PAC-3
Iron (7439-89-6)	3.2 mg/m3	35 mg/m3	150 mg/m3

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- A 227
- 300A
- ANCOR EN 80/150
- ARMCO IRON
- ATOMEL 300M200
- ATOMET 28
- ATOMIRON 44MR
- ATOMIRON 5M
- ATOMIRON AFP 25
- ATOMIRON AFP 5
- ATW 230
- ATW 432
- CARBONYL IRON
- COPY POWDER CS 105-175
- DH
- DSP 128B
- DSP 135
- DSP 135C
- DSP 138
- EF 1000
- EF 250
- EFV
- EFV 200/300
- EFV 250
- EFV 250/400
- EO 5A
- FERROVAC E
- FT 3
- FT 3 (ELEMENT)
- GS 6
- HF 2
- HF 2 (ELEMENT)
- HOEGANAES ATW 230
- HOEGANAES EH
- IRON ELEMENT
- IRON FULLERIDE (FEC20)
- IRON, [POWDERED]
- ISP-CIP-R 1470



Chemical Datasheet

ZINC DUST



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7440-66-6	1436	Dangerous When Wet Spontaneously Combustible	none

NIOSH Pocket Guide
none

International Chem Safety Card
ZINC POWDER

NFPA 704

data unavailable

General Description

A grayish powder. Insoluble in water. May produce toxic zinc oxide fumes when heated to very high temperatures or when burned. Used in paints, bleaches and to make other chemicals.

Hazards

Reactivity Alerts

- Strong Reducing Agent
- Known Catalytic Activity
- Water-Reactive
- Pyrophoric

Air & Water Reactions

Can evolve gaseous hydrogen in contact with water or damp air. The heat of the reaction may be sufficient to ignite the hydrogen produced [Haz. Chem. Data 1966. p. 171]. Flammable. May form an explosive mixture with air [Hawley].

Fire Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished. Some are transported in highly flammable liquids. Runoff may create fire or explosion hazard. (ERG, 2020)

Health Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause environmental contamination. (ERG, 2020)

Reactivity Profile

ZINC METAL is a reducing agent. Reacts violently with oxidants causing fire and explosion hazards [Handling Chemicals Safely 1980, p. 966]. In the presence of carbon, the combination of chlorine trifluoride with zinc results in a violent reaction [Mellor 2, Supp. 1: 1956]. Sodium peroxide oxidizes zinc with incandescence [Mellor 2:490-93 1946-47]. Zinc powder or dust in contact with acids forms hydrogen. The heat generated by the reaction is sufficient to ignite the hydrogen evolved [Lab. Govt. Chemist 1965]. A mixture of powdered zinc and an oxidizing agent such as potassium chlorate or powdered sulfur can be exploded by percussion. Zinc burns in moist chlorine. A mixture of zinc and carbon disulfide reacts with incandescence. Zinc powder reacts explosively when heated with manganese chloride. The reaction between zinc and selenium or tellurium is accompanied by incandescence [Mellor 4:476-480 1946-47]. When zinc and ammonium nitrate are mixed and wetted with a minimum of water, a violent reaction occurs with evolution of steam and zinc oxide. When hydrazine mononitrate is heated in contact with zinc a flaming decomposition occurs at temperatures a little above its melting point. Hydroxylamine is reduced when heated with zinc dust, unpredictably it may either ignite and burn or explode [Mellor 8 1946-47].

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

DO NOT USE WATER OR FOAM.

SMALL FIRE: Dry chemical, soda ash, lime or sand.

LARGE FIRE: DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING METALS OR POWDERS (ALUMINUM, LITHIUM, MAGNESIUM, ETC.): Use dry chemical, DRY sand, sodium chloride powder, graphite powder or class D extinguishers; in addition, for Lithium you may use Lith-X® powder or copper powder. Also, see ERG Guide 170.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. DO NOT GET WATER on spilled substance or inside containers.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so.

POWDER SPILL: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST. (ERG, 2020)

Protective Clothing

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE. Structural firefighters' protective clothing provides thermal protection but only limited chemical protection. (ERG, 2020)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Call 911 or emergency medical service. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Move victim to fresh air if it can be done safely. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Remove and isolate contaminated clothing and shoes. In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes. Keep victim calm and warm. (ERG, 2020)

Physical Properties

Chemical Formula: Zn

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: data unavailable

Vapor Pressure: data unavailable

Vapor Density (Relative to Air): data unavailable

Specific Gravity: data unavailable

Boiling Point: data unavailable

Molecular Weight: data unavailable

Water Solubility: data unavailable

Ionization Energy/Potential: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Zinc (7440-66-6)	6 mg/m3	21 mg/m3	120 mg/m3

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Zinc ††	7440-66-6			1000 pounds			
Zinc (fume or dust)	7440-66-6			1000 pounds	313		
Zinc Compounds	N982			&	313		

†† indicates that no reporting of releases of this CERCLA hazardous substance is required under CERCLA if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ASARCO L 15
- BLUE POWDER
- ECKA 4
- F 1000
- F 1000 (METAL)
- F 2000
- F 2000 (METAL)



Chemical Datasheet

COPPER

Chemical Identifiers

CAS Number 7440-50-8	UN/NA Number none	DOT Hazard Label data unavailable	USCG CHRIS Code none
NIOSH Pocket Guide Copper (dusts and mists, as Cu)	International Chem Safety Card COPPER		

NFPA 704

data unavailable

General Description

Reddish lustrous malleable odorless metallic solid.

Hazards

Reactivity Alerts

none

Air & Water Reactions

Solid pieces are very slowly oxidized by air to give a green basic carbonate. Solid pieces become covered by a black oxide when heated in air. Insoluble in water.

Fire Hazard

No information available.

Health Hazard

Excerpt from NIOSH Pocket Guide for Copper (dusts and mists, as Cu):

Exposure Routes: Inhalation, ingestion, skin and/or eye contact

Symptoms: Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia

Target Organs: Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease) (NIOSH, 2022)

Reactivity Profile

COPPER combines violently with chlorine trifluoride in the presence of carbon [Mellor 2, Supp. 1, 1956]. Is oxidized by sodium peroxide with incandescence [Mellor 2:490-93, 1946-1947]. Forms an unstable acetylide when acetylene is passed over samples that have been heated enough to form an oxide coating. Reacts more rapidly in powdered or granular form. Subject to explosive reaction when mixed in finely divided form with finely divided bromates chlorates and iodates of barium, calcium, magnesium, potassium, sodium, or zinc; these reactions are initiated by heat, percussion, and occasionally light friction [Mellor 2:310, 1946-1947]. A solution of sodium azide in copper pipe with lead joints formed copper azide and lead azide, both of these compounds can detonate [Klotz, 1973].

Belongs to the Following Reactive Group(s)

- Metals, Less Reactive

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

No information available.

Firefighting

No information available.

Non-Fire Response

No information available.

Protective Clothing

Excerpt from NIOSH Pocket Guide for Copper (dusts and mists, as Cu):

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: PREVENT EYE CONTACT - Wear appropriate eye protection to prevent eye contact.

Wash skin: WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.

Remove: WHEN WET OR CONTAMINATED - Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: DAILY - Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the work premises. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Copper (dusts and mists, as Cu):

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: SOAP WASH PROMPTLY - If this chemical contacts the skin, promptly wash the contaminated skin with soap and

water. If this chemical penetrates the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Cu

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 1981°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 8.94 (NIOSH, 2022)

Boiling Point: 4703°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 63.5 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 100 mg Cu/m³ (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Copper (7440-50-8)	3 mg/m ³	33 mg/m ³	200 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Copper ††	7440-50-8			5000 pounds	313		

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Copper Compounds	N100			&	313		

†† indicates that no reporting of releases of this CERCLA hazardous substance is required under CERCLA if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- COPPER
- COPPER COMPOUNDS
- COPPER METAL DUSTS
- COPPER METAL FUMES



Chemical Datasheet

MANGANESE



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7439-96-5	3089 (powder)	Flammable Solid	none
NIOSH Pocket Guide Manganese compounds and fume (as Mn)		International Chem Safety Card MANGANESE	

NFPA 704


data unavailable

General Description

A lustrous, brittle, silvery solid. (NIOSH, 2022)

Hazards

Reactivity Alerts

 Pyrophoric

Air & Water Reactions

Manganese dust (finely divided) has been known to be pyrophoric. During a fire in an industrial bag filter, a mixture of aluminum and manganese dusts was released and an explosion resulted [Occ. Haz. 28:185-7. 1946-47].

Fire Hazard

Excerpt from ERG Guide 170 [Metals (Powders, Dusts, Shavings, Borings, Turnings, or Cuttings, etc.)]:

May react violently or explosively on contact with water. Some are transported in flammable liquids. May be ignited by friction, heat, sparks or flames. Some of these materials will burn with intense heat. Dusts or fumes may form explosive mixtures in air. Containers may explode when heated. May re-ignite after fire is extinguished. (ERG, 2020)

Health Hazard

Excerpt from NIOSH Pocket Guide for Manganese compounds and fume (as Mn):

Exposure Routes: Inhalation, ingestion

Symptoms: Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness,

dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage

Target Organs: Respiratory system, central nervous system, blood, kidneys (NIOSH, 2022)

Reactivity Profile

Manganese dust(finely divided) has been known to be pyrophoric. Powdered manganese ignites in chlorine and burns brilliantly; with fluorine the reaction takes place with incandescence [Mellor 12:185, 344. 1946-47]. Concentrated nitric acid reacts with manganese with incandescence and a feeble explosion [Mellor 12:188. 1946-47]. Manganese or potassium ignites in nitrogen dioxide [Ann. Chim. et Phys.(2) 2:317]. Manganese burns with a brilliant flame when heated in sulfur dioxide vapor [Mellor 12:187. 1946-47]. Contact with conc. hydrogen peroxide causes violent decomposition and/or ignition.

Belongs to the Following Reactive Group(s)

- Metals, Less Reactive

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 170 [Metals (Powders, Dusts, Shavings, Borings, Turnings, or Cuttings, etc.)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

LARGE SPILL: Consider initial downwind evacuation for at least 50 meters (160 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 170 [Metals (Powders, Dusts, Shavings, Borings, Turnings, or Cuttings, etc.)]:

DO NOT USE WATER, FOAM OR CO₂. Dousing metallic fires with water will generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment (i.e., building, cargo hold, etc.). Use DRY sand, graphite powder, dry sodium chloride-based extinguishers, or class D extinguishers. Confining and smothering metal fires is preferable rather than applying water. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: If impossible to extinguish, protect surroundings and allow fire to burn itself out. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 170 [Metals (Powders, Dusts, Shavings, Borings, Turnings, or Cuttings, etc.)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. (ERG, 2020)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Manganese compounds and fume (as Mn):

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Manganese compounds and fume (as Mn):

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Mn

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 2271°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 7.2 (metal) (NIOSH, 2022)

Boiling Point: 3564°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 54.9 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 500 mg Mn/m³ (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Manganese (7439-96-5)	3 mg/m3	5 mg/m3	1800 mg/m3

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Manganese	7439-96-5				313		
Manganese Compounds	N450			&	313		

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- MANGANESE
- MANGANESE METAL: COLLOIDAL MANGANESE
- MANGANESE-55



Chemical Datasheet

MAGNESIUM



Chemical Identifiers

CAS Number 7439-95-4	UN/NA Number 1869	DOT Hazard Label Flammable Solid	USCG CHRIS Code MGX
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NIOSH Pocket Guide
none

International Chem Safety Card
MAGNESIUM (PELLETS)
MAGNESIUM POWDER

NFPA 704

Diamond	Hazard	Value	Description
1 0 1	Health	0	No hazard beyond that of ordinary combustible material.
	Flammability	1	Must be preheated before ignition can occur.
	Instability	1	Normally stable but can become unstable at elevated temperatures and pressures.
	Special		

(NFPA, 2010)

General Description

A light silvery metal. The more finely divided material reacts with water to liberate hydrogen, a flammable gas, though this reaction is not as vigorous as that of sodium or lithium with water. In finely divided forms is easily ignited. Burns with an intense white flame. Can be wax coated to render magnesium as nonreactive.

Hazards

Reactivity Alerts

- Strong Reducing Agent
- Water-Reactive
- Pyrophoric

Air & Water Reactions

Magnesium ribbon and fine magnesium shavings can be ignited at air temperatures of about 950°F and very finely divided powder has been ignited at air temperatures below 900°F. [Magnesium Standard 1967 p. 4]. May react slowly with water to liberate hydrogen, a flammable gas.

Fire Hazard

Behavior in Fire: Forms dense white smoke. Flame is very bright. (USCG, 1999)

Health Hazard

Dust irritates eyes in same way as any foreign material. Penetration of skin by fragments of metal is likely to produce local irritation, blisters, and ulcers which may become infected. (USCG, 1999)

Reactivity Profile

MAGNESIUM slowly oxidizes in moist air. Reacts very slowly with water at ordinary temperatures, less slowly at 100°C. Reacts with aqueous solutions of dilute acids with liberation of hydrogen [Merck 11th ed. 1989]. In the presence of carbon, the combination of chlorine trifluoride with aluminum, copper, lead, magnesium, silver, tin, or zinc results in a violent reaction [Mellor 2, Supp. 1. 1956]. A mixture of powdered magnesium with trichloroethylene or with carbon tetrachloride will flash or spark under heavy impact [ASESB Pot. Incid, 39. 1968]. Stannic oxide, heated with magnesium explodes [Mellor 7:401. 1946-47]. When carbon dioxide gas is passed over a mixture of powdered magnesium and sodium peroxide, the mixture exploded [Mellor 2:490. 1946-47]. Powdered magnesium plus potassium (or sodium) perchlorate is a friction-sensitive mixture [Safety Eng. Reports. 1947]. An explosion occurred during heating of a mixture of potassium chlorate and magnesium [Chem. Eng. News 14:451. 1936]. Powdered magnesium can decompose performic acid violently [Berichte 48:1139. 1915]. A mixture of finely divided magnesium and nitric acid is explosive [Pieters 1957. p. 28]. Magnesium exposed to moist fluorine or chlorine is spontaneously flammable [Mellor 4:267. 1946-47].

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Fire Extinguishing Agents Not to Be Used: Water, foam, halogenated agents, carbon dioxide.

Fire Extinguishing Agents: Inert dry powders (e.g., graphite, limestone, salt) (USCG, 1999)

Non-Fire Response

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. DO NOT GET WATER on spilled substance or inside containers.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so.

POWDER SPILL: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST. (ERG, 2020)

Protective Clothing

Eye protection (USCG, 1999)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

EYES: flush with water to remove dust.

SKIN: treat as any puncture. (USCG, 1999)

Physical Properties

Chemical Formula: Mg

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: 883°F (USCG, 1999)

Melting Point: 1202°F (USCG, 1999)

Vapor Pressure: data unavailable

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 1.74 at 68°F (USCG, 1999)

Boiling Point: 2012°F at 760 mmHg (USCG, 1999)

Molecular Weight: 24.3 (USCG, 1999)

Water Solubility: data unavailable

Ionization Energy/Potential: data unavailable

IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Magnesium (7439-95-4)	18 mg/m3	200 mg/m3	1200 mg/m3

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

Chemical of Interest	CAS Number	RELEASE			THEFT			SABOTAGE		
		Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue
Magnesium (powder)	7439-95-4				ACG	100 pounds	EXP/IEDP			

ACG = a commercial grade.

EXP/IEDP = explosives/improvised explosive device precursors.

(CISA, 2007)

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ANHYDRONE
- DEHYDRITE
- JIS 1
- MAGNESIUM
- MAGNESIUM (INCLUDING ALLOYS)
- MAGNESIUM ALLOY, [WITH > 50% MAGNESIUM, PELLETS, TURNINGS]
- MAGNESIUM ALLOYS, WITH MORE THAN 50% MAGNESIUM, IN PELLETS, TURNINGS OR RIBBONS
- MAGNESIUM ELEMENT
- MAGNESIUM GRANULES COATED, [PARTICLE SIZE >= 149 MICRONS]
- MAGNESIUM GRANULES, COATED
- MAGNESIUM SCRAP
- PK 31
- PK 31 (MAGNESIUM)



Chemical Datasheet

TIN

Chemical Identifiers

CAS Number 7440-31-5	UN/NA Number none	DOT Hazard Label data unavailable	USCG CHRIS Code none
NIOSH Pocket Guide Tin	International Chem Safety Card TIN		

NFPA 704

data unavailable

General Description

White TIN is an almost silver-white, ductile, malleable, lustrous solid. mp 232°C, bp: 2507°C. Density: 7.3 g/cm³. Pure white tin becomes non-metallic powdery gray tin if held for a sustained period at temperatures less than 13°C.

Hazards

Reactivity Alerts

none

Air & Water Reactions

No rapid reaction with air. No rapid reaction with water.

Fire Hazard

No information available.

Health Hazard

Excerpt from NIOSH Pocket Guide for Tin:

Exposure Routes: Inhalation, skin and/or eye contact

Symptoms: Irritation eyes, skin, respiratory system; In Animals: vomiting, diarrhea, paralysis with muscle twitching

Target Organs: Eyes, skin, respiratory system (NIOSH, 2022)

Reactivity Profile

TIN is a reducing agent. Stable in massive form in air, but oxidizes (corrodes) in air as a powder, especially in the presence of water. Dissolve slowly in dilute strong acids in the cold. Dissolves in hot aqueous KOH and other strongly basic solutions. Incompatible with acids and base. Incompatible with chlorine and turpentine.

Belongs to the Following Reactive Group(s)

- Metals, Less Reactive

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

No information available.

Firefighting

No information available.

Non-Fire Response

No information available.

Protective Clothing

Excerpt from NIOSH Pocket Guide for Tin:

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Tin:

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: SOAP WASH IMMEDIATELY - If this chemical contacts the skin, immediately wash the contaminated skin with soap and water. If this chemical penetrates the clothing, immediately remove the clothing, wash the skin with soap and water, and get medical attention promptly.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to

fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Sn

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 449°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 7.28 (NIOSH, 2022)

Boiling Point: 4545°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 118.7 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 100 mg Sn/m³ (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Tin (7440-31-5)	6 mg/m ³	67 mg/m ³	400 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- C.I. 77860



Chemical Datasheet

NICKEL

Chemical Identifiers

CAS Number

7440-02-0

UN/NA Number

none

DOT Hazard Label

data unavailable

USCG CHRIS Code

none





NIOSH Pocket Guide

Nickel metal and other compounds (as Ni)

International Chem Safety Card

NICKEL

NFPA 704

Diamond	Hazard	Value	Description
4 2 1	 Health	2	Can cause temporary incapacitation or residual injury.
	 Flammability	4	Burns readily. Rapidly or completely vaporizes at atmospheric pressure and normal ambient temperature.
	 Instability	1	Normally stable but can become unstable at elevated temperatures and pressures.
	 Special		




(NFPA, 2010)

General Description

Lustrous, silvery, odorless metallic solid. Insoluble in water.

Hazards

Reactivity Alerts

-  Strong Reducing Agent
-  Known Catalytic Activity
-  Pyrophoric

Air & Water Reactions

Insoluble in water.

Fire Hazard

No information available.

Health Hazard

Excerpt from NIOSH Pocket Guide for Nickel metal and other compounds (as Ni):

Exposure Routes: Inhalation, ingestion, skin and/or eye contact

Symptoms: Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]

Target Organs: Nasal cavities, lungs, skin

Cancer Site: Lung and nasal cancer (NIOSH, 2022)

Reactivity Profile

NICKEL METAL is not highly reactive in bulk. A reducing agent. Reacts with (is corroded by) acids to generate flammable hydrogen. Burns when heated in oxygen. Incompatible with oxidizing agents such as oxidizing acids, ammonium nitrate, chlorine, potassium perchlorate, nitryl fluoride. Powdered nickel is much more reactive; can ignite in air [Bretherick 1979 p. 170-171].

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

No information available.

Firefighting

No information available.

Non-Fire Response

No information available.

Protective Clothing

Excerpt from NIOSH Pocket Guide for Nickel metal and other compounds (as Ni):

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin:

- WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.
- DAILY - The worker should wash daily at the end of each work shift, and prior to eating, drinking, smoking, etc.

Remove: WHEN WET OR CONTAMINATED - Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: DAILY - Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the work premises. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Nickel metal and other compounds (as Ni):

Skin: WATER FLUSH IMMEDIATELY - If this chemical contacts the skin, immediately flush the contaminated skin with water. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water. Get medical attention promptly.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Ni

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 2831°F (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 8.9 (Metal) (NIOSH, 2022)

Boiling Point: 5139°F at 760 mmHg (NIOSH, 2022)

Molecular Weight: 58.7 (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 10 mg Ni/m³ ; A potential occupational carcinogen. (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Nickel (7440-02-0)	4.5 mg/m ³	50 mg/m ³	99 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Nickel ††	7440-02-0			100 pounds	313		
Nickel Compounds	N495			&	313		

†† indicates that no reporting of releases of this CERCLA hazardous substance is required under CERCLA if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- NICKEL
- NICKEL METAL
- NICKEL METAL: ELEMENTAL NICKEL



Chemical Datasheet

CHROMIUM TRIOXIDE, ANHYDROUS



Chemical Identifiers

CAS Number 1333-82-0	UN/NA Number 1463	DOT Hazard Label Oxidizer Poison Corrosive	USCG CHRIS Code CMA
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NIOSH Pocket Guide
Chromic acid and chromates

International Chem Safety Card
CHROMIUM(VI) OXIDE

NFPA 704

Diamond	Hazard	Value	Description
0 3 1 OX	Health	3	Can cause serious or permanent injury.
	Flammability	0	Will not burn under typical fire conditions.
	Instability	1	Normally stable but can become unstable at elevated temperatures and pressures.
	Special	OX	Possesses oxidizing properties.

(NFPA, 2010)

General Description

A dark purplish red solid. Under prolonged exposure to fire or heat the containers may explode. Highly toxic. A confirmed human carcinogen.

Hazards

Reactivity Alerts

- Strong Oxidizing Agent
- Water-Reactive

Air & Water Reactions

Deliquescent. Water soluble, giving acidic solutions.

Fire Hazard

Behavior in Fire: Containers may explode (USCG, 1999)

Health Hazard

Very irritating to eyes and respiratory tract. Ingestion causes severe gastrointestinal symptoms. Contact with eyes or skin causes burns; prolonged contact produces dermatitis ("chrome sores"). (USCG, 1999)

Reactivity Profile

CHROMIUM TRIOXIDE is a powerful oxidizing agent. Can react violently upon contact with reducing reagents, including organic matter, leading to ignition or explosion. Dangerously reactive with acetone, alcohols, alkali metals (sodium, potassium), ammonia, arsenic, dimethylformamide, hydrogen sulfide, phosphorus, peroxyformic acid, pyridine, selenium, sulfur, and many other chemicals [Sax, 9th ed., 1996, p. 852]. Noncombustible but can accelerate the burning of combustible materials. Sufficient heat may be generated from the reaction with combustible materials to ignite the mass. Aqueous solutions corrode many metals rapidly. Often mixed with sulfuric acid to make "cleaning solution" for glass. Used cleaning solution in closed bottles may explode due to the build up of gaseous carbon dioxide arising from oxidation of organic impurities [Bryson, W. R., Chem. Brit., 1975, 11, p. 377].

Belongs to the Following Reactive Group(s)

- Anhydrides
- Oxidizing Agents, Strong

Potentially Incompatible Absorbents

Use caution: Liquids with this reactive group classification have been known to react with the absorbents listed below.

- Cellulose-Based Absorbents
- Mineral-Based & Clay-Based Absorbents
- Expanded Polymeric Absorbents
- Dirt/Earth

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 141 [Oxidizers - Toxic]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

LARGE SPILL: Consider initial downwind evacuation for at least 100 meters (330 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 141 [Oxidizers - Toxic]:

SMALL FIRE: Use water. Do not use dry chemicals or foams. CO₂ or Halon® may provide limited control.

LARGE FIRE: Flood fire area with water from a distance. Do not move cargo or vehicle if cargo has been exposed to heat. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master

stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 141 [Oxidizers - Toxic]:

Keep combustibles (wood, paper, oil, etc.) away from spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk.

SMALL DRY SPILL: With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.

LARGE SPILL: Dike far ahead of spill for later disposal. (ERG, 2020)

Protective Clothing

Goggles and respirator. (Special chromic acid filters are available for respirators to prevent inhalation of dust or mist.) (USCG, 1999)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QS	QC	SL	C3	TF	TP	RC	TK	RF
Chromic acid (CrO ₃) (44.9%)	1333-82-0	Liquid	>480		>480		>480		>480	>480	>480

> indicates greater than.

Special Warning from DuPont: Tychem® and Tyvek® fabrics should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Only...

(DuPont, 2022)

First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. IMMEDIATELY call a physician and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: Some heavy metals are VERY TOXIC POISONS, especially if their salts are very soluble in water (e.g., lead, chromium, mercury, bismuth, osmium, and arsenic). IMMEDIATELY call a hospital or poison control center and locate activated charcoal, egg whites, or milk in case the medical advisor recommends administering one of them. Also locate Ipecac syrup or a glass of salt water in case the medical advisor recommends inducing vomiting. Usually, this is NOT RECOMMENDED outside of a physician's care. If advice from a physician is not readily available and the victim is conscious and not convulsing, give the victim a glass of activated charcoal slurry in water or, if this is not available, a glass of milk, or beaten egg whites and IMMEDIATELY transport victim to a hospital. If the victim is convulsing or

unconscious, do not give anything by mouth, assure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital.

OTHER: Since this chemical is a known or suspected carcinogen you should contact a physician for advice regarding the possible long term health effects and potential recommendation for medical monitoring. Recommendations from the physician will depend upon the specific compound, its chemical, physical and toxicity properties, the exposure level, length of exposure, and the route of exposure. (NTP, 1992)

Physical Properties

Chemical Formula: CrO3

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: May ignite organic materials on contact. (USCG, 1999)

Melting Point: 385°F (NTP, 1992)

Vapor Pressure: Very low (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 2.7 (NTP, 1992)

Boiling Point: 482°F at 760 mmHg (decomposes) (NTP, 1992)

Molecular Weight: 100 (NTP, 1992)

Water Solubility: Very soluble (NTP, 1992)

Ionization Energy/Potential: data unavailable

IDLH: 15 mg Cr(VI)/m³ ; A potential occupational carcinogen. (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Chromic trioxide; (Chromium(VI) oxide (1:3)) (1333-82-0)	0.29 mg/m ³	5 mg/m ³	30 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Chromium Compounds	N090			&	313		

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).



Chemical Datasheet

ARSENIC



Chemical Identifiers

CAS Number 7440-38-2	UN/NA Number 1558	DOT Hazard Label Poison	USCG CHRIS Code ARX
NIOSH Pocket Guide Arsenic (inorganic compounds, as As)	International Chem Safety Card ARSENIC		

NFPA 704

data unavailable

General Description

A grayish metallic solid that turns black upon exposure to air. Insoluble in water. Toxic by ingestion.

Hazards

Reactivity Alerts

none

Air & Water Reactions

Turns black on exposure to air. Insoluble in water.

Fire Hazard

Special Hazards of Combustion Products: Contain highly toxic arsenic trioxide and other forms of arsenic. Arsenic gas, the most dangerous form of arsenic, is produced upon contact with an acid or acid fumes.

Behavior in Fire: Burns to produce dense white fumes of highly toxic arsenic trioxide. (USCG, 1999)

Health Hazard

Poisonous by inhalation of dust or by ingestion. Regardless of exposure route, symptoms in most cases are characteristic of severe gastritis or gastroenteritis. All chemical forms of arsenic eventually produce similar toxic effects. Symptoms may be delayed. (USCG, 1999)

Reactivity Profile

ARSENIC reacts incandescently with bromine trifluoride, even at 10°C [Mellor 2:113 1946-47]. Causes bromoazide to explode upon contact. Ignites if ground up together with solid potassium permanganate [Mellor 12:322 1946-47]. Is

oxidized by sodium peroxide with incandescence [Mellor 2:490-93 1946-47]. A combination of finely divided arsenic with finely divided bromates (also chlorates and iodates) of barium, calcium, magnesium, potassium, sodium, or zinc can explode by heat, percussion, and friction [Mellor 2:310 1946-47]. Bromine pentafluoride reacts readily in the cold with arsenic. Ignition usually occurs. Reacts vigorously with fluorine at ordinary temperatures [Mellor 9:34 1946-47].

Belongs to the Following Reactive Group(s)

- Metals, Less Reactive

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

SMALL FIRE: Dry chemical, CO₂ or water spray.

LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal. Avoid aiming straight or solid streams directly onto the product.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 152 [Substances - Toxic (Combustible)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Cover with plastic sheet to prevent spreading. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. **DO NOT GET WATER INSIDE CONTAINERS.** (ERG, 2020)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Arsenic (inorganic compounds, as As):

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: PREVENT EYE CONTACT - Wear appropriate eye protection to prevent eye contact.

Wash skin:

- WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.
- DAILY - The worker should wash daily at the end of each work shift, and prior to eating, drinking, smoking, etc.

Remove: WHEN WET OR CONTAMINATED - Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: DAILY - Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the work premises.

Provide:

- EYEWASH - Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substances; this is irrespective of the recommendation involving the wearing of eye protection.
- QUICK DRENCH - Facilities for quickly drenching the body should be provided within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

Excerpt from NIOSH Pocket Guide for Arsenic (inorganic compounds, as As):

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: SOAP WASH IMMEDIATELY - If this chemical contacts the skin, immediately wash the contaminated skin with soap and water. If this chemical penetrates the clothing, immediately remove the clothing, wash the skin with soap and water, and get medical attention promptly.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: As

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 1135°F (Sublimes) (NIOSH, 2022)

Vapor Pressure: 0 mmHg (approx) (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 5.727 at 77°F (USCG, 1999)

Boiling Point: 1135°F at 760 mmHg (sublimes) (USCG, 1999)

Molecular Weight: 74.9216 (USCG, 1999)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 5 mg As/m³ ; A potential occupational carcinogen. (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Arsenic (7440-38-2)	1.5 mg/m ³	17 mg/m ³	100 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Arsenic ††	7440-38-2			1 pound	313		
Arsenic Compounds	N020			&	313		

†† indicates that no reporting of releases of this CERCLA hazardous substance is required under CERCLA if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ARSENIC
- ARSENIC BLACK
- ARSENIC METAL: ARSENIA
- ARSENIC, METALLIC
- ARSENIC, SOLID
- ARSENIC, [SOLID]
- ARSENIC-75



Chemical Datasheet

BARIUM



Chemical Identifiers

CAS Number 7440-39-3	UN/NA Number 1400	DOT Hazard Label Dangerous When Wet	USCG CHRIS Code none
NIOSH Pocket Guide none	International Chem Safety Card BARIUM		

NFPA 704




data unavailable

General Description

A silver to white metallic solid. Contact may cause burns to skin, eyes, and mucous membranes. May be toxic by ingestion, inhalation and skin absorption. Used to make other chemicals.

Hazards

Reactivity Alerts

-  Strong Reducing Agent
-  Water-Reactive
-  Pyrophoric

Air & Water Reactions

Reacts with moisture in the air. Rapidly reacts with water to generate gaseous hydrogen. The heat of reaction is sufficient that the evolved hydrogen may ignite [Lab. Govt. Chemist 1965]. Pyrophoric in powdered form [Bretherick, 1979 p. 170-171].

Fire Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. May re-ignite after fire is extinguished. Some are transported in highly flammable liquids. Runoff may create fire or explosion hazard. (ERG, 2020)

Health Hazard

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause environmental contamination. (ERG, 2020)

Reactivity Profile

BARIUM reacts readily with water, ammonia, halogens, oxygen and most acids. Reacts with incandescence when heated with boron trifluoride [Merck 11th ed. 1989]. Mixtures of finely divided barium metal and a number of halogenated hydrocarbons (such as monofluorotrichloromethane, trichlorotrifluoroethane, carbon tetrachloride, trichloroethylene, or tetrachloroethylene) are explosives [ASESB Pot. Incid. 39 1968; Chem. Eng. News 46(9):38 1968].

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

DO NOT USE WATER OR FOAM.

SMALL FIRE: Dry chemical, soda ash, lime or sand.

LARGE FIRE: DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING METALS OR POWDERS (ALUMINUM, LITHIUM, MAGNESIUM, ETC.): Use dry chemical, DRY sand, sodium chloride powder, graphite powder or class D extinguishers; in addition, for Lithium you may use Lith-X® powder or copper powder. Also, see ERG Guide 170.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. DO NOT GET WATER on spilled substance or inside containers.

SMALL SPILL: Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. Dike for later disposal; do not apply water unless directed to do so.

POWDER SPILL: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST. (ERG, 2020)

Protective Clothing

Excerpt from ERG Guide 138 [Substances - Water-Reactive (Emitting Flammable Gases)]:

Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE. Structural firefighters' protective clothing provides thermal protection but only limited chemical protection. (ERG, 2020)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: Some heavy metals are VERY TOXIC POISONS, especially if their salts are very soluble in water (e.g., lead, chromium, mercury, bismuth, osmium, and arsenic). IMMEDIATELY call a hospital or poison control center and locate activated charcoal, egg whites, or milk in case the medical advisor recommends administering one of them. Also locate Ipecac syrup or a glass of salt water in case the medical advisor recommends inducing vomiting. Usually, this is NOT RECOMMENDED outside of a physician's care. If advice from a physician is not readily available and the victim is conscious and not convulsing, give the victim a glass of activated charcoal slurry in water or, if this is not available, a glass of milk, or beaten egg whites and IMMEDIATELY transport victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, assure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

Physical Properties

Chemical Formula: Ba

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 1337°F (NTP, 1992)

Vapor Pressure: 10 mmHg at 1920°F (NTP, 1992)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 3.51 at 68°F (NTP, 1992)

Boiling Point: 2984°F at 760 mmHg (NTP, 1992)

Molecular Weight: 137.34 (NTP, 1992)

Water Solubility: data unavailable

Ionization Energy/Potential: data unavailable

IDLH: 50 mg Ba/m³ [From IDLH Table: Barium (soluble compounds, as Ba)] (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Barium (7440-39-3)	1.5 mg/m ³	180 mg/m ³	1100 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Barium	7440-39-3				313		
Barium Compounds	N040				313		

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- BARIUM
- BARIUM ELEMENT



Chemical Datasheet

CHROMIUM



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
7440-47-3	1759	Corrosive	none

NIOSH Pocket Guide
Chromium metal

International Chem Safety Card
CHROMIUM

NFPA 704


data unavailable

General Description

PHYSICAL DESCRIPTION: Very hard gray solid with a metallic luster. (NTP, 1992)

Hazards

Reactivity Alerts

 Pyrophoric

Air & Water Reactions

May be pyrophoric, as dust. Insoluble in water.

Fire Hazard

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]:

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.). Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. For electric vehicles or equipment, ERG Guide 147 (lithium ion batteries) or ERG Guide 138 (sodium batteries) should also be consulted. (ERG, 2020)

Health Hazard

Excerpt from NIOSH Pocket Guide for Chromium metal:

Exposure Routes: Inhalation, ingestion, skin and/or eye contact

Symptoms: Irritation eyes, skin; lung fibrosis (histologic)

Target Organs: Eyes, skin, respiratory system (NIOSH, 2022)

Reactivity Profile

CHROMIUM reacts violently with NH₄NO₃, N₂O₂, Li, NO, KClO₃, SO₂ (NTP, 1992). Metal dusts when suspended in atmospheres of carbon dioxide may ignite and explode.

Belongs to the Following Reactive Group(s)

- Metals, Elemental and Powder, Active

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]:

SMALL FIRE: Dry chemical, CO₂ or water spray.

LARGE FIRE: Dry chemical, CO₂, alcohol-resistant foam or water spray. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2020)

Non-Fire Response

SMALL SPILLS AND LEAKAGE: If you spill this chemical, dampen the solid spill material with 5% ammonium hydroxide, then transfer the dampened material to a suitable container. Use absorbent paper dampened with 5% ammonium hydroxide to pick up any remaining material. Your contaminated clothing and the absorbent paper should be sealed in a vapor-tight plastic bag for eventual disposal. Wash all contaminated surfaces with 5% ammonium hydroxide followed by washing with a strong soap and water solution. Do not reenter the contaminated area until the Safety Officer (or other responsible person) has verified that the area has been properly cleaned.

STORAGE PRECAUTIONS: You should store this material in a refrigerator. (NTP, 1992)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Chromium metal:

Skin: No recommendation is made specifying the need for personal protective equipment for the body.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: No recommendation is made specifying the need for removing clothing that becomes wet or contaminated.

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

No information available.

First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. IMMEDIATELY call a physician and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: Some heavy metals are VERY TOXIC POISONS, especially if their salts are very soluble in water (e.g., lead, chromium, mercury, bismuth, osmium, and arsenic). IMMEDIATELY call a hospital or poison control center and locate activated charcoal, egg whites, or milk in case the medical advisor recommends administering one of them. Also locate Ipecac syrup or a glass of salt water in case the medical advisor recommends inducing vomiting. Usually, this is NOT RECOMMENDED outside of a physician's care. If advice from a physician is not readily available and the victim is conscious and not convulsing, give the victim a glass of activated charcoal slurry in water or, if this is not available, a glass of milk, or beaten egg whites and IMMEDIATELY transport victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, assure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital.

OTHER: Since this chemical is a known or suspected carcinogen you should contact a physician for advice regarding the possible long term health effects and potential recommendation for medical monitoring. Recommendations from the physician will depend upon the specific compound, its chemical, physical and toxicity properties, the exposure level, length of exposure, and the route of exposure. (NTP, 1992)

Physical Properties

Chemical Formula: Cr

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: data unavailable

Melting Point: 3452°F (NTP, 1992)

Vapor Pressure: 1 mmHg at 2941°F (NTP, 1992)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 7.2 (NTP, 1992)

Boiling Point: 4788°F at 760 mmHg (NTP, 1992)

Molecular Weight: 52 (NTP, 1992)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 250 mg Cr/m³ (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Chromium (7440-47-3)	1.5 mg/m ³	17 mg/m ³	99 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Chromium ††	7440-47-3			5000 pounds	313		
Chromium Compounds	N090			&	313		

†† indicates that no reporting of releases of this CERCLA hazardous substance is required under CERCLA if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- ALPASTE RRA 030




Chemical Datasheet

MERCURY



Chemical Identifiers

CAS Number7439-97-6 **UN/NA Number**

2809

DOT Hazard LabelCorrosive
Poison**USCG CHRIS Code**

MCR

NIOSH Pocket Guide

Mercury compounds [except (organo) alkyls] (as Hg)

International Chem Safety Card

MERCURY

NFPA 704

data unavailable

General Description

An odorless, silvery metallic liquid. Insoluble in water. Toxic by ingestion, absorption and inhalation of the fumes. Corrosive to aluminum. Used as a catalyst in instruments, boilers, mirror coatings.

Hazards

Reactivity Alerts

none

Air & Water Reactions

Insoluble in water.

Fire Hazard

Behavior in Fire: Not flammable (USCG, 1999)

Health Hazard

No immediate symptoms. As poisoning becomes established, slight muscular tremor, loss of appetite, nausea, and diarrhea are observed. Psychic, kidney, and cardiovascular disturbances may occur. (USCG, 1999)

Reactivity Profile

MERCURY forms an explosive acetylide when mixed with acetylene. Can form explosive compounds with ammonia (a residue resulting from such a reaction exploded when an attempt was made to clean it off a steel rod [Chem. Eng. News 25:2138. 1947]. Chlorine dioxide (also other oxidants, such as: chlorine, bromine, nitric acid, performic acid), and mercury explode when mixed [Mellor 2, Supp. 1:381. 1956]. Methyl azide in the presence of mercury is potentially

explosive [Can. J. Chem. 41:1048. 1963]. Ground mixtures of sodium carbide and mercury can react vigorously [Mellor 5:848. 1946-47]. Ammonia forms explosive compounds with gold, mercury, or silver. (Eggeman, Tim. "Ammonia". Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 2001.).

Belongs to the Following Reactive Group(s)

- Metals, Less Reactive

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 172 [Gallium and Mercury]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area for at least 50 meters (150 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 100 meters (330 feet).

FIRE: When any large container is involved in a fire, consider initial evacuation for 500 meters (1/3 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 172 [Gallium and Mercury]:

Use extinguishing agent suitable for type of surrounding fire. Do not direct water at the heated metal. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 172 [Gallium and Mercury]:

Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Do not use steel or aluminum tools or equipment. Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain. For mercury, use a mercury spill kit. Mercury spill areas may be subsequently treated with calcium sulphide/calcium sulfide or with sodium thiosulphate/sodium thiosulfate wash to neutralize any residual mercury. (ERG, 2020)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Mercury compounds [except (organo) alkyls] (as Hg):

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: No recommendation is made specifying the need for eye protection.

Wash skin: WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.

Remove: WHEN WET OR CONTAMINATED - Work clothing that becomes wet or significantly contaminated should be removed and replaced.

Change: DAILY - Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the work premises. (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QS	QC	SL	C3	TF	TP	RC	TK	RF
Mercury	7439-97-6	Liquid		>480	>480	>480	>480	>480	>480	>480	>480

> indicates greater than.

Special Warning from DuPont: Tychem® and Tyvek® fabrics should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Only...

(DuPont, 2022)

First Aid

Excerpt from NIOSH Pocket Guide for Mercury compounds [except (organo) alkyls] (as Hg):

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: SOAP WASH PROMPTLY - If this chemical contacts the skin, promptly wash the contaminated skin with soap and water. If this chemical penetrates the clothing, promptly remove the clothing and wash the skin with soap and water. Get medical attention promptly.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: Hg

Flash Point: data unavailable

Lower Explosive Limit (LEL): data unavailable

Upper Explosive Limit (UEL): data unavailable

Autoignition Temperature: Not flammable (USCG, 1999)

Melting Point: -38°F (USCG, 1999)

Vapor Pressure: 0.0012 mmHg (NIOSH, 2022)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 13.55 at 68°F (USCG, 1999)

Boiling Point: 675°F at 760 mmHg (USCG, 1999)

Molecular Weight: 200.59 (USCG, 1999)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: 10 mg Hg/m³ (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

Interim AEGLs for Mercury Vapor (7439-97-6)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
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Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	NR	3.1 mg/m ³	16 mg/m ³
30 minutes	NR	2.1 mg/m ³	11 mg/m ³
60 minutes	NR	1.7 mg/m ³	8.9 mg/m ³
4 hours	NR	0.67 mg/m ³	2.2 mg/m ³
8 hours	NR	0.33 mg/m ³	2.2 mg/m ³

NR = Not recommended due to insufficient data
(NAC/NRC, 2022)

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Mercury Vapor (7439-97-6)	NA	0.25 ppm	0.5 ppm

NA = not appropriate.
(AIHA, 2020)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Mercury vapor (7439-97-6)	0.15 mg/m ³	1.7 mg/m ³	8.9 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112(r) RMP TQ
Mercury	7439-97-6			1 pound	313	U151	
Mercury Compounds	N458			&	313		

& indicates that no RQ is assigned to this generic or broad class, although the class is a CERCLA hazardous substance. See 50 Federal Register 13456 (April 4, 1985).

(EPA List of Lists, 2022)

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- MERCURY
- MERCURY ELEMENT
- MERCURY METAL
- MERCURY METAL: COLLOIDAL MERCURY
- MERCURY, METALLIC



Chemical Datasheet

FUEL OIL, [DIESEL]



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
68334-30-5	1993 (domestic)	Flammable Liquid	ODS
68476-30-2	1202 (international)		
68476-31-3			
68476-34-6			
77650-28-3			

NIOSH Pocket Guide

none

International Chem Safety Card

DIESEL FUEL No. 2

NFPA 704

Diamond	Hazard	Value	Description
2 1 0	Health	1	Can cause significant irritation.
	Flammability	2	Must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.
	Instability	0	Normally stable, even under fire conditions.
	Special		

(NFPA, 2010)

General Description

A straw yellow to dark colored liquid with a petroleum-like odor. Flash point below 141°F. Less dense than water and insoluble in water. Hence floats on water. Vapors heavier than air.

Hazards

Reactivity Alerts

Highly Flammable

Air & Water Reactions

Flammable. Insoluble in water.

Fire Hazard

Combustible. (USCG, 1999)

Health Hazard

LIQUID: Irritating to skin and eyes. Harmful if swallowed. (USCG, 1999)

Reactivity Profile

Saturated aliphatic hydrocarbons, which are contained in FUEL OIL, [DIESEL], may be incompatible with strong oxidizing agents like nitric acid. Charring of the hydrocarbon may occur followed by ignition of unreacted hydrocarbon and other nearby combustibles. In other settings, aliphatic saturated hydrocarbons are mostly unreactive. They are not affected by aqueous solutions of acids, alkalis, most oxidizing agents, and most reducing agents. When heated sufficiently or when ignited in the presence of air, oxygen or strong oxidizing agents, they burn exothermically to produce carbon dioxide and water. May be ignited by strong oxidizers.

Belongs to the Following Reactive Group(s)

- Hydrocarbons, Aliphatic Saturated

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area for at least 50 meters (150 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

CAUTION: The majority of these products have a very low flash point. Use of water spray when fighting fire may be inefficient. CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

SMALL FIRE: Dry chemical, CO₂, water spray or regular foam.

LARGE FIRE: Water spray, fog or regular foam. Avoid aiming straight or solid streams directly onto the product. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. For petroleum crude oil, do not spray water directly into a breached tank car. This can lead to a dangerous boil over. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor-suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor, but may not prevent ignition in closed spaces. (ERG, 2020)

Protective Clothing

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides thermal protection but only limited chemical protection. (ERG, 2020)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QS	QC	SL	C3	TF	TP	RC	TK	RF
Diesel fuel	68334-30-5	Liquid				199	>480	>480	>480	>480	>480
Fuel-oil no 2	68476-30-2	Liquid		imm	>480				>480		

> indicates greater than.

"imm" indicates immediate; having a normalized breakthrough time of 10 minutes or less.

Special Warning from DuPont: Tychem® and Tyvek® fabrics should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Only...

(DuPont, 2022)

First Aid

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

Chemical Formula: data unavailable

Flash Point: 125°F (NTP, 1992)

Lower Explosive Limit (LEL): 1.3 % (NTP, 1992)

Upper Explosive Limit (UEL): 6 % (NTP, 1992)

Autoignition Temperature: 350 to 625°F (USCG, 1999)

Melting Point: 0°F (NTP, 1992)

Vapor Pressure: 2.17 mmHg at 70°F (USCG, 1999)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 0.841 at 60.8°F (USCG, 1999)

Boiling Point: 540 to 640°F at 760 mmHg (NTP, 1992)

Molecular Weight: data unavailable

Water Solubility: less than 1 mg/mL at 66°F (NTP, 1992)


Ionization Energy/Potential: data unavailable


IDLH: data unavailable

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3
Diesel Fuel and Other Middle Distillate Fuels (68334-30-5)	300 mg/m ³ 	1000 mg/m ³	Not Established

 indicates that odor should be detectable near ERPG-1.

(AIHA, 2020)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3
Diesel fuels; (includes diesel fuel No. 4 (68476-31-3), fuel oil No.2 (68476-30-2), fuel oil residual (68476-33-5) (68334-30-5)	300 mg/m ³	3300 mg/m ³	20000 mg/m ³

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- DFM
- DIESEL FUEL
- DIESEL FUEL OIL



Chemical Datasheet

GASOLINE



Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	USCG CHRIS Code
8006-61-9 86290-81-5	1203	Flammable Liquid	GAT

NIOSH Pocket Guide
Gasoline

International Chem Safety Card
GASOLINE

NFPA 704

Diamond	Hazard	Value	Description
3 1 0	Health	1	Can cause significant irritation.
	Flammability	3	Can be ignited under almost all ambient temperature conditions.
	Instability	0	Normally stable, even under fire conditions.
	Special		

(NFPA, 2010)

General Description

A clear colorless to amber colored, volatile liquid with a petroleum-like odor. Flash point below 0°F. Less dense than water and insoluble in water. Hence floats on water. Vapors heavier than air. Leaked vapors may travel to a source of ignition and then flash back to the source.

Hazards

Reactivity Alerts

Highly Flammable

Air & Water Reactions

Highly flammable.

Fire Hazard

Special Hazards of Combustion Products: None

Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. (USCG, 1999)

Health Hazard

Irritation of mucous membranes and stimulation followed by depression of central nervous system. Breathing of vapor may also cause dizziness, headache, and incoordination or, in more severe cases, anesthesia, coma, and respiratory arrest. If liquid enters lungs, it will cause severe irritation, coughing, gagging, pulmonary edema, and, later, signs of bronchopneumonia and pneumonitis. Swallowing may cause irregular heartbeat. (USCG, 1999)

Reactivity Profile

GASOLINE may be incompatible with strong oxidizing agents such as nitric acid, peroxides, and perchlorates. Charring may occur followed by ignition of unreacted hydrocarbon and other nearby combustibles. In other settings, mostly unreactive. Not affected by aqueous solutions of acids, alkalis, most oxidizing agents, and most reducing agents. When heated sufficiently or when ignited in the presence of air, oxygen or strong oxidizing agents, burns exothermically to produce carbon dioxide and water.

Belongs to the Following Reactive Group(s)

- Hydrocarbons, Aliphatic Saturated

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area for at least 50 meters (150 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2020)

Firefighting

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

CAUTION: The majority of these products have a very low flash point. Use of water spray when fighting fire may be inefficient. CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

SMALL FIRE: Dry chemical, CO₂, water spray or regular foam.

LARGE FIRE: Water spray, fog or regular foam. Avoid aiming straight or solid streams directly onto the product. If it can be done safely, move undamaged containers away from the area around the fire.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. For petroleum crude oil, do not spray water directly into a breached tank car. This can lead to a dangerous boil over. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks

engulfed in fire. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2020)

Non-Fire Response

Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor-suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor, but may not prevent ignition in closed spaces. (ERG, 2020)

Protective Clothing

Excerpt from NIOSH Pocket Guide for Gasoline:

Skin: PREVENT SKIN CONTACT - Wear appropriate personal protective clothing to prevent skin contact.

Eyes: PREVENT EYE CONTACT - Wear appropriate eye protection to prevent eye contact.

Wash skin: WHEN CONTAMINATED - The worker should immediately wash the skin when it becomes contaminated.

Remove: WHEN WET (FLAMMABLE) - Work clothing that becomes wet should be immediately removed due to its flammability hazard (i.e., for liquids with a flash point <100°F).

Change: No recommendation is made specifying the need for the worker to change clothing after the workshift.

Provide:

- EYEWASH - Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substances; this is irrespective of the recommendation involving the wearing of eye protection.
- QUICK DRENCH - Facilities for quickly drenching the body should be provided within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.] (NIOSH, 2022)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QS	QC	SL	C3	TF	TP	RC	TK	RF
Gasoline, unleaded	86290-81-5	Liquid			imm	>480	>480	>480	>480	>480	>480

> indicates greater than.

"imm" indicates immediate; having a normalized breakthrough time of 10 minutes or less.

Special Warning from DuPont: Tychem® and Tyvek® fabrics should not be used around heat, flames, sparks or in potentially flammable or explosive environments. Only...

(DuPont, 2022)

First Aid

Excerpt from NIOSH Pocket Guide for Gasoline:

Eye: IRRIGATE IMMEDIATELY - If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: SOAP FLUSH IMMEDIATELY - If this chemical contacts the skin, immediately flush the contaminated skin with soap and water. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water. If irritation persists after washing, get medical attention.

Breathing: RESPIRATORY SUPPORT - If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: MEDICAL ATTENTION IMMEDIATELY - If this chemical has been swallowed, get medical attention immediately. (NIOSH, 2022)

Physical Properties

Chemical Formula: data unavailable

Flash Point: -36°F (USCG, 1999)

Lower Explosive Limit (LEL): 1.4 % (USCG, 1999)

Upper Explosive Limit (UEL): 7.4 % (USCG, 1999)

Autoignition Temperature: 853°F (USCG, 1999)

Melting Point: data unavailable

Vapor Pressure: 382.58 mmHg (USCG, 1999)

Vapor Density (Relative to Air): data unavailable

Specific Gravity: 0.7321 at 68°F (USCG, 1999)

Boiling Point: 140 to 390°F at 760 mmHg (USCG, 1999)

Molecular Weight: 110 (approx) (NIOSH, 2022)

Water Solubility: Insoluble (NIOSH, 2022)

Ionization Energy/Potential: data unavailable

IDLH: A potential occupational carcinogen. (NIOSH, 2022)

AEGLs (Acute Exposure Guideline Levels)

No AEGL information available.

ERPGs (Emergency Response Planning Guidelines)

Chemical	ERPG-1	ERPG-2	ERPG-3	
Gasoline (86290-81-5)	200 ppm 🌟	1000 ppm	4000 ppm 🌟	LEL = 14000 ppm

🌟 indicates that odor should be detectable near ERPG-1.

🌑 indicates value is 10-49% of LEL.

(AIHA, 2020)

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3	
Gasoline (86290-81-5)	200 ppm	1000 ppm	4000 ppm 🌑	LEL = 13000 ppm

🌑 indicates value is 10-49% of LEL.

(DOE, 2018)

Regulatory Information

EPA Consolidated List of Lists

No regulatory information available.

CISA Chemical Facility Anti-Terrorism Standards (CFATS)

No regulatory information available.

OSHA Process Safety Management (PSM) Standard List

No regulatory information available.

Alternate Chemical Names

- A 76
- A 76 (FUEL)
- AI 3
- AI 93 (FUEL)
- AKVAZIN
- BENZINE (MOTOR FUEL)
- FUELS, GASOLINE
- GASOLINE
- GASOLINE, SYNTHETIC
- GASOLINES: AUTOMOTIVE (<4.23G LEAD/GAL)
- HERBICIDE ES
- INDOLENE
- MOTOR FUEL
- MOTOR SPIRIT
- MOTOR SPIRITS
- NATURAL GAS CONDENSATES, GASOLINE
- NATURAL GASOLINE
- NEFRAS S 150/200
- NEFRAS S 50/170
- PETROL
- PETROL, NATURAL
- PETROL, SYNTHETIC
- SYNFUELS
- SYNTHETIC GASOLINE

Graymar Environmental
COVID-19 Pandemic Response Policy Statement

OSHA has determined that “most employers no longer need to take steps to protect their workers from COVID-19 exposure in any workplace, or well-defined portions of a workplace, where **all employees are fully vaccinated**.”

However, in light of evidence related to the Omicron variant of the SARS-CoV-2 virus, the CDC updated its guidance to recommend that even people who are fully vaccinated wear a mask in public indoor settings in **areas of substantial or high transmission**, or if they have had a known exposure to someone with COVID-19 and have not had a subsequent negative test at least 5 days after the last date of that exposure.

In addition, employers should **still take steps to protect unvaccinated or otherwise at-risk workers** in their workplaces, or well-defined portions of workplaces.” For more information, follow this link:

[Protecting Workers: Guidance on Mitigating and Preventing the Spread of COVID-19 in the Workplace](#)

CDC recommends that fully vaccinated people should nonetheless:

- a. **Watch out** for **symptoms of COVID-19**, especially if they have been around someone who is sick. If they have symptoms of COVID-19, they should get **tested** and **stay home** and away from others.
- b. **Monitor** for **symptoms of COVID-19** for 14 days following an exposure.

Note: **Guidance and criteria for Coronavirus Disease 2019 vary locally depending on current conditions. Check with your local health department for requirements specific to your location.**

The health of our employees is of utmost importance, as they are our most valuable asset. The following policy has been implemented to protect our employees to the greatest of our ability from the spread of Coronavirus Disease 2019 (COVID-19).

COVID-19 is a respiratory disease that has spread from China to many other countries around the world, including the United States. Infection with SARS-CoV-2, the virus that causes COVID-19, can cause illness ranging from mild to severe and, in some cases, can be fatal.

The following Pandemic Response Plan will be implemented, as necessary based on potential occupational exposures, in order to limit the risk to our employees. Tim Bussey, our Safety Director, is responsible for implementing and administering our Plan.

Our employees will be trained in all aspects of our plan in a language they understand, and the plan will be available for review by workers and their representatives.

We will ensure that workers understand their rights to a safe and healthful work environment and their right to raise workplace safety and health concerns free of retaliation. Employees can contact Tim Bussey with any questions or concerns about workplace safety and health, either directly or anonymously, without fear of discrimination or retaliation.

Prevention and Precautions

Our employees' risk of exposure will be continually assessed and evaluated. Controls to prevent exposure will be selected and implemented as appropriate, and workers will be required to use them.

These include engineering controls such as physical barriers to control the spread of the virus; administrative controls such as reducing the size of meetings or gatherings and implementing physical distancing strategies; and providing appropriate personal protective equipment, hygiene, and cleaning supplies.

- a. Policies and practices, such as flexible worksites (e.g., telecommuting) and flexible work hours (e.g., staggered shifts), will be used if necessary, to increase the physical distance among employees & between employees and others.
- b. The workplace will be modified to increase physical space between employees, and between employees and customers, to 6 feet or more, where necessary. Solid barriers (e.g., plexiglass, flexible strip curtains) will be installed where unvaccinated or at-risk workers are not able to remain at least 6 feet away from other people.
- c. Signs, tape marks, or other visual cues will be posted reminding workers, customers, and visitors to maintain at least six feet between one another. Directional signs will be posted in hallways/corridors where the width restricts movement and limits social distancing.
- d. On-site safety meetings will be adjusted to ensure physical distancing guidelines. When possible, other meetings and interviews will be conducted via phone or digital platforms or held outside.
- e. Workers will be discouraged from using other workers' phones, desks, offices, and other work tools and equipment, whenever possible. Shared items will be cleaned and disinfected before and after each use.
- f. State or local guidance and priorities for screening and viral testing will be followed in our workplaces. Daily health/temperature checks will be conducted and/or employees will be encouraged to self-monitor/self-screen and notify their supervisor when they are sick or experiencing symptoms of COVID-19. Workers will be required to stay home if they are sick.
- g. Any employee exhibiting signs and symptoms of COVID-19 at work will be immediately separated from others, sent home, and encouraged to seek medical attention.
- h. Adequate ventilation throughout the work environment can help to maintain a safe and healthy workplace. We will ensure that ventilation systems operate properly and provide acceptable indoor air quality for the current occupancy level for each space. If necessary, steps may be taken to optimize our heating, ventilation, and air conditioning (HVAC) system, increase sources of fresh, clean air, and prevent air from blowing from one worker to another. See **CDC's Ventilation in Buildings** and **OSHA Alert: COVID-19 Guidance on Ventilation in the Workplace** for more information.
- i. Vulnerable workers will be offered duties that minimize their contact with customers and other workers (e.g., restocking shelves rather than working as a cashier), if the worker agrees to this.

- j. Any PPE we determine to be necessary to protect workers will be provided at no cost in accordance with relevant OSHA standards and other industry-specific guidance.
- k. We will facilitate vaccinations for our workers. If possible, we will grant paid time off for employees to get vaccinated and recover from any side effects. We will provide our employees **CDC information** on the benefits and safety of vaccinations. Employees can search **vaccines.gov**, text their ZIP code to 438829, or call 1-800-232-0233 to find nearby vaccination locations.

Signs and Symptoms

Symptoms of COVID-19 typically include fever, cough, and shortness of breath. Some people infected with the virus have reported experiencing other non-respiratory symptoms such as fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea, vomiting, or diarrhea. Other people, referred to as *asymptomatic cases*, have experienced no symptoms at all.

Employees are reminded to seek medical attention if their symptoms become severe, including persistent pain or pressure in the chest, confusion, or bluish lips or face.

Updates and further details are available on **CDC's webpage**.

People of any age with the following conditions are at increased risk of severe illness from COVID-19:

- a. Chronic kidney disease
- b. COPD (chronic obstructive pulmonary disease)
- c. Immunocompromised state (weakened immune system) from solid organ transplant
- d. Obesity (body mass index [BMI] of 30 or higher)
- e. Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
- f. Sickle cell disease
- g. Type 2 diabetes mellitus

Transmission

According to the CDC, symptoms of COVID-19 may appear in as few as 2 days or as long as 14 days after exposure. It may be possible that a person can get COVID-19 by touching a surface or object that has SARS-CoV-2 on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the primary way the virus spreads. The virus is thought to spread mainly from person-to-person, including:

- a. Between people who are in close contact with one another (within about 6 feet).
- b. Through respiratory droplets produced when an infected person coughs or sneezes. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.

CDC recommends that even fully vaccinated people wear masks in public indoor settings in **areas of substantial or high transmission** to prevent them from spreading the virus when talking, coughing, and/or sneezing.

Face coverings will be provided to employees at no cost, and employees will be instructed in their proper use. See CDC's **Guide to Masks**.

Face coverings should be made of at least two layers of a tightly woven breathable fabric, such as cotton, and should not have exhalation valves or vents. They should fit snugly over the nose, mouth, and chin with no large gaps on the outside of the face.

"Reasonable accommodation" will be made for any workers who are unable to wear or have difficulty wearing certain types of face coverings due to a disability.

Unless otherwise provided by federal, state, or local requirements, workers who are outdoors may opt not to wear face coverings unless they are at risk, for example, if they are immunocompromised. Regardless, we will support all workers in continuing to wear a face covering if they choose, especially in order to safely work closely with other people.

In situations where face coverings or PPE may increase the risk of heat-related illness indoors or outdoors or cause safety concerns due to introduction of a hazard (for instance, straps getting caught in machinery), additional precautions will be taken to protect worker health as appropriate.

Procedures for a Confirmed Case

If an employee is confirmed to have COVID-19, fellow employees will be informed of their possible exposure to COVID-19 in the workplace, but confidentiality will be maintained as required by the Americans with Disabilities Act (ADA). Employees exposed to a co-worker with confirmed COVID-19 will be referred to CDC guidance for how to conduct a **risk assessment** of their potential exposure and **quarantine guidelines**.

Communication/Notification Procedure

Important COVID-19 information will be communicated to our employees by small safety meetings, email, text, and/or telephone.

- a. A suspected employee illness will be communicated internally by the most effective, safe means possible using emails and/or phone messages.
- b. As the event evolves, we will communicate any necessary changes with our employees through workplace postings, emails, and/or phone messages.
- c. We will provide information on workforce readiness and precautionary measures for personnel reporting to 3rd party sites and projects via email and phone messages.

Team Member Hygiene

Frequent and thorough hand washing will be promoted, including by providing workers, customers, and worksite visitors with a place and time to wash their hands often with soap and water (for at least 20 seconds) or to use hand sanitizer.

Note: Hand washing is preferred to using hand sanitizer.

Key times for workers to clean their hands include:

- a. Before and after work shifts.
- b. Before and after work breaks.
- c. After blowing their nose, coughing, or sneezing.
- d. After using the restroom.
- e. Before and after eating or preparing food.
- f. After putting on, touching, or removing PPE or face coverings.
- g. After coming into contact with surfaces touched by other people.

Supplies necessary for good hygiene will be provided to the workers at no cost.

- a. If soap and running water are not immediately available, alcohol-based hand rubs containing at least 60% ethanol or 70% isopropanol will be provided.
- b. Disposable tissues and trash cans will be provided. Respiratory etiquette, including covering coughs and sneezes, will be required.
- c. Disposable gloves may be used to supplement frequent handwashing or use of hand sanitizer; examples are for workers who are screening others for symptoms or handling commonly touched items.

Facility Hygiene and Sanitation Procedures

Regular housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment such as doorknobs, light switches, handles, toilets, faucets, etc., will be maintained.

- a. Cleaning products with EPA-approved emerging viral pathogens claims ([click here](#) for a list of qualified disinfectants), diluted household bleach solutions (5 tablespoons per gallon of water), or alcohol solutions with at least 70% alcohol that are appropriate for the surface will be used.
- b. Workers will be trained on the chemical hazards, manufacturer's directions (e.g., concentration, application method and contact time, PPE), ventilation, and requirements for safe use.

If someone who has been in the facility within 24 hours is **suspected of having or confirmed to have COVID-19**, we will follow the **CDC cleaning and disinfection recommendations**.

Return to Work

Employees with COVID-19 who have stayed home (home isolated) can stop home isolation after these three things have happened:

- a. At least 5 days have passed since symptoms first appeared; AND
- b. At least 24 hours have passed since resolution of fever without the use of fever-reducing medications; AND
- c. Other symptoms have improved, for example, when cough, fatigue, sore throat, or shortness of breath (loss of taste and smell may persist for weeks or months and need not delay the end of isolation).

After isolation employees with COVID-19 should continue to wear a proper mask around others for the next 5 days (day 6 through 10).

Some workers might need to stay home and isolate longer than 10 days, as recommended by their healthcare providers:

- a. A healthcare provider may recommend that a worker who had severe illness from COVID-19 (admitted to a hospital and needed oxygen) stay in isolation from 10 to 20 days after symptoms first appeared.
- b. Workers who had COVID-19 or tested positive for COVID-19 and have a weakened immune system should consult with their healthcare providers for more information. Their doctors may work with infectious disease experts at the local health department to determine when they can be around others.

Note: Under the Americans with Disabilities Act, employers are permitted to require a doctor's note from workers to verify that they are healthy and able to return to work. But given potential delays in seeking treatment and demands on the healthcare system, requiring a COVID-19 test result or a healthcare provider's note for workers who are sick to validate their illness or return to work may cause significant delays affecting employers and workers alike.

There are certain circumstances where employers may consider a COVID-19 test-based strategy. See [SARS-CoV-2 Testing Strategy: Considerations for Non-Healthcare Workplaces](#).

A worker without symptoms who was diagnosed with COVID-19 can return to work only if 5 days have passed since the date of the first positive COVID-19 test and the employee wears a mask for the first 5 days after returning to work. If they ever develop symptoms, then the symptom-based or test-based strategy should be used.

Workers should **quarantine** if they have been in **close contact** (within 6 feet of someone for a cumulative total of 15 minutes or more over a 24-hour period) with someone who has COVID-19, unless they have been **fully vaccinated**. People who are fully vaccinated do NOT need to quarantine after contact with someone who had COVID-19 unless they have **symptoms**. However, fully vaccinated people should get tested at least 5 days after their exposure, even if they don't have symptoms and wear a mask indoors in public for 10 days following exposure or until their test result is negative.

When possible, quarantined workers will be allowed to telework, or work in an area isolated from others. If those are not possible, workers will be allowed to use paid sick leave, if available, or we may consider implementing paid leave policies to reduce risk for everyone at the workplace.

In all cases, we will follow the guidance of our local public health department. The decision to stop home isolation will be made in consultation with the healthcare provider and state and local health departments. Local decisions depend on local circumstances.

Work-related cases of COVID-19 illness will be recorded on our **Form 300 logs** if the following requirements are met:

- a. The case is a confirmed case of COVID-19;
- b. The case is work-related (as defined by **29 CFR 1904.5**); and
- c. The case involves one or more relevant recording criteria (set forth in **29 CFR 1904.7**) (e.g., medical treatment, days away from work).

We will follow the requirements in **29 CFR 1904** when **reporting COVID-19 fatalities and hospitalizations to OSHA**.

Workplace outbreaks will be reported to health departments as required, and we will support their contact tracing efforts.

We will continue to monitor public health communications about COVID-19 recommendations by frequently checking the **OSHA** and **CDC** COVID-19 websites.

This Policy Statement will be conspicuously posted.

Mini Respiratory Protection Program

This section applies only to respirator use in for protection from COVID-19.

Respirators Provided by Employees

If employees provide and use their own respirators, Graymar Environmental will provide them with the following notice:

Respirators can be an effective method of protection against COVID–19 hazards when properly selected and worn. Respirator use is encouraged to provide an additional level of comfort and protection for workers even in circumstances that do not require a respirator to be used. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. If Graymar Environmental allows you to provide and use your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following:

- a. Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
- b. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
- c. Do not wear your respirator where other workplace hazards (e.g., chemical exposures) require use of a respirator. In such cases, Graymar Environmental will provide you with a respirator that is used in accordance with our Respiratory Protection Program that complies with OSHA 29 CFR 1910.134. For more information about using a respirator, see OSHA's respiratory protection safety and health topics page (<https://www.osha.gov/respiratoryprotection>).

Respirators Provided by Employers

If Graymar Environmental provides respirators to our employees, it will be ensured that each employee wearing a respirator receives training prior to first use (or if they change the type of respirators) and comprehends at least the following:

- a. How to inspect, put on and remove, and use a respirator;
- b. The limitations and capabilities of the respirator, particularly when the respirator has not been fit tested;
- c. Procedures and schedules for storing, maintaining, and inspecting respirators;
- d. How to correctly perform a user seal check; and
- e. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators and what to do if they experiences signs and symptoms.

Each employee who uses a tight-fitting respirator will perform a user seal check to ensure that the respirator is properly seated to the face each time the respirator is put on. Acceptable methods of user seal checks include:

- a. Positive pressure user seal check (i.e., blow air out). Once you have conducted proper hand hygiene and properly donned the respirator, place your hands over the facepiece, covering as much surface area as possible. Exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure is being built up inside the facepiece without any evidence of outward leakage of air at the seal. Examples of evidence that it is leaking could be the feeling of air movement on your face along the seal of the facepiece, fogging of your glasses, or a lack of pressure being built up inside the facepiece. If the particulate respirator has an exhalation valve, then performing a positive pressure check may not be possible unless the user can cover the exhalation valve. In such cases, a negative pressure check must be performed.
- b. Negative pressure user seal check (i.e., suck air in). Once you have conducted proper hand hygiene and properly donned the respirator, cover the filter surface with your hands as much as possible and then inhale. The facepiece should collapse on your face and you should not feel air passing between your face and the facepiece.

Employees must correct any problems discovered during the user seal check. In the case of either type of user seal check (positive or negative), if air leaks around the nose, use both hands to readjust how the respirator sits on your face or adjust the nosepiece, if applicable. Readjust the straps along the sides of your head until a proper seal is achieved.

A filtering facepiece respirator used by a particular employee is only permitted to be reused by that employee, and only when:

- a. The respirator is not visibly soiled or damaged;
- b. The respirator has been stored in a breathable storage container (e.g., paper bag) for at least five calendar days between use and has been kept away from water or moisture;
- c. A visual check is performed, in adequate lighting, for damage to the respirator's fabric or seal;
- d. A user seal check is successfully completed;
- e. Proper hand hygiene is used before putting the respirator on and conducting the user seal check; and
- f. The respirator has not been worn more than five days total.

Note: The reuse of single-use respirators (e.g., filtering facepiece respirators) is discouraged.

Graymar Environmental will ensure that an elastomeric respirator or PAPR is only reused when:

- a. The respirator is not damaged;
- b. The respirator is cleaned and disinfected as often as necessary to be maintained in a sanitary condition; and
- c. A change schedule is implemented for cartridges, canisters, or filters.

Employees are required to discontinue use of a respirator when either they or a supervisor reports medical signs or symptoms (e.g., shortness of breath, coughing, wheezing, chest pain, any other symptoms related to lung problems, cardiovascular symptoms) that are related to ability to use a respirator.

Any employee who previously had a medical evaluation and was determined to not be medically fit to wear a respirator must not be provided with a respirator unless they are re-evaluated and medically cleared to use a respirator.

Training

Graymar Environmental will train each employee about:

- a. The requirements of this program as well as any policies and procedures established to implement this program;
- b. COVID-19 vaccine efficacy, safety, and the benefits of being vaccinated, by providing the document, "Key Things to Know About COVID-19 Vaccines," available at <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/keythingstoknow.html>;
- c. The requirements of 29 CFR 1904.35(b)(1)(iv), which prohibits Graymar Environmental from discharging or in any manner discriminating against an employee for reporting a work-related injuries or illness, and section 11(c) of the OSH Act, which prohibits Graymar Environmental from discriminating against an employee for exercising rights under, or as a result of actions that are required by, this program. Section 11(c) also protects the employee from retaliation for filing an occupational safety or health complaint, reporting a work-related injuries or illness, or otherwise exercising any rights afforded by the OSH Act; and
- d. The prohibitions of 18 U.S.C. 1001 and of section 17(g) of the OSH Act, which provide for criminal penalties associated with knowingly supplying false statements or documentation regarding vaccination or testing status.

Reporting COVID-19 Fatalities & Hospitalizations to OSHA

Graymar Environmental must report to OSHA each work-related COVID-19:

- a. Fatality within 8 hours of the employer learning about the fatality.
- b. In-patient hospitalization within 24 hours of the employer learning about the in-patient hospitalization.

Availability of Records

Graymar Environmental will make individual COVID-19 vaccine documentation and any COVID-19 test results for a particular employee available to that employee and the aggregate number of fully vaccinated employees at a workplace along with the total number of employees at that workplace by the end of the next business day after a request.

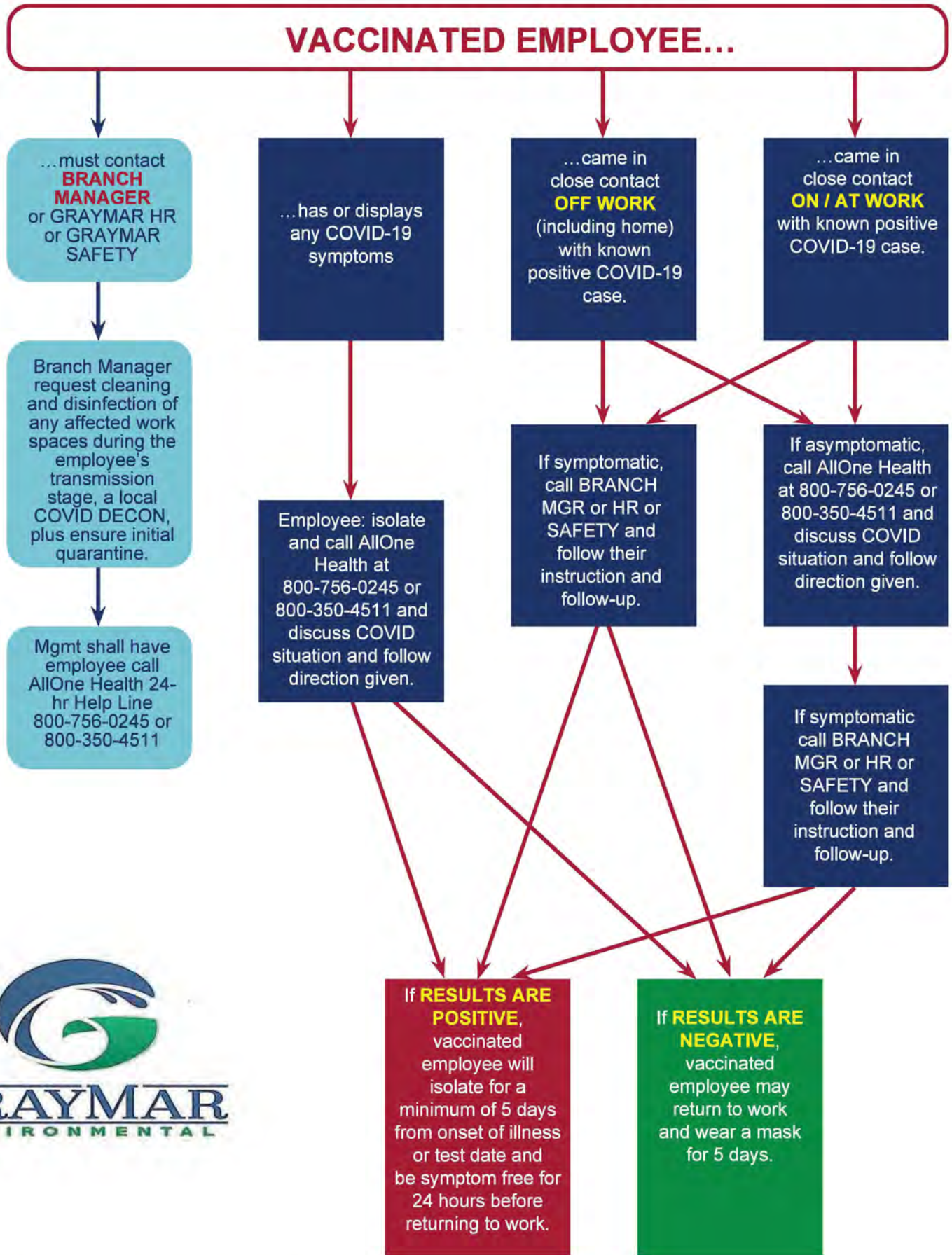
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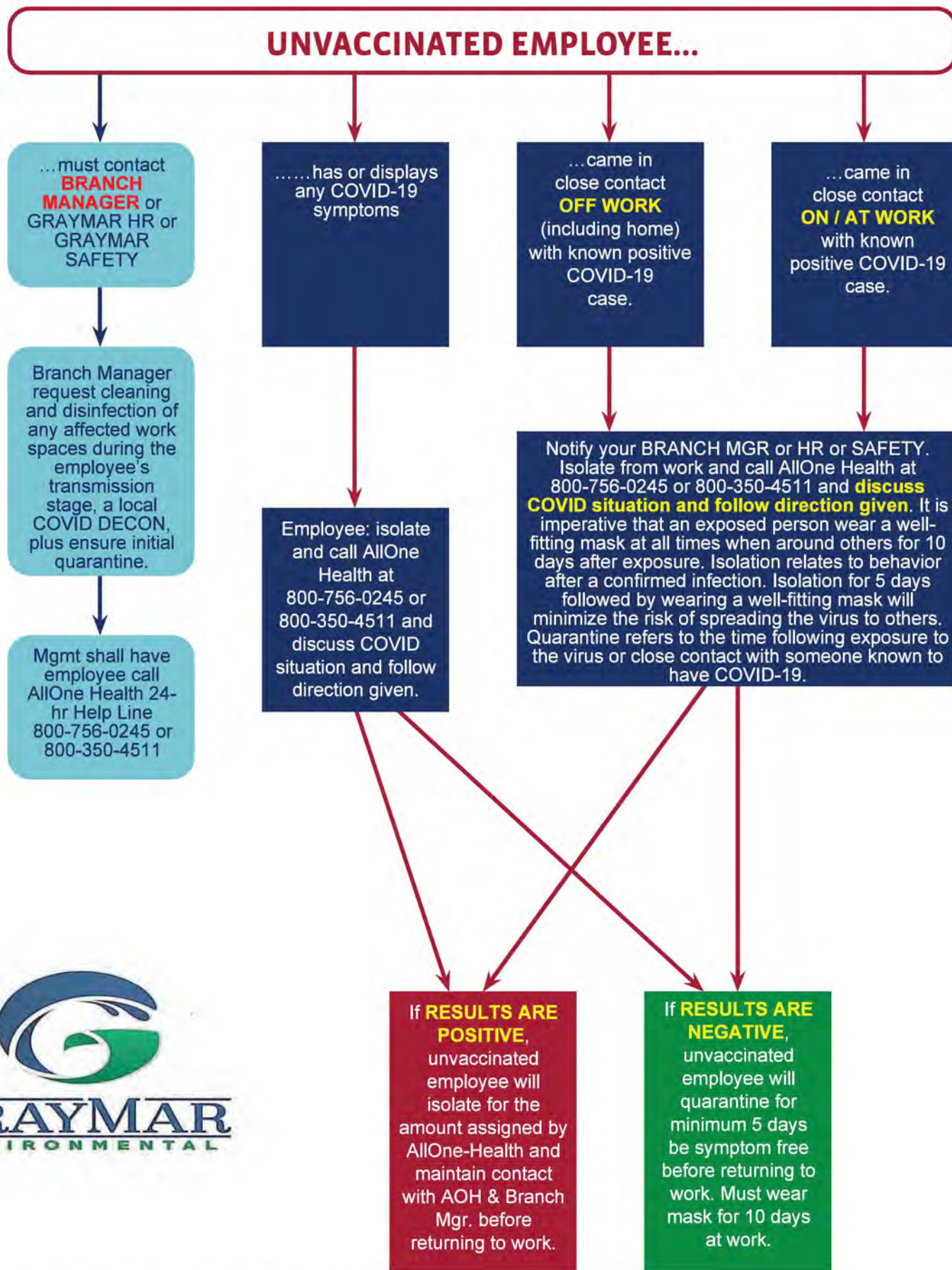
This Policy Statement will be conspicuously posted.

Tim Bussey
Safety Director













COVID-19 Flowchart for Vaccinated Employees



COVID-19 Flowchart for Unvaccinated Employees



CORONAVIRUS vs. COLD vs. FLU vs. ALLERGIES

SYMPTOMS	COVID-19	COLD	FLU	ALLERGIES
 Fever	Common <small>(measured at 100F or Higher)</small>	Rare	High <small>(100-102F), can last 3-4 days</small>	No
 Headache	Sometimes	Rare	Intense	Sometimes
 Extreme Exhaustion	Sometimes <small>(progresses slowly)</small>	No	Common <small>(starts early)</small>	No
 General Aches/Pains	Sometimes	Slight	Common <small>often severe</small>	No
 Fatigue, Weakness	Sometimes	Slight	Common <small>often severe</small>	Sometimes
 Stuffy nose	Rare	Common	Sometimes	Common
 Sneezing	Rare	Common	Sometimes	Common
 Sore Throat	Rare	Common	Common	No
 Cough	Common	Mild to Moderate	Common <small>can become severe</small>	Sometimes
 Shortness of Breath	In more serious infections	Rare	Rare	Common
 Runny Nose	Rare	Common	Sometimes	Common
 Diarrhea	Sometimes	No	Sometimes	No

Days to show symptoms after exposure	2-14 days	1-3 days	1-3 days	Right Away
Average Recovery Period:	Current CDC Guidance: 10 days after symptoms appear	3-7 days	7-10 days	As long as you are exposed

Sources: CDC, WHO, National Institute of Allergy and Infectious Diseases, American College of Allergy, Asthma and Immunology





Quick Action Protocol **Vehicle Accidents / Personnel Injuries / Equipment Damages**

1. Is the area safe? Help keep yourself, other people, and area safe from more harm.
2. Provide help, or care, or first aid, if you can and know what to do and how to do it.
3. Call at least one of the following persons and speak in-person (not voicemails).
 - A. Company Safety – **Tim Bussey 512-968-8435**
 - B. Closest area-management contact to incident if no contact made with Safety:
 - TX AREA MGR – Blas Muniz 915-474-6914*
 - AZ AREA MGR – Jesus Bermudez 602-622-8808*
 - UT AREA MGR – Jake Wilcox 435-265-6003*
 - NV AREA MGR – Kevin Anderson 775-354-8526*
 - OR-Portland MGR - Aaron Gilfilan 971-678-9115*
 - WA-Pasco MGR – Junior Mendoza 509-770-3381*
 - WA-Auburn MGR – Francisco DeJesus 206-600-8430*

***Area Mgr. to communicate and coordinate actions with Safety or VP or President, no exceptions.**

4. Notify police, EMS, or client's responder unit. (If needed/directed from above GRAYMAR Mgmt.)
 - A. **[INJURY]** Assess the situation and condition, ask if first aid or medical care is wanted.
 - B. **[INJURY]** Provide any & all initial first aid/emergency care and support you are capable.
 - C. **[INJURY]** Follow the injury-care through until done or professionals take over.

 - A. **[VEHICLE]** Exchange general contact and insurance information.
 - B. **[VEHICLE]** Use cell phone and take pictures/video of everything, all angles, and distances.
 - C. **[VEHICLE]** If called, wait for police, do not leave until told.
 - D. **[VEHICLE]** Get police report or report number and LE contact information.

 - A. **[PROPERTY]** Do not move anything until instructed to do so.
 - B. **[PROPERTY]** Use cell phone and take pictures/video of everything, all angles, and distances.
5. Verify all your steps and actions with the GRAYMAR Mgmt. contacted earlier. (Call again)
6. Branch Admin personnel to coordinate with Tim Bussey to verify if a "POST-ACCIDENT" D&A test is needed for all GRAYMAR personnel involved.
7. Complete & Save ALL paperwork, statements, contact information, reports, write-ups, pictures, etc. and make sure that it is made available for the Director Health & Safety & Transportation tbussey@graymarenv.com once you are in a place with copy/scan/email capabilities.

Possible Accident Investigation Questions

Some of the questions below will be applicable and some will not. Which questions are applicable depends on the nature and circumstances of the accident.

HOW

- How does the injured employee feel now?
- How did the injury occur?
- How could this accident have been prevented?

WHO

- Who was injured?
- Who saw the accident?
- Who was working with the injured person?
- Who had assigned the person to the work task?
- Who had trained the person on the hazards and protective measures for this task?
- Who else was involved?

WHAT

- What were the causal factors of the accident?
- What were the injuries?
- What was the person doing when injured?
- What had the person been instructed to do?
- What tools was the person using?
- What machinery/equipment was involved?
- What was the condition of the machinery/equipment involved?
- What training had been given?
- What specific precautions were necessary?
- What personal protective equipment was being used?
- What personal protective equipment should have been used?
- What will be done to prevent a recurrence?
- What safety rules were in place to prevent this type of accident?
- What safety rules were being followed?
- What were the environmental conditions (e.g., lighting, floor surface, etc.)?

WHEN

- When did the accident occur?
- When did the person start this task?
- When was the person assigned to this department?
- When had the supervisor last checked on the job progress?

WHY

- Why was the person injured?
- Why did the person do what he/she did?
- Why wasn't protective equipment used?
- Why weren't specific instructions issued?
- Why didn't the person check with the supervisor when he/she noted things weren't as they should be?
- Why did the person continue to work under these circumstances?

WHERE

- Where did the accident occur?
- Where was the person at the time of the accident?
- Where was the supervisor at the time?
- Where were fellow workers at the time?

Information and documentation that may be needed during an accident investigation

- Inspection logs
- Applicable policies and procedures
- JSA (Job Safety Analysis)
- Equipment Operations Manuals
- Condition of all equipment involved
- Check training Records
 - Was appropriate training being provided?
 - When was training provided?
- Check equipment maintenance records
 - Is regular PM or service provided?
 - Is there a recurring type of failure?
- Check accident records
 - Have there been similar accidents or injuries involving other employees?

NOTES:

INCIDENT SUMMARY PAGE

DATE: _____

PREVENTABLE UNPREVENTABLE

- When the incident happened.
-

- Who or what was affected or hurt by the incident.
-

- Where it happened.
-

- What object, if any, caused the incident.
-

- What work element was deficient and most directly caused the incident.
-

- What system failure (or root cause), if any, was evident that needs to be corrected that will prevent a recurrence.
-

*OPINION ON WHY/HOW?

Tim Bussey
Director Health, Safety
GRAYMAR ENVIRONMENTAL SERVICES
512-968-8435
www.graymarenvironmental.com
24-Hour Emergency Response
1-866-GRAYMAR





VEHICLE ACCIDENT REPORT

- | | |
|--|--|
| 1. Stop immediately. Keep calm and be courteous. | 5. Immediately notify your supervisor. |
| 2. Turn on your emergency flashers. | 6. Obtain and record all the facts on this report |
| 3. Send for help. Don't go yourself. Call police. | 7. Submit this form to your supervisor |
| 4 Give reasonable help to injured. Do not move. injured persons if likely to cause further injury. | 8. Do not make a statement of any kind to anyone other than police or representative of the company. |

This report is to be completed if you are in an accident while driving a company vehicle or while driving your personal vehicle on company business.

1. Date Report Prepared	2. Information Supplied By	3. Company Name
4. Company Phone Number	5. Date of Accident	6. Time of Accident
7. Location of Accident (city, state, cross streets, etc.)		

DRIVER AND VEHICLE INFORMATION

COMPANY VEHICLE		OTHER VEHICLE OR PROPERTY	
8. Name of Driver	9. Driver's DOB	20. Name of Driver	21. Driver's DOB
10. Driver's Address		22. Driver's Address	
11. Driver's Telephone No.	12. Driver's License No.	23. Driver's Telephone No.	24. Driver's License No.
13. Company Vehicle Number (if applicable)		25. Vehicle owner's name and address (if different)	
14. Purpose for which vehicle was being used		Insurance company	
		Insurance agent name address and phone number	
15. Year, Make, and Model of Vehicle	16. License Plane No. and State	26. Year, Make, and Model of Vehicle	27. License Plane No. and State
17. Vehicle Identification No.	18. <input type="checkbox"/> Company Vehicle <input type="checkbox"/> Personal Vehicle	28. Describe the Damage to the Vehicle	
19. Describe the Damage to the Vehicle			

INJURED

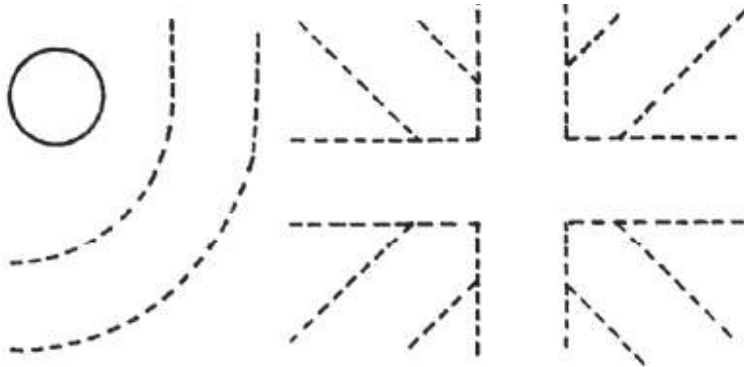
Name	Address	Phone Number
29.		
30.		
31.		

WITNESSES OR PASSENGERS

Name	Address	Phone Number
32.		
33.		
34.		

Use one of these outlines to sketch the scene of your accident. Show names of streets, direction and position of the automobiles, and point of contact. Use a solid line to show the path before the accident and a dotted line to show the path after the accident.

Indicate North with an arrow in the circle



-  Your Vehicle
-  Other Vehicle
-  Third Vehicle
-  Traffic Light
-  Yield Sign
-  Stop Sign
-  Pedestrian

LIGHT

(check one)

- Dawn Daylight
- Darkness- street lights
- Darkness-no street lights
- Dusk

ROAD CHARACTER

(check one)

- Level Curve
- Hillcrest Straight
- On grade

WEATHER

(check one)

- Clear Raining
- Snowing Fog

ROAD SURFACE

(check one)

- Dry Muddy
- Wet Icy
- Snowy

35. Law enforcement agency notified

36. Case number

37. Citation issued, to whom and for what reason



VEHICLE ACCIDENT REPORT

38. Brief description of accident (give speeds, violations, etc.)

I authorize the release to my employer of all records relevant to this accident. It is understood that the company will use the information to verify who was at fault and determine my eligibility for appropriate benefits. This authorization also applies to insurance companies, workers' compensation carriers, and organizations administering benefit programs. This authorization will remain in effect throughout the investigation of this accident. A photocopy of this authorization will be as valid as the original.

Employee Name

Date

Employee Signature

Employee's Report of Injury Form

Instructions: Employees shall use this form to report all work related injuries, illnesses, or “near miss” events (which could have caused an injury or illness) – *no matter how minor*. This helps us to identify and correct hazards before they cause serious injuries. This form shall be completed by employees as soon as possible and given to a supervisor for further action.

I am reporting a work related: <input type="checkbox"/> Injury <input type="checkbox"/> Illness <input type="checkbox"/> Near miss	
Your Name:	
Job title:	
Supervisor:	
Have you told your supervisor about this injury/near miss? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of injury/near miss:	Time of injury/near miss:
Names of witnesses (if any):	
Where, exactly, did it happen?	
What were you doing at the time?	
Describe step by step what led up to the injury/near miss. (continue on the back if necessary):	
What could have been done to prevent this injury/near miss?	
What parts of your body were injured? If a near miss, how could you have been hurt?	
Did you see a doctor about this injury/illness? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, whom did you see?	Doctor's phone number:
Date:	Time:
Has this part of your body been injured before? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, when?	Supervisor:
Your signature:	Date:

Supervisor's Accident Investigation Form

Name of Injured Person _____

Date of Birth _____ Telephone Number _____

Address _____

City _____ State _____ Zip _____

(Circle one) Male Female

What part of the body was injured? Describe in detail. _____

What was the nature of the injury? Describe in detail. _____

Describe fully how the accident happened? What was employee doing prior to the event? What equipment, tools being using? _____

Names of all witnesses: _____

Date of Event _____ Time of Event _____

Exact location of event: _____

What caused the event? _____

Were safety regulations in place and used? If not, what was wrong? _____

Employee went to doctor/hospital? Doctor's Name _____

Hospital Name _____

Recommended preventive action to take in the future to prevent reoccurrence.

Supervisor Signature

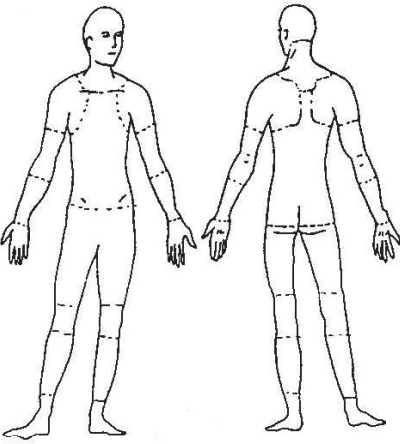
Date

Incident Investigation Report

Instructions: Complete this form as soon as possible after an incident that results in serious injury or illness.
 (Optional: Use to investigate a minor injury or near miss that *could have resulted in a serious injury or illness.*)

This is a report of a: <input type="checkbox"/> Death <input type="checkbox"/> Lost Time <input type="checkbox"/> Dr. Visit Only <input type="checkbox"/> First Aid Only <input type="checkbox"/> Near Miss	
Date of incident:	This report is made by: <input type="checkbox"/> Employee <input type="checkbox"/> Supervisor <input type="checkbox"/> Team <input type="checkbox"/> Other _____

Step 1: Injured employee (complete this part for each injured employee)

Name:	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
Department:	Job title at time of incident:	
Part of body affected: (shade all that apply)	Nature of injury: (most serious one) <input type="checkbox"/> Abrasion, scrapes <input type="checkbox"/> Amputation <input type="checkbox"/> Broken bone <input type="checkbox"/> Bruise <input type="checkbox"/> Burn (heat) <input type="checkbox"/> Burn (chemical) <input type="checkbox"/> Concussion (to the head) <input type="checkbox"/> Crushing Injury <input type="checkbox"/> Cut, laceration, puncture <input type="checkbox"/> Hernia <input type="checkbox"/> Illness <input type="checkbox"/> Sprain, strain <input type="checkbox"/> Damage to a body system: <input type="checkbox"/> Other _____	This employee works: <input type="checkbox"/> Regular full time <input type="checkbox"/> Regular part time <input type="checkbox"/> Seasonal <input type="checkbox"/> Temporary
		Months with this employer
		Months doing this job:

Step 2: Describe the incident

Exact location of the incident:	Exact time:
What part of employee's workday? <input type="checkbox"/> Entering or leaving work <input type="checkbox"/> Doing normal work activities <input type="checkbox"/> During meal period <input type="checkbox"/> During break <input type="checkbox"/> Working overtime <input type="checkbox"/> Other _____	
Names of witnesses (if any):	

Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:
What personal protective equipment was being used (if any)?			
Describe, step-by-step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.			
Description continued on attached sheets: <input type="checkbox"/>			

Step 3: Why did the incident happen?	
<p>Unsafe workplace conditions: (Check all that apply)</p> <input type="checkbox"/> Inadequate guard <input type="checkbox"/> Unguarded hazard <input type="checkbox"/> Safety device is defective <input type="checkbox"/> Tool or equipment defective <input type="checkbox"/> Workstation layout is hazardous <input type="checkbox"/> Unsafe lighting <input type="checkbox"/> Unsafe ventilation <input type="checkbox"/> Lack of needed personal protective equipment <input type="checkbox"/> Lack of appropriate equipment / tools <input type="checkbox"/> Unsafe clothing <input type="checkbox"/> No training or insufficient training <input type="checkbox"/> Other: _____	<p>Unsafe acts by people: (Check all that apply)</p> <input type="checkbox"/> Operating without permission <input type="checkbox"/> Operating at unsafe speed <input type="checkbox"/> Servicing equipment that has power to it <input type="checkbox"/> Making a safety device inoperative <input type="checkbox"/> Using defective equipment <input type="checkbox"/> Using equipment in an unapproved way <input type="checkbox"/> Unsafe lifting <input type="checkbox"/> Taking an unsafe position or posture <input type="checkbox"/> Distraction, teasing, horseplay <input type="checkbox"/> Failure to wear personal protective equipment <input type="checkbox"/> Failure to use the available equipment / tools <input type="checkbox"/> Other: _____
Why did the unsafe conditions exist?	
Why did the unsafe acts occur?	
<p>Is there a reward (such as “the job can be done more quickly”, or “the product is less likely to be damaged”) that may have encouraged the unsafe conditions or acts? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, describe:</p>	
<p>Were the unsafe acts or conditions reported prior to the incident? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>Have there been similar incidents or near misses prior to this one? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	

Step 4: How can future incidents be prevented?

What changes do you suggest to prevent this incident/near miss from happening again?

- Stop this activity Guard the hazard Train the employee(s) Train the supervisor(s)
- Redesign task steps Redesign work station Write a new policy/rule Enforce existing policy
- Routinely inspect for the hazard Personal Protective Equipment Other: _____

What should be (or has been) done to carry out the suggestion(s) checked above?

Description continued on attached sheets:

Step 5: Who completed and reviewed this form? (Please Print)

Written by:

Title:

Department:

Date:

Names of investigation team members:



Reviewed by:

Title:

Date:

APPENDIX C

Emergency Telephone List and Hospital Location/Route Map

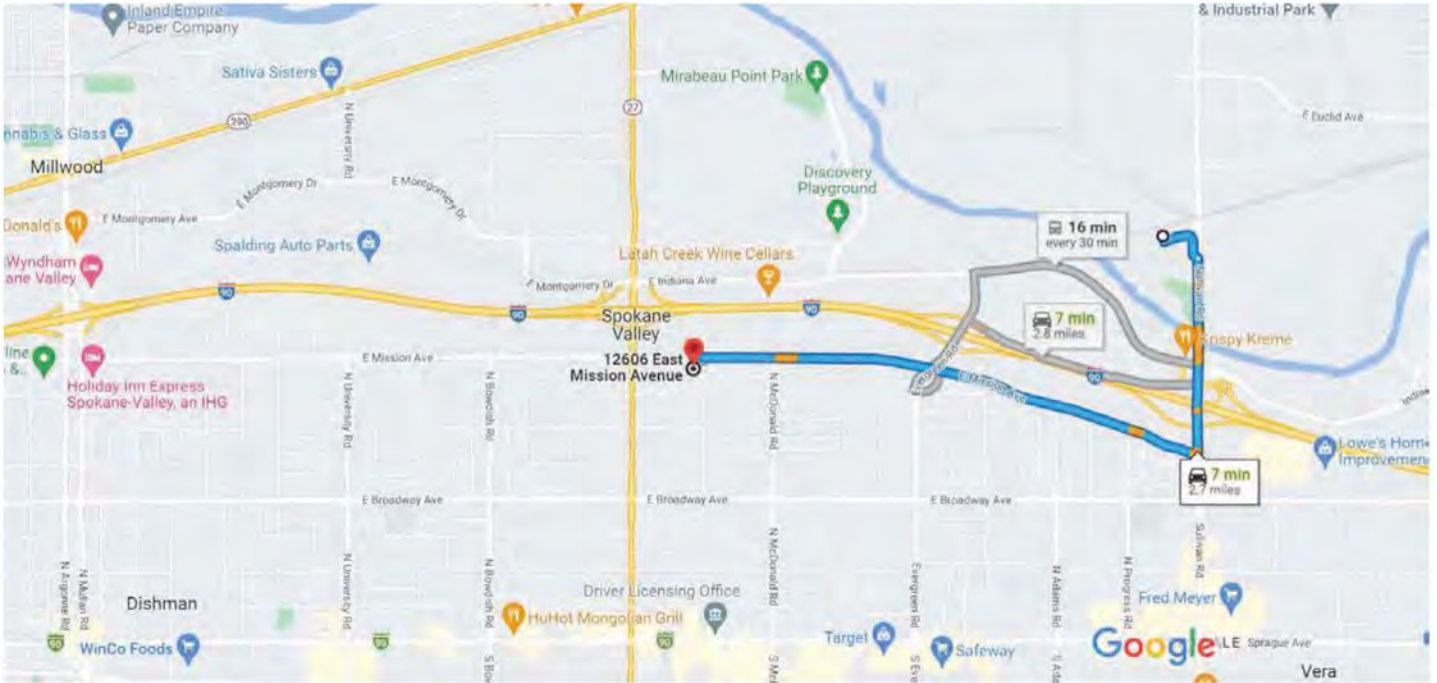
Paramedics/Ambulance (Emergency)	911
Fire Department (Emergency)	911
Police (Emergency)	911
Poison Control Center (Irvine, CA)	(800) 544-4404
GrayMar Environmental Services (Spokane, WA Branch)	(208) 304-0487
GrayMar Environmental Services (Moses Lake, WA)	(509) 398-3577
GrayMar Contract Contact – Michael Gray	(509) 770-4456
GrayMar QA/QC Contact – Kelly Ottmar	(509) 770-4621
UPRR Contact - Andrew Eihausen	(402) 544-3363
Golder Contact – Ted Norton	(206) 755-4970
MultiCare Valley Hospital E.R (2.9 miles)	(509) 765-5606

JOBSITE ADDRESS

Union Pacific Railroad – Trentwood Site 2317
North Sullivan Road
Spokane Valley (Trentwood),
Washington 99016
(Per the agreed Order)

HOSPITAL NAME/LOCATION

MultiCare Valley
Hospital E.R.
12606 E Mission Ave
Spokane Valley, WA
99216
Tel: 509-765-5606
3-miles (7 minutes) from the work site



Map data ©2022 Google 2000 ft

2317 N Sullivan Rd
Spokane Valley, WA 99216

- ↑ 1. Head east toward Sullivan Rd
_____ 0.2 mi
- ↘ 2. Turn right onto Sullivan Rd
_____ 0.7 mi
- ↘ 3. Turn right onto E Mission Ave
📍 Destination will be on the left
_____ 1.8 mi

12606 E Mission Ave
Spokane Valley, WA 99216

SECTION 1: GENERAL INFORMATION

Date & Time: _____ Location/Physical Address: _____
 Project Name: _____ GPS Coordinates: _____
 Emergency Contact: _____ Emergency Notification #: _____
DIAL 911 FOR ALL EMERGENCIES – IF 911 IS NOT AVAILABLE, LIST AN ALTERNATIVE NUMBER: _____
 Primary Assembly Point: _____ Secondary Assembly Point: _____
 Nearest Medical Facility: _____ Nearest Fire Extinguisher: _____
 Nearest First Aid Kit: _____ Nearest Eye Wash: _____
 Do Cell Phones Work: Yes No Project Name: _____

SECTION 2: TASK INFORMATION

Describe the tasks to be performed: _____

Are the employees working on a task out of sight of each other? If so, what communication method is being used? Cell Phone Land Line 2-Way Radio Other

SECTION 3: HAZARD IDENTIFICATION & CONTROL

TYPE OF WORK: Hot Work Lockout/Tagout Excavation Confined Space **(If checked, additional permits/forms must be completed)**

Mark An X On All Applicable Hazards For This Task:

<input type="checkbox"/> Hazardous Atmosphere	<input type="checkbox"/> Overhead Hazards	<input type="checkbox"/> Hydrates/Line Blockage	<input type="checkbox"/> Radiation
<input type="checkbox"/> Temperature Extremes (Heat & Cold)	<input type="checkbox"/> Chemical Exposure	<input type="checkbox"/> Lifting (Sprains & Strains)	<input type="checkbox"/> Asbestos/Lead Materials
<input type="checkbox"/> Safety Systems Bypassed/Disabled	<input type="checkbox"/> Weather Hazards	<input type="checkbox"/> Electrical	<input type="checkbox"/> PCBs
<input type="checkbox"/> Trapped Pressure	<input type="checkbox"/> Heavy Loads	<input type="checkbox"/> Slips/Trips/Falls	<input type="checkbox"/> Dusty Environment
<input type="checkbox"/> Fall From Heights	<input type="checkbox"/> Noise	<input type="checkbox"/> Excavation Collapse	<input type="checkbox"/> Roadway Work (Traffic Control)
<input type="checkbox"/> Moving Machinery	<input type="checkbox"/> Electrical	<input type="checkbox"/> Adjacent Operations	<input type="checkbox"/> Wildlife (Snakes, Bears, etc.)
<input type="checkbox"/> Suspended Loads/Rigging	<input type="checkbox"/> Pinch Points	<input type="checkbox"/> Mobile Equipment	<input type="checkbox"/> Insects (Bees, Ticks, etc.)
<input type="checkbox"/> Ignition Sources	<input type="checkbox"/> Lone Worker	<input type="checkbox"/> Overexertion	<input type="checkbox"/> Other _____

SECTION 4: PERSONAL PROTECTIVE EQUIPMENT

Mark An X Next To Required PPE: **HARD HAT, SAFETY GLASSES AND HARD TOE BOOTS ARE ALWAYS REQUIRED**

GENERAL PPE	GLOVES	FALL ARREST	PERSONAL MONITOR	RESPIRATOR TYPE*
<input type="checkbox"/> Face Shield	<input type="checkbox"/> General Purpose	<input type="checkbox"/> Harness	<input type="checkbox"/> 5-Gas Monitor	<input type="checkbox"/> Full Face
<input type="checkbox"/> FR Clothing	<input type="checkbox"/> Chemical Resistant	<input type="checkbox"/> Lanyard	<input type="checkbox"/> H ₂ S	<input type="checkbox"/> Line Air
<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Heat Resistant	<input type="checkbox"/> Retrieval Line	<input type="checkbox"/> O ₂	<input type="checkbox"/> SCBA
<input type="checkbox"/> Chemical Boots	<input type="checkbox"/> Cut Resistant	<input type="checkbox"/> Other	<input type="checkbox"/> LEL	<input type="checkbox"/> Other
<input type="checkbox"/> Other _____	<input type="checkbox"/> Other		<input type="checkbox"/> VOC	

*Note: (Employees/Contractors must be medically qualified and trained in order to wear a respirator)

SECTION 5: TSM COMPLETION

GRAYMAR TSM LEADER: Print: _____ Signature: _____

List GrayMar Employees conducting the tasks and participating in the TSM: (Attach a separate page if additional space is needed or use back of sheet)

Print: _____	Print: _____	Print: _____
Print: _____	Print: _____	Print: _____
Print: _____	Print: _____	Print: _____

Contractor Name (if applicable): _____

List all contract employees conducting the task: (Attach a separate page if additional space is needed or use back of sheet)

Print: _____	Print: _____	Print: _____
Print: _____	Print: _____	Print: _____
Print: _____	Print: _____	Print: _____

Are other personnel on-site conducting tasks not related to this task? YES NO

If you answered YES to the question above, will the other personnel be affected by this task? YES NO

If you answered YES to the question above, have you included those personnel in this TSM? YES NO

Note: All personnel arriving after initial TSM shall be tailgated: (Attach a separate page if additional space is needed or use back of sheet)

Comments: _____

GRAYMAR EQUIPMENT AND SITE DAILY INSPECTION FORM TO BE COMPLETED BY THE SITE SUPERVISOR PRIOR TO STARTUP OF ANY WORK ON THE SITE.

Inspection Guidelines

This listing includes items and categories for health and safety inspections on the job and in the shop. It is generic and not all-inclusive but provides a guideline of areas to be surveyed or developed into a checklist for use during the inspection.

- First aid safety and health equipment
- Posters, signs required by OSHA and State Safety and health and safety practices
- Accident reporting records
- Traffic Control properly in place.
- Employee training provided, such as health and safety talks, worker orientation
- Equipment and tools (hand, power, welding, etc.): condition, use
- Protective guards and devices - availability, use, proper maintenance, and operating condition
- Housekeeping, maintaining clean work areas free of trash/debris accumulation, tripping and slipping hazards
- Lighting: for adequacy and safety
- Sanitation: water, toilets for cleanliness and proper operation
- Noise hazards, hearing protection
- Ventilation for gases, vapors, fumes, dusts
- Availability of personal protective equipment: Hard hats, respirators, fall protection, gloves, face & eye protection
- Fire protection, prevention and control, use of fire protection equipment
- Temporary buildings, trailers, and sheds
- Open yard storage
- Storage of flammable and combustible liquids including service and refueling areas for vehicles
- Temporary heating devices
- Fall protection requirements: In place and in use (if required)
- Electrical system and devices; condition and use of cords; ground fault protection or assured grounding protection
- Materials - handling equipment and elevators
- Ladders: condition and use
- Hazard communication program and material safety data sheets (MSDS)
- Excavations and trenches: protective systems
- Other items as appropriate

PRINTED NAME

SIGNATURE

DATE

Excavation Inspection Checklist

IMPORTANT NOTE: Always Call 811 Before Digging

General Excavation Information

Inspection Date: _____
 Competent Person on Site: _____
 Excavation Depth: _____ Excavation Width: _____
 Soil Classification: _____
 Type of Soil: Stable Rock: _____ Type A: _____ Type B: _____ Type C: _____
 Ground Conditions: Dry: _____ Wet: _____ Slightly Damp: _____
 Protective System(s) Used _____

Personal Protective Equipment (PPE) Required

Check the appropriate box:	Yes	No	N/A
Hard Hats			
Eye Protection			
Gloves/Hand Protection			
Appropriate & Approved Work Boots/Shoes			

General Site Items

Check the appropriate box:	Yes	No	N/A
Is potable water available?			
Are there adequate restroom facilities?			
Is there a first aid kit available and fully stocked?			

Utilities

Check the appropriate box:	Yes	No	N/A
Has 811 been called and marked all underground utilities?			
Are there any overhead power lines in the area?			
If work is performed around overhead power lines, have they been de-energized?			

General Site Hazards

Check the appropriate box:	Yes	No	N/A
Is the excavation being performed around vehicular or pedestrian traffic?			
If there is traffic, is it clearly mark so the public knows to avoid the area?			
Is the weather safe to perform work in?			
Is all equipment inspected prior to use each day?			
Are measures taken to try to prevent water from entering excavation?			
Is accumulated water immediately removed from the excavation hole?			

Trench Hazards

Check the appropriate box:	Yes	No	N/A
Are spoil piles maintained at least 2 feet away from excavation?			
Are barriers surrounding the excavation area?			
Are all safety measures being taken to prevent an excavation collapse?			
If walkways are used over and excavation more than 4 feet, are handrails available on the walkway?			
Are there means of egress within 25 feet of where any employee may be working in an excavation that is 4 feet or deeper?			
If ladders are used as a means of egress, does the ladder extend above the excavation edge by 3 feet?			
Were structural ramps designed by a competent person or engineer?			
If needed, is there a recue procedure in place should something happen while an employee or employees are within the excavation?			
When working at depths greater than 5 feet, is sloping, benching or other form of structural support used?			
Do excavations with a depth greater than 20 feet have protective systems designed by a professional engineer?			
If the protective system was designed by an engineer, do you have the documentation from the engineer on-site and readily available?			

Hazardous Atmospheres

Check the appropriate box:	Yes	No	N/A
If there's reason to believe an atmospheric hazard exists in the excavation, has it been tested to ensure employees can work safely?			
Does the excavation provide enough ventilation of fresh air?			
When hazardous atmospheres exist, are only employees who are properly trained and provided the proper PPE allowed to enter the excavation?			

Additional Site-Specific Inspection Items

Check the appropriate box:	Yes	No	N/A

Signature of Inspector: _____

REMEMBER: ALWAYS CALL 811 BEFORE YOU DIG

Graymar Environmental

Excavator Inspection

Vehicle Inspection Site: _____

Vehicle Serial Number: _____ Hour Meter Reading: _____

Inspection Performed By: _____

Was the excavator in good condition?

Yes No If No, explain: _____

Was the vehicle equipped with a fully charged fire extinguisher?

Yes No If No, explain: _____

Was the cab exterior in good condition?

Yes No If No, explain: _____

Were the steps and handholds to gain entry to the machine in good condition?

Steps:

Yes No If No, explain: _____

Handholds:

Yes No If No, explain: _____

Were all mirrors in place and clean?

Yes No If No, explain: _____

Was the bucket in good condition?

Yes No If No, explain: _____

Were the booms and hydraulic cylinders in good condition?

Booms:

Yes No If No, explain: _____

Hydraulic cylinders:

Yes No If No, explain: _____

Were the mobile treads in good condition?

Yes No If No, explain: _____

Was the undercarriage free of excessive wear, damage or dirty/trash build-up?

Excessive wear:

Yes No If No, explain: _____

Damage:

Yes No If No, explain: _____

Dirty/trash build-up:

Yes No If No, explain: _____

Was the air filter clean?

Yes No If No, explain: _____

Were all the engine belts and hoses in good condition?

Engine belts:

Yes No If No, explain: _____

Hoses:

Yes No If No, explain: _____

Was the battery and its tie-down in good condition?

Battery:

Yes No If No, explain: _____

Battery tie-downs:

Yes No If No, explain: _____

Was the radiator in good condition?

Yes No If No, explain: _____

Were there any fluid leaks or low fluid levels?

Fluid leaks:

Yes No If No, explain: _____

Low fluid levels:

Yes No If No, explain: _____

Was the seat, seat belt and seat mount in good condition?

Seat:

Yes No If No, explain: _____

Seat belt:

Yes No If No, explain: _____

Seat mount:

Yes No If No, explain: _____

Were all gauges and indicators working properly?

Yes No If No, explain: _____

Were the horn and back-up alarm working properly?

Horn:

Yes No If No, explain: _____

Back-up alarm:

Yes No If No, explain: _____

Were all lights working properly, including:

Headlights

Yes No If No, explain: _____

Taillights

Yes No If No, explain: _____

Spotlights

Yes No If No, explain: _____

Beacon lights

Yes No If No, explain: _____

Flashers

Yes No If No, explain: _____

Other: _____

Yes No If No, explain: _____

Were all brakes working properly, including Parking Brake and Service B



Standard Brake:

Yes No If No, explain: _____

Parking Brake:

Yes No If No, explain: _____

Service Brake:

Yes No If No, explain: _____

Were all controls working properly, including drive, steering, boom and bucket controls?

Drive controls:

Yes No If No, explain: _____

Steering controls:

Yes No If No, explain: _____

Boom controls:

Yes No If No, explain: _____

Bucket controls:

Yes No If No, explain: _____

Inspector Signature

Inspection Date

Emergency Response (ER) Report Form

GrayMar Project No:___

A) Generator Information:

Generator Name and Address:

Generator Contact: _____

Phone #: _____

Cell #: _____

Fax #: _____

B) E/R Information:

E/R Call Received By: _____

Date: _____ Time: _____

Location of E/R: _____

C) Incident Description:

- Scene Description: _____

- Substances/Pollutants Involved: _____
- Chemical Hazards: _____
- Physical Hazards: _____
- Spill Dimensions (L x W x D): _____
- Spill Quantity: _____
- Contaminated Media: _____

D) On Scene Information:

Contractor Personnel on Scene:

- Technician I: _____
- Technician II: _____
- Technician III: _____
- Technician IV: _____
- Chemist/Biologist: _____
- Competent Person: _____
- Equipment Operator: _____
- Project Supervisor: _____
- Field Service Manager: _____

Generator Personnel on Scene:

Additional on Scene Personnel:

E) Response Actions to Contain/Clean Up Hazardous Substances/Pollutants:

F) Equipment/Materials Being Used, PPE Involved, and Vehicles:

G) Subcontractors Being Used:

H) Materials Removed and Disposed from Site:

I) Location and Method of Disposal/Recycling:

J) Additional On-Scene Information:

Photographs ER Report
(Attachment 1)

Wood Chipper Safety: Tips for Avoiding Accidents and Injuries

Learn how to use a wood chipper without ending up in the ER.

October 2021 - UNITED RENTALS GUIDE

Wood chippers show up in horror movies because of just how powerful they are. Their ability to turn large tree limbs into small chips is truly impressive. But accidents are common. The pull of a chipper can cause serious injury and even death. Whether you're using one for the first time or you've used many times before, brushing up on wood chipper safety best practices can help you keep all your fingers and limbs intact.

How does a wood chipper work?

A wood chipper, as its name implies, is a machine that transforms tree limbs, branches and trunks into chips. A powerful engine turns a rotating drum set with blades or "knives" that cut the wood.

The combination of speed and torque allows commercial wood chippers to pull in branches at 20 inches per second. As an operator manually pushes brush and tree limbs through the infeed chute or hopper collar into the hopper, the feed mechanism and drum blades grab anything within reach. "Anything" can include long hair, loose jewelry, rope, an arm or fingers.

How common are wood chipper accidents?

Statistics tell a sobering story. Five workers died in chipper-related accidents in 2020, and two died in 2019, OSHA accident records show. Most fatalities result from being caught in the chipper; a smaller number occur when an object kicks back from a chipper and strikes the operator.

How to use a wood chipper the safe way

To avoid accidents, follow these best practices for safe wood chipper operation.

- 1. Wear the right safety gear.** Anyone working near a wood chipper should wear eye and hearing protection, close-fitting clothing and a hard hat or helmet. Wear pants and gloves that don't have cuffs. Steel-toed work boots with skid-resistant soles can prevent slips near the infeed chute and protect your feet. Leave the jewelry and anything dangly at home. If you have long hair or a beard, tie it up or tuck it away.
- 2. Know the machine.** Before using a wood chipper, read the operating manual. Familiarize yourself with the machine, its safety controls and proper start-up and shut-down procedures. Know how to stop or reverse the machine in case of an emergency before you turn it on.
- 3. Inspect it before each use or at the start of each shift.** The disc hood should be closed and latched. Check the infeed chute for foreign objects. Make sure bolts and pins are tight. (Every chipper manufacturer specifies torque levels for the knife bolts and nuts.) Inspect the knives for wear or damage. Running the chipper with worn or damaged knives can cause the feed to clog and eventually kick debris back through the infeed chute.

4. **Check the guards.** Make sure they're not missing. Many chipper accident reports cite the absence of guards or malfunctioning safety devices. OSHA's general machine guarding standard 29 CFR 1910.212 (a) (1) requires that chippers have one or more guards to protect workers from rotating parts and flying debris.
5. **Point the discharge chute away from people and traffic.** This one's obvious but still worth mentioning.
6. **Designate someone to stand near the emergency shut-off switch when the machine is in operation.** A worker caught in a commercial wood chipper can't reach a safety device. Never work alone with a wood chipper.
7. **Check tree debris before feeding it into the chipper to make sure it doesn't contain foreign objects.** Never throw other materials into the machine.
8. **Stay free and clear as you feed.** OSHA's Chipper/Shredder Safety Manual recommends standing to the side of the infeed chute, pushing materials in with a wooden push tool or long branch, feeding branches in butt-end first and placing shorter branches on top of longer ones.
9. **Limit the size of the pieces you insert.** Don't feed the machine material that's larger than it's rated for. Industrial chippers are capable of cutting wood from 6 inches in diameter to 12 inches in diameter, so study your worksite before choosing your machine. Put small debris in the trash, not in the chipper.
10. **Immobilize the disc or roller.** Do this before clearing a chute or changing the chipper blades.

Wood chipper manufacturers have introduced a variety of engineering controls designed to increase the safety of these machines. They include feed tray extensions, rubber curtains in front of the infeed chute, feed control bars that stop or reverse feed rollers, pressure-sensitive bottom feed stop bars, panic bars that stop the hydraulic system that operates the feed rollers, and emergency pull ropes that allow operators to reverse feed rollers. Remember, however, that engineering controls are never a substitute for safe work practices and commonsense precautions.

CHAINSAWS:

Read the manufacturer's chainsaw manual from cover to cover and ensure you understand the manual.

- Check your chainsaw thoroughly before every use.
- Make sure the bar, chain and sprocket are in top condition.
- Check that bar oil is flowing and the chain brake is working.
- Sharpen your chainsaw and top up with bar oil each time you stop to re-fill with fuel.
- Always wear suitable protective clothing.
- Never use the saw to cut anything above shoulder height (between knee and waist-high is safest.)
- Never operate the saw beyond your ability.
- Carry a chainsaw with the motor off and the saw blade pointing to the rear.
- Always have a properly equipped first aid box with you.

Protective Equipment

Certain equipment is necessary to protect your body from materials thrown from the chipper/shredder and to avoid being caught in the equipment's moving parts.

When operating a chipper/shredder, you should wear:

Close-fitting clothes and no jewelry

Loose shirt sleeves, pant legs or jewelry can catch in the equipment's moving parts, resulting in injury. Do not wear gloves with loose cuffs. Pull back long hair.

Long pants and sturdy, non-slip boots

Wear long pants, without cuffs, to protect your legs from objects that could be thrown from the chipper. Sturdy, non-slip boots will help you keep a firm footing on the ground and reduce the risk of slipping and falling into the chipper/shredder.

Safety glasses

Wear safety glasses to protect your vision.

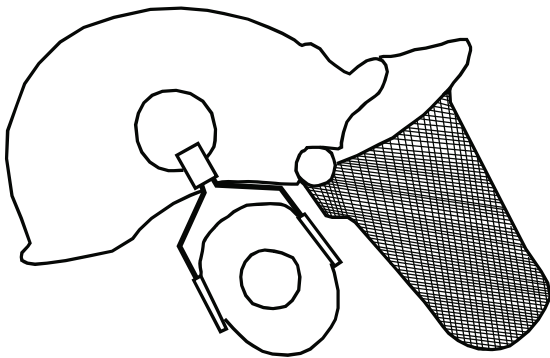
Hard hat

Wear a hard hat to protect your head from material that may be kicked out of the machine.

Hearing protection

Over time, you will lose your hearing if you are exposed to loud noises without protection.

Two common types of hearing protection are muffs and plugs. Ear muffs should seal around your ears to properly muffle loud noises. Wash reusable ear plugs with warm, soapy water after each use in order to prevent infection. Discard disposable ear plugs after each use.



This logger's style safety helmet can also be used while operating a chipper/shredder. It contains a hard hat, hearing and face protection in one piece.

When to Wear Hearing Protection

OSHA Standard 1910.95 (i) (l) requires hearing protection to be worn when sound levels exceed certain limits (generally, a daily average of 85 or 90 decibels, depending on the circumstances). These levels can be measured with a sound level meter. A hearing conservation program requiring hearing tests and other precautions may also be necessary. Check with the equipment operator's manual, as well as your supervisor, for suggestions on hearing protection for each piece of equipment as well as instructions on how to wear it properly.



Hearing Protection Rules of Thumb

Hearing protection may be needed if:

- ▶ You have to raise your voice significantly to be heard by someone three feet away.
- ▶ After leaving a noisy area, your ears feel plugged or you hear a mild ringing or whooshing noise that goes away after an hour or two.
- ▶ When you start your car in the morning, the radio is so loud from the evening before that you have to turn it down.



Competent Person Evaluation Excavation and Trenching

This checklist was developed to assist the employer in determining if the person they have designated as a **Competent Person (CP)** is competent within the description and intent of the **Excavation & Trenching Standard**.

Employee's name	How many years of experience in excavation & trenching operations?	Length of time with employer
-----------------	--	------------------------------

Title and Job duties:

I. Training and Knowledge	Yes	No
Does the designated CP have training and knowledge in:		
1. Soils classification?	<input type="checkbox"/>	<input type="checkbox"/>
2. Use of protective systems?	<input type="checkbox"/>	<input type="checkbox"/>
3. All applicable requirements including definitions in Part N, Chapter 296-155, WAC Rules by chapter	<input type="checkbox"/>	<input type="checkbox"/>
4. Properly protecting utilities when they're involved.	<input type="checkbox"/>	<input type="checkbox"/>

II. Authority	Yes	No
Does the designated CP have the authority to:		
1. Take prompt corrective measures to eliminate existing and predictable hazards?	<input type="checkbox"/>	<input type="checkbox"/>
2. Stop work and remove employees when hazards are identified until proper systems are in place?	<input type="checkbox"/>	<input type="checkbox"/>

III. Inspections	Yes	No
Does the CP conduct daily inspections:		
1. Of the excavation and adjacent areas?	<input type="checkbox"/>	<input type="checkbox"/>
a. Is there water in the excavation? If yes, is the water removal equipment being used and monitored to ensure safe operation?	<input type="checkbox"/>	<input type="checkbox"/>
b. Was the soil reclassified following any influence of water or any condition that may have changed the initial classification?	<input type="checkbox"/>	<input type="checkbox"/>
2. Of the protective system?	<input type="checkbox"/>	<input type="checkbox"/>
a. Is damage evident to the structural members of the protective system?	<input type="checkbox"/>	<input type="checkbox"/>
b. Is there evidence of failure of any portion of the protective system? If so, has the system been evaluated for suitability of use?	<input type="checkbox"/>	<input type="checkbox"/>
3. Prior to the start of work and as needed during excavation operations?	<input type="checkbox"/>	<input type="checkbox"/>
4. After every rainstorm or other hazard increasing occurrence?	<input type="checkbox"/>	<input type="checkbox"/>
5. To identify confined spaces in the work environment?	<input type="checkbox"/>	<input type="checkbox"/>

Continue on reverse

IV. Soils Classification	Yes	No
Did the CP do the following:		
1. A visual test?	<input type="checkbox"/>	<input type="checkbox"/>
2. A manual test	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, which manual test(s) were performed?		
b. Name of person who classified the soil if someone other than your designated CP?		
What qualifies them to perform the soils classification?		

3. What types of soils were identified?		

4. Have the soil conditions changed since the classification was made?	<input type="checkbox"/>	<input type="checkbox"/>
5. Based on the soil classification, and the depth and the width of the excavation, has the proper cave-in protective system been selected?	<input type="checkbox"/>	<input type="checkbox"/>
6. Does the cave-in protection meet the criteria outlined in Part N, <u>Chapter 296-155, WAC Rules by chapter</u>	<input type="checkbox"/>	<input type="checkbox"/>
What is the soils classification for this site?		

V. Access/Egress	Yes	No
1. If ramps are involved, are they constructed according to Part N, <u>Chapter 296-155, WAC Rules by chapter</u>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is safe access/egress being provided into and out of the protective system?	<input type="checkbox"/>	<input type="checkbox"/>
3. When using a ladder, does it remain within the protection of the system at all times?	<input type="checkbox"/>	<input type="checkbox"/>

VII. Comments	Yes	No
Do you consider the individual to be competent within the requirements of Part N, <u>Chapter 296-155, WAC Rules by chapter</u>	<input type="checkbox"/>	<input type="checkbox"/>
If Not, Why?		

Employer Signature	Date



SUBMITTAL REVIEW

Date: 10/7/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Dust Control Plan – Revision 1

Submittal No. 003.B

Specification No: N/A

Specification Section: N/A

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The resubmittal of the Dust Control Plan, dated 9-30-2022, is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/7/22

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

Dust Control Plan General Information

1-A Project Name and Location

Project Name: UPRR - TRENTWOOD DROSS SITE

Project Address: 2317 Sullivan Road, Spokane Valley, WA 99216

Major X-Streets: East Indiana Avenue or I90 3/4 mile to the South

City: Spokane Valley County: Spokane County

Expected Construction Start Date: October 2022 End Date: March 2023

1-B Contacts

Report the names, addresses, and phone numbers of persons and owners or operators responsible for the preparation, submittal, and implementation of the Dust control Plan and responsible for the dust generating operation and dust control applications.

Property Owner: Union Pacific Rail Road and Washington State DOT, and Pentzer

Address: -2317 Sullivan Road, Spokane Valley, WA 99216

City/ State/ Zip: See enclosed project map

Phone: -(402) 544-3363 Fax: -NA

Developer: NA

Address: NA

City/ State/ Zip: NA

Contact Person: NA

Phone: NA Fax: NA

General Contractor: GrayMar Environmental Services, Inc.

Address: 601 South Pioneer Way, Suite F218

City/ State/ Zip: Moses Lake, WA 98837

Contact Person: Michael Gray

Phone: (509) 770-4456 Fax: NA

1-C Contractors

Provide the names, addresses, and phone numbers of the contractors involved in dust generating activities or performing dust control as part of this project.

	NAME	ADDRESS	PHONE NUMBER
1.	<u>GrayMar Env. Services, I</u>	<u>601 South Pioneer Way, Suite F218, Mose Lake</u>	<u>509) 770-4456</u>
2.	<u>TBD</u>		
3.	<u>TBD</u>		
4.	<u>TBD</u>		
5.	<u>TBD</u>		
6.	<u>TBD</u>		
7.	<u>TBD</u>		
8.	<u>TBD</u>		

Dust Control Plan General Information

Project Name:	<u>UPRR - TRENTWOOD DROSS SITE</u>	
1-D Who will have the primary responsibility for implementing this Dust Control Plan?		
<input type="checkbox"/> Property Owner	<input type="checkbox"/> Developer	<input checked="" type="checkbox"/> General / Prime Contractor
<input type="checkbox"/> Sub-Contractor (s)	<input type="checkbox"/> Other:	_____
Primary Project Contact: <u>Mr. Michael Gray</u>		
Title: <u>President</u>		
Company Name: <u>GrayMar Environmental Services, Inc.</u>		
Address: <u>601 South Pioneer Way, Suite F218</u>		
City / State / Zip: <u>Moses Lake, WA 98837</u>		
On-Site Phone: <u>TBD</u>	Fax: <u>N/A</u>	
Mobile Phone: <u>(509) 770-4456</u>	Pager: <u>N/A</u>	

1-E Provide a brief description of the Project's Operations.

GrayMar will complete excavation and disposal of the waste from the site at a permitted landfill. Waste and contaminated dross / soil will be removed, transported by truck, and disposed of at the WM Graham Road Landfill. Because the Spokane River and Recreational Trails are near the Site all remaining contaminated soil will be removed from the Pentzer and Washington State Department of Transportation properties and capped on the UPRR property. The cap, as well as the permanent protective fence would keep people, plants, and wildlife from contacting waste and would stop wind and water contact and erosion.

Dust Control Plan Plot Plan

Project Name: UPRR - TRENTWOOD DROSS SITE

2-A Plot Plan

A plot plan identifies the type and location of each project. Attach appropriately sized maps with the project boundaries outlined or use the space in sections 2-B or 2-C to draw a plot plan. Attached maps may include tract maps, site maps, and topographic maps. Use the checklist below to make sure all areas have been identified on the plot plan.

Identify the relative locations of actual and potential sources of fugitive dust emissions.

- Bulk material handling and storage areas.
- Paved and unpaved access roads, haul roads, traffic areas, and equipment storage yards.
- Exit points where carryout and trackout onto paved public roads may occur.
- Water supply locations if water application will be used for controlling visible dust emissions.

Identify the relative locations of sensitive receptors within ¼ mile of the project. (Rule 407, Nuisance)

- No sensitive receptors within ¼ mile of the project.
- Residential areas, schools, day care, churches, hospitals, nursing facilities, commercial, retail, etc.
- Freeways, roads, or traffic areas that may be affected by the dust generating activities.
- Other: Spokane River 1/4 mile south of project site

2-B Draw Plot Plan (if one is not attached)

May use the back of this form Include a North Arrow

Plot plan is attached (Skip to 3-A)

See Plot Plan Attached

Dust Control Plan Plot Plan

Project Name: UPRR - TRENTWOOD DROSS SITE

2-C Draw Plot Plan (if one is not attached)

Include a North Arrow

SEE ATTACHED PLOT AERIAL AND SITE MAP

Dust Control Plan Fugitive PM10 Sources

Project Name: UPRR - TRENTWOOD DROSS SITE

3-A Disturbed Surface Area

Report the total area of land surface to be disturbed, the daily throughput volume of earthmoving in cubic yards and the total area in acres of the entire project site.

Total area of land surface to be disturbed:	<u>5 - 6</u>	Acres
Daily maximum throughput volume of earthmoving:	<u>1,800</u>	Cubic Yards
Daily average throughput volume of earthmoving:	<u>612</u>	Cubic Yards
Total area of entire project site:	<u>10</u>	Acres
Total disturbed areas left inactive for more than seven days:	<u>est.<4</u>	Acres

3-B Dust Generating Activity Dates

The expected start and completion dates of dust generating activities and soil disturbance activities to be performed on site. For phased projects, it may be necessary to report expected start and completion dates separately.

Expected start date:	<u>October 2022</u>	Completion Date:	<u>March 2023</u>
Phase Project Start - A:	_____	Completion - A:	_____
Phase Project Start - B:	-	Completion - B:	-
Phase Project Start - C:	-	Completion - C:	-

3-C Other Locations

Identify whether any other locations should be included with this plan that are involved with this project. An example may include listing any site where materials will be imported from or exported to.

No other locations are included with this project. (Skip to 3-D)

Location 1: _____

No Dust Control Plan Required Included with this plan Included with another plan

Location 2: _____

No Dust Control Plan Required Included with this plan Included with another plan

Location 3: _____

No Dust Control Plan Required Included with this plan Included with another plan

Dust Control Plan

Fugitive PM10 Sources

Project Name: UPRR - TRENTWOOD DROSS SITE

3-D Sources of Fugitive Dust

This section describes the minimum requirements for limiting visible dust emissions from activities that cause fugitive dust emissions. **Check at least one box under each category**

Structural Demolition.

- No demolitions are planned for this project.
- Asbestos NESHAP notification has been submitted to the ARB and copy to the District

Pre-Activity.

- Not applicable for this project (Please explain why in 3-F).
- The site will be pre-watered and work will be phased to reduce the amount of disturbed surface area at any one time (Complete 4-A).

Active Operations. _____

- Application of water to earthmoving activities (Complete 4-A or 4-B).
- Construct & and maintain wind barriers to limit visible dust emissions to 20%

Temporary stabilization: areas unused for seven or more days.

- Not applicable for this project (Please explain why in 3-F).
- Vehicular access will be restricted and water will be applied and maintained at all unvegetated areas (Complete 4-A or 4-B and 4-C).

Unpaved Access, Haul Roads, Traffic & Equipment Storage Areas.

- Not applicable for this project (Please explain why in 3-F).
- Apply water to unpaved haul and access roads (Complete 4-A or 4-B)
- Method of restricting unauthorized vehicle access (for permanent road closure complete 3-F)
- Water will be applied to vehicle traffic and equipment storage areas (Complete 4-A or 4-B).
- Establish vegetation on all previously disturbed areas (Complete 4-C).

Wind Events (Rule 801 sec.D)

- Cease dust generating activities during a wind event (i.e., wind gusts over 25mph)
 - Application of water once per hour (Complete 4 A-D as applicable)
 - Apply water to maintain 12% soil moisture content (Complete 4-A)
 - Construct fences 3-5 feet high with 50% or less porosity in conjunction with water application or dust

Dust Control Plan

Dust Control Methods

Project Name: UPRR - TRENTWOOD DROSS SITE

4-A Water Application

Complete this section if water application will be used as a control method for limiting visible dust emissions and stabilizing surface areas. Check and answer everything that applies to this project.

Water Application Equipment:

Sprinklers: Describe the activities that will utilize sprinklers:

Minimum treated area: _____ Square Feet Acres

Maximum treated area: _____ Square Feet Acres

Minimum water flow rate: _____ Duration: _____

Water Truck Water Trailer Water Wagon Other: _____

Describe the activities that will utilize the equipment:

Access roads, excavation areas, re-construction of site areas, trenches as needed

Number of application equipment available: 2

Application equipment capacity: 2,500 gallons each

Application frequency: Three times daily or as needed in conjunction with other measures

Application rate: 2,400 Gallons per acre per application

Hours of operation: 0630 to 1800 hours

Water application equipment is available to operate after normal working hours, on weekends and holidays

After hours contact: Kelly Ottmar Phone No.: (609) 770-4621

After hours contact: Bob Seitz Phone No.: (480) 436-0997

Water Supply: Include the relative locations of these sources on the plot plan in Section 2

Fire hydrants

Number of hydrants available On-Site: _____ Off-Site: 1

Approval granted by the owner or public agency to use their fire hydrants for this project.

Owner or Agency: Trentwood Irrigation District

Contact: Mike Klein

Storage tanks Number and capacity: _____

Wells Number and flow rate: _____

Canal, River, Pond, Lake etc. Describe: _____

Approval granted by the owner or public agency to use their water source for this project.

Owner or Agency: Trentwood Irrigation District

Contact: Mike Klein - Manager Phone No.: (509) 922-7532

Other: _____

Dust Control Plan

Dust Control Methods

Project Name: UPRR - TRENTWOOD DROSS SITE

4-B Dust Suppressant Products

Complete this section if a dust suppressant product will be used. These materials include but are not limited to: hygroscopic suppressants (road salts), adhesives, petroleum emulsions, polymer emulsions and bituminous materials (road oils).

Copy this page if more than one dust suppressant product will be used.

Not Applicable. Only water application will be the control method used. **Skip to 4-C.**

Application Area: _____

Product Name: _____

Contractor's Name: _____ Phone No.: _____

Application Rate: _____ Gallons of undiluted material per mile or acre treated

Application Frequency: _____ Application per week month year

Application Equipment: _____

Number of Application Equipment Available: _____

Application Equipment Capacity: _____

Attach each of the following information that fully describes this product. Use the checklist below to make sure all information is submitted with this plan.

- Product Specifications (MSDS, Product Safety Data Sheet, etc.)
- Manufacturer's Usage Instructions (method, frequency and intensity of application)
- Environmental impacts and approvals or certifications related to the appropriate and safe use for ground application.

Dust Control Plan

Dust Control Methods

Project Name: UPRR TRENTWOOD DROSS SITE

4-C Other Dust Control Methods

Check below the other types of dust control methods that will be employed at the project site.

- Physical barriers for restricting unauthorized vehicle access:
 - Fences Gates Posts Berms Concrete Barriers
 - Other: _____
- Wind barriers Describe: Silt fences will be installed
- Re-establish vegetation for temporarily stabilizing previously disturbed surfaces.
Explain: Vegetative ground cover will be planted as soon as practical.
- Apply and maintain gravel:
 - On haul roads On access roads At equipment storage yards
 - At vehicle traffic areas For temporarily stabilizing previously disturbed areas.Explain: As required only should the addition of gravel be required
- Apply pavement:
Explain: _____
- Other: Vehicle speeds will be limited to 5 mph on unpaved roads.

4-D Contingencies (Optional)

Contingencies to be implemented if application equipment becomes inoperable, more equipment is needed to effectively control fugitive dust emissions during active and inactive periods, accessibility limitations occur at the water sources or staff is not available to operate the application equipment. Describe proposed contingencies and when they will be implemented.

Construction grading will be prohibited on days when the wind gusts exceed 25 mph to the extent feasible to control fugitive dust.

Multiple water application vehicles will be on-site with additional available as-needed

Multiple personnel on site or available that can operate water application vehicles

Multiple personnel (equipment operators) available 24/7 as-needed

4-E Record Keeping

Records and any other supporting documents used for the demonstration of compliance must be maintained for two years and be made available to jurisdictional authorities, if applicable

- Records attached
- Records not attached

Explain: Golder WSP, UPRR's Env. Consultant is maintaining real-time dust logs

Dust Control Plan

Carryout and Trackout

Project Name: UPRR TRENTWOOD DROSS SITE

5-A Treatments for Preventing Trackout

Select the control devices that will be used for preventing trackout from occurring onto paved public roads. Trackout is any material that adheres to vehicle tires and is deposited onto a paved public road or the paved shoulder of a paved public road. Check one or a combination that will apply to this project.

- Grizzly:** Rails, pipes, or grates used to dislodge debris off of vehicles before exiting the site. Extends from the intersection with the paved public road surface for the full width of the unpaved exit surface for a distance of at least 25 feet. **The Grizzly Trackout Control Device is an approved & effective way to control trackout from exiting your work site. The shaking of the vehicle as it drives across the device knocks dust and dirt off the tires and chassis, which would typically be tracked out on to the roadway.**

Describe: _____

- Gravel Pad:** A layer of washed gravel at least three (3) inches deep which extends from the intersection with the public paved road surface for the full width of the unpaved exit surface for a distance of at least 50 feet.

Gravel Size: 4" to 6" ^{Quarry} _{Spall} Inches

Pad Width: 20 Feet Length: 100 Feet Depth: 12" Inches

- Paved Surface:** Extends from the intersection with the paved public road surface for the full width of the unpaved access road for at least 50 feet to allow mud and dirt to drop off of vehicles before exiting the site.

Width: _____ Feet Length: _____ Feet

Mud and dirt deposits within an urban area shall be cleaned immediately when trackout or carryout extends a cumulative distance of 50 linear feet or more otherwise clean up must be at the end of the workday.

Clean up Frequency: _____

- Wheel Washer:** Uses water to dislodge debris from tires and vehicle undercarriage.

- Other:** _____

5-B Treatments for Preventing Carryout

Report the required treatments that will be used for preventing carryout from occurring on paved public roads. Carryout occurs when materials from emptied or loaded haul trucks, vehicles, or trailers fall onto a paved public road or paved shoulder of a paved public road.

- No haul trucks will be routinely entering or leaving the project site.

Emptied Haul Trucks:

- Interior cargo compartments will be cleaned before leaving the project site.
 Cargo compartment will be covered with a tarp or suitable cover before leaving the project site.

Loaded Haul Trucks: Spillage or loss of materials from holes or other opening in the cargo compartment will be prevented when material is transported onto any paved public access road.

- Haul trucks will be loaded such that the freeboard is not less than six inches.

- Other:** Cover / Tarp loads. Inspect trucks for loose debris prior to leaving site.

Dust Control Plan

Carryout and Trackout

Project Name: UPRR TRENTWOOD DROSS SITE

5-C Cleaning up Carryout and Trackout

Check and report below the methods and frequency for cleaning up carryout and trackout from the surface and paved shoulder of paved public roads.

The use of blower devices, or dry rotary brushers or brooms, for removal of carryout and trackout from paved public roads is not recommended.

In the event the control device becomes ineffective due to an accumulation of mud and dirt, material should be removed.

The project is located in:

- An Urban Area**
 Minimum cleanup frequency will be at the end of the workday and removed immediately if carryout and trackout, extends beyond 50 feet.
- Non Urban Area**
 At the end of the workday

Optional: Clean up Method

- Manually sweeping and picking up
 Mechanical sweeping with a rotary brush or broom accompanied or preceded by water.

Describe types of equipment that will be used

Wet sweepers may be used as necessary to remove visible dust from adjacent roadway

5-D Record keeping for Cleanup of Carryout and Trackout (Rule 801 sec.G)

Records and any other supporting documents used for the demonstration of compliance will be maintained for two years and provided to the jurisdictional authority, if applicable.

- Records attached
- Records not attached
- Explain: Records of the Removal and Cleanup of the Carrou / Trackout will be documented and compiled upon demoblization from the site. These records will than be either managed by GrayMar, or given to the UPRR or Golder to maintain.

Dust Control Plan Certification

Project Name: UPRR - TRENTWOOD DROSS SITE

6-A Certification

I certify that all information contained herein and information submitted in the attachments to these documents are true and correct.

Michael Gray

Print Name

President

Title

Michael S. Gray

Signature

September 30, 2022

Date

Phone Number (509) 770-4456

Fax Number N/A

Cell Number (509) 770-4456

NOTE:

THIS DUST CONTROL DOCUMENT HAS BEEN COMPLETED FOR USE BY AND FOR GRAYMAR ENVIRONMENTAL SERVICES, INC. (GRAYMAR) FOR USE ON THE UPRR TRENTWOOD DROSS SITE. AT THIS TIME NO JURISDICTIONAL AUTHORITY IS REQUIRING A DUST PLAN BE PUT IN PLACE.

SHOULD A DUST PLAN BE REQUIRED BY A REGULATORY AGENCY GRAYMAR WILL HAVE THIS PLAN ON SITE AS REQUIRED AND WOULD FURTHER SUBMIT ANY REQUIRED INFORMATION AT THAT TIME TO THE SAID AGENCY.

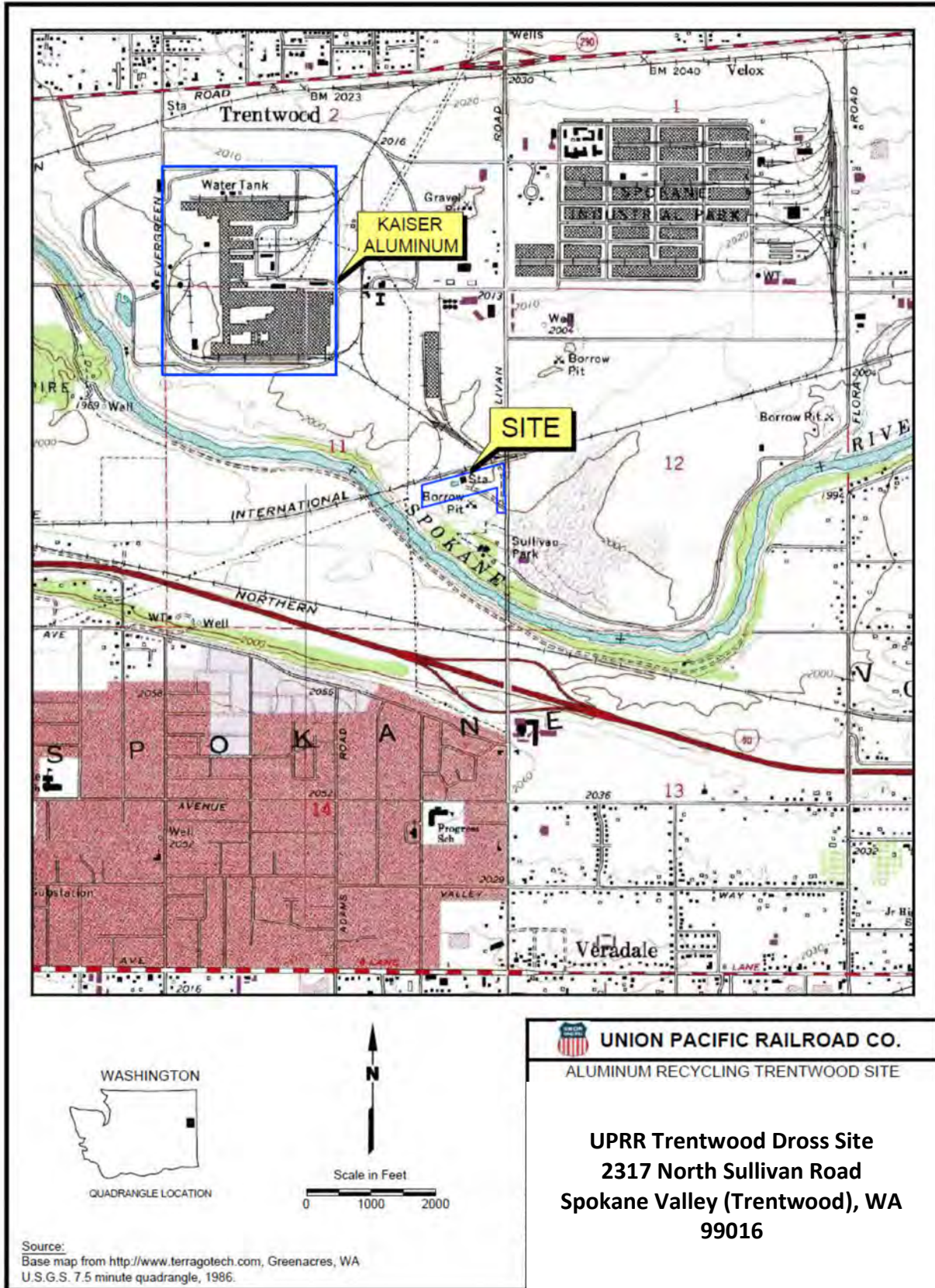
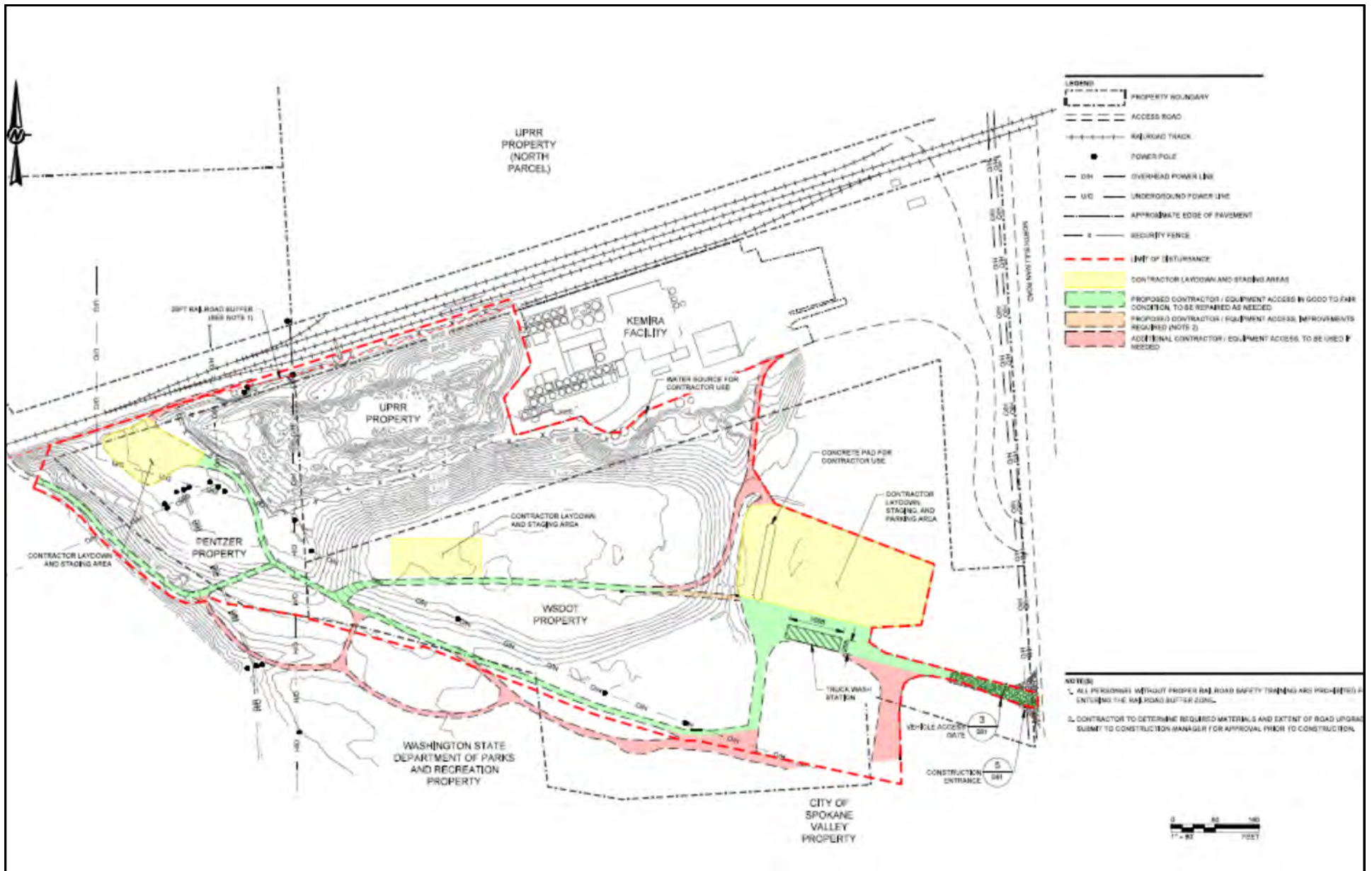


FIGURE ONE
UPRR TRENTWOOD DROSS SITE
SITE PLAN (LOCATION MAP)



**FIGURE TWO
UPRR TRENTWOOD DROSS SITE
SITE AERIAL AND PLOT PLAN SHOWING OWNERSHIP**



**FIGURE THREE
ENTRANCE / EXIT and SITE MOVEMENT ROADS MAP**



SUBMITTAL REVIEW

Date: 10/18/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Traffic Control Plan – Revision 2

Submittal No. 004.C

Specification No: Drawing 020 – Traffic Control

Specification Section: A-C

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The resubmittal of the Traffic Control Plan/Transportation Plan, dated 10/17/2022, is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/18/22

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

**TRANSPORTATION PLAN
FOR OPERATIONS AT:**

**UPRR TRENTWOOD DROSS SITE
2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WASHINGTON 99016**

**WA DEPARTMENT OF ECOLOGY REFERENCE
FACILITY ID: 628 and CLEANUP SITE ID: 1081**

**SITE COORDINATES
LAT: 47.6777265 LONG:-117.1982753**

**SITE ACCESS ROAD
ACCESS ROAD IS LOCATED ON THE LEFT (WEST SIDE) OF SULLIVAN RD**

Prepared for:

UPRR
John DeJong
Tel: (509) 866-8329
Email: John.DeJong@up.com

Prepared by:

GrayMar Environmental Services, Inc.
Michael Gray - President
601 S Pioneer Way, Suite F#218
Moses Lake, WA 98837
Cell: (509) 770-4456
Email: mgray@graymarenv.com

Date Prepared: October 17, 2022 (revised)

GrayMar Environmental Services, Inc. Project: 08052022-01



**TRANSPORTATION PLAN
FOR OPERATIONS AT:

UPRR TRENTWOOD DROSS SITE
2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WASHINGTON 99016**

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LIST OF FIGURES

Figure One	Site Location Map
Figure Two	UPRR Trentwood Dross Site Property Delineation
Figure Three	Site Entrance / Exit and Site Access Road Map
Figure Four	Primary Transportation Route Detail
Figure Five	Alternate Transportation Route Detail

LIST OF ATTACHMENTS

Attachment A	Contaminants of Concern – UPRR Trentwood Dross Site
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1.0 INTRODUCTION

This Transportation Plan (TP) presents an integral part of the Closure Plan for the Union Pacific Railroad (UPRR) removal of dross waste material as well as the on-site stabilization of dross located at the Trentwood former dross recycling site now known as the UPRR Trentwood Dross Cleanup Site.

The TP is part of the requirement in the WA Department of Ecology's Enforcement Order No. DE 20752 for the CAP that includes a soil excavation and disposal plan, including proposed transportation routes to be made part of the on-site services to be completed by GrayMar Environmental Services, Inc., (GrayMar), 601 S Pioneer Way, Moses Lake, WA 98837 for the UPRR Trentwood Dross Project (UPRR TDS):

- Site Name: Trentwood Dross Site
- Site Address: 2317 Sullivan Rd. Spokane Valley, WA 99216
- Site Coordinates: LAT: 47.6777265 LONG:-117.1982753
- Site Access Road: Access road is located on the left (west) of Sullivan Rd.
- Site Entry and Exit Info: Enter site work area through WADOT entrance (southern entrance to the site)
- Previous land uses: Aluminum metal recovery processing

Amendments to this plan to reflect the use of different site personnel, transportation companies, environmental service contractors or disposal facility may be made. This Transportation Plan will be packaged as a stand-alone document so it can be used for training and distribution purposes for all personnel involved in the transportation segment, including each truck driver. The Health and Safety Plan prepared for closure of the UPRR TDS will also be provided to personnel involved in the transportation segment. Amendments to this plan may be subject to a jurisdictional authority for traffic control should one be required. GrayMar would make all the required notifications on amendment of this plan.

The content and format of the Transportation Plan follows a universal document used by GrayMar and other environmental services companies for large sites or as required by jurisdictional approval in the format as referenced and described below:

1. Introduction (Background)
2. Purpose and Objective
3. Characteristics of Waste/Material to be Transported
4. Destination of Waste/Material
5. Transportation Mode
6. Routes
7. Traffic Control and Loading Procedures
8. Record Keeping
9. Health and Safety
10. Contingency Plan

1.1 BACKGROUND

1.1.1 Site Location

This Transportation Plan presents the transportation and shipment management procedures that are intended to guide on-site and off-site services to be completed by GrayMar Environmental Services, Inc., (GrayMar), 601 S Pioneer Way, Moses Lake, WA 98837 at the UPRR Trentwood Dross Site (UPRR TDS), located at 2317 North Sullivan Road, Spokane Valley (formerly Trentwood), Washington 99016.

UPRR and its consultant WSP Golder will be responsible for soil and groundwater sampling, air monitoring, as well as determination of the extent of excavation required to meet site Cleanup Levels (CUL).

1.1.2 Site Access and Exit Location

GrayMar has followed the specification for the entrance and exit road for the UPRR TDS. These can be found as Figure 2 and Figure 3 at the rear of this Transportation Plan. The UPRR TDS entrance can be access from either the north or the south. Dependent on traffic flow it may be safer to approach the entrance the north using the southbound North Sullivan road lane allowing truck to turn right into the site rather than crossing traffic.

1.1.3 Regulatory Status

The WA Department of Ecology will have jurisdiction over this remediation performed at the UPRR TDS as part of Closure activities.

1.1.4 Proposed Remediation

A large stockpile of mixed industrial process material is present over approximately 4 acres of the site; the volume is estimated at 57,000 cubic yards converted to an estimated 76,699-tons. The stockpile slopes have an approximate grade of 1:1 and show evidence of erosion onto neighboring properties with lower elevations. In addition to the original 57,000 cubic yards or 76,699-tons there will be another estimated 7,466-tons removed from the screening of excavation materials on the site. The estimated total to be excavated, loaded into transport vehicles, and shipped from the site is 84,165-tons.

Once the above listed material is removed to an off-site disposal facility the original four acres that contained the 76,699-tons of dross that is to be removed will then have a permeable cap install with engineered controls for runoff and protected by a permanent chain-link fence that will be installed later in the project.

The proposed remediation as part of Closure activities consists of staged and tasked outlined in the WA Ecology Corrective Action Plan. This included the transportation off site of wastes as well as the transportation of an estimated 28,000 or so tons of clean backfill onto the site. The complete remediation project is estimated to take an estimated 147 working days to complete with working days currently defined as daylight hours Monday thru Friday.

1.1.5 Estimate of Excavation

At this stage of preparation of TP is has been estimated that that 84,165-tons of soil will be removed and transported off site. This volume is just an estimate, based on the past studies as well as called out in WA Department of Ecology documents and the Request for Proposal for this project. If larger quantities of soil are to be excavated, this fact will not constitute a major change to the UPRR TDS Closure Plan, including this Transportation Plan, and no further approval would be needed. Should this increase the number of trucks required to complete the project GrayMar would then notify the jurisdictional authority should one exist.

2.0 PURPOSE AND OBJECTIVE

The purpose of the Transportation Plan is to minimize potential health, safety, and environmental risks resulting from the implementation of the proposed cleanup plan, particularly during loading, site entry, and egress, and during transportation of waste on public roads. The plan will be used as a stand-alone document by all personnel involved in the transportation of the contaminated soil to achieve the plan's purposes, including the proper implementation of the Contingency Plan.

3.0 CHARACTERISTICS OF WASTE/MATERIAL TO BE TRANSPORTED

Different types of waste removal activities will be performed during implementation of the remediation at the UPRR TDS such as:

- Removal of Stockpiled Dross
- Removal and screening of soil impacted with dross
- Excavation of potentially contaminated soils

3.1.1 Waste Source

The following waste will be generated as part of implementation of the Closure Plan for the UPRR TDS.

- DROSS - Removal of Stockpiled Dross
- Excavated and Screen soil / rocks / cobbles impacted with dross
- Potentially contaminated soils from the excavation areas

3.1.2 Estimated Waste Quantity

The volume of dross has been estimated based on visual inspection and measurement at the UPRR TDS. The amount of dross has been estimated at approximately 3,334 truck-loads. If additional trucks are needed, due to larger volume of dross than currently anticipated, this fact will not constitute a major change to the Transportation Plan and no further approval will be necessary.

For purposes of providing an approximation of the amount of dross impacted material (soil / rock / dross /cobbles) that might be excavated, a volume of 7,466-tons or 324 truck-loads is proposed. This volume is an initial estimate, based on the type and areas where wastes were handled. This volume is not based on any analytical data, as no such data exist at the time when this plan was prepared but rather an estimate of screen material that will be disposed of off-site based on size parameters. If larger quantities are to be excavated, the event will not constitute a major change to this Transportation Plan, and no further approval would be needed.

3.1.3 Physical Nature of Contaminants

The physical nature of the generated excavation wastes is solid. It can be defined as dross, soil or debris type materials with concentration of constituents of potential concern in the parts per million and below range. The wastewater generated from decontamination or dewatering activities will be liquid, with low concentrations of COCs and will be used for dust control in the area of the main dross pile.

3.1.4 Chemical Nature of Contaminants

For the purpose of disposal, chemical analysis will be conducted by collecting representative samples of the dross, which will then be utilized for profile into the Waste Management Graham Road Landfill. Any addition

sampling on site will be complete by UPRR's consultant, Golder WSP. All samples will be properly recorded on the chain of custody and taken to a WA State-certified laboratory for testing.

The WA Department of Ecology has determined material in the stockpile was not a federally designated waste, and the site should not be evaluated by the Environmental Protection Agency. It also noted potential runoff to the Spokane River and leaching to groundwater were primary concerns.

3.1.5 Applicable Regulations for Waste Transportation

The following regulations are applicable to the management of the waste material generated from the site cleanup:

Applicable Regulations for Waste Transportation

APPLICABLE CODES AND STANDARDS

Item Number	Code and Standard Number	Code or Standard Title
1.	49 CFR	Title 49 - Transportation: Code of Federal Regulations CFR49
2.	42 CFR	Title 42 - The Fundamentals of 42 CFR
3.	10 CFR 851 (for onsite work)	Title 10 - Worker Safety and Health Program
4.	(RCW) 46.44.041	Maximum Gross Weights - Axle and Tire Factors
5.	23 CFR 658	Truck Size and Weight, Route Designations - Length, Width and Weight Limitations

4.0 DESTINATION OF WASTE/MATERIAL

4.1 Destination of Dross and Screened Contaminated Soil from the UPRR TDS

4.1.1 Facility Identification and Facility Contact

The contaminated dross and screened excavated soils from the UPRR TDS will be hauled to Waste Management's Graham Road Landfill Facility.

Facility Address:

Waste Management of Washington, Inc.
Graham Road Recycling and Disposal Facility
S. 1820 Graham Road
Medical Lake, WA 99022
Tel: (509) 244-0151

GPS Latitude: 47.6365814208984 GPS Longitude: -117.668792724609

Permit:

Solid Waste Disposal Site: SRHD SW-GRAHAMRD-001

Facility Contact:

Fred Downs
WM National Accounts
509-309-6850
Fdowns1@wm.com

4.1.2 Waste Fate

The waste, classified as Industrial Waste, non-RCRA waste will be landfilled directly into the appropriate cells. The landfill has taken material from the UPRR TDS before and does not foresee an issue if the waste has remained unchanged. The need for pretreatment will be determined prior to shipment by submitting profile characterizing the waste based on a representative sample that has been analyzed by a WA State permitted and certified laboratory.

4.2 Responsibilities during Transportation

During transportation several responsibilities are required by the generator of the waste, the transporter of the waste, and by the facility accepting the waste. The following sections describe the responsibilities for each party.

4.2.1 Responsibilities of Waste Generator (has been delegated to the Contractor on site (GrayMar Environmental Services, Inc.))

The responsibilities of the waste generator (UPRR) or its consultant, Golder WSP include but are not limited to: (the below can and has been delegated to the Contractor on site (GrayMar Environmental Services, Inc.

- Ensuring the waste transporter has correct licenses for the specific waste streams to be disposed of
- Ensuring that the waste will be shipped with proper regulatory manifest and shipment papers
- Signing or ensuring the manifest / shipping papers are signed
- Providing the waste transporter with emergency response guidelines that includes an emergency contact list, waste profile, manifests, facility acceptance times and approval letters and transportation route to the disposal facility
- Requesting a certificate of disposal from the facility where the waste was disposed

4.2.2 The responsibilities of the waste transporter include but are not limited to:

- Ensuring that the following shipping papers accompany the waste at all times, except when requested during inspection:
 - Manifests
 - Land disposal restrictions (if required)
 - Emergency response guidelines – Transportation route map
 - Copy of Waste profile
 - Facility acceptance time/approval letter
- Ensuring the waste is secure and covered in the vehicle
- Ensuring the waste is delivered to the specified disposal facility
- Any Retention will be handled per the contract for this project made between GrayMar and the UPRR.

4.2.3 Responsibilities of Disposal Facility

The responsibilities of the disposal facility (varies depending on type of waste) include but are not limited to:

- Securing proper profile for the waste and secure permits to dispose at the landfill
- Coordinating with the Contractor on the trucking and unloading at the landfill
- Providing waste generator with certificate of disposal

4.2.4 Transportation Contingency

Before leaving the site, the driver will be given a manifest and instructions by the transportation coordinator on-site along with proper directions and suggested routes to the final disposal destination. Should screening by the facility identify the presence of conditions in a load that preclude its acceptance, the driver shall contact the transportation manager or his/her designee. The following procedures will then be followed:

- Suspend truck loading and export operations at the UPRR TDS if needed, pending investigation into the condition and corrective action to preclude recurrence.
- If the condition identified is compatible with the haul vehicle licenses and certifications, the load will either be redirected to another compatible facility, or will be returned to the UPRR TDS via the same routing. This determination will be made by the Project Manager in consultation with the UPRR representative.
- If the condition identified is incompatible with the haul vehicles licenses and certifications (i.e., hazardous material in a trailer not rated to haul this material), the transporter and the Contractor (GrayMar) may dispatch a team to the landfill site with appropriately rated haul vehicles. The load will be transferred, and the original truck cleaned prior to release. The load will then be re-manifested and shipped to an appropriate facility.

5.0 TRANSPORTATION MODE

5.1.1 Transportation Mode

The contaminated dross and screened soil originating from the UPRR TDS will be hauled by trucks, certified for the waste as required, from the Trentwood site to the WM Graham Road Facility.

5.1.2 Vehicle & Container Description & Capacity

All UPRR wastes will be transported in open top end-dump trucks, truck and pups, etc. with a minimum capacity of 23 tons and will be tarped properly to control and dust in transit.

5.1.3 Special Features

Each truck box will be covered and secured with a tarp prior to leaving the site.

5.1.4 Transporter Registration

The transporter involved with moving the wastes on public routes will have the appropriate authorization for the transportation of the dross and dross impacted wastes.

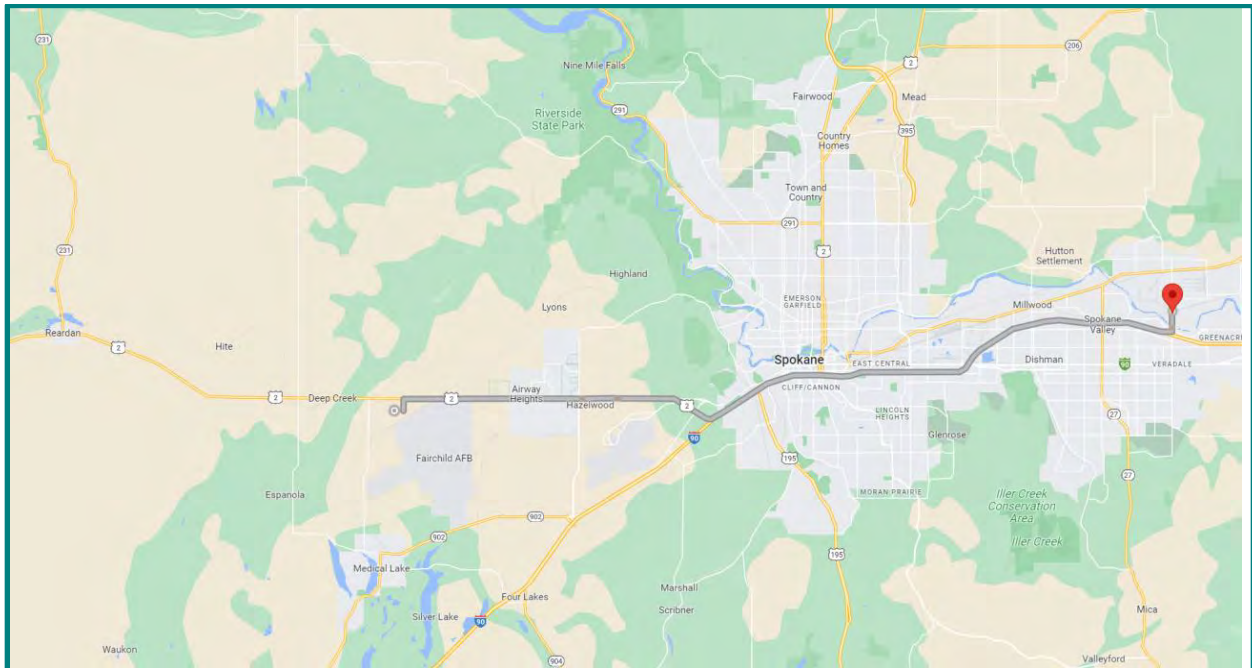
6.0 ROUTES

6.1.1 Primary Route (See Figure Four)

The primary truck route to the end disposal facility starts at the entrance / exit on the west side of North Sullivan Road, and follows the route as listed below:

Primary Route to the I90 Freeway

Beginning at the Site's gate, right on North Sullivan Road and then Right on Entrance Ramp to the I90 Westbound.



Route to WM Graham Road Landfill

34 min (25.9 miles) - via I-90 W and US-2 W – from 2302 N Sullivan Rd, Spokane Valley, WA 99216

- Turn Right (Head south) on Sullivan Rd toward I90 0.5 mi
- Turn right onto I90 entrance ramp to westbound I90 0.6 mi
- Use the right lane to merge onto I-90 W via the ramp to Spokane 0.3 mi -
- Follow I-90 W to US-2 W. Take exit 277 from I-90 W 14 min (13.9 mi)
- Follow US-2 W to S Christensen Rd/S Graham Rd 14 min (9.2 mi)

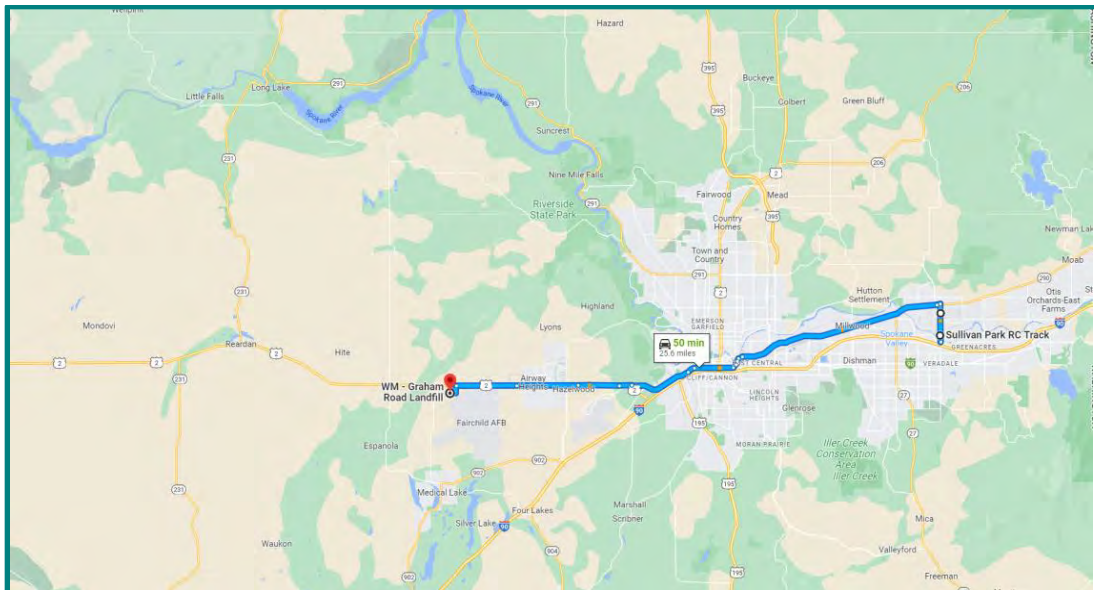
- Arrive WM Graham Road Landfill - 1820 S Graham Rd, Medical Lake, WA 99022

6.1.2 Rationale

The primary route has selected because it is the least restrictive and believed to be the safest by causing the least inconvenience to nearby residents and utilizing the widest available artery between the site and the receiving facilities. The route is accessible to emergency service organization and traffic control agencies.

6.1.3 Alternate Route (See Figure Five)

An alternate route between the Site and freeway entrance should for any reason the westbound I90 is blocked or restricted east of downtown Spokane, WA is listed below.



49 min (26.2 miles) - Use WA-290 W/E Trent Ave from Sullivan Rd

- Turn Left (Head North) on Sullivan Rd toward WA-290 3 min - 1.3 mi
- Merge onto WA-290 entrance ramp to westbound WA-290 17 min - 9.3 mi
- Follow E 2nd Ave, W Sunset Blvd and S Geiger Blvd to WA-902 W 22 min - 10.3 mi -
- Follow WA-902 W to N Graham Ln in Medical Lake 6 min - 5.1 mi
- Turn Right on Graham Ln in Medical Lake to 30 second – 0.6 mi

Arrive WM Graham Road Landfill - 1820 S Graham Rd, Medical Lake, WA 99022

6.1.4 Discussion of Alternate Route

Access to I90 is the recommended route. An alternate freeway access is through using WA-290 1.3 miles north of the UPRR TDS. This alternate will cause the truck to be driven more miles on surface roads than it would on the primary route. WA-290 access should only be considered in case of congestion on the I90 due to unforeseen accidents, construction work, etc.

6.1.5 Transportation Hours

Thus, for this project, the Contractor intends to maintain a steady but measured interval between trucks entering and exiting the site. Truck operations during project implementation will be limited to Monday through Friday between 6:30 a.m. and 5:00 p.m. Based on project timelines and objectives, it may be necessary for truck transportation during the weekends. If weekend work is required, GrayMar will work with WSP Golder and UPRR representatives for approvals.

There will no limiting of trucks to only the off-peak hours of 9 a.m. and 4 p.m. when hauling excavated contaminated dross / soil from the site or delivering clean backfill to the site.

6.1.6 Hazardous Road Conditions

No trucking will be conducted under inclement weather conditions such as heavy rains, ice, heavy snow, bad visibility, high winds, etc.

6.1.7 Emergency Response Resources

When the transportation effort involves ten or greater truck trips per day, a traffic coordinator may have to be stationed at the entrance of the site off of northbound North Sullivan Road. The traffic coordinators will be equipped with lightweight vehicles and two-way communication radios to coordinate trucking and respond to emergencies between the site and the actual site entrance. The traffic coordinator will drive both the primary and the alternate transportation route to become familiar with both routes. The coordinator will monitor WADOT for hazardous conditions, congestion, and any inconvenience that could be mitigated. The traffic coordinators will initiate emergency response as needed by communicating with the transportation manager and GrayMar's emergency response dispatcher as detailed in the Contingency Plan (Section 10.0).

Additional emergency response resources include the local police, fire department and WA State Department of Public Safety. A copy of the Transportation Plan and schedule will be provided to them prior to commencing site activities.

6.1.8 Repair Facilities along the Route

Various truck repair facilities will be sourced in case an event arises where on the road maintenance is required. (Ex: flat tires). Emergencies on the freeways will be handled in accordance with the Contingency Plan (Section 10.0).

6.1.9 Verification of Route Non-Restriction by WA DOT

The routes specified in this traffic plan are not restricted by the WA DOT, local ordinance, or road maintenance activities as of the date of preparation of this plan. Should unforeseen future restrictions be imposed on any particular section of the route, this Transportation Plan will be amended by developing an alternate route for the restricted section.

6.1.10 Round Trip Time

The trip time between the Site and the Waste Management – Graham Road facility is approximately 35 minutes via the primary route and 49-minutes via the alternate route; therefore, each truck will be loaded an average of 5-times per day, and with a potential of five round trips being foreseen on any particular day.

NO TRUCKS ARE ALLOWED TO PIGGYBACK ON EACH OTHER. THERE WILL BE NO WAITING FOR EACH OTHER DURING THE TRANSPORTATION OF WASTE. TRUCKS ARE TO TRAVEL INDEPENDENTLY AND NOT INTENTIONALLY BUNCH UP.

6.1.11 Number of Vehicles per Day

It is expected that an average of 100 trucks per day over an assumed 36-day duration, will be necessary to remove the approximated 84,165-tons of hazardous dross / soil. There will be no restriction of trucks per hour unless required by a jurisdictional authority.

The maximum estimate total of 93 trucks per day will be required for hauling import fill soil to the site. Truck travel to and from off-site borrow sources. A maximum total of 28,000-tons of backfill have been used for this calculation with backfill being delivered over a 10-day period. GrayMar will also utilize backhaul deliveries, where applicable, to transport clean import fill to the site. This will significantly reduce the number of individual trucks to complete project objectives.

The Contractors Daily Log will be available to WA DOT and WA Ecology's for review. If additional trucks are needed, due to larger volume of dross / soil / backfill than currently anticipated, this fact will not constitute a major change to the Transportation Plan and no further approval will be necessary.

6.1.12 Schedule of Truck Operation

Restrictions on the schedule for trucking were discussed in Section 6.1.6, “Transportation Hours.” The time interval between dispatching each truck is approximately 5-minutes at the sites peak in shipping waste off site, which is the time required to load and sign the manifest for each truck. Proper spacing will be voluntarily used for trucks during peak hours. If it is necessary to import fill from an off-site borrow source, trucks used for hauling imported soil to the site will be operational for approximately 8 hours. The estimated time to complete importing fill soil is 10 days.

7.0 TRAFFIC CONTROL AND LOADING PROCEDURES

7.1.1 Procedure for Entering and Leaving the Site

Procedure for transportation personnel entering the site and leaving the site is described below:

- Each truck driver will make a temporary stop near office trailers inside the entrance at North Sullivan Road
- The driver will park the truck at an area designated
- The driver will be provided direction from the transportation coordinator as to where and when to go to the authorized loading area.
- The driver will proceed to the loading area following the posted signs. The truck route within the facility will be determined as part of the scope of the project.
- Once loaded they will be required to go through the truck exit area for visible inspection for hanging debris, manually cleaned if required and will then be given a manifest to sign.
- The process will be repeated throughout the loading process for the dross / soil from the site

7.1.2 Staging Area

At any time, approximately four to five trucks can be staged at the loading area. GrayMar will schedule trucks to minimize staging along the truck route. The traffic coordinator will then mobilize the empty trucks towards the facility, as the need arises at the loading area, in coordination with the transportation manager. There will be no staging area required for trucks carrying loads of waste to the disposal facility since those trucks don't need to stop after leaving the facility.

7.1.3 Local Traffic Hazards

The intersection of North Sullivan Road and the entrance to Westbound I90 is an area where local traffic problems can be encountered due to the potential for missing the entrance by drivers. This is noted as a precaution only.

7.1.4 Lane Closure

There will be no need to perform lane closure; however, traffic control signage may be required so that the desired interval between successive trucks is maintained and drivers on North Sullivan Road are forewarned of trucks entering and / or crossing the road at the entrance/exit to the site. Once on site GrayMar will have the area mapped by our traffic control vendor for use with this plan. This Transportation will be revised at that time. The use of signage will be determined by a local jurisdictional authority should that become a requirement.

7.1.5 Noise Restrictions

All trucks used on this project will comply with all WA DOT Motor Vehicle noise restrictions. This will require trucks exceeding 35 mph to have a noise level of less than 90 decibels, A-Scale (dBA) and trucks traveling less than 35 mph to have a noise level of less than 86 dBA. Any truck exceeding these requirements will be removed from service. Trucks are not allowed the use of their engine exhaust braking (“Jake Brake”) on the site or public roads or highways.

7.1.6 Traffic Control Details

There will be no staging of trucks along the transportation route. No staging of trucks will be allowed between the freeway and the Site. All empty trucks are to proceed in such a fashion that no more than five trucks will be staged at the loading area at any time and that an approximate 5-minute interval will be maintained between consecutive trucks.

7.1.7 City/County Approval

The above plan does not require city or county approval since it involves neither traffic control of normal activities along the route nor lane closure. Should traffic signage be required than the City of Spokane Valley and the WA DOT will be notified for permit approval as required.

7.1.8 Loading Procedure and Weighing Procedure

The dross waste material may be loaded using a loader. Truck drivers will stay in the trucks while loading is in progress. Once the loading is complete, the truck drivers will tarp their load and pull the truck through the truck exit area. The truck will then move forward to receive and sign the manifest required while driving on public roads between the UPRR TDS and the WM Graham Road Landfill.

Over-loaded trucks are the responsibility of the driver. GrayMar will do everything required to ensure all loads are within legal weight limits.

7.1.9 Manifest

The waste has been characterized as non-hazardous waste, the truck driver will be handed a waste manifest or bill of lading. The truck driver will sign the waste manifest or bill of lading. A generator’s copy will be retained by the transportation manager for logging and tracking purposes. The balance of the manifest sheets will be handed over to the driver to accompany the shipment of the waste to the landfill facility.

7.1.10 Dust Suppression

Loading of trucks will be performed at the excavation and loading area for the dross, within UPRR TDS depending on location of stockpiles and appropriate access. . Highway trucks can approach along the sites access roads for each location. These trucks will be decontaminated to avoid spreading dust or small amounts of soil.

Trucks will be loaded using a combination of loaders and excavators. Prior to loading, stockpiles will be kept moist using water to minimize dust during the loading process. . Material released during loading will be collected. These trucks will then go through the truck exit area for visual inspection for debris prior to departure from the site.

7.1.11 Truck Decontamination

Highway trucks will be visually inspected and decontaminated prior to leaving the site to avoid spreading dust or small amounts of soil. Highway trucks entering the excavation and loading zones to be loaded with the dross impacted waste will then proceed through the truck exit lane for visual inspection. It is not expected that there will be a need for washing the truck itself with water; rather dry decontamination by brushing and brooming is planned. Should rain occur during the work, mud may form at the loading zone, in which case work will be temporarily suspended until either weather conditions become favorable with visual inspection and any dirt debris on the exterior of the truck being manually removed and brimmed. If required the truck inspection area can be expanded to handle wet decontamination of numerous trucks. This would be based on discussing and decision between Golder, the UPRR, and GrayMar.

7.1.12 Environmental Monitoring

Environmental monitoring, including monitoring for dust, will be performed during loading activities for precautionary purposes by WSP Golder.

7.1.13 Noise Emissions

Noise levels from trucks will be minimized by reducing bunching of trucks and reducing speeds on site. .

7.1.14 Container Cover

All hauled material will be covered prior to transportation. Roll-off bins will be equipped with fixed covers. End dump truck boxes will be covered with tarpaulins.

7.1.15 Truck Inspection

All trucks will be inspected by the transportation manager before leaving the site. The inspection will include visual checking of tire conditions, brake pads, latches, proper covering, placarding, and hauling documents (manifests).

7.1.16 Inspection Record

The inspection results will be logged in the daily construction logs kept by the transportation manager.

7.1.17 Spill/Release Control

Gentle loading will be performed to minimize the potential for spill or dust creation. Water spraying will be implemented as needed to suppress potential dust while loading. No loading will be performed during unfavorable weather condition (high winds or storms).

8.0 RECORD KEEPING

8.1.1 Field Record

A daily log will be maintained, by the transportation manager, in which the following information is recorded for each load:

- Date of loading
- Time of loading
- Vehicle identification
- Truck driver name
- Trucking company
- Approximate weight of the load Comments or remarks
- Handling of the shipping documentation
- Type of waste in truck
- Time of departure
- Quantity of waste
- Instruction to truck drivers on record-keeping
- Handling of waste manifest (signature, distribution of copies and handling)
- Handling of Transportation Plan
- Handling of driving certificate, maintenance log and vehicle permits.
- Manifest Distribution

Additionally, a waste manifest or bill of lading will be generated for each load to accompany the load to the receiving facility. The document will be signed by both the generator's representative and the truck driver. For all waste loads, a copy of the waste manifest or bill of lading will be retained by the transportation manager.

8.1.2 Driver's Record

The waste manifest or the bill of lading for each shipment of waste will be kept by the driver in the appropriate document pocket located in the driver's door.

For waste, the receiving facility will sign the waste manifest or bill of lading and send a copy to the generator for reconciliation purposes.

8.1.3 Plan Distribution

Each truck driver will be given a copy of this Transportation Plan, which includes complete instructions describing the route to be traveled and special instructions for emergency procedures and contacts (Section 10.0 of this plan). A copy of the Health and Safety Plan, bill of lading, analytical results, waste manifest and maps will also be included in the document. The Transportation Plan along with the other documentation shall be kept by the truck driver in the cab of the truck with the driver.

9.0 HEALTH AND SAFETY

9.1.1 Plan Identification

A comprehensive Health and Safety Plan has been prepared for the Closure project for the UPRR TDS.

9.1.2 Training Procedure and Health and Safety Plan Distribution

The Health and Safety Plan will be used for training purposes prior to the start of the project. Each truck driver will be given a copy of the Health and Safety Plan as an integral part of this Transportation Plan. Prior to project startup, the transportation manager will hold a health and safety meeting with all vehicle operators to thoroughly communicate the Transportation and the Health and Safety Plan to the vehicle operators. Each vehicle operator will acknowledge his understanding of the plans by signing the attendance sheet. New truck drivers assigned to haul waste will go through the same procedures prior to being authorized to commence the work.

9.1.3 Truck drivers hauling waste

Will have Health and Safety training in accordance with 29 Code of Federal Regulations (CFR). The drivers will be protected per modified level D and each will have a dust mask if needed. Truck drivers are permitted to cover their trucks after completion of loading prior to leaving the site.

On-site personnel will not be allowed near loading area to avoid unnecessary exposure to airborne dust and/or physical risks associated with movement of heavy equipment (loaders, etc.). The loader driver will be in an enclosed-cabin loader equipped with air filter to minimize his exposure to airborne particles.

9.1.4 Specific Instructions

In addition to the Task Specific Health and Safety Plan described above, the following additional procedures and requirements are applicable to the truck drivers:

- The truck driver shall leave the cab after staging the truck at the loading area prior to commencing the loading. The driver will observe the loading while standing outside the loading zone, upstream of any prevailing wind direction.
- Upon completion of loading, the driver will pull the truck to the decontamination area. This is where he will also leave the truck to perform truck taming and final visual checking of the truck prior to signing the manifest and leaving the site.
- After leaving the facility with a full load of waste and proper shipping documents (manifest or bill of lading), the driver must tend to the vehicle at all times by tagging within 100 feet of the vehicle and having it within unobstructed view. The shipping documents and a copy of the Transportation Plan must be left on the driver's door.

Areas where the truck driver is not permitted to enter:

- Inside the facility loading zone unless requested to move their truck in place.
- Areas outside of the prescribed route Outside the facility
- Areas outside of the transportation route

9.1.5 Transportation Coordination

Subject to change, the health and safety coordinator for the Transportation Plan is expected to be:

PRIMARY:

Mr. Tim Bussey

Director of EHS and Risk Management

GrayMar Environmental Services, Inc.

Telephone: Cell Phone (512) 968-8435

ALTERNATE:

Mr. Bob Seitz

Senior Project Manager

Telephone: Cell Phone (480) 436-0997

9.1.6 Communications

Communications will be achieved by cell phone or wireless radio. The on-site transportation coordinator, the road traffic coordinators, and each truck driver will be provided with wireless communication gear that will enable them to communicate during the implementation of the plan and to coordinate emergency response in accordance with the Contingency Plan (Section 10.0).

9.1.7 Transportation Coordinator (subject to change): Mr. Michael Gipson

Primary Responsibilities:

- Field implementation of the Transportation Plan
- Coordination with receiving facility, trucking company, environmental field supervision, and excavation and loading personnel
- Management of the Traffic Coordinator

10.0 CONTINGENCY PLAN

10.1.1 Plan Distribution

The Contingency Plan addresses the response for accidental off-site releases. Each driver will carry a copy of the Contingency Plan and will be made aware of its contents so that he can take the necessary steps to implement the tasks assigned to him and communicate the plan to the emergency service organization, law enforcement agencies, and transportation authorities that have jurisdiction along the proposed route.

10.1.2 Description of Contaminants

The non-hazardous contaminant matrix is dross or dross impacted soil contaminated with low level (parts per million) of one or more of the following chemicals. These are based on knowledge of processes and material used or generated at the UPRR TDS

- Metals
- Other chemicals are suspected and would be tested for. A list of COCs at the UPRR TDS is listed below

The primary chemical hazards to be encountered during site work are listed in the table below and will be found on the site in the form of dust particulates from the movement of the dross or the soils impacted by the runoff of rain waters primarily to the south of the primary dross pile that is being removed.

- | | |
|---------------------|----------------------|
| • Aluminum | • Manganese |
| • Aluminum Oxide | • Magnesium |
| • Arsenic | • Mercury |
| • Barium | • Nickel |
| • Chromium Trioxide | • Silica , amorphous |
| • Copper | • Tin |
| • Iron | • Zinc |

10.1.3 Hazard Analysis

The main concern regarding accidental release during transportation is human exposure, which includes chemical and physical hazards.

Chemical Hazards

The main hazard is human exposure through ingestion and inhalation. Therefore, denying unauthorized personnel access to the area of the release is the first and most important step.

A secondary hazard is impact on the environment. Such risk is considered very low, since a release will most likely occur on a public road, where the likelihood of impacting the subsurface soil, surface water, or groundwater is insignificant. The risk from airborne contaminants is greatly diminished by having the waste already moist when it is loaded and covered during transportation. Should a release occur during transportation, potential airborne contaminants will be further minimized by controlling the area of the release.

Physical Hazard

This hazard depends on the amount of the dross or dross impacted soils released. A large release on a public road would require lane closure and could pose a significant risk to motorists. The driver will make mandatory notifications described in the Transportation Plan so that highway patrol police and local agency personnel can help in performing lane closure and securing the perimeter of the area of the release.

In the event of a small release the driver will use hand tools such as brooms, pan and shovel to return the waste to the bin or truck.

10.1.4 Method of Containment of Accidental Release

Training and equipment the drivers will have so that they can implement the provisions of the Contingency Plan are as follows:

- Each driver will be provided with a copy of the Transportation Plan, which includes a list of emergency contacts.
- Pre-construction training on the contents of the Transportation Plan, including the Contingency Plan, will be conducted for all drivers.
- Each driver will be carrying a wireless communication device. (Cell Phone)
- Each driver will carry small cleanup accessories, traffic cones, signs, caution tape and personal protective equipment.

10.1.5 Mandatory Notifications

In case of waste release during transportation, the following shall be contacted by the driver: 911 if release originates on the highway

911 Local Fire Department

(505) 895-1387 Transportation Coordinator (subject to change): Mr. Michael Gibbons

10.1.6 Spill / Release Response Plan

In case of a spill / release on the road, the truck driver is too immediately

- (1) Isolate and deny entry to the release area,
- (2) make mandatory notifications described above so WA DOT and local agency personnel can help secure the perimeters of the area of release, and
- (3) Perform necessary lane closure.

The driver shall then call the on-duty transportation manager to arrange for the mobilization of necessary cleanup efforts.

The procedure for isolating the area of spill / release is as follows:

1. Isolate area of spill / release by placing traffic cones around it.
2. Call local emergency response authorities to help secure the area of release and deny Access to unauthorized persons.
3. Call Transportation Coordinator to dispatch necessary equipment (loader and an empty truck with emergency crew) to clean the spill / release.
4. Dispatch a water truck in order to suppress any dust formed during the spill / release.
5. In the event of a small spill / release, the driver will use hand tools such as brooms, pan and Shovel to return the waste to the bin or truck.

10.1.7 Cleanup Plan

For a major truck release the transportation manager will dispatch a loader, an empty truck with an empty roll-off bin, and necessary operators to containerize the released soil, then broom clean and vacuum clean the footprint of the spill / release surfaces.

10.1.8 Driver Training Plan

Each driver will be trained in Emergency Response notification, in accordance with the Emergency Response/ Incident Control Manual and prepared by Environmental Training and Compliance for Hazardous Material and Waste Transportation training course, in accordance with 49 CFR, Part 172-704 (a), (1), (2), (3), Subpart H.

TRANSPORTATION PLAN

FIGURES

FIGURE ONE -SITE LOCATION MAP

FIGURE TWO - UPRR TRENTWOOD DROSS SITE PROPERTY

FIGURE THREE - UPRR TRENTWOOD DROSS SITE PROPERTY

FIGURE FOUR - PRIMARY TRANSPORTATION ROUTE DETAIL

FIGURE FIVE - ALTERNATE TRANSPORTATION ROUTE DETAIL



GrayMar Environmental Services, Inc., Corporate Address: 601 S Pioneer Way, Suite F#218, Moses Lake, WA 98837
Primary Project Field Office: 11023 E. Mt. Spokane State Park Drive, Mead, WA 99201
Emergency Response 24/7 Phone Number: (866) 472-9627

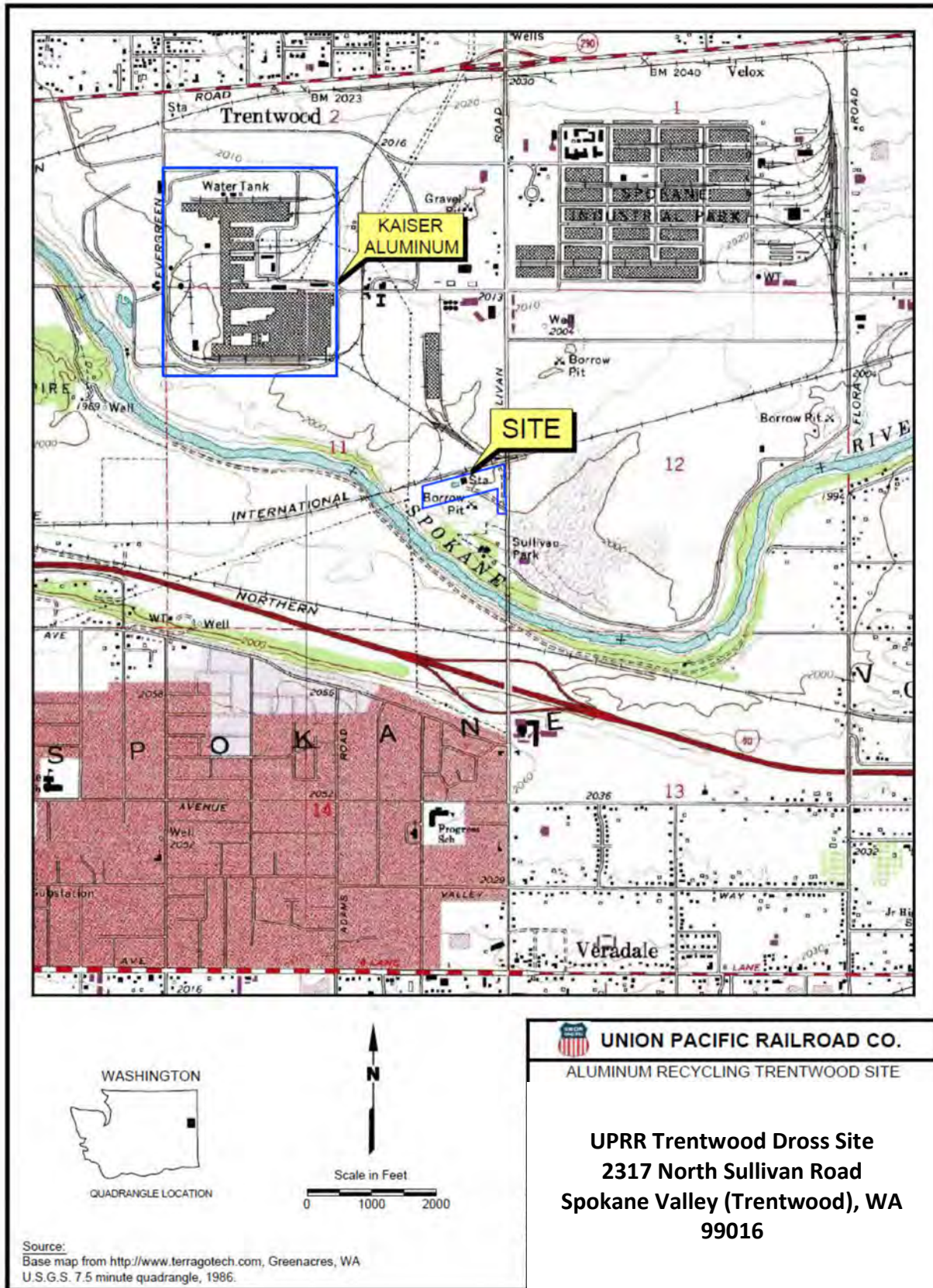
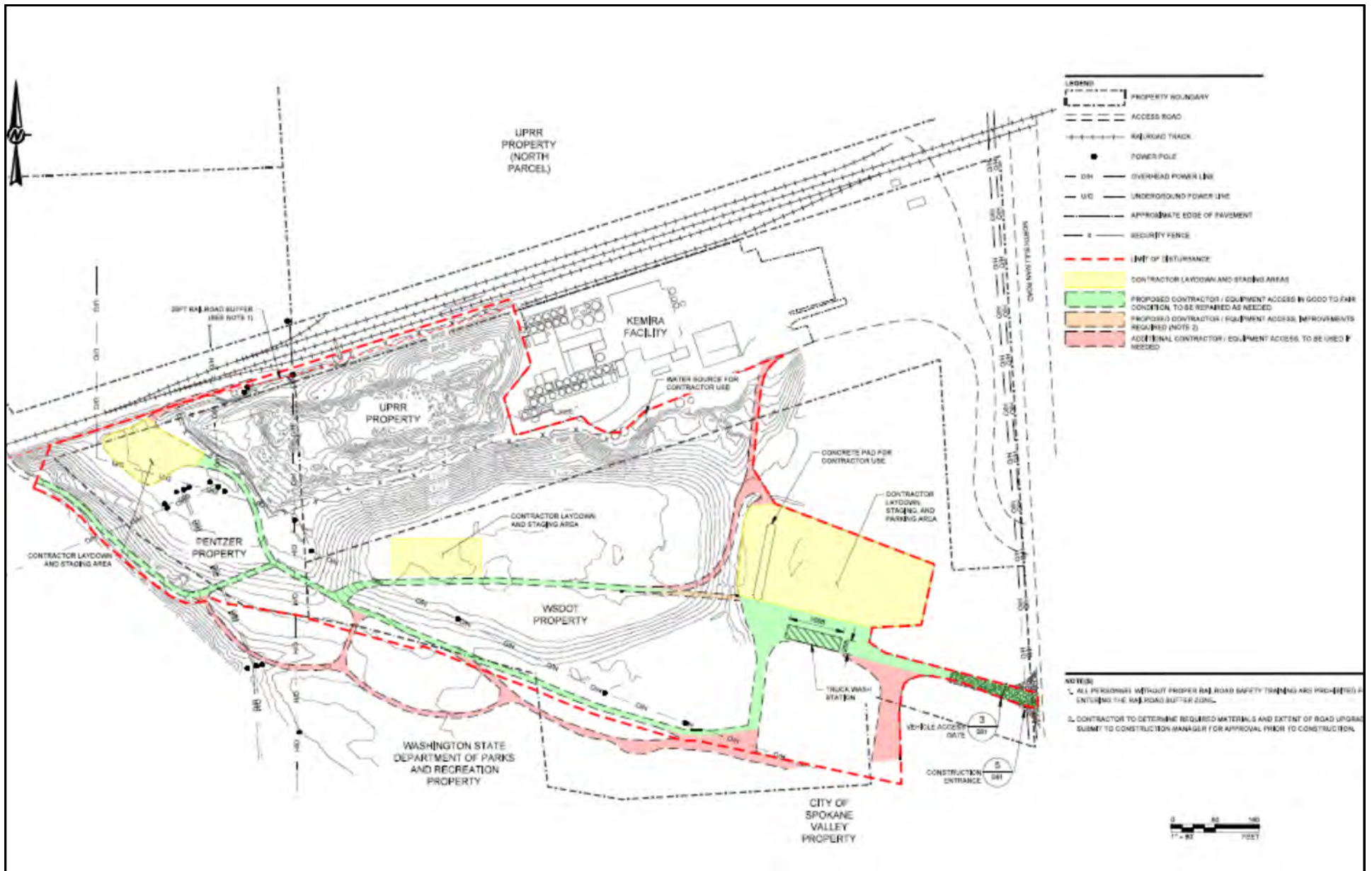


FIGURE ONE
UPRR TRENTWOOD DROSS SITE
SITE PLAN (LOCATION MAP)



FIGURE TWO
UPRR TRENTWOOD DROSS SITE
SITE AERIAL AND PLOT PLAN SHOWING OWNERSHIP



**FIGURE THREE
ENTRANCE / EXIT and SITE MOVEMENT ROADS MAP**

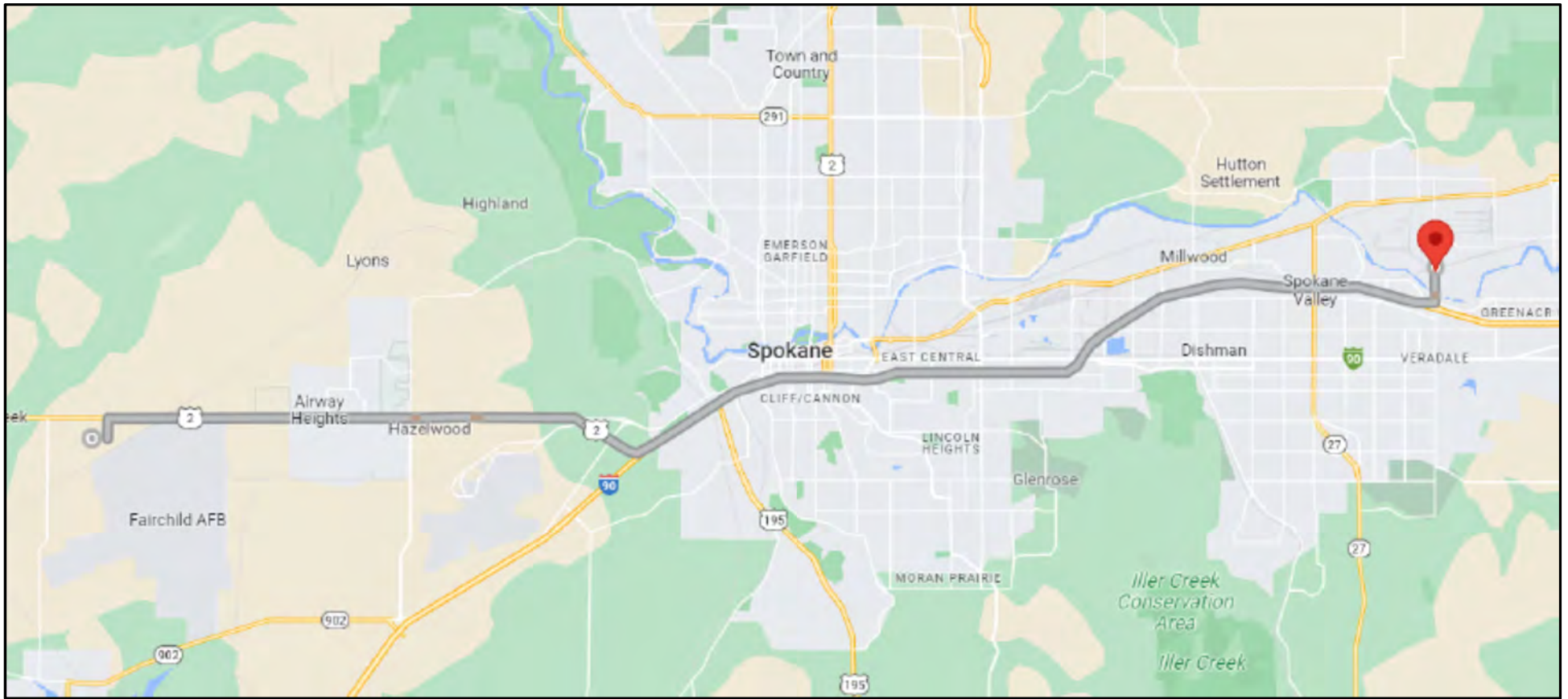
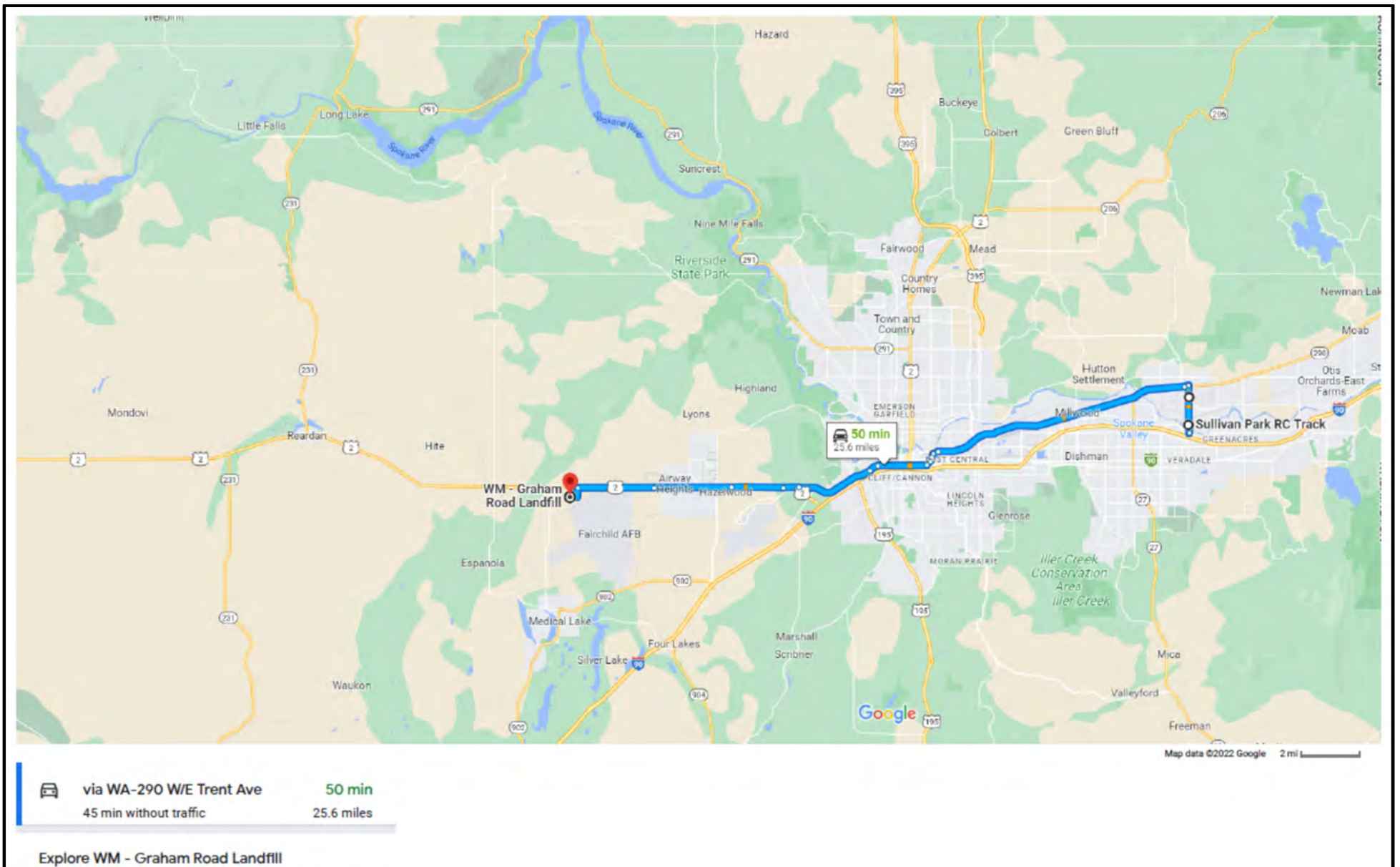


FIGURE FOUR
PRIMARY TRANSPORTATION ROUTE MAP



**FIGURE FIVE
ALTERNATE TRANSPORTATION ROUTE MAP**

TRANSPORTATION PLAN ATTACHMENT A

CONTAMINANTS OF CONCERN

UPRR TRENTWOOD DROSS SITE



GrayMar Environmental Services, Inc., Corporate Address: 601 S Pioneer Way, Suite F#218, Moses Lake, WA 98837
Primary Project Field Office: 11023 E. Mt. Spokane State Park Drive, Mead, WA 99201
Emergency Response 24/7 Phone Number: (866) 472-9627

CHEMICAL HAZARD INFORMATION

CONTAMINANTS OF CONCERN

GENERAL PRODUCT INFORMATION (DROSS)

Inhalation of metal fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

ALUMINUM: Chronic overexposure to aluminum can result in lung damage and has been associated with asthma-like syndrome. Accumulation of aluminum in the body may result in neurological damage, anemia and bone softening.

ALUMINUM OXIDE : Repeated overexposure to high levels of aluminum oxide may lead to pulmonary fibrosis, a progressive lung disorder.

ARSENIC: Arsenic (As) is a white to gray, brittle solid. It occurs naturally in water and soil. Arsenic can be harmful to the eyes, skin, liver, kidneys, lungs, and lymphatic system. Exposure to arsenic can also cause cancer. Workers may be harmed from exposure to arsenic. The level of exposure depends upon the dose, duration, and work being done.

BARIIUM: Barium enters your body when you breathe air, eat food, or drink water containing barium. Barium at hazardous waste sites may enter your body if you breathe dust, eat soil or plants, or drink water polluted with barium from this area. Human health effects from barium at low environmental doses or at biomonitored levels from low environmental exposures are unknown. The health effects of exposure to barium compounds depend on the dose, chemical form, water solubility, and route of exposure. Toxicity from soluble barium salts is rare, but can occur after intentional or accidental ingestion of barium carbonate in rodenticides (Genter, 2001). Barium blocks cellular efflux of potassium resulting in profound hypokalemia. Symptoms following acute high dose include perioral paresthesias, vomiting, diarrhea, weakness, paralysis, hypertension, and cardiac dysrhythmias.

CHROMIUM: Industrial exposure to chromium may cause dermatitis, skin ulcers, perforation of the nasal septum, as well as cancers of the lungs, nasal cavity and paranasal sinuses. The cancer sites are mainly associated with hexavalent chrome which can also cause skin sensitization, skin and nasal ulcers, and perforation of the nasal septum.

COPPER: Copper dust and fume can affect you when breathed in. Exposure to dust and fume can irritate the eyes, nose and throat causing coughing, wheezing, nosebleeds, ulcers and a hole in the “bone” dividing the inner nose. Copper fume may cause “metal fume fever.” This is a flu-Like illness with symptoms of metallic taste, fever and chills, aches, chest tightness and cough. **Copper may cause a skin allergy**

IRON: Chronic inhalation of iron has resulted in mottling of the lungs, a condition referred to as siderosis. This is considered benign pneumoconiosis and does not ordinarily cause significant physiologic impairment.

MANGANESE: Overexposure to manganese may result in CNS effects, anemia and pneumonitis which increased the risk of pneumonia.

MAGNESIUM: High exposure to Magnesium can irritate the skin and eyes. Inhaling Magnesium can irritate the nose, throat and lungs causing tightness in the chest and/or difficulty in breathing. Exposure to Magnesium may cause “metal fume fever.” This is a flu-like illness with symptoms of metallic taste in the

MERCURY: Mercury (Hg) is a naturally occurring metal. Metallic mercury is a shiny, silver-white, odorless liquid. When heated it becomes a colorless, odorless gas. Some of the health effects exposure to mercury may cause include: irritation to the eyes, skin, and stomach; cough, chest pain, or difficulty breathing, insomnia, irritability, indecision, headache, weakness or exhaustion, and weight loss. Workers may be harmed from exposure to mercury. The level of exposure depends upon the dose, duration, and work being done.

NICKEL: Systemic effects from ingestion of nickel salts include capillary damage, kidney damage, myocardial weakness and central nervous system depression. Allergic skin sensitization reactions are the most frequent effect of exposure to nickel compounds. Contact with nickel compounds may also result in allergic lung sensitization reactions. Nickel is an identified human carcinogen.

SILICON: Silicon dust seems to have little adverse effect on lungs and does not appear to produce significant organic disease or toxic effects when exposures are kept under reasonable control.

TIN: Prolonged exposure to high concentration of tin-containing dusts and/or fumes may result in the development of Stannosis which is a rare benign pneumoconiosis. The maximum concentration of tin in the product is such that Stannosis should not present a potential hazard.

ZINC: Zinc poisoning can cause anemia, lethargy and dizziness. Inhalation of zinc fumes may cause metal fume fever, a flulike illness generally lasting 24 hours or less.

FUELS ON SITE AND OVER THE ROAD

LEAD: Inorganic lead has been found to have toxic effects on both the central and peripheral nervous systems. Symptoms of lead toxicity include behavioral disturbances such as irritability, restlessness, insomnia, and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy. With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions, and coma. Lead compounds can have a variety of effects. Lead poisoning is characterized by muscle weakness, weight loss, listlessness, insomnia, gastrointestinal disturbances, and low blood pressure. In severe cases, neuromuscular damage can occur as well as permanent brain damage. In addition to generalized poisoning, lead can have potentially serious reproductive effects for both males and females.

Lead exposure can cause decreased fertility in both males and females. Male sperm counts can be decreased and sperm morphology altered while the female ovulatory cycle can be disrupted. Lead can also cross the placental barrier and affect the developing fetus. Studies have shown that in-utero lead exposure can lead to potentially severe developmental disabilities.

TABLE 1 Chemical Hazard Information			
COMPOUND	EXPOSURE LIMITS	ROUTE OF EXPOSURE	HEALTH EFFECTS
Aluminum (7429-90-5)	NIOSH REL TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp) OSHA PEL TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	inhalation, skin and/or eye contact	irritation eyes, skin, respiratory system
Aluminum Oxide (1344-28-1)	NIOSH REL TWA 10 mg/m ³ OSHA PEL TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, respiratory system
Arsenic (7440-38-2)	NIOSH REL Ca C 0.002 mg/m ³ [15-minute] OSHA PEL [1910.1018] TWA 0.010 mg/m ³	inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Barium (7440-39-3)	NIOSH REL TWA 0.5 mg/m ³ [*Note: The REL also applies to other soluble barium compounds (as Ba) except Barium sulfate.] OSHA PEL TWA 0.5 mg/m ³ [*Note: The PEL also applies to other soluble barium compounds (as Ba)	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia

	except Barium sulfate.]		
Chromium (total) (7440-47-3)	NIOSH REL TWA 0.5 mg/m ³ OSHA PEL TWA 1 mg/m ³ [*Note: The PEL also applies to insoluble chromium salts.]	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin; lung fibrosis (histologic)
Chromium Trioxide (1333-82-0)	NIOSH REL (as Cr): Ca TWA 0.0002 mg/m ³ (8-hours) OSHA PEL (as CrO ₃): TWA 0.005 mg/m ³	inhalation, ingestion, skin and/or eye contact	irritation respiratory system; nasal septum perforation; liver, kidney damage; leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia; eye injury, conjunctivitis; skin ulcer, sensitization dermatitis; [potential occupational carcinogen]
Copper (7440-50-8)	NIOSH REL TWA 1 mg/m ³ [*Note: The REL also applies to other copper compounds (as Cu) except copper fume.] OSHA PEL TWA 1 mg/m ³ [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]	inhalation, ingestion, skin and/or eye contact	irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia
Iron (1309-37-1)	NIOSH REL TWA 5 mg/m ³ OSHA PEL TWA 10 mg/m ³	inhalation	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Manganese (7439-96-5)	NIOSH REL TWA: 1 mg/m ³ OSHA PEL TWA: 1 mg/m ³ Ceiling: 5 mg/m ³	inhalation, skin and/or eye contact	irritation eyes, skin, respiratory system

Magnesium (1309-48-4)	NIOSH REL 10 mg/m ³ OSHA PEL TWA 15 mg/m ³	inhalation, skin and/or eye contact	irritation eyes, nose; metal fume fever: cough, chest pain, flu-like fever
Mercury (7439-97-6)	NIOSH REL Hg Vapor: TWA 0.05 mg/m ³ [skin] Other: C 0.1 mg/m ³ [skin] OSHA PEL TWA 0.1 mg/m ³	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria
Nickel (7440-02-0)	NIOSH REL Ca TWA 0.015 mg/m ³ [*Note: The REL does not apply to Nickel carbonyl.] OSHA PEL TWA 1 mg/m ³ [*Note: The PEL does not apply to Nickel carbonyl.]	inhalation, ingestion, skin and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]
Silica, amorphous (7440-21-3)	NIOSH REL TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp) OSHA PEL TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, respiratory system, pneumoconiosis, cough
Tin (7440-31-5)	NIOSH REL TWA 2 mg/m ³ [*Note: The REL also applies to other inorganic tin compounds (as Sn) except tin oxides.] OSHA PEL TWA 2 mg/m ³ [*Note: The PEL also applies to other inorganic tin compounds (as Sn) except tin oxides.]	inhalation, skin and/or eye contact	irritation eyes, skin, respiratory system; In Animals: vomiting, diarrhea, paralysis with muscle twitching

<p>Zinc (7440-66-6)</p>	<p>NIOSH REL Dust: TWA 5 mg/m³ C 15 mg/m³ Fume: TWA 5 mg/m³ ST 10 mg/m³</p> <p>OSHA PEL TWA 5 mg/m³ (fume) TWA 15 mg/m³ (total dust) TWA 5 mg/m³ (resp dust)</p>	<p>inhalation</p>	<p>Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function</p>
<p>Chromium (total) (7440-47-3)</p>	<p>NIOSH REL TWA 0.5 mg/m³</p> <p>OSHA PEL TWA 1 mg/m³ [*Note: The PEL also applies to insoluble chromium salts.]</p>	<p>inhalation, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin; lung fibrosis (histologic)</p>
<p>Mercury (7439-97-6)</p>	<p>NIOSH REL Hg Vapor: TWA 0.05 mg/m³ [skin] Other: C 0.1 mg/m³ [skin]</p> <p>OSHA PEL TWA 0.1 mg/m³</p>	<p>inhalation, skin absorption, ingestion, skin and/or eye contact</p>	<p>irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria</p>
<p>*TBD (if needed)</p>			

**TABLE 2
Chemical Hazard
Information (FUELS)**

COMPOUND	EXPOSURE LIMITS	ROUTE OF EXPOSURE	HEALTH EFFECTS
FUELS USED ON-SITE			
Lead	<p>ACGIH: 0.05 mg/m³ TWA</p> <p>OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see 29 CFR 1910.1025)</p> <p>CAL-OSHA: 50 µg/m³ TWA (as Pb); 30 µg/m³ Action Level (as Pb. Poison - see CCR, Title 8, Section 5198)</p> <p>NIOSH: 0.050 mg/m³ TWA; Blood lead level <0.06mg/100 ml of whole blood</p>	Inhalation/ Ingestion/ Dermal	CNS depression; Possible liver and kidney damage; Possible brain damage
Gasoline	300ppm (PEL); 500ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis
Benzene	1.0ppm (PEL); 5.0ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Leukemia; Dermatitis
Toluene	100ppm (PEL); 150ppm (STEL); 500ppm (C)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis
Xylenes	100ppm (PEL); 150 ppm (STEL);	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis
Ethylbenzene	100ppm (PEL); 125ppm (STEL)	Inhalation/ Ingestion/ Dermal	Eye, skin, and respiratory irritation; CNS depression; Dermatitis

Diesel (No. 2 Fuel)	300ppm (PEL); 500ppm (STEL)	Inhalation/ Ingestion/ Dermal	100 mg/m ³ TWA Skin - potential significant contribution to overall exposure by the cutaneous route Eye, skin, and respiratory irritation; CNS depression; Possible liver and kidney damage; Dermatitis



GOLDER
MEMBER OF WSP

SUBMITTAL REVIEW

Date: 10/14/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Stormwater Pollution Prevention Plan (SWPPP) – Revision 1

Submittal No. 005.B

Specification No: Drawing 021 – Erosion and Sediment Control

Specification Section: A.5

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments:

 Please resubmit with the following suggested changes:

- 1) It is our understanding that GrayMar has determined that they are not required to obtain coverage under Washington State Department of Ecology's Construction Stormwater General Permit, and therefore this SWPPP is no longer a required submittal. If GrayMar wishes to obtain our approval on the SWPPP with respect to complying with Construction Stormwater General Permit requirements, then please address Comments #2 through #12 and revise the document to follow the Ecology template.
- 2) Section 1.11, pdf page 18. Replace both sentences with "Not applicable".
- 3) Section 2.2.1, pdf page 22. Change heading "Temporary Erosion Control –Silt Fencing" to "Temporary Erosion Control".
- 4) Section 2.2.1, pdf page 22. After "1508 linear feet and silt fencing", "300 linear feet of straw wattles", and "40 each straw bales" add "(more as needed)".
- 5) Section 2.3 Control Stormwater Flowing Onto and Through the Project, pdf page 29. Change "sediment fences, swales and hay bales" to "silt fence, straw wattles, and straw bales."
- 6) Section 2.4 Stabilize Soils, pdf page 29. Delete all text in this section and replace with text from TESC Plan to make consistent: "Soil stabilization will be conducted (as needed) on haul routes or areas of high traffic and steep road grades to reduce sediment generation."
- 7) Section 2.5 Protect Slopes, pdf page 30. Remove all text in this section. the sentence, "There are no slopes to protect." and change the sentence that says, "The grading of the site will not be changed and the original natural / engineered slope of the site to the south will be maintained and protected." to "The south side slope on



SUBMITTAL REVIEW

- UPRR property will be regraded from a 2H:1V slope to a 3H:1V slope and will be covered with geotextile and gravel to limit erosion. Surface water will not be allowed to run onto the ecological cap area from the Kemira facility.”
- 8) Section 2.7 Establish perimeter Controls and Sediment Barriers, pdf page 30. Change “swales, hay bales, and sediment fences” to “silt fence, straw wattles, and straw bales.”
 - 9) Section 2.8 Retain Sediment On-Site, pdf page 30. Change “swales, hay bales, and sediment fences” to “silt fence, straw wattles, and straw bales.”
 - 10) Section 2.8 Retain Sediment On-Site, pdf page 30. Similar to SWPPP review Comment #1, replace Figures C and D with an 11x17 copy of Sheet 050 from the Rev 1 City Grading Permit Drawing package (showing revised track-out pad design and truck access). In red pen, hand-draw in approximate locations for planned operations, identifying haul routes, laydown areas, stockpile locations, and other major features that could produce sediment during the work. In addition to the silt fence that is already called out, the figure needs to indicate the specific BMPs that will be implemented to control sediment release from each of these features (i.e., berms or plastic sheeting around stockpiles etc.). Show the diversion ditch that was put in to direct any stormwater from the dross stockpile area to the WSDOT pit.
 - 11) Section 2.9 Establish Construction Exits, pdf page 31. Replace the last two sentences of the BMP description with, “The site access point will have a security gate and a rock trackout pad with rumble strips. The rock trackout pad and rumble strips will be graded to drain to a sediment pond where runoff will be directed in the event that truck washing is needed.”
 - 12) Section 3.5 Control Equipment/Vehicle Washing, pdf page 33. Make sure this section is consistent with Section 2.9 and the following comment on the TESC Plan: Comment #2 pertaining to pdf page 8, Main Access Point (Site Entrance). Replace the last sentence with, “The site access point will have a security gate and a rock trackout pad with rumble strips. The rock trackout pad and rumble strips will be graded to drain to a sediment pond where runoff will be directed in the event that truck washing is needed.”

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/14/22

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

STORMWATER POLLUTION PREVENTION PLAN

FOR

**UPRR TRENTWOOD DROSS SITE
2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WASHINGTON 99016**

**WA DEPARTMENT OF ECOLOGY REFERENCE
FACILITY ID: 628 and CLEANUP SITE ID: 1081**

**SITE COORDINATES
LAT: 47.6777265 LONG:-117.1982753**

OPERATOR(S):

**GrayMar Environmental Services, Inc.
601 S Pioneer Way – F-218
Moses Lake, WA 98837
Tel: (509) 770-4456**

SWPPP CONTACT(S):

**GrayMar Environmental Services, Inc.
601 S Pioneer Way – F-218
Moses Lake, WA 98837
Tel: (509) 770-4456**

SWPPP PREPARATION DATE:

September 23, 2022

ESTIMATED PROJECT DATES:

Estimated Project Start Date: October 3, 2022

Estimated Project Completion Date: March 31 2023

STORMWATER POLLUTION PREVENTION PLAN

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BMP AND LOCATION IN THE SWPPP

NAME OF BMP	SECTION AND LOCATION IN SWPPP
1. Preserve Vegetation / Mark Clearing Limits	1.4 and 2.1
2. Establish Construction Access	2.9 and Figure B and Figure C
3. Control Flow Rates	1.4 and 2.3
4. Install Sediment Controls	2.7 and 2.8
5. Stabilize Soils	2.9 and 3.8
6. Protect Slopes	2.5
7. Protect Drain Inlets	2.6 (no drain inlets)
8. Stabilize Channels and Outfalls	7.0
9. Control Pollutants	3.1 and 3.4 and 4.0
10. Control Dewatering	No dewatering on site
11. Maintain BMPs	5.1
12. Manage the Project	6.3
13. Protect Low Impact Development	NA (no construction or changes to site – any vegetation removed during the Dross removal is being reseeded and/or trees being planted – See 1.4 and 2.1

APPENDIX ONE

- **Figure A – General Location Map**
- **Figure B – Site Map Showing Plots and Ownership**
- **Figure C – Site Plan showing Entrance/Exit and internal site roads**
- **Figure D – WSP Golder from RFP - Drawing 50 – Erosion and Sediment Control Plan**
- **Figure E – Construction General Permit**
- **Figure F – NOI and Acknowledgement Letter from EPA/State**
- **Figure G – Inspection Reports**
- **Figure H – Corrective Action Log (or in Part 5.3)**
- **Figure I – SWPPP Amendment Log (or in Part 6.2)**
- **Figure J – Subcontractor Certifications/Agreements**
- **Figure K – Grading and Stabilization Activities Log (or in Part 6.1)**
- **Figure L – Training Log**
- **Figure M – Delegation of Authority**
- **Figure N – Additional Information (SDS for Stabilizer,**

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 PROJECT/SITE INFORMATION

Project/Site Name: UPRR Trentwood Dross Site

Project Street/Location: 2317 North Sullivan Road
Spokane County (See Figure B for ownership delineation)

City: Spokane Valley State: WA ZIP Code: 99016

County or Similar Subdivision: Spokane County

Latitude/Longitude

Latitude: 47.6777265 N (decimal) Longitude: -117.1982753 W (decimal)

Method for determining latitude/longitude:

USGS topographic map (specify scale: _____) EPA Web site GPS
 Other (please specify): Google Earth and verified on USGS site

Is the project located in Indian country? Yes No

If yes, name of Reservation, or if not part of a Reservation, indicate "not applicable." _____

Is this project considered a federal facility? Yes No

NPDES project or permit tracking number*: N/A

**(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit.)*

1.2 CONTACT INFORMATION/RESPONSIBLE PARTIES

Operator(s):

GrayMar Environmental Services, Inc.

601 S Pioneer Way – F-218

Moses Lake, WA 98837

Tel: (509) 770-4456

Project Manager(s) or Site Supervisor(s):

GrayMar Environmental Services, Inc.
601 S Pioneer Way – F-218
Moses Lake, WA 98837
Tel: (509) 770-4456

SWPPP Contact(s):

GrayMar Environmental Services, Inc.
601 S Pioneer Way – F-218
Moses Lake, WA 98837
Tel: (509) 770-4456

This SWPPP was Prepared by:

GrayMar Environmental Services, Inc.
Michael Gray – President
601 S Pioneer Way – F-218
Moses Lake, WA 98837
Tel: (509) 770-4456
Email: mgray@graymarenv.com

Subcontractor(s):

TO BE DETERMINED



Emergency 24-Hour Contact: (866) GRAYMAR or (866) 472-9627

GrayMar Environmental Services, Inc.

Kelly Ottmar – Sr. Vice President

601 S Pioneer Way – F-218

Moses Lake, WA 98837

Cell: (509) 770-4621

Email: kottmar@Graymarenv.com

1.3 NATURE AND SEQUENCE OF CONSTRUCTION ACTIVITY AND DEFINED SCOPE OF WORK

GrayMar Environmental Services scope of work (SOW) to be performed on-site is as follows:

Defined Scope of Work per Specifications supplied by UPRR / WSP Golder

1.3.1 Defined Scope of Work

The following tasks listed below make up the full Scope of Work.

GrayMar will mobilize the Site locate at 2317 North Sullivan Road just west of North Sullivan Road and north of the Spokane River in Spokane Valley, Washington to complete the remediation and removal of Aluminum Dross per UPRR , WSP Golder, and the Washington Department of Ecology as listed below.

The Washington Department of Ecology originally defined four individual alternatives on the approach to cleanup of the site. What was termed Alternative Number three was chosen. Alternative Three includes the excavation and disposal of waste from the site at a permitted landfill. The worst waste was identified as contaminated dross / soil which needs to be removed, transported by truck, and disposed of at the Waste Management Landfill at Graham Road in Medical Lake. Because the Spokane River and a recreational trail are near the site, all remaining contaminated soil would be removed from the Pentzer and WSDOT properties and capped on the UPRR property. No deed or use restrictions would be needed for the Pentzer and WSDOT properties. The permanent protective fence would keep people, plants, and wildlife from coming in contact with waste material. The ecological cap will prevent possible contact from wind and water sources as well as control any contact and erosion.



**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
UPRR TRENTWOOD DROSS SITE**

As provided in the Scope of Work issued by UPRR and WSP Golder, GrayMar will provide the following list of tasks:

UPRR'S LIST OF TASKS (FROM UPRR'S ORIGINAL EXCEL SHEET FOR ACTUAL QUOTED NUMBERS)	
1. Mobilization	16. Backfill- Offsite Source
2. Erosion Control - Slit Fencing	17. Ecological Cap
3. Erosion Control - Straw Wattles	18. Containment Berm
4. Erosion Control - Straw Bales	19. Railroad Ditch
5. Erosion Control - Construction Entrance	20. Overflow Channel
6. Street Cleaning	21. Amor Rock Apron
7. Temp Facilities - Office, Sanitary Facilities, etc.	22. Monitoring Well Decommissioning
8. Clearing and Chipping	23. Vehicle Access Gate
9. Tree Removal	24. Security Fence
10. Dross Stockpile Removal	25. Maintenance Gate
11. Shoring Design	26. Reseeding
12. Cont.Soil Removal - Stockpile/Place	27. Tree Planting
13. Cont.Soil Removal - Screen Onsite	28. Demobilization
14. Cont.Soil Removal- Screen Offsite	29. Truck Wheel Wash or Equivalent
15. Backfill - Onsite Stockpile	30. Access Road Improvements

This listing of task makeup the full Scope of Work that GrayMar will complete based on both the UPRR's and WSP Golder's list of tasks from the supplied document titled "19119180-trentwood_measurement and payment 061322".

Mobilization - Work includes all activities necessary to prepare for on-site work activities to include but not limited to:

- GrayMar, as UPRR's first responder, meets all training and insurance requirements to work on this project.
- Supply UPRR / WSP Golder electronically for review and comment the following plans in draft
 - Spill Prevention, Control, and Countermeasure (SPCC)
 - Site-specific Safety and Health Plan (SSHP)
 - Traffic Control Plan
 - Stormwater Pollution Prevention Plan (SWPP)
 - Temporary Erosion and Sediment Control (TESC)
- Set up equipment storage area and site parking area. Equipment storage area will be



further fenced in to secure and protect equipment at night and over the weekend.

- Setup fueling center and truck track out area on-site.
- Set up gravel laydown area by temporary office and drag-out area for trucks at the entrance of the site.
- Graymar will move all equipment to the site to included heavy equipment, safety equipment , storage trailer, and transport equipment required on the site etc.,
- All GrayMar personnel not already trained under the UPRR guideline shall receive said training.
- All temporary facilities to include electrical hookup, office trailer, and sanitary facilities to be moved to site.
- All fencing not to be utilized will be removed and stockpiled in the setup Contractor Laydown Area.
- Removing existing ecology block wall for placement and storage as directed by Construction Manager.
- GrayMar has procured a local water source (Trentwood Irrigation District) hydrant to supply non-potable water to be used for dust control.
- GrayMar understands that the full mobilization to the site must be completed in the most efficient and cost-effective manor and once competed the actual service tasks within this project can be started.

Temporary Erosion Control – Silt Fencing

- GrayMar will provide 1508 linear feet of Silt Fencing and place /maintain as required for temporary erosion control.
- GrayMar will provide 300 linear feet of Straw Wattles per the specs and place /maintain as required for temporary erosion control.
- GrayMar will provide 40 each Straw Bales per the specs and place /maintain as required for temporary erosion control
- The above includes the setting up and maintaining temporary erosion control at the construction entrance as required.
- GrayMar will inspect and maintain / make changes if required, of the Erosion control to meet the approved Stormwater Pollution Prevention Plan (SWPP) and the approved Temporary Erosion and Sediment Control (TESC) for this project.

Street Cleaning

- GrayMar will supply street cleaning throughout the project to ensure sediment does not migrate off-site onto adjacent roadways.



Temporary Facilities – Offices, Sanitary, Utilities, etc.

- GrayMar will set up an office trailer along with supplied power and set up sanitary facilities on site.

Temporary Facilities – Truck Wheel Wash or Trackout Equivalent

- GrayMar will supply, operate, and maintaining a truck wheel wash or truck trackout over the course of the project.

Temporary Facilities – Vehicle Access Gate

- GrayMar will provide and maintaining vehicle access gate at the location described in the Specifications/drawings

Access Road Improvements

- GrayMar will improve as need and maintain access roads as needed to facilitate construction

Clearing and Chipping

- GrayMar will clear and chip brush and trees less than 6 inches in diameter in excavation areas as shown in the drawings. Total area to be chipped is estimated at 2-acres. Chipping will be stockpiled on site for future use.

Tree Removal

- GrayMar will clear and chip brush and trees greater than 6 inches in diameter from excavation areas. Total area to be chipped is estimated at 2-acres. Trunks will be cut into 20-ft sections or other approved length, and removing and stockpiling stumps for later use as habitat materials.

Dross Stockpile Removal

- GrayMar will excavate, load, and transport for disposal the dross stockpile material. GrayMar will use the WM Graham Road Landfill. Proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized. WSP Golder will maintain dust monitoring on site.

Shoring Design

- GrayMar, through our current UPRR First Responder contract, understands and has read the UPRR Guidelines for Temporary Shoring, dated October 25, 2004, if required.

Off-Stockpile Contaminated Soil Removal – Stockpile and Place Onsite on UPRR Property

- GrayMar will excavate areas, haul to a defined location and stockpile on site for subsequent placement of material to reach subgrade elevations required on the UPRR property if testing allows and approved by the Construction Manager (WSP Golder). All engineering controls, the use of water, will be utilized for dust control to prevent airborne contaminant dispersion. Excavated area may include coordination /reimbursing utility providers while complying with their requirements. GrayMar understands that excavation may include the use of small equipment under power lines, use of spotters during soil removal, replacing power poles, maintaining buffer zones around equipment and structures, restoring access roads to minimum standards, and other conditions.

Off-Stockpile Contaminated Soil Removal – Screen and Stockpile Onsite

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed not impacted, by WSP Golder, below agreed-upon levels, and approved \ directed by the construction manager.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process. No downtime can be charged for while waiting for analytical laboratory results
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Off-Stockpile Contaminated Soil Removal – Screen and Dispose Offsite

- Graymar understand that soils removed from areas outside of the dross stockpile may be used as backfill to reach subgrade elevations required on the UPRR property if they are impacted below agreed-upon levels, as approved \ directed by the construction manager.



- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Backfill – Onsite Stockpile

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed not impacted, by WSP Golder, below agreed-upon levels, and approved \ directed by the construction manager.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process. No downtime can be charged for while waiting for analytical laboratory results
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized



Backfill – Offsite Source

- GrayMar has included and understand that the procurement, loading, hauling, and placement of backfill material from an offsite source is required as part of this project. Backfill from offsite sources shall be non-plastic soil as determined by ASTM D4318 “standard test methods for liquid limit, plastic limit, and plasticity index of soils”, and shall have a maximum particle size of 6 inches, and shall have no more than 15% by dry weight of material passing the U.S. No. 200 Sieve.
- At this time there is a potential of 19,000-yards of backfill to be potentially obtained on site through excavation and use. The UPRR Excel Price document calls for pricing out 18,683 yards of backfill. The volume of imported backfill will be based by the difference of available excavated materials onsite and the UPRR requirements.

Ecological Cap

- Graymar has read and understand the specification that the gravel for the ecological cap shall be angular to sub-angular, sound, hard, durable natural rock conforming to the requirements of WSDOT 9-03.9(2) “permeable ballast”. The Ecological Cap will be the specifications as called out for subgrade, geotextile fabric, “armor rock or quarry squall cover that meet WSDOT requirements
- Graymar will prepare the subgrade per the specifications as called out in WSP Golder’s documents. The subgrade will be prepared by rolling and compaction with a minimum of 4 passes of a smooth drum vibratory roller with a minimum static weight of 15,000 lbs. such as a CAT CS44, IR SD-70, or similar approved equivalent to achieve a firm and unyielding surface. GrayMar understand that per specification that the subgrade surface must be smooth, flat, and free of ruts and protrusions greater than 0.5 inches. The surface will be protected and maintain to ensure the required surface is met prior to installation of the geotextile cover.
- GrayMar will then install the ecological cap gravel utilizing a single lift, using methods that will not stretch, displace, or damage the underlying geotextile.

Surface Water Drainage – Containment Berm

- GrayMar will design and construct the Containment Berm (est. at 1,150 linear feet in length) for the ecological cap per the specification that will inhibit any drainage of waters from the ecological cap to the surrounding areas. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Containment Berm will be either by survey or actual tape measurement.



Surface Water Drainage – Railroad Ditch

- GrayMar will design and construct the Railroad ditch (est. at 387 linear feet in length) for the collection and proper dispersal of ground water to be diverted around the northwest corner of the capped area along railroad property. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Railroad ditch will be either by survey or actual tape measurement.

Surface Water Drainage – Overflow Channel

- GrayMar will design and construct the Overflow Channel (est. at 22 linear feet in length) for the collection and proper dispersal of ground water should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Overflow Channel would divert the excess water allowing the Ecological Cap to drain so not to damage the containment berm into the Railroad Ditch on the northwest corner of the Ecological Cap. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Overflow Channel will be either by survey or actual tape measurement.

Surface Water Drainage – Armor Rock Apron

- GrayMar will design and construct the Armor Rock Apron at the outlet of the Overflow Channel using gravel/rock that meets the WSDOT specifications as called out by WSP Golder’s approved specification and drawing. The Armor Rock Apron is designed in such a way so that the collection and proper dispersal of ground water so no damage is caused to the Overflow Channel should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Armor Rock Apron is located at the based (lower end) of the Overflow Channel. It will assist in the diversion of the excess water without damage to the Overflow channel allowing excess waters to flow into the Railroad Channel. The actual measurement of the Armor Rock Apron will be either by survey or actual tape measurement.

Monitoring Well Decommissioning

- GrayMar will hire an license drilling company to properly decommission four monitor wells on site....each being 60’ by 2” MW-1 thru MW-4. Two wells (MW2 and MW4) are located in the dross area to be removed. One (MW-3) is on the Pentzer property in the northwest corner of site, and one (MW-1) appears to be on the Kemira Property on the northeast corner of the site.

Security Fence

- GrayMar has had the Permanent Security fence cost out for installation by multiple licensed fence installation firms utilized the full WSP Golder approved specifications and the two drawing as received from the UPRR site. This is one of the last tasks to be performed by GrayMar towards the end of the project. The fence will not be performed until final grading of the site is complete and approved by the Construction manager (WSP Golder)

Maintenance Gate

- GrayMar will have the Maintenance Gate install in the Permanent Fence per the WSP Golder approved specification as can be found in the specifications and sheet 510 of the WSP Golder drawing as received.

Final Regrading of the Site

- Graymar will complete the regrading of the site per WSP Golder approved specifications following the regrading plans as found in drawing numbers 220, 221, and 222 supplied with the UPRR request for proposal. Regrading will not be considered complete unless approved by the Construction manager (WSP Golder). GrayMar will further supply a surveyor to ensure all regrading elevations and slopes meet the required specifications. Equipment will be equipped with laser guided level instrumentation.

Reseeding

- GrayMar understands the required re-seeding requirements where up to 5-acres plus will be required to be re-seeded with the required mix. GrayMar will use a licensed firm to hydro-seed the area and understands the requirements that if for any reason the re-seeding doesn't take after a set amount of time GrayMar will be responsible for a second application. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.

Tree Planting

- GrayMar understands that up to 60 trees but per the UPRR cost request. The trees are to be 6' Ponderosa Pine. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.



Demobilization

GrayMar upon completion of the work on sit (Project) will de-mobilize and restore the site to the final required condition based on the approval of the Construction manager (WSP Golder), including but not limited to:

- Removing all equipment, tools, and unused materials from the site.
- Removing and properly disposing of trash, debris, and other waste materials.
- Restoring access roads to at least the service level prior to the project, as determined by the Construction Manager.
- Restoring access to utility features as required by the utility provider.
- Terminating utility connections and removing temporary facilities from the site.
- Submitting of reports, to include any site records, photos, as-built drawings and any other required documentation.

What is the function of the construction activity?

Residential Commercial Industrial Road Construction Linear Utility

Other (please specify): **SITE REMEDIATION / DROSS REMOVAL / SITE**

ENCAPSILATION

Estimated Project Start Date: **October 3, 2022**

Estimated Project Completion Date: **March 31, 2023**

1.4 SOILS, SLOPES, VEGETATION, AND CURRENT DRAINAGE PATTERNS

Soil type(s): **gravelly loam with thicknesses of up to five feet.**

Slopes (describe current slopes and note any changes due to grading or fill activities):

Flow is currently from the large pile of dross sitting on four acres on the north/northwest border of the property running down to the south-south east. The property is basically flat with a very slight elevation change from the northeast to the southwest running towards the Spokane River. (Based on WA Dept. of Ecology reports and the USGS Topo Maps)

The Site elevation is around 1,980 feet above mean sea level. The stockpile represents an additional 30 feet of height. The stockpile sits on a narrow but flat surface nearly level with



the land to the north, east, and west but immediately abuts a steep slope which drops another 25 feet down to a former borrow pit and the Spokane River to the south.

Drainage Patterns (describe current drainage patterns and note any changes due to grading or fill activities):

Drainage would be by the natural slope of the property flow is slightly from the northeast to due southwest (Based on USGS Topo Maps). Final grading will be in accordance with the specifications provided in the approved drawings in the RFP.

Vegetation:

Very sparse weedy vegetation is on the site. The site appears to have been cleared multiple times in the past for weed control by currently and past users of the site. GrayMar will perform clearing and chipping activities for materials as prescribed in the specifications.

Other:

The site has been occupied with the Kaiser dross buildup since 1979.

Geology of the Site:

The geology in the vicinity of the Site is primarily basalt flows of the Columbia Plateau overlain by Quaternary glacial flood deposits. The flood deposits are composed of thickly bedded, poorly sorted boulders, cobbles, gravel, and sand and are approximately 250–300 feet thick in the site vicinity. The coarse nature of the deposits results in very high permeability. Overlying the flood deposits are native surficial soils consisting of gravelly loam with thicknesses of up to five feet.

1.5 REMEDIATION SITE AREA AND DISTURBANCE ESTIMATES

The following are estimates of the construction site.

Total project area: <10.00 acre
Site area to be disturbed: estimated at <7.00 acre

1.6 RECEIVING WATERS – 303(d)

Description of receiving waters: **No receiving waters**

Description of storm sewer systems: **No storm sewer system in downgradient vicinity**



Description of impaired waters or waters subject to TMDLs: **None**

Other: **Due to no 303(d) water bodies being impacted by runoff from the site no sampling (Turbidity) or pH (concrete work being completed – no construction) is required**

1.7 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

City of Spokane River Park / hiking trails to the south of the site. Cart racing track to the southeast of the site. All road features on the site.

1.8 POTENTIAL SOURCES OF POLLUTION

Potential sources of sediment to Stormwater runoff:

Sediment (loose soils) from the site will be affected on the site. The site has been used to store loose aluminum dross for over the last 36+ years. It is estimated that 84,165-tons of loose dross or soil impacted with dross will be removed from the site.

Potential pollutants and sources, other than sediment, to Stormwater runoff:

Leaching to groundwater potentially containing any of the constituent makeup of the remaining previously existing dross on site.

1.9 ENDANGERED SPECIES CERTIFICATION

Are endangered or threatened species and critical habitats on or near the project area?

Yes No

Describe how this determination was made:

Site has been utilized as an agricultural materials manufacturing facility before the surrounding areas were developed

If yes, describe the species and/or critical habitat:

None

Description of unique features that are to be preserved: **Slight mounding of soil under which the 4-acre dross stockpile sat prior to removal during this project. Area to be ecologically capped and fenced.**

Describe measures to protect these features: **Security fence offering both public and wildlife protection**



If yes, describe or refer to documentation that determines the likelihood of an impact on identified species and/or habitat and the steps taken to address that impact. (Note, if species are on or near your project site, EPA strongly recommends that the site operator work closely with the appropriate field office of the U.S. Fish and Wildlife Service or National Marine Fisheries Service. For concerns related to state or tribal listing of species, please contact a state or tribal official.)

NA

1.10 HISTORIC PRESERVATION

Are there any historic sites on or near the construction site?

Yes No

Describe how this determination was made:

A review of the Washington State Department of Natural Resources geographic information system data set indicated that no threatened or endangered plant species occur within the area of the Site.

If yes, describe or refer to documentation that determines the likelihood of an impact on this historic site and the steps taken to address that impact.

N/A

1.11 APPLICABLE FEDERAL, TRIBAL, STATE OR LOCAL PROGRAMS

None that exist. This SWPP is being completed as a requirement by Golder as part of the RFP for the UPRR Trentwood Dross Site.

1.12 MAPS

Include the site maps with the SWPPP. **See Figures A, B, and C in Appendix One**

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
UPRR TRENTWOOD DROSS SITE**

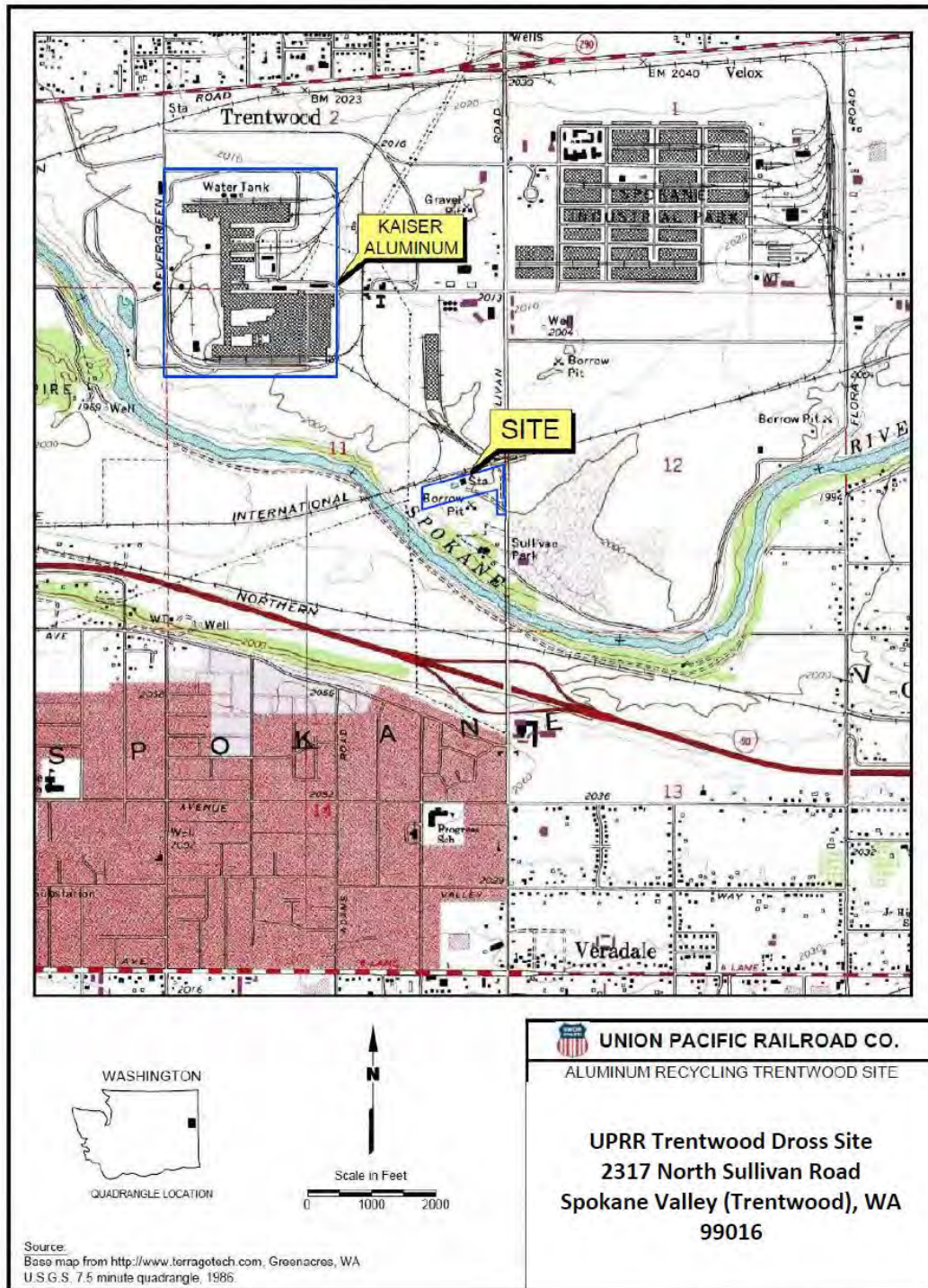


Figure A
UPRR TRENTWOOD DROSS SITE
SITE PLAN (LOCATION MAP)

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

2.1 MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL

There are no natural features other than the existing slope from north to south on the property. Existing surface soils will be removed and or moved in excavated areas on the site and imported backfill may be brought in to fill the voids left by removal soils with no change to existing slope of the site

The Site elevation is around 1,980 feet above mean sea level. The stockpile represents an additional 30 feet of height. The stockpile sits on a narrow but flat surface nearly level with the land to the north, east, and west but immediately abuts a steep slope which drops another 25 feet down to a former borrow pit and the Spokane River to the south.

2.2 PHASE CONSTRUCTION ACTIVITY

Defined Scope of Work per Specifications supplied by UPRR / WSP Golder

2.2.1 Defined Scope of Work

The following tasks required to complete the Scope of Work are listed below.

GrayMar will mobilize to the Site located at 2317 North Sullivan Road just west of North Sullivan Road and north of the Spokane River in Spokane Valley, Washington to complete remediation activities associated with Al Dross removal project in accordance with the approved plans and specifications prepared and approved by UPRR, WSP Golder, and the Washington Department of Ecology.

The Washington Department of Ecology originally defined four individual alternatives on the approach to cleanup of the site. What was termed Alternative Number three was chosen. Alternative Three includes the excavation and disposal the waste from the site at a permitted landfill. It was determined that the worst waste and contaminated dross / soil would be removed, transported by truck, and disposed of at the Waste Management Landfill at Graham Road in Medical Lake. Because the Spokane River and a recreational trail are near the site, all remaining contaminated soil would be removed from the Pentzer and WSDOT properties and capped on the UPRR property. No deed or use restrictions would be needed for the Pentzer and WSDOT



**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
UPRR TRENTWOOD DROSS SITE**

properties. The cap as well as the permanent protective fence would keep people, plants, and wildlife from contacting waste, and would stop wind and water contact and erosion.

GrayMar will perform the following tasks as prescribed by the approved plans, drawings, specifications and discussions with UPRR, WSP Golder and participating government, municipal and regulatory agencies.

UPRR'S LIST OF TASKS (FROM UPRR'S ORIGINAL EXCEL SHEET FOR ACTUAL QUOTED NUMBERS)	
16. Mobilization	16. Backfill- Offsite Source
17. Erosion Control - Slit Fencing	17. Ecological Cap
18. Erosion Control - Straw Wattles	18. Containment Berm
19. Erosion Control - Straw Bales	19. Railroad Ditch
20. Erosion Control - Construction Entrance	20. Overflow Channel
21. Street Cleaning	21. Amor Rock Apron
22. Temp Facilities - Office, Sanitary Facilities, etc.	22. Monitoring Well Decommissioning
23. Clearing and Chipping	23. Vehicle Access Gate
24. Tree Removal	24. Security Fence
25. Dross Stockpile Removal	25. Maintenance Gate
26. Shoring Design	26. Reseeding
27. Cont.Soil Removal - Stockpile/Place	27. Tree Planting
28. Cont.Soil Removal - Screen Onsite	28. Demobilization
29. Cont.Soil Removal- Screen Offsite	29. Truck Wheel Wash or Equivalent
30. Backfill - Onsite Stockpile	30. Access Road Improvements

This listing of tasks makeup the full Scope of Work that GrayMar will complete based on both the UPRR's and WSP Golder's list of tasks from the supplied document titled "19119180-trentwood_measurement and payment 061322".

Mobilization - Work includes all activities necessary to prepare for on-site work activities to include

- GrayMar, as UPRR's first responder, meets all training and insurance requirements to work on this project.
- Supply UPRR / WSP Golder electronically for review and comment the following plans in draft
 - Spill Prevention, Control, and Countermeasure (SPCC)
 - Site-specific Safety and Health Plan (SSHP)
 - Traffic Control Plan
 - Stormwater Pollution Prevention Plan (SWPP)
 - Temporary Erosion and Sediment Control (TESC)
- Set up equipment storage area and site parking area. Equipment storage area will be further fenced in to secure and protect equipment at night and over the weekend.

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
UPRR TRENTWOOD DROSS SITE**

- Setup fueling center and wheel wash or Truck Trackout area on-site.
- Set up gravel laydown area by temporary office and drag-out area for trucks at the entrance of the site.
- Graymar will move all equipment to the site to included heavy equipment, safety equipment , storage trailer, and transport equipment required on the site etc.,
- Any and all GrayMar personnel not already trained under the UPRR guideline shall receive said training.
- All temporary facilities to include electrical hookup, office trailer, and sanitary facilities to be moved to site.
- All fencing not to be utilized will be removed and stockpiled in the setup Contractor Laydown Area.
- Removing existing ecology block wall and storing at Kemira facility.
- GrayMar has sourced with the local water company a hydrant for non-potable water to be used for dust control.
- GrayMar understands that the full mobilization to the site must be completed in the most efficient and cost effective manor and once competed the actual service tasks within this project can be started.

Temporary Erosion Control – Silt Fencing

- GrayMar will provide 1508 linear feet of Silt Fencing and place /maintain as required for temporary erosion control.
- GrayMar will provide 300 linear feet of Straw Wattles per the specs and place /maintain as required for temporary erosion control.
- GrayMar will provide 40 each Straw Bales per the specs and place /maintain as required for temporary erosion control
- The above includes the setting up and maintaining temporary erosion control at the construction entrance as required.
- The above will be inspected during the course of the project and will be replace or added to as needed.
- GrayMar will inspect and maintain / make changes if required, of the Erosion control to meet this Stormwater Pollution Prevention Plan (SWPP) and the Temporary Erosion and Sediment Control (TESC) for this project.

Street Cleaning

- GrayMar will supply street cleaning throughout the project to ensure sediment does not migrate off-site onto adjacent roadways. Street cleaning will be charged only for actual use of the street cleaning equipment.

Temporary Facilities – Offices, Sanitary, Utilities, etc.



- GrayMar will set up an office trailer along with supplied power and set up sanitary facilities on site.

Temporary Facilities – Truck Wheel Wash or Truck Trackout

- GrayMar will supply, operate, and maintaining a truck wheel wash or truck track out over the course of the project.

Temporary Facilities – Vehicle Access Gate

- GrayMar will provide and maintaining vehicle access gate at the location described in the Specifications/drawings

Access Road Improvements

- GrayMar will improve as need and maintain access roads as needed to facilitate construction

Clearing and Chipping

- GrayMar will clear and chip brush and trees less than 6 inches in diameter in excavation areas as shown in the drawings. Total area to be chipped is estimated at 2-acres. Chipping will be stockpiled on site for future use.

Tree Removal

- GrayMar will clear and chip brush and trees greater than 6 inches in diameter from excavation areas. Total area to be chipped is estimated at 2-acres. Trunks will be cut into 20-ft sections or other approved length, and removing and stockpiling stumps for later use as habitat materials.

Dross Stockpile Removal

- GrayMar will excavate, load, and transport for disposal the dross stockpile material. GrayMar will use the WM Graham Road Landfill. Proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized. WSP Golder will maintain dust monitoring on site. Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.

Shoring Design

- GrayMar, through our current UPRR First Responder contract, understands and has read the UPRR Guidelines for Temporary Shoring, dated October 25, 2004, if required

Off-Stockpile Contaminated Soil Removal – Stockpile and Place Onsite on UPRR Property

- GrayMar will excavate areas, haul to a defined location and stockpile on site for subsequent placement of material to reach subgrade elevations required on the UPRR property if testing allows and approved by the Construction Manager (WSP Golder). All engineering controls, the use of water, will be utilized for dust control to prevent airborne contaminant dispersion. Excavated area may include coordination /reimbursing utility providers while complying with their requirements. GrayMar understands that excavation may include the use of small equipment under power lines, use of spotters during soil removal, replacing power poles, maintaining buffer zones around equipment and structures, restoring access roads to minimum standards, and other conditions.

Off-Stockpile Contaminated Soil Removal – Screen and Stockpile Onsite

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed not impacted, by WSP Golder, below agreed-upon levels, and approved \ directed by the construction manager.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process. No downtime can be charged for while waiting for analytical laboratory results
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Off-Stockpile Contaminated Soil Removal – Screen and Dispose Offsite

- Graymar understand that soils removed from areas outside of the dross stockpile may be used as backfill to reach subgrade elevations required on the UPRR property if they are impacted below agreed-upon levels, as approved \ directed by the construction manager.
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.
 - Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
 - GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Backfill – Onsite Stockpile

- GrayMar will remove soils from areas outside of the dross stockpile to potentially be used as backfill to reach subgrade elevations required on the UPRR property. Soils prior to stockpile must be deemed not impacted, by WSP Golder, below agreed-upon levels, and approved \ directed by the construction manager.
- GrayMar will make every effort to our work activities so that soil removal can be performed as a continuous process. No downtime can be charged for while waiting for analytical laboratory results
- GrayMar understands that once subgrade elevations are achieved on the UPRR property, all remaining excavated soils must be screened to remove all material greater than 6 inches in dimension. Material retained on the screen shall be stockpiled at a location as shown on the drawings or as approved \ directed by the construction manager for later use as backfill. Material passing the screen shall be disposed of at the WM Graham Road Landfill.



- Weight tickets from WM for the incoming dross will be utilized to invoice dross disposal by the ton.
- GrayMar understands that proper engineering control in the form of water for dust control to prevent airborne contaminant dispersion will be utilized

Backfill – Offsite Source

- GrayMar has included and understand that the procurement, loading, hauling, and placement of backfill material from an offsite source is required as part of this project. Backfill from offsite sources shall be non-plastic soil as determined by ASTM D4318 “standard test methods for liquid limit, plastic limit, and plasticity index of soils”, and shall have a maximum particle size of 6 inches, and shall have no more than 15% by dry weight of material passing the U.S. No. 200 Sieve.
- At this time there is a potential of 19,000-yards of backfill to be potentially obtained on site through excavation and use. The UPRR Excel Price document calls for pricing out 18,683 yards of backfill. The volume of imported backfill will be based by the difference of available excavated materials onsite and the UPRR requirements.

Ecological Cap

- Graymar has read and understand the specification that the gravel for the ecological cap shall be angular to sub-angular, sound, hard, durable natural rock conforming to the requirements of WSDOT 9-03.9(2) “permeable ballast”. The Ecological Cap will be the specifications as called out for subgrade, geotextile fabric, “armor rock or quarry squall cover that meet WSDOT requirements
- Graymar will prepare the subgrade per the specifications as called out in WSP Golder’s documents. The subgrade will be prepared by rolling and compaction with a minimum of 4 passes of a smooth drum vibratory roller with a minimum static weight of 15,000 lbs. such as a CAT CS44, IR SD-70, or similar approved equivalent to achieve a firm and unyielding surface. GrayMar understand that per specification that the subgrade surface must be smooth, flat, and free of ruts and protrusions greater than 0.5 inches. The surface will be protected and maintain to ensure the required surface is met prior to installation of the geotextile cover.
- GrayMar will then install the ecological cap gravel utilizing a single lift, using methods that will not stretch, displace, or damage the underlying geotextile.



Surface Water Drainage – Containment Berm

- GrayMar will design and construct the Containment Berm (est. at 1,150 linear feet in length) for the ecological cap per the specification that will inhibit any drainage of waters from the ecological cap to the surrounding areas. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Containment Berm will be either by survey or actual tape measurement.

Surface Water Drainage – Railroad Ditch

- GrayMar will design and construct the Railroad ditch (est. at 387 linear feet in length) for the collection and proper dispersal of ground water to be diverted around the northwest corner of the capped area along railroad property. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Railroad ditch will be either by survey or actual tape measurement.

Surface Water Drainage – Overflow Channel

- GrayMar will design and construct the Overflow Channel (est. at 22 linear feet in length) for the collection and proper dispersal of ground water should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Overflow Channel would divert the excess water allowing the Ecological Cap to drain so not to damage the containment berm into the Railroad Ditch on the northwest corner of the Ecological Cap. The construction shall follow those as stated in WSP Golder’s approved specifications and drawings. The actual measurement of the Overflow Channel will be either by survey or actual tape measurement.

Surface Water Drainage – Armor Rock Apron

- GrayMar will design and construct the Armor Rock Apron at the outlet of the Overflow Channel using gravel/rock that meets the WSDOT specifications as called out by WSP Golder’s approved specification and drawing. The Armor Rock Apron is designed in such a way so that the collection and proper dispersal of ground water so no damage is caused to the Overflow Channel should the Ecological Cap ever get inundated to the point where water has collected and could possibly damage the Containment Berm. The Armor Rock Apron is located at the based (lower end) of the Overflow Channel. It will assist in the diversion of the excess water without damage to the Overflow channel allowing excess



waters to flow into the Railroad Channel. The actual measurement of the Armor Rock Apron will be either by survey or actual tape measurement.

Monitoring Well Decommissioning

- GrayMar will hire an license drilling company to properly decommission four monitor wells on site....each being 60' by 2" MW-1 thru MW-4. Two wells (MW2 and MW4) are located in the dross area to be removed. One (MW-3) is on the Pentzer property in the northwest corner of site, and one (MW-1) appears to be on the Kemira Property on the northeast corner of the site.

Security Fence

- GrayMar has had the Permanent Security fence cost out for installation by multiple licensed fence installation firms utilized the full WSP Golder approved specifications and the two drawing as received from the UPRR site. This is one of the last tasks to be performed by GrayMar towards the end of the project. The fence with not be performed until final grading of the site is complete and approved by the Construction manager (WSP Golder)

Maintenance Gate

- GrayMar will have the Maintenance Gate install in the Permanent Fence per the WSP Golder approved specification as can be found in the specifications and sheet 510 of the WSP Golder drawing as received.

Final Regrading of the Site

- Graymar will complete the regrading of the site per WSP Golder approved specifications following the regrading plans as found in drawing numbers 220, 221, and 222 supplied with the UPRR request for proposal. Regrading will not be considered complete unless approved by the Construction manager (WSP Golder). GrayMar will further supply a surveyor to ensure all regrading elevations and slopes meet the required specifications. Equipment will be equipped with laser guided level instrumentation.

Reseeding

- GrayMar understands the required re-seeding requirements where up to 5-acres plus will be required to be re-seeded with the required mix. GrayMar will use a licensed firm to



hydro-seed the area and understands the requirements that if for any reason the re-seeding doesn't take after a set amount of time GrayMar will be responsible for a second application. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.

Tree Planting

- GrayMar understands that up to 60 trees but per the UPRR cost request. The trees are to be 6' Ponderosa Pine. This task will be completed once all grading is complete and GrayMar has removed all equipment from the site.

Demobilization

GrayMar upon completion of the work on sit (Project) will de-mobilize and restore the site to the final required condition based on the approval of the Construction manager (WSP Golder), including but not limited to:

- Removing all equipment, tools, and unused materials from the site.
- Removing and properly disposing of trash, debris, and other waste materials.
- Restoring access roads to at least the service level prior to the project, as determined by the Construction Manager.
- Restoring access to utility features as required by the utility provider.
- Terminating utility connections and removing temporary facilities from the site.
- Submitting of reports, to include any site records, photos, as-built drawings and any other required documentation.

2.3 CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

Not applicable. Through the use of sediment fences, swales, and hay bales GrayMar will try to control the directional Stormwater runoff from the site caused by intermittent rains and snows over the course of the project.

2.4 STABILIZE SOILS

No stabilization of the soils has been planned at the time of this SWPP submittal. If required GrayMar can apply a stabilization

Material to the surface for temporary stabilization. See SDS of the stabilization materials as Figure L of this SWPP



2.5 *Protect Slopes*

There are no slopes to protect.

The grading of the site will not be changed and the original natural / engineered slope of the site to the south will be maintained and protected.

The Site elevation is around 1,980 feet above mean sea level. The stockpile represents an additional 30 feet of height. The stockpile sits on a narrow but flat surface nearly level with the land to the north, east, and west but immediately abuts a steep slope which drops another 25 feet down to a former borrow pit and the Spokane River to the south

2.6 PROTECT STORM DRAIN INLETS

Not applicable - no storm drain inlets in close proximity to the downgradient area of the site.

2.7 ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

BMP Description: GRAYMAR will install small earthen berm as well as having straw bales on site should they be required. WSP Golder as part of the project specs has called out Swales, Hay Bales, and Sediment fences to be utilized in specific locations on the site.

<i>Installation Schedule:</i>	At the start of the project
<i>Maintenance and Inspection:</i>	Daily inspection and weather dependent
<i>Responsible Staff:</i>	Site manager and crew on site.

2.8 RETAIN SEDIMENT ON-SITE

BMP Description: GRAYMAR will install small earthen berm as well as having straw bales on site should they be required. WSP Golder as part of the project specs has called out Swales, Hay Bales, and Sediment fences to be utilized in specific locations on the site.

Other means of sediment control may be introduced to the Site as required such as sediment traps, berms, etc. to prevent sediment from migrating outside of the work area limits. See drawing 50 as Figure D in Appendix One. Should any additional sediment controls be required they would then be added to this figure as required by this change.

The sediment fences are of the greatest concern for damage during heavier rains and will

be checked more often.

<i>Installation Schedule:</i>	At the start of the project
<i>Maintenance and Inspection:</i>	Daily inspection and weather dependent
<i>Responsible Staff:</i>	Site manager and crew on site.

2.9 ESTABLISH STABILIZED CONSTRUCTION EXITS

BMP Description: There will only be one site entrance and exit. See the Site Map as Figure B and Figure C of this SWPP. Per the Specs a security gate, gobble track-out, and a wheel-wash or equivalent track out system will be utilized to protect and ensure no runoff of soils from the site exits the site. The track-out will be up to an estimated 100' long by 30' wide (to the extent possible).

<i>Installation Schedule:</i>	Prior to start of truck movement after October 3, 2022
<i>Maintenance and Inspection:</i>	Daily and as needed
<i>Responsible Staff:</i>	Site manager and crew on site

2.10 ADDITIONAL BMPS

None at this time...will be added if required

SECTION 3: GOOD HOUSEKEEPING BMPS

3.1 MATERIAL HANDLING AND WASTE MANAGEMENT

BMP Description: Portable restrooms / Sanitation-Cleanup area	
Installation Schedule:	Will have brought in first day on site
Maintenance and Inspection:	(Weekly) and As-needed
Responsible Staff:	Site manager and crew on site
BMP Description: Daily generated trash (bags, bottles, debris) on the site – Trash	
Installation Schedule:	First day of project
Maintenance and Inspection:	As needed
Responsible Staff:	Site manager and crew on site

3.2 ESTABLISH PROPER BUILDING MATERIAL STAGING AREAS

Per the approved site drawings and specs GrayMar will have an office trailer, Sanitary station, laydown, parking and an equipment maintenance, fueling containment area....

3.3 DESIGNATE WASHOUT AREAS

Not applicable....no truck washout area on site. Washouts will take place at the WM Graham Road landfill if required.

3.4 ESTABLISH PROPER EQUIPMENT/VEHICLE FUELING AND MAINTENANCE PRACTICES

BMP Description: Fueling of Equipment	
Installation Schedule:	GRAYMAR will fuel dirt moving equipment in a designated area that can be monitored and quickly addressed if required.
Maintenance and Inspection:	Inspection during and after fueling event by outside fuel supplier
Responsible Staff:	GRAYMAR staff on site are Spill Response Trained should an incident occur.



3.5 CONTROL EQUIPMENT/VEHICLE WASHING

GrayMar per the WSP Golder project specs will have a truck / wheel decontamination set up in the designed track-out area at the Security Exit and Entrance gate. All trucks and vehicles used on site will utilize this track-out prior to leaving site. The track-out will be made up of 4"-6" Quarry Spall as well as the use of steel plates commonly called Grizzly track-out control devices is an approved & effective way to control trackout from exiting the work site. The shaking of the vehicle as it drives across the device knocks dust and dirt off the tires and chassis, which would typically be tracked out on to the roadway. Trucks are not expected to be heavily impacted on the site so no side wash except for brooming to know down any spillover from the trucks being loaded will be utilized.

3.6 SPILL PREVENTION AND CONTROL PLAN

GRAYMAR is the premier environmental construction and emergency response company in Washington. We hold multiple contracts for Emergency Response and waste management activities including the State of Washington's ER contract. The only potential for spill would be fuel from the double wall storage tank or site equipment. GRAYMAR's site team is comprised of ER managers, operators, and technicians who have the knowledge and equipment on site to manage any release on or off the property site. GrayMar will maintain spill cleanup equipment on site.

3.7 ANY ADDITIONAL BMPS

None at this time

3.8 ALLOWABLE NON-STORMWATER DISCHARGE MANAGEMENT

List allowable non-Stormwater discharge and the measures used to eliminate or reduce them and to prevent them from becoming contaminated:

BMP Description: Water used for dust control

<i>Installation Schedule:</i>	Start first day
<i>Maintenance and Inspection:</i>	All soils with the area will be kept wet per the requirements of the Federal Clean Air Act (PM-10) and utilize engineering controls. This will be based on weather conditions. All soils will be kept wet but not overly watered to cause runoff.
<i>Responsible Staff:</i>	Site Manager and Water Truck Operator



SECTION 4: SELECTING POST-CONSTRUCTION BMPs

BMP Description: The area of the original dross pile will be capped and bermed to not allow waters to spill and run over the cap. Additionally rainwater will be diverted in manmade runoff on the outside of the berms so as not to allow water to undermine the berms surrounding the cap. The capped area will be further fenced with a 6' wire topped security fence to keep both the public and animal life off the cap. The 2-3 acres down gradient of the cap is to be re-seeded with natural grasses and up to 50-each four foot Ponderosa Pine trees will be planted. All of the above will inhibit any runoff from the site.

<i>Installation Schedule:</i>	Upon completion of task
<i>Maintenance and Inspection:</i>	The owner and or owner's consultant will be responsible for any future inspection.
<i>Responsible Staff:</i>	owner and or owner's consultant upon completion



SECTION 5: INSPECTIONS

5.1 INSPECTIONS

1. *Inspection Personnel:*

Site Manager and Assigned Site Personnel

2. *Inspection Schedule and Procedures:*

All BMPs will be inspected on a daily basis. Site size is such where required BMPs are minimal and easily maintained

Describe the general procedures for correcting problems when they are identified. Include responsible staff and time frames for making corrections:

Any deficiency in a BMP due to the small site size and remediation task will be addressed immediately upon discovery.

Attach a copy of the inspection report you will use for your site.

See Inspection Logs in Figure E of this SWPPP

5.2 DELEGATION OF AUTHORITY

Instructions:

- Identify the individual(s) or specifically describe the position where the construction site operator has delegated authority for the purposes of signing inspection reports, certifications, or other information.
- Attach the delegation of authority form that will be used.
- For more on this topic, see *SWPPP Guide*, Chapter 7.

Duly Authorized Representative(s) or Position(s):

Michael Gipson

Senior Project / Site Manager

GrayMar Environmental Services, Inc.

601 S Pioneer Way – F218

Moses Lake, WA 98837

Tel: (505) 895-1387



5.3 CORRECTIVE ACTION LOG

Corrective Action Log:

See Corrective Action Log in Figure F of this SWPPP



SECTION 6: RECORDKEEPING AND TRAINING

6.1 Recordkeeping

Instructions:

- The following is a list of records you should keep at your project site available for inspectors to review:
- Dates of grading, construction activity, and stabilization (which is covered in Sections 2 and 3)
- A copy of the construction general permit (attach)
- The signed and certified NOI form or permit application form (attach)
- A copy of the letter from EPA or/the state notifying you of their receipt of your complete NOI/application (attach)
- Inspection reports (attach)
- Records relating to endangered species and historic preservation (attach)
- Check your permit for additional details
- For more on this subject, see *SWPPP Guide*, Chapter 6.C.

Records will be retained for a minimum period of at least 3 years after the permit is terminated.

Date(s) when major grading activities occur:

Grading will be completed on the existing roads and area of reshaping / excavated areas on the site.

The site will be graded in accordance with the approved grading plan by backfilling voids left where impacted soils were removed during remediation as well as following provided grade contour per approved grading specifications This will be completed during prior to leaving the site in March of 2023.

Date(s) when construction activities temporarily or permanently cease on a portion of the site:

The site is not considered a construction project but a remediation / closure project by the WA Department of Ecology.

Date(s) when an area is either temporarily or permanently stabilized:



Water will be used for dust control throughout the project. Determination will be at the end of project whether engineered soil stabilization will be required. Project is expected to end toward late in March 2023.

6.2 LOG OF CHANGES TO THE SWPPP

Log of changes and updates to the SWPPP - Will add to log as changes (if required) are made

6.3 TRAINING

Instructions:

- Training your staff and subcontractors is an effective BMP. As with the other steps you take to prevent Stormwater problems at your site, you should document the training that you conduct for your staff, for those with specific Stormwater responsibilities (e.g. installing, inspecting, and maintaining BMPs), and for subcontractors.
- Include dates, number of attendees, subjects covered, and length of training.
- For more on this subject, see *SWPPP Guide*, Chapter 8.

Individual(s) Responsible for Training:

Tim Bussey and/or Bob Seitz

Describe Training Conducted:

General Stormwater and BMP awareness training for staff and subcontractors:

All training will follow the federal guidelines as well as the SWPPP documentation

Detailed training for staff and subcontractors with specific Stormwater responsibilities:

The full site crew will be trained in following the Stormwater responsibilities as well as the property inspection and maintenance of the engineered control plans for the site. All training will follow the federal guidelines as well as the SWPPP documentation



SECTION 7: FINAL STABILIZATION

BMP Description: Final stabilization upon demobilization from the site. The site will be prepared in accordance to all backfill, compaction, contour and grading specifications prior to leaving. At the time of this SWPP submittal per the requirements on the Site only water in the water truck can be applied to the surface. No additional soil stabilizer is allowed to be utilized. There is not traffic or use of the site so the site should remain stable until dirt compact and reseeding / trees growth starts

<i>Installation Schedule:</i>	Completion of project
<i>Maintenance and Inspection:</i>	No inspection once applied. Responsibility at that point falls to the owner of the property
<i>Responsible Staff:</i>	Site Manager and Water truck operator prior to leaving site



SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all Figures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Michael S. Gray Title: President / Owner
GrayMar Environmental Service, Inc.

Signature: _____ Date: September 23, 2022



APPENDIX ONE

CONTAINED IN THIS APPENDIX ONE

- **Figure A – General Location Map**
- **Figure B – Site Map Showing Plots and Ownership**
- **Figure C – Site Plan showing Entrance/Exit and internal site roads**
- **Figure D – WSP Golder per RFP - Drawing 50 – Erosion and Sediment Control Plan**
- **Figure E – Construction General Permit**
- **Figure F – NOI and Acknowledgement Letter from EPA/State**
- **Figure G – Inspection Reports**
- **Figure H – Corrective Action Log (or in Part 5.3)**
- **Figure I – SWPPP Amendment Log (or in Part 6.2)**
- **Figure J – Subcontractor Certifications/Agreements**
- **Figure K – Grading and Stabilization Activities Log (or in Part 6.1)**
- **Figure L – Training Log**
- **Figure M – Delegation of Authority**
- **Figure N – Additional Information (SDS for Stabilizer,**

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
UPRR TRENTWOOD DROSS SITE

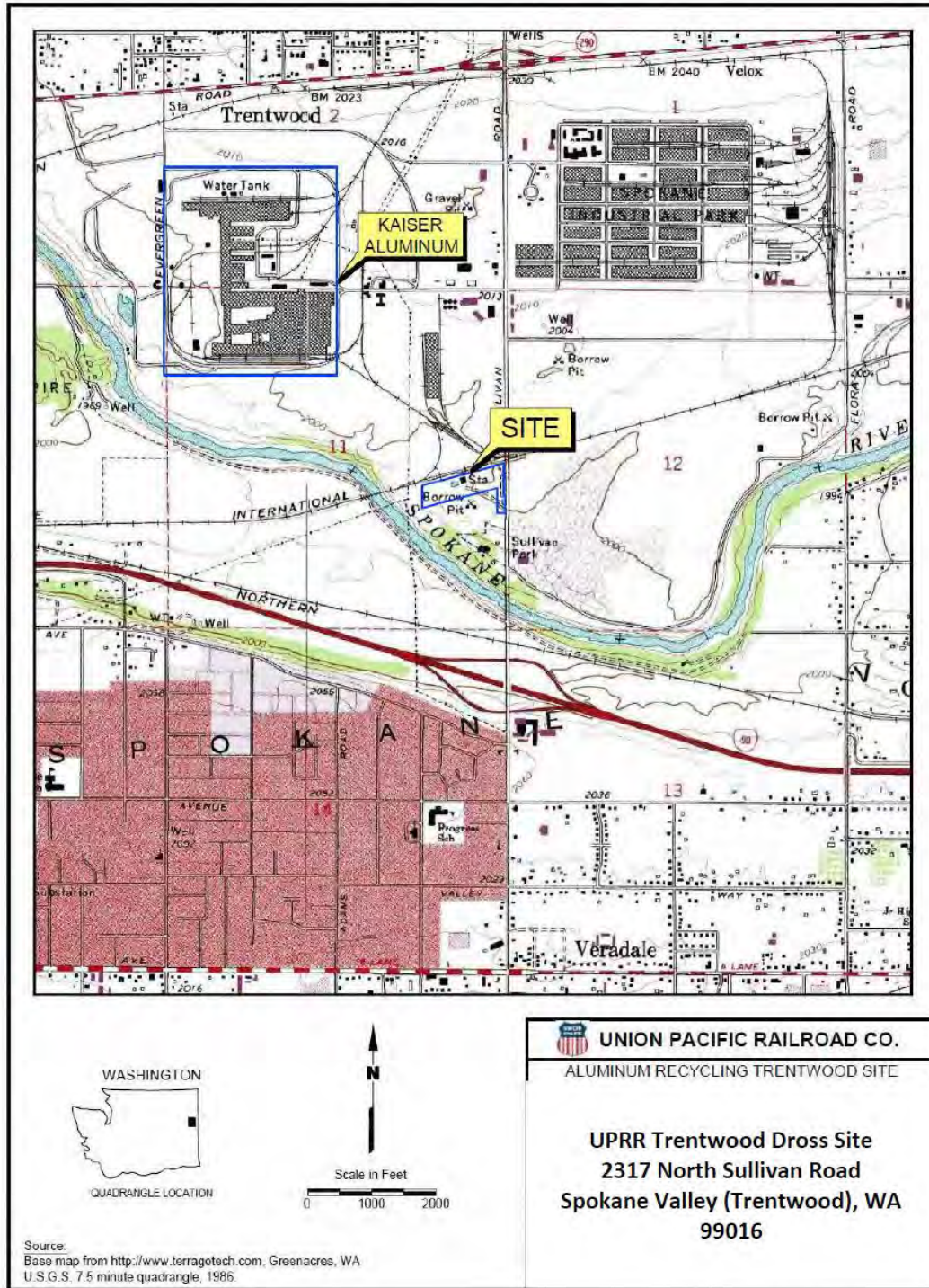


Figure A
UPRR TRENTWOOD DROSS SITE
SITE PLAN (LOCATION MAP)



**FIGURE B
UPRR TRENTWOOD DROSS SITE
SITE AERIAL AND PLOT PLAN SHOWING OWNERSHIP**

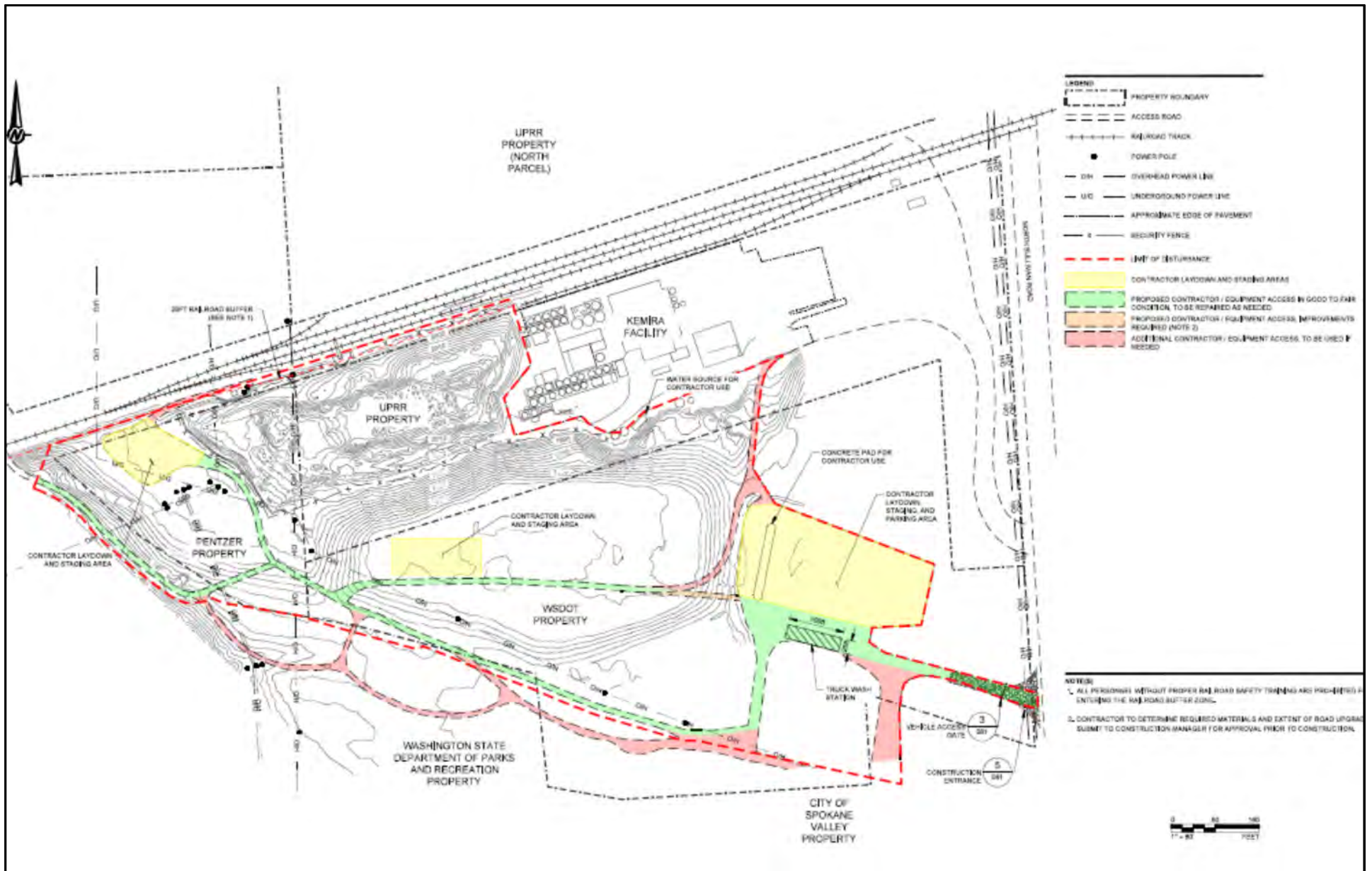


FIGURE C
ENTRANCE / EXIT and SITE MOVEMENT ROADS MAP

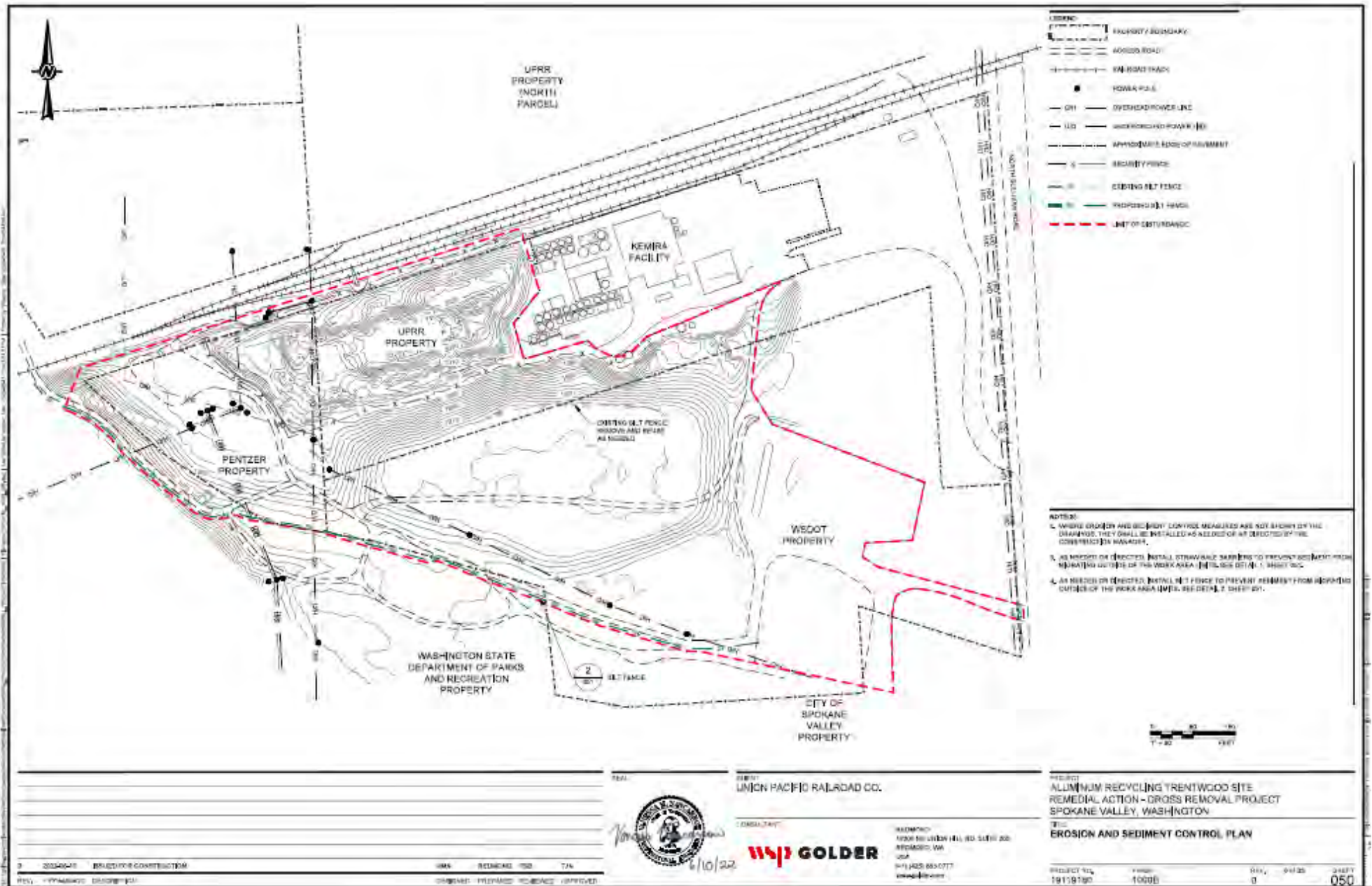


FIGURE D
UPRR TRENTWOOD DROSS SITE
WSP GOLDER DRAWING 50 FROM THE RFP SHOWING EROSION CONTROLS

Figure E – Construction General Permit

NOT REQUIRED FOR THIS TASK

Figure F

NOI and Acknowledgement Letter from EPA/State Ecology

NOT REQUIRED FOR THIS TASK

Figure G – Inspection Reports

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
Inspection Checklist

Daily Inspection Monthly Inspection Rain Event Inspection

 Project closeout

(NOTE: Each YES answer will require an explanation or comment describing the event and the corrective measures implemented to remedy the situation.)

	Best Management Practices (list BMP inspected)	YES	NO
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

COMMENTS

Inspected By: _____ **Date:** _____

Figure J –Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact Stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above-named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

Signature: _____

Title: _____

Date: _____

Figure L – *Sample* SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name: _____

Project Location: _____

Instructor's Name(s): _____

Instructor's Title(s): _____

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- Erosion Control BMPs Emergency Procedures
- Sediment Control BMPs Good Housekeeping BMPs
- Non-Stormwater BMPs

Specific Training Objective: _____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Figure M – Sample Delegation of Authority Form

Delegation of Authority

I, Michael S. Gray (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the Moreland Properties, LLC remediation site. The designee is authorized to sign any reports, Stormwater pollution prevention plans and all other documents required by the permit.

_____	(Name of person or position)
<u>GrayMar Environmental Services, Inc.</u>	(Company)
<u>601 S Pioneer Way, Suite F#218</u>	(address)
<u>Moses Lake, WA 98837</u>	(city, state, zip)
<u>(509) 770-4456</u>	(phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in NA (Reference State Permit), and that the designee above meets the definition of a “duly authorized representative” as set forth in NA (Reference State Permit).

I certify under penalty of law that this document and all Figures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Michael S. Gray

Company: GrayMar Environmental Services, Inc.

Title: President / Owner

Signature: _____

Date: 9-23-2022

SAMPLE DOCUMENT

Figure N – Additional Information



SUBMITTAL REVIEW

Date: 10/25/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Temporary Erosion and Sediment Control (TESC) Plan – Revision 2

Submittal No. 006.C

Specification No: Drawing 021 – Erosion and Sediment Control

Specification Section: A.2

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The resubmittal of the TESC Plan, dated 10/20/2022, is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/25/22

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

**TEMPORARY EROSION SEDIMENT CONTROL PLAN NARRATIVE
FOR OPERATIONS AT:**

**UPRR TRENTWOOD DROSS SITE
2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WASHINGTON 99016**

**WA DEPARTMENT OF ECOLOGY REFERENCE
FACILITY ID: 628 and CLEANUP SITE ID: 1081**

**SITE COORDINATES
LAT: 47.6777265 LONG:-117.1982753**

**SITE ACCESS ROAD
ACCESS ROAD IS LOCATED ON THE LEFT (WEST SIDE) OF SULLIVAN RD**

Prepared for:

UPRR
John DeJong
Tel: (509) 866-8329
Email: John.DeJong@up.com

Prepared by (Contractor):

GrayMar Environmental Services, Inc.
Michael Gray - President
601 S Pioneer Way, Suite F#218
Moses Lake, WA 98837
Cell: (509) 770-4456
Email: mgray@graymarenv.com

Date Prepared: October 20, 2022 (Revised)

TESC Plan Designer: Matthew Dunn

GrayMar Environmental Services, Inc. Project: 08052022-01



**TEMPORARY EROSION SEDIMENT CONTROL PLAN NARRATIVE
FOR OPERATIONS AT:**

**UPRR TRENTWOOD DROSS SITE
2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WASHINGTON 99016**

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PROJECT INFORMATION

Project name: UPRR Trentwood Dross Site

Location: The Site is located in Spokane County, Washington in the Spokane Valley, within the incorporated limits of the City of Spokane Valley. The physical address of the Site is 2317 North Sullivan Road, Spokane Valley (formerly Trentwood), Washington 99016. (Per the Agreed Order). The Site is identified by Ecology as Facility/Site No. 628 in accordance with the MTCA RCW 70.105D and its implementing regulations 173-340 WAC.

Transfer of Coverage: No **Permittee:** GrayMar Environmental Services, Inc.

Total disturbed acreage identified in the Notice of Intent (NOI): 4.4 acres

Existing contamination identified: Yes (See below)

Information About Contamination	Additional Environmental Commitments Required?
Aluminum Dross from past aluminum processing. Contamination Constituents: Compound Concentration (%) <ul style="list-style-type: none">• Calcium 0.0575• Sodium 14.15• Potassium 13.35• Aluminum 21.4• Oxides, as Al₂O₃ 40.4• Chloride 43.0• Fluoride 0.13• Nitrides, as NH₃ 1.4• pH (Standard Units) 10.14• Soluble Material 64.6	N/A

Permitted construction outfalls identified in the NOI: N/A

Waterbody impairments or approved TMDLs applicable to construction outfalls: N/A



CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL)

CESCL(s) that will perform permit required site inspections and discharge sampling during construction may not be known during the TESC plan design process. This section is intended to be used during construction to identify the CESCL(s) in accordance with S4.B.4 of the permit.

Name	CESCL Certification Number	CESCL Cert. Exp. Date
Michael Gipson	ID#: acbbe244	September 15, 2025
Michael Murphy	ID# 2a68d318	September 15, 2025
Colton Bennett	ID# f41b3fb9	September 15, 2025

CONSTRUCTION SCHEDULE

- Site remedial activities are expected to commence on or about October 15, 2022 with major remediation completed by March 31, 2023
- Work will proceed during wet season with the preponderance of contamination removal and consolidation occurring throughout the term of remedial activities.
- Project progress is based on phased removal and/or relocation of known surface and shallow subsurface areas identified by previous soil sampling immediately followed by placement of clean backfill to specified grade. This will reduce the possibility of spread of any contaminants and erosion.

EXISTING SITE CONDITIONS

Soils

- Site soils consist of poorly to moderately well-sorted, massive to thick-bedded, stratified deposits of boulders, cobbles, pebbles, and sand resulting from multiple episodes of catastrophic outbursts from glacially dammed Lake Missoula.
- Soils are moderately to highly permeable.
- Soil particle size lend to rapid gravity settling aiding the effectiveness of mechanical filtering.
- Soil saturation can pose a problem on cut/fill slopes and haul routes; however, this can be controlled using various BMP's including filter mats, wattles, and check dams.

Climate

- The Spokane Valley is a semi-arid region that has warm, dry summers and cool, moist winters. Annual rainfall averages 20 inches, with most precipitation occurring from November to March,



frequently as snowfall. Snowfall accumulations of one foot or more are frequent in the Spokane area, but the snow usually melts within a few days (Molenaar, 1988)

- Most if not all BMP's will be installed during the commencement of work with occasional replacement or re-positioning of erosion controls based on changes in site conditions.
- It is not anticipated that freezing conditions will significantly impede construction schedule.

Topography

- Potential erosion risks include multiple slopes and gradients, closed depressions and relatively low ground cover or vegetation.
- No major accumulation of groundwater is expected due to the relatively high soil permeability
- As part of the project scope, site contours will be regraded in accordance with approved plan. In addition, long term erosion controls such as appropriate site compaction and sloping of ecological cap will be performed to lessen potential erosion after the project is completed.

Vegetation

- Vegetative areas not subject to excavation or relocation will be preserved to protect soil.
- Non-native invasive species discovered during remedial activities will be removed as time allows.
- Low lying surface areas cleared of vegetation subject to excavation or considered to be part of an active work area will be utilized to collect stormwater. The intent is not to allow stormwater to enter undisturbed areas of the site.
- Any non-invasive vegetation removed will be used as a mulch to cover exposed soil or a part of erosion control BMPs.
- Planting of Ponderosa Pines as required by approved plans will be performed at the conclusion of the project.

Drainage

- Surrounding areas are similar in topography which exhibit conditions with moderate to low surface vegetation.
- There are no ongoing activities on adjacent properties subject to impact from project activities.
- During the course of the project, adjacent properties will be protected from site runoff using BMPs to include straw wattles, bales, silt fencing, earthen dams and diversion channels (where applicable)



- There are no known significant off-site water sources, springs or jurisdictional ditches that may be impacted by work.

Groundwater

- During the former RI investigation, groundwater was encountered in the monitoring wells at a depth of approximately 45-55 feet below ground surface (bgs). Groundwater flow is from east to west towards the Spokane River which can act as a losing or gaining water body depending on river flow and recent precipitation. The groundwater gradient across the site is approximately 0.003 ft/ft based on water level data collected during the RI.
- Groundwater levels should remain static throughout the project
- No underground seeps are anticipated on any of the newly cut slopes.
- Natural infiltration will be considered a BMP for non-contaminated stormwater. All potentially contaminated rain water accumulations will be added to contaminated material stockpiles as dust suppression.

Sensitive Areas

- No environmental sensitive areas have been identified on site.
- Non contaminated areas will be protected from impacts by installing rumble strips, track out pads, and a compacted stone egress area prior to trucks leaving the site.
- There are no impaired surface water bodies on site to be impacted by construction.

Contingency Planning

- In the event that any one or more BMPs are found inadequate, work around impacted area(s) will be reassessed and more effective BMPs will be immediately implemented before work resumes.
- In maintaining compliance, improvements to BMPs may include the addition of more water filtration materials, water diversion, pumping into temporary storage vessels or tanks, or the addition of quarry spalls to stabilize roads and work entrances.
- Contaminated stockpiled material and limited soil will be removed and/or relocated during the project. Backfill will be placed in open excavations once verification sampling has been completed. This will limit future impacts to completed work areas.



Site Specific Erosion Control Measures

Silt Fencing and Hay Bales - Figure 2 shows the locations of various planned site-specific sediment erosion controls. Measures include silt fencing and hay bales setup along the southern boundary of planned areas of disturbances. Additional straw wattles will be positioned and re-located wherever potential surface runoff may occur from excavations or support areas.

Main Access Point (Site Entrance) - The site will have one active access point located at the southeast boundary of the WSDOT property. The site access point will have a security gate and a rock trackout pad with rumble strips. The rock trackout pad and rumble strips will be graded to drain to a sediment pond where runoff will be directed in the event that truck washing is needed.

Check Dams and Earthen Berms – Check dams, Earthen Berms, and dispersion devices such as permeable fabric will be placed where needed as excavation and stockpile removal work progresses.

Haul Routes – Traffic within the active work site will be limited to authorized personnel and limited to movement on improved (stabilized) roadways. Silt fencing will be erected along the haul route between the WSDOT property staging area and UPRR property as shown in Figure 2.

Laydown Areas – Equipment and material laydown areas will consist of impermeable or semipermeable material or placed on existing asphalt to lessen the risk of surface soil disturbance.

Stabilization – Soil stabilization will be conducted (as needed) on haul routes or areas of high traffic and steep road grades to reduce sediment generation. No stabilization of the soils outside of the use of water has been planned at the time of this TESC submittal. If required, GrayMar can apply an U.S EPA approved stabilization component to our dust control water upon approval of the UPRR, WSC Golder and WA Ecology.

Control Stormwater Flowing Onto And Through The Project - Not applicable. Through the use of sediment fences, swales, hay bales, and earthen berms GrayMar will try to control the directional Stormwater runoff from the site caused by intermittent rains and snows over the course of the project.

Protect Slopes - There are no slopes to protect. The grading of the site will not be changed and the original natural / engineered slope of the site to the south will be maintained and protected. The Site elevation is around 1,980 feet above mean sea level. The stockpile represents an additional 30 feet of height. The stockpile sits on a narrow but flat surface nearly level with the land to the north, east, and west but immediately abuts a steep slope which drops another 25 feet down to a former borrow pit and the Spokane River to the south. The Dross stockpile will be further reduced to bring it more level with the existing site once removed and capped. At the time of this TESC submittal that height has yet to be determined.

Protect Storm Drain Inlets - Not applicable - no storm drain inlets in close proximity to the downgradient area of the site.



TESC INSPECTIONS AND LIST OF BMP'S TO BE INSPECTED

Inspection Personnel:

Duly Authorized Representative(s) or Position(s) of Site Personnel to oversee and be utilized for inspection:

Michael Gipson – CESCL Certification ID Number: acbbe244
Senior Project / Site Manager
GrayMar Environmental Services, Inc.
601 S Pioneer Way – F218
Moses Lake, WA 98837
Tel: (505) 895-1387

And

Michael A Murphy – CESCL Certification ID Number: 2a68d318
Senior Project Manager
GrayMar Environmental Services, Inc.
11023 E. Mt. Spokane State Park Drive,
Mead (Spokane), WA 99201
Tel: (208) 304-0487

Inspection Schedule and Procedures:

- All BMPs will be inspected on a daily basis. Site size is such where required BMPs are minimal and easily maintained
- Any deficiency in a BMP due to the small site size and remediation task will be addressed immediately upon discovery.
- See Inspection Logs in Figure 3 of this TESC
- See BMP Corrective Action Logs Figure 4 of this TESC



BEST MANAGEMENT PRACTICES (BMP) TO BE REGULARLY INSPECTED

ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

BMP Description: GRAYMAR will install small earthen berm as well as having straw bales on site should they be required. WSP Golder, also as part of the project specs, has called out Swales, Hay Bales, Sediment fences, and Earthen Berms (if added) to be utilized in specific locations on the site.	
Installation Schedule:	At the start of the project
Maintenance and Inspection:	Daily inspection and weather dependent
Responsible Staff:	Site manager and crew on site.

RETAIN SEDIMENT ON-SITE

BMP Description: GRAYMAR will install small earthen berms as well as having straw bales on site should they be required. WSP Golder as part of the project specs has called out Swales, Hay Bales, and Sediment fences to be utilized in specific locations on the site. Other means of sediment control may be introduced to the Site as required such as sediment traps, berms, etc. to prevent sediment from migrating outside of the work area limits. Should any additional sediment controls be required they would then be added to Figure 2 of this TESC as required by this change. The sediment fences are of the greatest concern for damage during heavier rains and will be checked more often and replace if required.	
Installation Schedule:	At the start of the project and as needed
Maintenance and Inspection:	Daily inspection and weather dependent
Responsible Staff:	Site manager and crew on site.



ESTABLISH STABILIZED CONSTRUCTION EXITS

BMP Description: There will only be one site entrance and exit. See Figure 2 of this TESC GrayMar will have a truck inspection and decontamination set up in the designed track-out area at the Security Exit and Entrance gate. All trucks and vehicles used on site will utilize this track-out prior to leaving site. The track-out will be made up of 4"-6" Quarry Spall as well as the use of steel plates commonly called Grizzly track-out control device.

Installation Schedule:	Prior to start of truck movement after October 3, 2022
Maintenance and Inspection:	Daily inspection and weather dependent
Responsible Staff:	Site manager and crew on site.

GOOD HOUSEKEEPING BMPS

MATERIAL HANDLING AND WASTE MANAGEMENT

BMP Description: Portable restrooms / Sanitation-Cleanup area	
Installation Schedule:	Will have brought in first day on site
Maintenance and Inspection:	(Weekly) and As-needed
Responsible Staff:	Site manager and crew on site

BMP Description: Daily generated trash (bags, bottles, debris) on the site – Trash	
Installation Schedule:	First day of project
Maintenance and Inspection:	As needed
Responsible Staff:	Site manager and crew on site



ESTABLISH PROPER EQUIPMENT/VEHICLE FUELING AND MAINTENANCE PRACTICES

BMP Description: Fueling of Equipment	
Installation Schedule:	GRAYMAR will fuel dirt moving equipment in a designated area that can be monitored and quickly addressed if required.
Maintenance and Inspection:	Inspection during and after fueling event by outside fuel supplier
Responsible Staff:	GRAYMAR staff on site are Spill Response Trained should an incident occur.

POST-CONSTRUCTION BMPs

BMP Description: The area of the original dross pile will be capped and bermed to not to allow waters to spill and run over the cap. Additionally rainwater will be diverted in manmade runoff on the outside of the berms so as not to allow water to undermine the berms surrounding the cap. The capped area will be further fenced with a 6' wire topped security fence to keep both the public and animal life off the cap. The 2-3 acres down gradient of the cap is to be re-seeded with natural grasses and up to 50-each four foot Ponderosa Pine trees will be planted. All of the above will inhibit any runoff from the site.	
Installation Schedule:	Upon completion of task
Maintenance and Inspection:	The owner and or owner's consultant will be responsible for any future inspection.
Responsible Staff:	owner and or owner's consultant upon completion

Equipment and Supplies to Maintain BMPs and address potential releases on the site are listed below:

Silt Fencing:	Five Rolls @100' each
Straw Bales:	10 each
Waddles:	25 each
Underlayment:	Geotextile material should it be required 2 x 100' rolls
Spill Kits:	Two Full Spill Kit will be kept on site in the Fueling area as well as additional fire Extinguishers
Clean Soil:	For use in emergency repair of earthen berms should they be required

Due to the proximity of the site to GrayMar's Spokane Branch location (<10 miles) any additional materials required are easily accessible.



TEMPORARY EROSION SEDIMENT CONTROL PLAN

FIGURES

FIGURE ONE - SITE LOCATION MAP

FIGURE TWO – SITE MAP SHOWING BMPS

**FIGURE THREE - TEMPORARY EROSION SEDIMENT CONTROL
PLAN INSPECTION CHECKLIST**

FIGURE FOUR - BMP CORRECTIVE ACTION LOG



GrayMar Environmental Services, Inc., Corporate Address: 601 S Pioneer Way, Suite F#218, Moses Lake, WA 98837
Primary Project Field Office: 11023 E. Mt. Spokane State Park Drive, Mead, WA 99201
Emergency Response 24/7 Phone Number: (866) 472-9627

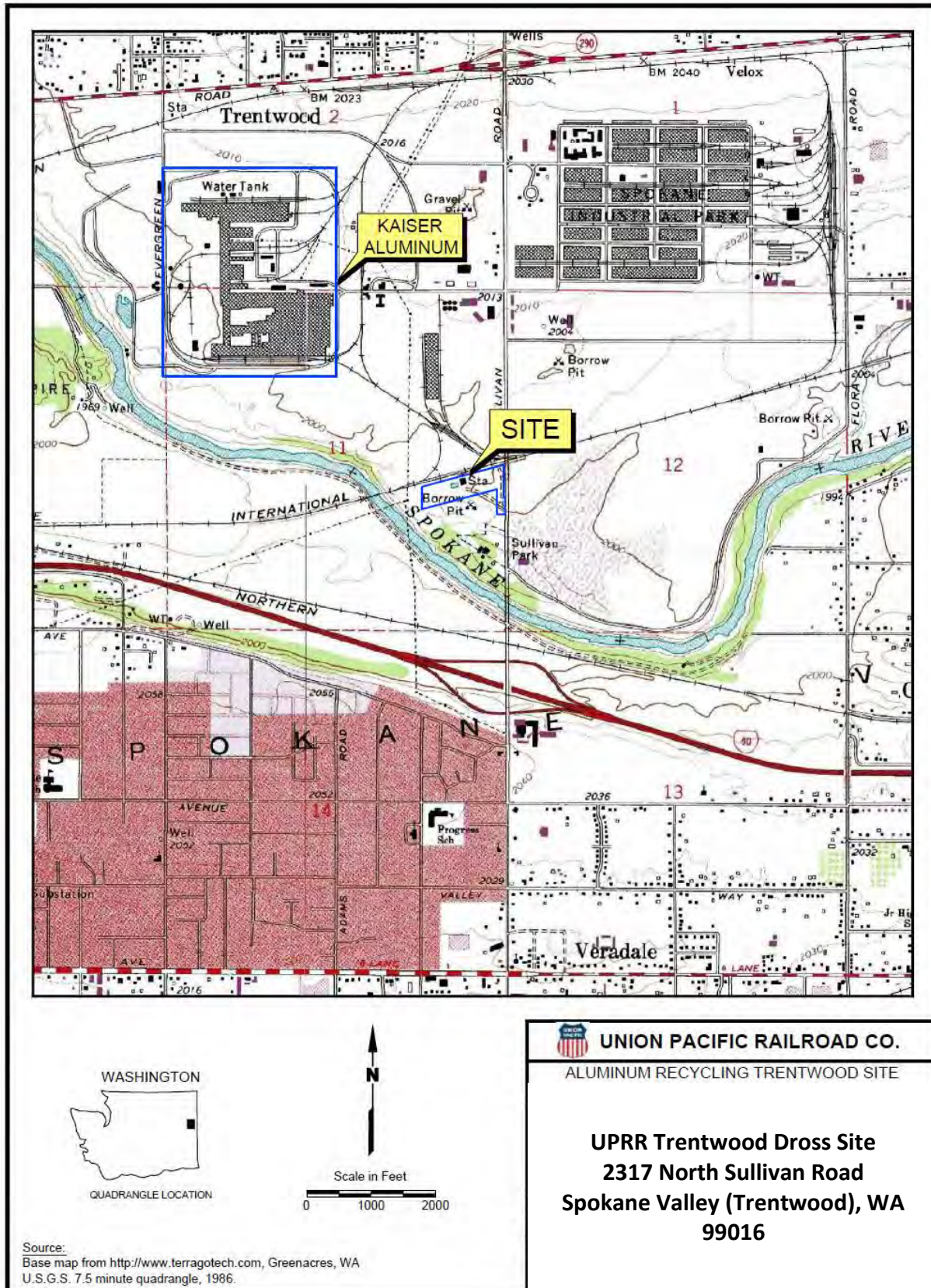


FIGURE ONE
UPRR TRENTWOOD DROSS SITE
SITE PLAN (LOCATION MAP)



LEGEND

	Truck Route (Proposed)
	Truck Traffic Direction
	Rumble/Shaker Plates 12' W x 14' L (3) Each
	Trackout Armor Rock 4"- 8" in Diameter, 12" deep Geofabric to be used under trackout
	Check Dams (Ecology Blocks)
	Check Dams (Hay Bales)
	Silt Fencing



Name:	EROSION AND SEDIMENT CONTROL PLAN (MODIFICATION)	Drawing:	801507	Project:	TRENTWOOD	Drawn:	Steve Sitton	Notes:	GRAYMAR ENVIRONMENTAL 601 S PIONEER WAY STE F #218 MOSES LAKE, WA 98837
Cat:		Scale:	NOT TO SCALE	Date:	10/17/2022	Rev:	6		

Figure Two - TESC BMP Layout

Figure 3 – BMP Inspection Reports

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) Inspection Checklist

- Daily Inspection
 Monthly Inspection
 Rain Event Inspection
 Project closeout

(NOTE: Each YES answer will require an explanation or comment describing the event and the corrective measures implemented to remedy the situation.)

	Best Management Practices (list BMP inspected)	YES	NO
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

COMMENTS

Inspected By: _____ Date: _____



SUBMITTAL REVIEW

Date: 10/28/22

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Spill Prevention, Control, and Countermeasure (SPCC) Plan – Revision 2

Submittal No. 007.C

Specification No: Drawing 020 – Temporary Facilities

Specification Section: I

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The resubmittal of the SPCC Plan, dated 10/27/2022, is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 10/28/22

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Lester Rubstello | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

SPILL PREVENTION CONTROL & COUNTERMEASURES PLAN

FOR OPERATIONS AT:

UPRR TRENTWOOD SITE DROSS REMEDIAL ACTIONS

**2317 NORTH SULLIVAN ROAD
SPOKANE VALLEY (TRENTWOOD), WA 99016**

**WA DEPARTMENT OF ECOLOGY REFERENCE
FACILITY ID: 628 CLEANUP SITE ID: 1081**

SITE COORDINATES

LAT: 47.6777265 LONG: -117.1982753



**11023 EAST MOUNT SPOKANE DRIVE
MEAD, WASHINGTON 99201**

(208) 304-0487

EXECUTIVE	<i>Robert Seitz</i>
PROJECT MANAGER	<i>Michael Gipson</i>
SUPERINTENDENT	<i>Colton Bennett</i>
EHS DIRECTOR	<i>Tim Bussey</i>

SPILL PREVENTION • CONTROL & COUNTERMEASURES PLAN

FOR OPERATIONS AT:

UNION PACIFIC (UPRR) TRENTWOOD DROSS SITE

23127 NORTH SULLIVAN ROAD

SPOKANE VALLEY, WA 990176

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PURPOSE

The purpose of this Spill Prevention Control and Countermeasure (SPCC) Plan is to describe measures implemented by GrayMar Environmental Services to prevent oil-discharges from occurring, and to prepare GrayMar to respond in a safe, effective, and timely manner to mitigate the impacts of a discharge from the UPRR Trentwood Dross Project site location. This SPCC Plan has been prepared and implemented in accordance with the SPCC requirements contained in 40 CFR part 112.

In addition to fulfilling requirements of 40 CFR part 112, this SPCC Plan is used as a reference for fuel-oil storage information and testing records, as a tool to communicate practices on preventing and responding to discharges with GrayMar employees and contractors, as a guide on site-inspections, and as a resource during emergency response.

CERTIFICATION

I hereby certify that I will examine the project location upon project award and being familiar with the provisions of 40 CFR part 112, attest that this SPCC plan has been prepared, (or updated) within 5 years, in accordance with good engineering practices and meets the requirements listed in 40 CFR part 112.

This plan has been created by: GrayMar Environmental Services

Author: Robert Seitz

This plan reviewed by: Michael Gray

Date of review: 11 OCTOBER 2022/27 October 2022

Copies of this plan are in the GrayMar-side of Trentwood job-trailer and are available to all employees.
Location(s) of plan(s): Onsite Office Trailer • Inside GrayMar-side of the Site-Trailer (~44' X 10')

USEPA & WASHINGTON STATE ECOLOGY • REGULATORY INTRODUCTION

Section 311(j)(1)(C) of the Clean Water Act required that regulations be issued to establish procedures, methods, equipment, and other requirements to prevent discharges of oil from vessels and facilities and to contain such discharges. These regulations were promulgated by the United States Environmental Protection Agency (EPA) and are found in 40 CFR Part 112, Oil Pollution Prevention and became effective on January 10, 1974. The EPA promulgated revised 40 CFR 112 regulations on July 17, 2002 and amended on February 17, 2006. On December 26, 2006, the EPA issued another rule amendment which provides streamlined, alternative methods for compliance with oil spill prevention requirements for:

1. Facilities with an oil storage capacity of 10,000 gallons or less (*"qualified facilities"*)
2. Oil-filled operational equipment; and
3. Mobile refuelers

On November 5, 2009, the EPA promulgated some additional amendments which are effective January 14, 2010. On June 19, 2009, the EPA promulgated an extension for the amendment and implementation of SPCC plans. Under these revised rules, SPCC Plans must be amended, certified, and implemented by November 10, 2010. 40 CFR 112 requires the preparation and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan to address the prevention of discharges of oil. GrayMar must

implement an SPCC Plan because it meets the requirements listed in 40 CFR Part 112 (***Total Oil-Storage at the Site will be above 1,320-gallons***). This project location (jobsite), has an aggregate above-ground oil storage, not counting containers of less than 55-gallons, in excess of 1,320-gallons. (40CFR 112.1(d)(2)).

SITE INFORMATION

SITE NAME: UPRR Trentwood Dross Site
SITE ADDRESS: 2317 Sullivan Road Spokane Valley, WA 99216
SITE COORDINATES: **LAT:** 47.6777265 **LONG:** -117.1982753
SITE ACCESS ROAD: Access Road is located on the left (West) of Sullivan Rd.
SITE ENTRY & EXIT: Enter site work area through North Sullivan Road Entrance
PRIOR LAND USAGE: Aluminum metal recovery processing

SITE DESCRIPTION & ASSESSMENT

The Site is in Spokane County, Washington, within the incorporated limits of the City of Spokane Valley. The physical address of the Site is 2317 North Sullivan Road, Spokane Valley (*formerly Trentwood*), Washington 99016. The Site is identified by the Washington State Department of Ecology (Ecology), as Facility/Site No. 628 in accordance with the MTCA RCW 70.105D and its implementing regulations 173-340 WAC.

The Site is located west of Sullivan Road and north of the Spokane River (*Figure 1*). In the Agreed Order, the Site is defined “*by the extent of contamination caused by the release of Non-Hazardous Substances.*” Therefore, for the purposes of this SPCC, the Site includes the area where a stockpile of material resulting from aluminum recycling operations. This area, which consists of approximately 9 acres, includes property owned by Union Pacific Railroad Company (UPRR), Pentzer Venture Holdings II, Inc. (Pentzer), and the State of Washington Department of Transportation (WSDOT). Other property owners in the area include the Washington State Department of Parks and Recreation (Parks) and the City of Spokane Valley. Land use at the Site is heavy industrial (Zone I-2, per the City of Spokane Valley).

The nearest residential neighborhood is approximately 1.2 miles south of the Site across Interstate 90. The Spokane Valley Mall is approximately 0.3 miles southwest of the Site across the Spokane River. The Kaiser Trentwood Works (aluminum rolling mill) is located 0.5 miles northwest of the Site.

A UPRR rail line is present on the northern boundary of the Site.

The UPRR property south of the rail line (south parcel) totals approximately 11 acres and includes a large stockpile of material and an industrial facility on land leased from UPRR (described below). UPRR also owns the contiguous property north of the rail line (north parcel).

The Pentzer property is located immediately adjacent to the west side of the UPRR South Parcel. The property south of the UPRR southern parcel is owned by WSDOT.

The Spokane River is located approximately 350 feet southwest of the UPRR TDS property (beyond the Pentzer and WSDOT properties).

Kemira Water Solutions, Inc. leases a portion of the UPRR property and operates a facility that manufactures chemical coagulants (polyaluminum chloride (PAX) and aluminum sulfate (alum), for use in water and wastewater treatment applications. Raw materials used in the manufacturing process include sulfuric acid, chloride sources (aluminum chloride, hydrochloric acid, etc.), and aluminum sources (alumina hydrate, aluminum metal, and/or alumina cake). Other materials used in the manufacturing process include soda ash, resins, xylene, and isopropyl alcohol. Sulfuric and hydrochloric acid are unloaded from railcars and stored in

tanks at this facility. Other raw materials are stored in tanks and/or silos. The chemical coagulants are produced in various reactors and the finished products are stored in tanks.

SITE HISTORY

Industrial operations on the UPRR TDS property (*south parcel*) begun in 1979 by the Aluminum Recycling Corporation (ARC), which leased the property from Spokane International Railroad (subsequently merged with UPRR TDS in 1987). In May 1984, ARC filed for reorganization under Chapter 11 and ceased operations at that time (*Ecology, 1987*).

Following the ARC bankruptcy, Imperial West Chemical (IWC) operated on the UPRR TDS property from 1986 to 1995 and used aluminum dross to make aluminum sulfate.

A 4.4-acre portion of the current UPRR TDS property was purchased from the WSDOT in 1991 (*southern portion of south parcel*), and IWC leased both the original UPRR TDS property and the 4.4-acre acquisition from 1995 until 1998.

In 1998 Kemwater North America Inc. began leasing the property. Kemiron NW, Inc. took over the lease from Kemwater North America Inc. in 2001. The current tenant, Kemira Water Solutions, Inc., produces industrial water treatment chemicals and does not stockpile or process aluminum dross, or otherwise use the material in the stockpile.

According to Ecology records, aluminum dross was transported to the Site and stockpiled between 1982 and 1991, after which the dross was also stockpiled on a portion of the newly acquired 4.4-acre parcel until 1998. There is no indication of black dross or other by-products associated with aluminum recovery using the smelting process.

A portion of the stockpile is located adjacent to the property, on property which is owned by Pentzer. Pentzer was named a Potentially Liable Person (PLP) by Ecology on December 11, 2009. Information regarding Pentzer's PLP status was brought to Ecology's attention during the public comment period for the Agreed Order. As the Agreed Order between Ecology and UPRR TDS had already been underway, Aluminum Recycling Trentwood Site 4 Pastor, Behling & Wheeler, LLC been negotiated, and the public comment period had expired, UPRR and Ecology agreed to finalize the Agreed Order. Pentzer remains a PLP and has allowed UPRR access to the property for the purposes of the past RI performed on the site but did not participate in the RI/FS.

HISTORICAL DROSS ANALYSIS

The Site Hazard Assessment report (Ecology, 2008) included analytical results for a sample of dross (not identified as black or white dross) submitted by ARC for analysis in September 1983. The sample was found to contain the following constituents:

COMPOUND	CONCENTRATION (%)
Calcium	0.0575
Sodium	14.15
Potassium	13.35
Aluminum	21.4
Oxides, as Al ₂ O ₃	40.4
Chloride	43.0
Fluoride	0.13
Nitrides, as NH ₃	1.4
pH (Standard Units)	10.14
Soluble Material	64.6

PHYSICAL SETTING

1.5.1 Elevation

The surface elevation of the upper part of the southern parcel (stockpile area) is approximately 1,985 ft mean sea level (MSL); the elevation of the stockpile itself ranges from approximately 1,988 to 2,030 ft MSL.

The surface elevation of the lower part of the southern parcel (at the base of the steep slope south of the stockpile) is approximately 1,965 ft MSL. The elevation of the Spokane River near the Site is approximately 1,920 ft MSL.

1.5.2 Site Description

The stockpile is located on the northern portion of the UPRR TDS property and the eastern portion of the Pentzer property. The stockpile material on both properties was placed there intentionally by Aluminum Recycling Trentwood Site 6, Pastor, Behling & Wheeler, LLC, (*former property users during their occupancy*). The stockpile is located on land that is at a higher elevation than the property to the south, which has resulted in stockpile material being transported from the main stockpile to the south by storm water runoff and vehicle traffic. The stockpile is approximately 600 feet long on the north side, 555 feet long on the south side, and 220 feet wide (*approximately 4 acres*). The depth of the stockpile varies from 5 to 30 feet deep. The stockpile side slopes were estimated to be approximately 1:1 and the total volume of the stockpile estimated to be approximately 57,000 cubic yards. Approximately 8,000 to 10,000 cubic yards of the total volume is estimated to be present on the Pentzer property. The stockpile contains a mixture of several varied materials based on historical information and visual differences in color and chemical composition. Information obtained during the past RI indicates the stockpile is comprised of two main types of material that are readily identifiable by color. The western portion of the stockpile is made up of grey, fine-grained material that contains high concentrations of aluminum (40,000 – 60,000 mg/Kg) and sulfate (10,000 mg/Kg – 30,000 mg/Kg). The eastern portion of the stockpile is made up of tan, fine grained material that contains low concentrations of aluminum (< 9.9 mg/Kg) and higher chloride/salt content (approaching 10,000 mg/Kg or 1%). Throughout this report the term “stockpile” or “dross” is used to refer to the material in the stockpile, regardless of composition (*i.e., dross, aluminum sulfate, metallic oxides*).

1.5.3 Climate

The Spokane Valley is a semi-arid region that has warm, dry summers and cool, moist winters. Annual rainfall averages 20 inches, with most precipitation occurring from November to March, frequently as snowfall. Snowfall accumulations of one foot or more are frequent in the Spokane area, but the snow usually melts within a few days (*Molenaar, 1988*). Average temperatures in the area range from 27° F during the winter months to 69° F during the summer months. Precipitation in the area ranges from less than 1 inch during the months of July, August, and September, slightly more than 2 inches during the months of November and December, and slightly less than 2 inches during January through June (NOAA, 2010). Wind data from Felts Field, located approximately 5 miles west of the Site, indicates that the prevailing wind direction is SW or SSW from November through June and NNE from July through October (*Western Regional Climate Center, 2010*).

1.5.4 Geology

The surface geology in the Site vicinity consists of Pleistocene-aged glacial flood deposits (Hart Crowser, 2009). The glacial flood deposits consist of poorly to moderately well-sorted, massive to thick-bedded, stratified deposits of boulders, cobbles, pebbles, and sand resulting from multiple episodes of catastrophic outbursts from glacially dammed Lake Missoula. Undifferentiated alluvium and loess deposits may be present along the Spokane River. The top of the bedrock (metamorphic rocks) is at an elevation of approximately 1,700 to 1,750 ft MSL, or at a depth of approximately 250 to 300 feet below grade. Based on observation of subsurface materials collected during the drilling program at the Site, the Site geology is consistent with the scientific literature and descriptions reported in other environmental Aluminum Recycling Trentwood Site. Pastor, Behling & Wheeler, LLC investigations conducted in the area. A 1 – 2 ft thick surface soil layer was observed across the Site. This soil layer consisted of unconsolidated silt, sand, and gravel. Beneath this surficial soil layer are poorly sorted sandy gravel, gravelly sand, and sand consistent with glacial flood deposits. These soils are typically dark gray and tan, have angular grains, and contain some cobbles and pebbles. Groundwater was observed between 45 and 55 feet below ground surface (bgs).

1.5.5 Groundwater

Groundwater in the vicinity of the Site was previously characterized by Hart Crowser Inc. as part of a Groundwater Remedial Investigation conducted at the adjacent Kaiser Trentwood Facility. The results of the Remedial Investigation were summarized in a report issued in May 2009 and are used as a basis for understanding the groundwater conditions at the UPRR Trentwood Dross Site. The Pleistocene-aged glacial flood deposits present at the Site are part of a regional aquifer system called the Spokane Valley-Rathdrum Prairie (SVRP) aquifer. The SVRP aquifer is designated as a Sole Source Aquifer by the EPA. The SVRP provides drinking water to approximately 500,000 residents in the region and covers approximately 370 square miles (Hart Crowser, 2009). Near the Site, the aquifer is called the Spokane aquifer, which underlies about 135 square miles in the Spokane River valley. The Spokane aquifer is unconfined and is recharged by surface infiltration, from the Spokane and Little Spokane Rivers, and contribution from the Spokane-Rathdrum Prairie aquifer that is hydraulically connected and located to the east. Groundwater flow in the aquifer is generally to the west, with flow in the vicinity of the Site to the west/southwest (Hart Crowser, 2009). Groundwater flow in general is influenced by the Spokane and Little Spokane Rivers, which have a close hydraulic connection to the aquifer. The Spokane aquifer is highly permeable and consists of coarse sand, gravel, cobbles, and boulders deposited by historic floods which accounts for the large amount of water storage and high hydraulic conductivity in the aquifer. The thickness of the aquifer varies from relatively thin in the city of Spokane where basalt bedrock approaches the surface, to a thickness of greater than 300 feet near the state border with Idaho. Near the Site, the thickness is estimated to be approximately 200-350 ft, and the groundwater flow velocity approximately 33 feet per day (Hart Crowser, 2009). During the former RI investigation, groundwater was encountered in the monitoring wells (Figure 3) at a depth of approximately 45-55 ft bgs (Table 1). Groundwater flow is from east to west towards the Spokane River (Figures 4 and 5), which can act as a losing or gaining water body depending on river flow and recent precipitation. The groundwater gradient across the Site is approximately 0.003 ft/ft based on water level data collected during the RI.

1.5.6 Receptors

A past receptor survey was conducted within 500 feet of the Site to identify current or potential land and groundwater users that may constitute a complete receptor pathway. For the purposes of the survey the limits of the stockpile were considered "the Site," and the results of the survey consider all features within the resulting 500-foot boundary.

A water well search was conducted by Banks Environmental Data in May 2010 to identify potential water wells near the Site. Twenty-three water wells were identified within one mile of the UPRR TDS property. The Aluminum Recycling Trentwood Site well depths range from 78 to 200 feet. Most of the wells are registered for industrial use, though there are several which are registered for domestic and/or irrigation use. During the performance of the most current RI, a physical survey was performed to identify the water wells identified in the water well database search as well as any water wells in the area that were omitted from the report. No additional wells were identified during the well search.

SCOPE OF WORK

The site is the location of an aluminum dross stockpile area that was used as the feedstock for a secondary aluminum metal recovery process. Aluminum recycling is no longer conducted at the property and the dross is considered a waste material. The dross stockpile and adjacent soils impacted with dross constituents at concentrations above cleanup levels will be excavated and removed and then transported off-site for disposal at an approved landfill. Activities will consist of providing dross and soil excavation, backfill operations, dust control, dross, and soil movement to include off-site truck loading and transportation, on-site soil movement to ensure removal activities are adequate to meet cleanup criteria on the UPRR TDS property and the surrounding Pentzer and WSDOT properties.

SITE DESCRIPTION

a. Acres of land: < 10-Acres

b. Existing (or Temporary) Structures and Equipment:

- Temporary pad for (Track-out – Decon-Pad)
- Pressure-washer (If necessary)
- Soil Stockpile (Clean fill)
- Soil Stockpile (Contains Aluminum Dross)
- Spill kit/emergency equipment (placed as needed)
- 2,000-Gallon #2 Red-Dye Diesel Fuel-Tank

2,000 GALLON DOUBLE-WALL ABOVEGROUND STORAGE TANK • (RED-DYE DIESEL TANK)

GrayMar Environmental Services, Inc. will utilize a listed 2,000-gallon Double-Wall temporary storage tank for onsite refueling of all yellow-iron equipment used off DOT highways. International Fire Code (IFC) Section 3404.2.10 stipulates drainage control and diking (secondary containment) is not required on a listed tank.

GrayMar will direct the Fueling Company, (Connell / Co-Energy) to fill the 2,000-gallon double-walled temporary AST tank (as-needed) on a regular schedule once fuel-consumption become constant. Prior to arriving onsite, the 2,000 gallon double-wall AST will be tested by the Oil Company, and a copy of the test prior to onsite delivery, spotting, and subsequent filling of #2 (red-Dye) Diesel will be included in this plan (as an addendum).

Additionally, a properly sized *secondary containment system* will be setup adjacent to the fuel-tank to stage the 45kVa GenSet inside, to contain any drips from refueling, or in the event that the self-contained 42-gallon fuel tank developed a leak. Between the 2,000-gallon AST and 45kVa generator, GrayMar will stage a 40'L X 8'W Conex-box. *(for ancillary materials necessary for project completion such as the below)*. Actual *(final proper-size)* to be based-on total gallons of material *(excluding the 2,000-gallon Diesel Tank as it already has secondary containment)*. GrayMar plans to stage the following inside the collapsible containment system, *(dependent upon exterior temperature)*:

DEF Fluid	(2) 55-gallon Drums
Grease	(4) Boxes of 10/box Tubes of grease for heavy equipment <i>(Stored inside Trailer)</i>
Hydraulic oil	20 gallons (in 5) gallon pails
Motor-Oil (15w-40)	(10) Gallons of Conventional Motor-Oil for all Onsite Diesel-Fired Equipment

Any additional materials brought-onto the site during the project will be staged inside the secondary containment system. Each container will retain original manufacturer packaging, complete with SDS and technical specifications (as available). All SDS's will also be maintained in our Onsite SDS binder.

TOTAL QUANTITY OF ANTICIPATED ONSITE (STORED) MATERIALS:

The combined quantity of the materials listed above is approximately: **2,110 gallons**

OIL-SPILL HISTORY

Place an X on the appropriate line and proceed accordingly.

There has never been a significant spill at the above-named facility, while GrayMar has been onsite performing work directly for UPRR or Golder.

There have been one or more significant spills at the above-named facility. Details of such spill(s) are described).

For the purpose of this SPCC plan, (as far as GrayMar Environmental Services is aware), there has never been any oil-based materials spilled on the property during the course of any sitework or projects

OIL-SPILL HISTORY

Type and amount of oil spilled	<u>N/A</u>	Cost of damage	<u>N/A</u>
Location, date, and time of spill(s)	<u>N/A</u>	Cost of clean-up	<u>N/A</u>
Watercourse affected	<u>N/A</u>	Cause of spill	<u>N/A</u>
Description of physical damage	<u>N/A</u>	Action taken to prevent recurrence	<u>N/A</u>

POTENTIAL SPILL VOLUMES AND RATES

Fill in all applicable blanks. Be prepared to show the engineer documentation of flow rates. Your fuel vendor and the manufacturer of your storage and dispensing equipment should be able to provide this documentation.

POTENTIAL EVENT	VOLUME RELEASED	SPILL RATE
Complete failure of a full tank*	<u>2,000</u> gallons	Instantaneous
Partial failure of a full tank*	1 to <u>2,000</u> gallons	gradual to instantaneous
Tank overflow**	1 to <u>22</u> gallons	up to <u>32</u> gallons per minute
Leaking during unloading***	up to <u>30</u> gallons	up to <u>45</u> gallons per minute
Pipe failure****	up to <u>100</u> gallons	up to <u>10</u> gallons per minute
Leaking pipe or valve****	several ounces to gallons	up to <u>10</u> gallons per minute
Fueling operations****	several ounces to gallons	up to <u>15</u> gallons per minute
Oil and grease	several ounces to quarts	Spotting

* Volume of largest tank - (2,000-gallons)

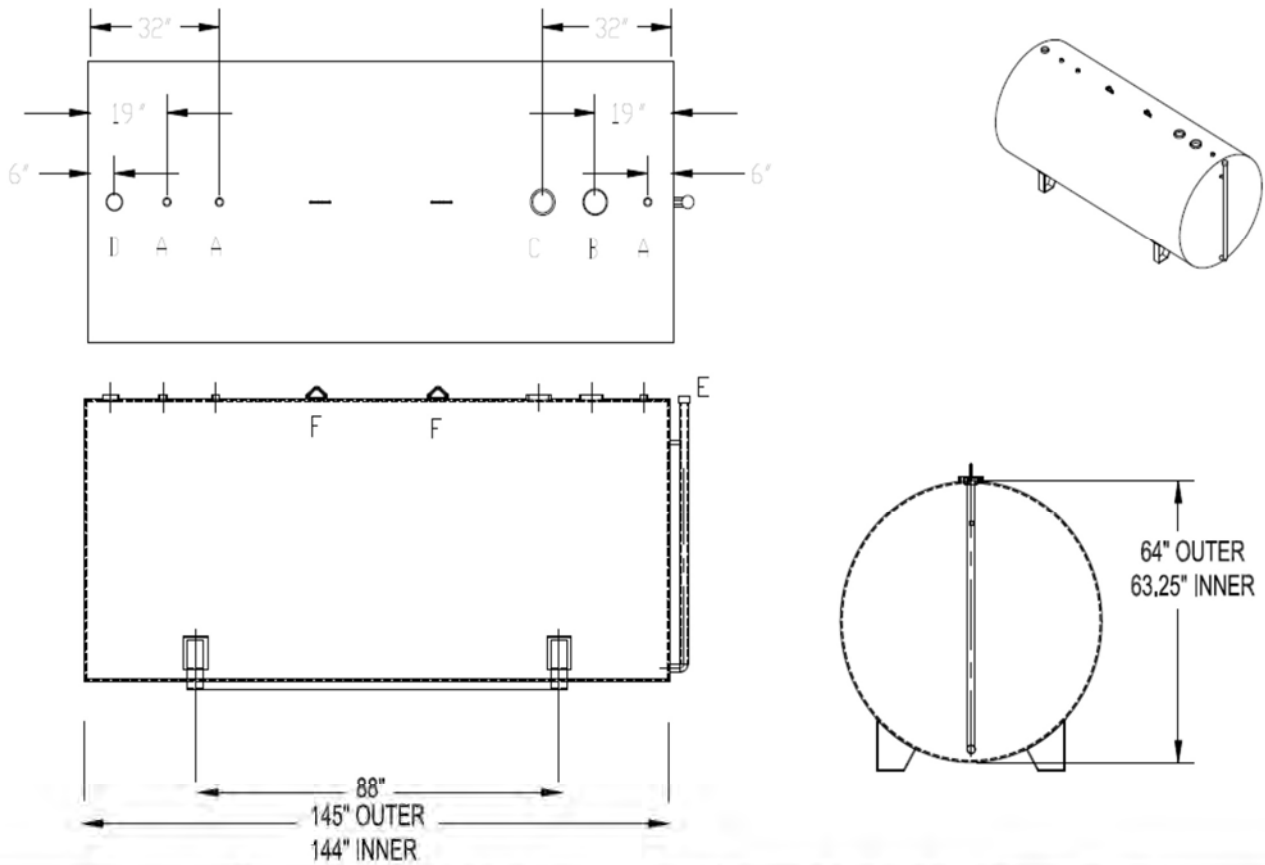
** Calculate using the rate at which fuel is dispensed from the delivery truck into your tank(s) - (75gpm)



*** Calculate using the rate at which petroleum would be withdrawn from the tank if it should have to be emptied (e.g., if it was being taken out of service).

**** Calculate based on the specifications of your equipment. emptied (e.g., if it was being taken out of service).

**** Calculate based on the specifications of your equipment

DRAWING • TEMPORARY DOUBLE-WALL 2,000-GALLON AST (ABOVEGROUND STORAGE TANK)



	STDW-2000-7P	DESCRIPTION: ABOVE GROUND, DOUBLE WALL 7 GA. INNER/10 GA. OUTER STEEL STORAGE TANK CAPACITY: 1998 GALLONS	FINISH: SURFACE PREP; SPOC SP3; ONE SPRAY COAT OF PRIMER; OPT FINISH* APPROX. WEIGHT: 3675 lbs ± 5%
 Underwriters Laboratories Inc. <small>UL9129 G</small>	LEGEND (ID:(QTY.OF OPENINGS) PART A - (3) 2" NPT CPL D - (1) 4" NPT CPL B - (1) 6" INNER E. VENT CPL E - (1) 2" INSPECTION PIPE C - (1) 6" OUTER E. VENT FLANGE F - (2) FORGED LIFT LUG	 1500 HWY 117 S, GOLDSBORO, NC 27530 P: (919) 734 - 8328 F: (919) 736 - 4560	

DRAWING - DIESEL FUELING DISPENSER

(Owner Manual will be located at the rear of this plan in the Appendix)

Fill-Rite's 700 Series of heavy-duty fuel transfer pumps are built to last with cast-iron construction and rotary vane technology, which maintains peak performance over time. 230V AC 20-GPM Fuel Transfer Pump with Meter & Nozzle. ¾" - 230V, NPT Threads, Meter, Manual Nozzle.

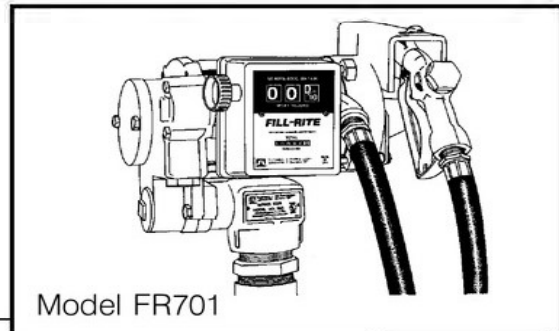
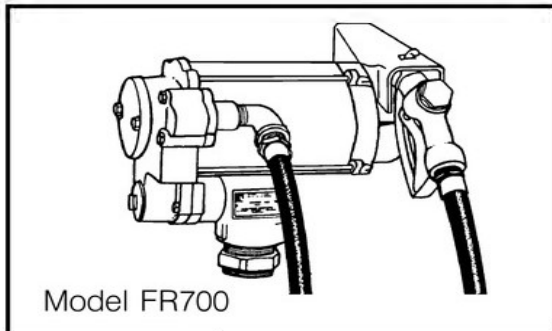
Pump System Technology

FILL-RITE

Owner's Operation & Safety Manual

SERIES 700B PUMP

For models: FR700, FR701



OUTSTANDING FEATURES

- Up to 20 GPM / 76 LPM
- UL, CUL, CSA listed pump and motor
- Full 1/3 HP 115 VAC-60Hz motor, optional 230 VAC-50/60Hz
- Thermal overload protector
- Heavy duty switch
- Integral check valve
- Built-in bypass valve

SPILL PREVENTION AND CONTROL

a. Spill Prevention:

All GrayMar Environmental Services, Inc. employees are 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) trained in addition to other regulatory and industry-specific trainings under 29CFR and 49CFR. Although GrayMar has done everything possible to remove as much potential for a release as possible, there is always a chance of accidentally spilled or released products. GrayMar has pre-planned all equipment fueling operations (*equipment fueled with ignition in off-position, on level-ground & sorbent-pads on standby*)

b. Spill discharge and flow:

For each potential spill source, describe where petroleum would flow in the event of a spill.

The 2,000-gallon diesel tank has a pre-manufactured secondary containment system (*capable of containing the total volume of the tank*) and *“Any release, or accidental spill while refueling equipment would be contained to the immediate 2,000-gallon AST and Oils and Lubricants containment area and quickly cleaned up with oil absorbents and deposited into 55-gallon metal open-top drums.”* 55-gallon drums are stored in 40' Conex box.

NOTE: GrayMar will incorporate an updated sitemap, depicting the actual location where the AST has been staged for the project duration, along with the small containment system that will be secured by the erection of fencing to secure the area.

In the extremely rare case where fuel is physically spilled onto the ground, a GrayMar employee will immediately stop the leak (*or wipe-up the released material*). Additionally, the Golder Construction Manager, Project Manager and/or Health & Safety Officer will be notified immediately. The GrayMar Project Manager will notify necessary personnel and fill-out GrayMar's Emergency Response Incident Report (*See Appendix to this SPCC for report Template*).

c. Spill response:

In the event of a release, GrayMar will deploy sorbent pads and Clay-based or Diatomaceous earth “socks” to ensure no fuel escapes the immediate fueling area. GrayMar will maintain stock of any sorbent materials, as well as 55-gallon empty open-top drum(s) to contain any used pads or rags that were used to capture any drips or weeps due to refueling operations. In the event of a release due to equipment mechanical failure, GrayMar will deploy absorbent materials and place in an appropriate container. Besides the (2) staged and (1) mobile “Spill Kit”, GrayMar also has additional drums, sorbent-pads, socks and sweeps, floor-dry, drum liners, polybags and sheeting, etc. that can be utilized in the event of more than a few drips.

NOTE: All relevant project-specific contact numbers can be found posted in the office trailer on the Whiteboard. This has also been included in this SPCC Plan.

d. Security

A heavy-duty lock has been installed to safeguard all on-site chemicals such as the temporary 2,000-gallon double wall container fuel tank, (to prevent unauthorized dispensing of fuel during offsite hours and weekends.

containment system used to safely stage a minimum of 110% of all oils and lubricants, etc. This system will be sized to ensure a minimum of 110% of capacity of materials in the containers is available.

INSPECTIONS

a. Routine Inspections

All equipment (to include but not limited to *Excavators, Loaders, Generators, Rollers, etc.*) and trucks (*to include Haul-trucks, water-trucks, transportation vehicles and pickup trucks, etc.*) will be inspected daily prior to initial start, when a mechanical situation has been identified, and at the end of each day. Routine maintenance will be performed to minimize equipment mechanical failures associated with inattention.

Personnel responsible for inspection will be the operator for the specific equipment being utilized, or other GrayMar employees authorized to operate heavy equipment.

b. Annual Inspections (N/A)

c. Recordkeeping (If / When Applicable)

GrayMar maintains all maintenance-records as follows:

- a. Heavy Trucks (Over-the-Road):** GrayMar follows all current USDOT regulations.
- b. Heavy Equipment (Owned):** GrayMar follows the manufacturer's recommended frequencies.
- c. Heavy Equipment (Non-Owned):** GrayMar follows the Leasing-company's prescribed intervals.

GrayMar will keep the following US DOT-related documents on file:

DVIR – DRIVER VEHICLE INSPECTION REPORT

a. APPROVED BY FMCSA – (FEDERAL MOTOR CARRIER SAFETY ASSOCIATION)

An example of a current GrayMar DVIR Form is shown below:

Driver's Vehicle Inspection Report



DATE: _____ TIME: _____ AM / PM LOCATION: _____

TRUCK/TRACTOR NO: _____ PRE-TRIP MILES: _____ POST-TRIP _____

- | | | |
|---|---|---|
| <input type="checkbox"/> Air Compressor
<input type="checkbox"/> Air Lines
<input type="checkbox"/> Battery
<input type="checkbox"/> Brake Accessories
<input type="checkbox"/> Brakes
<input type="checkbox"/> Carburetor
<input type="checkbox"/> Clutch
<input type="checkbox"/> Defroster
<input type="checkbox"/> Drive Line
<input type="checkbox"/> Engine
<input type="checkbox"/> Fifth Wheel
<input type="checkbox"/> Front Axle
<input type="checkbox"/> Fuel Tanks
<input type="checkbox"/> Heater | <input type="checkbox"/> Horn
<input type="checkbox"/> Lights
Head – Stop
Tail – Dash
Turn Indicators
<input type="checkbox"/> Mirrors
<input type="checkbox"/> Muffler
<input type="checkbox"/> Oil Pressure
<input type="checkbox"/> On-Board Recorder
<input type="checkbox"/> Radiator
<input type="checkbox"/> Rear End
<input type="checkbox"/> Reflectors
<input type="checkbox"/> Safety Equipment
Fire Extinguisher
Flags – Flares – Fuses
Spare Bulbs & Fuses
Spare Seal Beam | <input type="checkbox"/> Springs
<input type="checkbox"/> Starter
<input type="checkbox"/> Steering
<input type="checkbox"/> Tachograph Tires
<input type="checkbox"/> Transmission
<input type="checkbox"/> Wheels Windows
<input type="checkbox"/> Windshield Wipers
<input type="checkbox"/> Other (paperwork,
license, accident refs,
gas card/forms, etc. |
|---|---|---|

TRAILER(S) NO (S): _____

- | | | |
|---|---|--|
| <input type="checkbox"/> Brake Connections
<input type="checkbox"/> Brakes
<input type="checkbox"/> Coupling Chains
<input type="checkbox"/> Coupling (king) Pin
<input type="checkbox"/> Doors | <input type="checkbox"/> Hitch
<input type="checkbox"/> Landing Gear
<input type="checkbox"/> Lights – All
<input type="checkbox"/> Roof
<input type="checkbox"/> Springs | <input type="checkbox"/> Tarp
<input type="checkbox"/> Tires
<input type="checkbox"/> Wheels
<input type="checkbox"/> Other |
|---|---|--|

Remarks: _____

Condition of the above vehicle is satisfactory

Driver's Signature _____ Date _____

Deficiency above noted & corrected

Deficiency noted above does not affect the safe operation of the truck and will be scheduled on for correction on: _____

Mechanic's Signature _____ Date _____

Driver's Signature _____ Date _____

EMPLOYEE TRAINING RECORDS (EXAMPLE PER EMPLOYEE)

Each GrayMar employee is monitored under a Training Tracker Spreadsheet that is managed by both the Location General Manager as well as the EHS Department. Training-due is sent out approximately 6-weeks prior to being due. Once completed, the tracker is updated post-successful completion.

Example of GrayMar Employee Training Tracker (Pulled Live Randomly from Spokane Service-Center Employee)

CURRENT TRAINING (By Employee – MURPHY, M)				
FIRST NAME	LAST NAME	LOCATION	TRAINING COURSE	COMPLETION
Michael	MURPHY	SPOKANE	40-HR HAZWOPER	5/22/2009
Michael	MURPHY	SPOKANE	8-HR HAZWOPER REFRESHER	12/20/2020
Michael	MURPHY	SPOKANE	8-HR HAZWOPER REFRESHER	4/8/2022
Michael	MURPHY	SPOKANE	ACCIDENT INVESTIGATION	10/11/2022
Michael	MURPHY	SPOKANE	BULLYING & DISRUPTIVE BEHAVIORS FOR MANAGERS & SUP'S	10/11/2022
Michael	MURPHY	SPOKANE	CARGO SECUREMENT FOR CMV DRIVERS	11/9/2021
Michael	MURPHY	SPOKANE	CONSTRUCTION SAFETY - LOCKOUT/TAGOUT	1/3/2022
Michael	MURPHY	SPOKANE	DEALING WITH HAZARDOUS SPILLS	10/11/2022

Michael	MURPHY	SPOKANE	DOT HAZARDOUS MATERIALS TRAINING	10/6/2021
Michael	MURPHY	SPOKANE	DRIVER SAFETY - DEFENSIVE DRIVING	1/14/2022
Michael	MURPHY	SPOKANE	DRIVING SAFETY: THE BASICS	10/11/2022
Michael	MURPHY	SPOKANE	DRUGS AND ALCOHOL IN THE WORKPLACE (FMCSA-COMPLIANT)	9/23/2021
Michael	MURPHY	SPOKANE	EMERGENCY PLANNING	10/11/2022
Michael	MURPHY	SPOKANE	EMERGENCY RESPONSE	10/11/2022
Michael	MURPHY	SPOKANE	EYE AND FACE PROTECTION FOR MANAGEMENT	10/11/2022
Michael	MURPHY	SPOKANE	FALL PROTECTION AWARENESS	1/14/2022
Michael	MURPHY	SPOKANE	FIRE EXTINGUISHER SAFETY	1/3/2022
Michael	MURPHY	SPOKANE	FIRE PREVENTION	2/21/2022
Michael	MURPHY	SPOKANE	HAZARD COMMUNICATION FOR MANAGERS	10/11/2022
Michael	MURPHY	SPOKANE	HAZARD RECOGNITION	10/11/2022
Michael	MURPHY	SPOKANE	HAZARDOUS WASTE GENERATOR - RCRA	2/21/2022
Michael	MURPHY	SPOKANE	LOCKOUT/TAGOUT GENERAL AWARENESS	1/3/2022
Michael	MURPHY	SPOKANE	MSHA NEW MINER - P48	7/23/2021
Michael	MURPHY	SPOKANE	PERSONAL PROTECTIVE EQUIPMENT FOR MANAGEMENT	10/11/2022
Michael	MURPHY	SPOKANE	PORTABLE LADDER SAFETY	4/7/2022
Michael	MURPHY	SPOKANE	SAFETY HOUSEKEEPING AND ACCIDENT PREVENTION	10/11/2022
Michael	MURPHY	SPOKANE	SPEED AND STOPPING DISTANCE FOR CMV DRIVERS	1/3/2022
Michael	MURPHY	SPOKANE	SUPERVISOR AND MANAGER SAFETY: SAFETY LEADERSHIP	10/11/2022

SPILLS

GrayMar will cleanup (and) Document any and all releases that occur onsite. In the event of a release, (no matter how seemingly insignificant in nature), GrayMar will document and complete an Incident After Action Report. A Blank Copy of this report can be found on Page: 37.

MAINTENANCE INSPECTION

2,000-GALLON (DOUBLE-WALLED) AST (INSPECTION PRIOR TO ARRIVAL ONSITE)

(PRIOR TO GRAYMAR TAKING RECEIPT OF 2K AST TANK)

FUEL TANK WEEKLY INSPECTION				
The inspection record below shall be completed each week. If needed, provide further description and comments on a separate sheet of paper, and attach. Any items marked "yes" must be addressed immediately. If every question checks "No", sign and date the sheet accordingly.				
INSPECTION ITEM	YES	NO	N/A	NOTES
STORAGE TANKS				
Tanks surfaces show signs of leakage		X		
Tanks are damaged, rusted, or deteriorated		X		
Bolts, rivets, or seams are damaged		X		
Tank supports are deteriorated or buckled		X		
Tank foundations have eroded or settled			X	
Level gauges or alarms are inoperative		X		
Vents are obstructed		X		
Secondary containment is damaged or stained			X	Dwile wait
PIPING				
Valve seals, gaskets, joints leak		X		
Pipelines or supports are damaged or deteriorated		X		
RESPONSE EQUIPMENT				
Response inventory is not stocked or in correct place			X	
DATE	10/13/2022	PRINTED NAME	Tim Ippolito	SIGNATURE

CO-EMERG

(ACTUAL) INITIAL INSPECTION FOR OIL COMPANY

GRAYMAR 2,000-GALLON (DOUBLE-WALLED) AST DAILY INSPECTION FORM

AST FUEL TANK DAILY INSPECTION FORM					
The inspection record below shall be completed each shift (Minimum once every 24-working hours). If needed, You can provide further details and description, comments, etc. below at the bottom of the form. Any items marked "Yes" must be addressed immediately. If every question checks "No" or N/A, <i>Sign and date the sheet accordingly.</i>					
INSPECTION ITEM	YES	NO	N/A	NOTES	
STORAGE TANKS					
Tanks surfaces show signs of leakage					
Tanks are damaged, rusted, or deteriorated					
Bolts, rivets, or seams are damaged					
Tank supports are deteriorated or buckled					
Tank foundations have eroded or settled					
Level gauges or alarms are inoperative					
Vents are obstructed					
Secondary containment is damaged or stained					
PIPING					
Valve seals, gaskets, joints leak					
Pipelines or supports are damaged or deteriorated					
RESPONSE EQUIPMENT					
Response inventory is not stocked or in correct place					
DATE _____	PRINTED NAME _____		SIGNATURE _____		
ADDITIONAL COMMENTS OR ISSUES WITH 2,000 GALLON AST TANK SYSTEM: _____					

DVIR REPORT (SAMPLE OF FORM)

Driver's Vehicle Inspection Report



DATE: _____ TIME: _____ AM / PM LOCATION: _____

TRUCK/TRACTOR NO: _____ PRE-TRIP MILES: _____ POST-TRIP _____

<input type="checkbox"/> Air Compressor	<input type="checkbox"/> Horn	<input type="checkbox"/> Springs
<input type="checkbox"/> Air Lines	<input type="checkbox"/> Lights	<input type="checkbox"/> Starter
<input type="checkbox"/> Battery	<input type="checkbox"/> Head – Stop	<input type="checkbox"/> Steering
<input type="checkbox"/> Brake Accessories	<input type="checkbox"/> Tail – Dash	<input type="checkbox"/> Tachograph Tires
<input type="checkbox"/> Brakes	<input type="checkbox"/> Turn Indicators	<input type="checkbox"/> Transmission
<input type="checkbox"/> Carburetor	<input type="checkbox"/> Mirrors	<input type="checkbox"/> Wheels Windows
<input type="checkbox"/> Clutch	<input type="checkbox"/> Muffler	<input type="checkbox"/> Windshield Wipers
<input type="checkbox"/> Defroster	<input type="checkbox"/> Oil Pressure	<input type="checkbox"/> Other (paperwork, license, accident refs, gas cards/forms, etc.)
<input type="checkbox"/> Drive Line	<input type="checkbox"/> On-Board Recorder	
<input type="checkbox"/> Engine	<input type="checkbox"/> Radiator	
<input type="checkbox"/> Fifth Wheel	<input type="checkbox"/> Rear End	
<input type="checkbox"/> Front Axle	<input type="checkbox"/> Reflectors	
<input type="checkbox"/> Fuel Tanks	<input type="checkbox"/> Safety Equipment	
<input type="checkbox"/> Heater	<input type="checkbox"/> Fire Extinguisher	
	<input type="checkbox"/> Flags – Flares – Fuses	
	<input type="checkbox"/> Spare Bulbs & Fuses	
	<input type="checkbox"/> Spare Seal Beam	

TRAILER(S) NO (S): _____

<input type="checkbox"/> Brake Connections	<input type="checkbox"/> Hitch	<input type="checkbox"/> Tarp
<input type="checkbox"/> Brakes	<input type="checkbox"/> Landing Gear	<input type="checkbox"/> Tires
<input type="checkbox"/> Coupling Chains	<input type="checkbox"/> Lights – All	<input type="checkbox"/> Wheels
<input type="checkbox"/> Coupling (king) Pin	<input type="checkbox"/> Roof	<input type="checkbox"/> Other
<input type="checkbox"/> Doors	<input type="checkbox"/> Springs	

Remarks: _____

Condition of the above vehicle is satisfactory

Driver's Signature _____ Date _____

Deficiency above noted & corrected

Deficiency noted above does not affect the safe operation of the truck and will be scheduled on for correction on: _____

Mechanic's Signature _____ Date _____


Driver's Signature _____ Date _____

SPCC PLAN ELEMENTS

Responsible Personnel

Table 1.1 identifies the name(s), title(s), and contact information for the personnel responsible for implementing and updating the SPCC Plan, and for responding to spills. If spill response Subcontractor(s) will be used for spill response (as described in Section 8, Spill Response, below), the Subcontractor(s) company name(s) and contact information are also included in Table 1.1.

TABLE 1 • RESPONSIBLE PERSONNEL

RESPONSIBILITY	NAME AND TITLE	CONTACT INFORMATION
Implementing and Updating SPCC Plan (primary contact person)	Robert Seitz Executive	COMPANY: GrayMar Environmental Services OFFICE: 866-472-9627 MOBILE: 480-436-0997
Implementing and Updating SPCC Plan (secondary contact person)	Mike Gipson Project Manager	COMPANY: GrayMar Environmental Services OFFICE: 866-472-9627 MOBILE: 509-895-1387
Equipment Operator On-Site Spill Responder	Colton Bennett Equipment Operator EHSP Lead	COMPANY: GrayMar Environmental Services OFFICE: 866-472-9627 MOBILE: 509-398-6630
Equipment Operator Field-Supervisor On-Site Spill Responder	Michael Murphy Equipment Operator ER Lead	COMPANY: GrayMar Environmental Services OFFICE: 866-472-9627 MOBILE: 208-304-0487
	866 – 472 – 9627 866 – GRAYMAR	COMPANY: GrayMar Environmental Services OFFICE: 866-472-9627 MOBILE: 208-304-0487

SPILL REPORTING

In the event of a spill, GrayMar Environmental Services, Inc. shall contact the Golder Construction Manager and shall notify the Federal, State, and Local Agencies listed in Figure 2 and Table 2.

TABLE 2 • PROJECT-SPECIFIC FEDERAL, STATE, & LOCAL AGENCIES

(NOTIFIED IN THE EVENT OF A SPILL)

AGENCY NAME	AGENCY NOTIFICATION #	WHEN AGENCY SHALL BE NOTIFIED	AGENCY REGION
Department of Ecology	800-258-5990	Spill or release to soil that is an immediate threat to human health or the environment, (or a spill or release to water or a confirmed release or spill from a UST	Eastern Office
National Response Center	800-424-8802	ER - e.g., spill or release to water	Not applicable
Washington State Division of Emergency Management	509-329-3400	Spill or release to water	Not applicable

PROJECT AND SITE INFORMATION

A. Nearby waterways and sensitive areas and their distances from the site:

The Site is located West of Sullivan Road and North of the Spokane River

TABLE 3 • NEARBY WATERWAYS¹ AND SENSITIVE AREAS

WATERWAY¹ OR SENSITIVE AREA²	DISTANCE FROM PROJECT SITE	DIRECTION OF FLOW FROM PROJECT SITE	RUNOFF DRAINAGE PATHWAY FROM SITE
Spokane River	350 feet Southwest of Project Site)	Approximate 25' Elevation Change from Site to Riverbank	N/A

NOTES: ¹ *Waterways include streams, creeks, sloughs, rivers, Puget Sound, etc.*

² *Sensitive areas are areas that typically contain populations that could be particularly sensitive to a hazardous materials spill or release. Such areas include wetlands, areas that provide habitat for threatened or endangered species, nursing homes, hospitals, childcare centers, etc. Sensitive areas also include areas where groundwater is used for drinking water, such as wellhead protection zones and sole source aquifer recharge areas.*

POTENTIAL SPILL SOURCES

A description of each potential fuel, petroleum product and other hazardous material brought or generated on-site is set forth in Table 4.0. The potential fuel, petroleum product and other hazardous materials listed on Table 4.0 include materials used for operating, refueling, maintaining, and cleaning equipment.

TABLE 4 • FUEL & PETROLEUM PRODUCT & OTHER HAZARDOUS MATERIALS ON-SITE

Hazardous Material Name	Intended Use of Material	Estimated Maximum Amount of Material OnSite at Any One Time	Material Staging, Use, and Storage Location(s) & Material Storage and Secondary Containment Practices and Structures, in accordance with Element 7¹	Distance of Material Staging, Use, and Storage Locations from Nearby Waterways² and Sensitive Areas³
#2 Red-Dye Diesel	Power Equipment	2,000 Gallons	Stored in a Double-Walled Tank with $\geq 110\%$ Secondary Containment	>350'
15W-40 Motor Oil	Engine Lubrication	25 Gallons	Stored in Office Trailer to Keep from Freezing	>350'
Lube Grease	Lubricate Fittings on Equipment	36-Tubes (6oz)	Stored in Office Trailer to Keep from Freezing	>350'
DEF Fluid	EPA-Mandated Muffler Fluid	(2) 55-gallon Drum	Stored inside Dike	>350'
Low-VOC Marking Paint	Mark Ground	24 Cans of Upside Down Paint	Stored in Office Trailer to Keep from Freezing	N/A

NOTE:

¹ *Waterways include streams, creeks, sloughs, rivers, Puget Sound, etc.*

² *Sensitive areas are areas that typically contain populations that could be particularly sensitive to a hazardous materials spill or release. Such areas include wetlands, areas that provide habitat for threatened or endangered species, nursing homes, hospitals, childcare centers, etc. Sensitive areas also include areas where groundwater is used for drinking water, such as wellhead protection zones and sole source aquifer recharge areas.*

NOTE: GrayMar has prepared, and Golder has approved various site-specific plans necessary to safely complete this project. Examples may consist of the following, used as guides:

TITLE OF PROJECT-SPECIFIC PLAN	PLAN ACRONYM
• SITE-SPECIFIC ENVIRONMENTAL HEALTH & SAFETY PLAN	SS-EHSP
• STORMWATER PREVENTION PLAN (N/A)	SWPPP
• TEMPORARY EROSION AND SEDIMENT CONTROL	TESC
• TRAFFIC CONTROL PLAN	TCP
• TRANSPORTATION PLAN	TP
• DUST CONTROL PLAN	DCP

SPILL PREVENTION AND RESPONSE TRAINING

The foundation of GrayMar Environmental Services began as a full-service environmental services and spills-provider, which includes 24/7 Emergency Spill Response and Cleanup. GrayMar is an active Response Contractor for both the State of Washington Department of Ecology as well as UPRR. In the event of a release of oil or fuel at the project location, all onsite GrayMar personnel are trained to both respond to, and cleanup, all types and sizes of releases, to include all types and sizes of oil-spills, (both on and off of UPRR and WA State property.

- Training is performed on an annual basis (*following 29 CFR 1910.120*). All personnel also partake in annual 8-hour HAZWOPER refresher training, along with various related FEMA, DOT, and OSHA, training, relative to their position.
- Each GrayMar employee on the project site will be trained and proficient in spill prevention, containment, and response, as well as the location and contents of each of the spill-response kits.
- The majority of fueling will take place within the immediate (20') vicinity of the 2,000-gallon Red-Dye Diesel AST. The dispenser has (1) 20' X ¾" fuel-grade hose and OPW-type nozzle.
- This area is comprised of a dirt base with an average of 1" of Item #4 "crusher-run" gravel top-course.
- Diesel fuel will be transferred from the 2,000-gallon Diesel AST into 60-gallon to 90-gallon "Slip-Tanks" that are secured to most of GrayMar's pickup trucks.

GrayMar has strategically placed a total of (3) 55-gallon Spill-Kits in the following locations:

2,000-gallon Double-wall Red-Dye Diesel Tank

1. A 55-gallon spill kit will be placed next to the 2,000-gallon double-wall red-dye diesel tank

- This will provide easy access to the Co-Energy tanker-truck that refuels the 2,000-gallon Double-Wall Red-Dye Diesel AST on an "As-Needed" basis (*no lower than 30%*)
- This will serve to provide rapid deployment of spill materials to contain and cleanup small diesel spills, (in the unlikely event that any drips or release occurs while filling a day-tank), that is mounted in most GrayMar pickup trucks.
- This spill-kit will also cover the adjacent refilling of the 45Kva Genset, and any off-road wheeled construction equipment (*wheel-loader, Single-Drum, Roller, Road-Grader, etc.*) filled within 20' of the 2,000-gallon AST

2. Conex-Box Housing 55-Gallon Spill-Kit OVERNIGHT

Back of Pickup-Truck SITE OPERATIONS

- A 55-gallon spill kit will be kept in Conex-box overnight
- Each morning the spill kit will be loaded into a crew-truck and transported up to the primary work-area with the operators. This will be considered a “Mobile Spill-Kit” and will be utilized to rapidly deploy to virtually any necessary location on the jobsite.

3. Immediate Work Area

- A 55-gallon spill kit will be staged nearest the Center of the work area (Purposely set in a safe area close to Excavation and Loading Activities. This will be relocated on an As-Needed Basis to maintain rapid response and deployment/containment.

SPILL PREVENTION

Spill Response Kit Contents and Location(s)

Appropriately stocked spill response kits shall be maintained near Non-hazardous materials and equipment and shall be immediately accessible to all Project personnel. There are no RCRA or DOT-Hazardous Materials Onsite. This plan will be reviewed and updated each time relevant materials are brought onsite.

TABLE 5 - Spill Response Kit Contents and Locations

TYPE OF SPILL KIT	SPILL KIT CONTENTS	SPILL KIT LOCATION(S)
<p>55-Gallon Open-Top Drum (17H – 1A2) General-Use Spill-Kit</p> <p>Kit will rapidly deploy (unscrew (1) ¼”-Drive X 15”/16” Socket to Remove Lid for Access to Cleanup Contents)</p> <p>The General Use Spill-Kit is designed to cleanup various types and grades of Hydrocarbon-based Oil, VOCs, and most Non-aggressive Corrosive-Acids and Bases (Caustics)</p>	<p>Each Spill Kit will contain the following items:</p> <ul style="list-style-type: none"> • (1) 6-Mil Poly Bag • 50# Bag of Oil-Dry • (2) Clay or Diatomaceous Earth Socks (2” X 8’) • (2) Sorbent-Boom (4” X 10’) • 25 Sorbent Pads (Half-Bale) • (1-Set) Standard Level ‘D’ PPE <ul style="list-style-type: none"> ○ (Consisting of Tyvek, Safety-Glasses, PVC or Nitril Gloves, HazMat Bootie) ○ Non-Hazardous Waste Label ○ Complete Copy of SPCC Plan, etc.) 	<p>Next to the 2K AST Tank and the containment area.</p> <p>Outside main job trailer, in Supply Conex Box</p> <p>Throughout site (as needed)</p>

Security Measures for Potential Spill Sources

- Standard security measures that will be maintained to prevent accidental spills and vandalism, e.g., the site and work area will be surrounded by a secured fence, hazardous materials will not be encountered or stored onsite. Non-Hazardous materials are allowed to be stored inside a locked storage containment, all heavy equipment will have proper working fuel caps, etc.

Methods used to Prevent Stormwater from Contacting Fuel & Petroleum Products

- Hazardous materials are not going to be encountered during this approximately 6-month project and will not be stored onsite. All non-hazardous materials will be stored inside the containment area. In addition, all stormwaters will be diverted away from the non-hazardous materials containment area.

Secondary Containment for Each Potential Spill-Source Listed in Section 4

- Please see Table 4.0 for GrayMar’s BMP-practices and portable secondary containment that will be used to store and oil and oil-derived products and other non-hazardous materials as well as the practices and structures that will be used to store and contain equipment used to transfer potential fuel, petroleum product and hazardous materials. The description incorporates the following requirements:

Secondary containment structures shall be in accordance with Section S9.D.9 of Ecology’s Construction Stormwater General NPDES Permit, where secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume contained in the largest tank within the containment structure. This NPDES Permit does not require additional secondary containment for double-walled tanks.

- GrayMar will complete using a double-walled aboveground storage tank with a maximum capacity of 2,000-gallons (Offroad) Red-Dye Diesel.
- Secondary containment BMPs, as presented by Washington State Ecology, are required during fueling activity from fuel-tanks, including the 2,000-gallon double-walled AST.
 - GrayMar will utilize a series of “Ecology Blocks” to surround the exterior of the 2,000-gallon AST (*in lieu of Bollards*) to stop the potential for any vehicle or equipment to inadvertently hit the tank, causing damage and potential release on the property.

BEST MANAGEMENT PRACTICES (BMP)

BMP Methods will be used to prevent discharges to ground or water during mixing and transfers of hazardous materials consisting of petroleum product and fuel. Describe here methods to control pollutants using BMPs in accordance with Ecology’s Construction Stormwater General NPDES Permit. BMPs guidance is provided in Ecology’s Stormwater Management Manuals, such as Volume II – Construction Stormwater Pollution Prevention, BMP C153 (Volume II Construction Stormwater Pollution Prevention) (and Volume IV Source Control BMPs (Stormwater Manual Volume IV Source Control BMPs).

- Multiple members of GrayMar’s on-site team have successfully completed the CESCL-Training. Utilizing the CESCL training along with following specifications and requirements provided in approved remediation drawings/plans the team will implement necessary BMPs as prescribed.

Refueling Procedures for Filling the 2,000-Gallon AST Tank and Pickup Truck “Slip-Tanks”

Refueling the 2,000-gallon Double-Wall Aboveground Storage Tank

- Secondary Containment is not required for the 2,000-gallon tank due to this AST having a USEPA-approved “Double-wall”, meaning the unit is a tank within a tank, intended to contain any leaks
- For added protection, GrayMar will utilize a properly sized “catch-can” to lay directly below the fueling point, whenever fuel is transferred from truck to tank and tank to slip-tank near the 2,000-gallon AST
- GrayMar will provide a 5-gallon pail and sorbent-pads to catch the potential for any #2-oil drips

NOTE: This same approach will function properly whether refilling around fuel storage containers and during transfers. Secondary containment will be provided on all regulated containers and be in place during refueling activities involving transfers of fuel from “on-road” delivery trucks, “offroad” pickup trucks with “Slip-Tanks” for fueling construction equipment (*referred to as “portable tanks” for field equipment*).

APPROACH 1 (Mobile Fueling): This involves fueling earthmoving or excavation equipment from a pickup truck with a “Slip-Tank” that is moved around the site. Secondary containment equipment used during mobile fueling should be sized to contain the most likely volume of fuel to be spilled during a fuel transfer.

Portable containment equipment should be positioned to catch any fuel spills due to overfilling the equipment and any other spills that may occur at or near the fuel filler port to that equipment. The selection of containment equipment and its positioning and use should take into account all of the drip points associated with the fuel-filling port and the hose from the fuel delivery truck.

Personnel must attend to the fueling process to ensure that any spills will be of limited volume.

APPROACH 2 (Fuel Storage and Transfer Areas): This involves fueling equipment in a fixed location on the site. The 2,000-gallon aboveground Storage Tank does not require secondary containment due to the double wall construction.

Secondary containment areas for fuel storage tanks must be able to contain 110 percent of the volume of the largest fuel storage container and have an impervious floor. Tanks may be placed within a metal, plastic, polymer or precast concrete vault providing 110 percent of the volume of the largest fuel storage container.

For smaller volumes stored in fuel drums, containment pallets provide suitable secondary containment. Fuel transfer should be done over a flat, impervious fuel transfer area adjacent to the fuel storage tank(s). The impervious fuel transfer area should extend beyond the full reach (length) of the fuel hose to avoid spills directly onto a pervious surface.

Portable containment equipment may provide both secondary containment for the fuel storage tank (110 percent of the volume) and the required impervious area (typically raised at the perimeter) necessary for conducting fuel transfers.

Daily Inspections

Daily inspection and cleanup procedures will ensure that all equipment is checked during the Pre-Trip Inspection prior to operating that piece of equipment every morning. GrayMar will police the areas throughout the day that are currently being worked-in, and during all planned site operations.

Routine Equipment Inspections

Routine equipment, storage area, and structure inspection and maintenance practices to prevent drips, leaks or failures of hoses, valves, fittings, containers, pumps, or other systems that contain or transfer hazardous materials. Describe the equipment and structure inspection and maintenance practices.

- On a daily basis, GrayMar will inspect all equipment, storage areas and temporary structures. Visual inspections of the storage areas and structures will be performed and any identified deficiencies will be immediately corrected (*See Attached Inspection Checklist*). GrayMar will utilize our DVIR (*vehicle inspection forms*) for all equipment (*Completed DVIR's can be performed manually or through electronic processes*). Any deficiencies identified during inspection will be immediately addressed and corrected.

Site Inspections & Frequency

Describe the site inspection frequency and site inspection procedures.

- Internal inspections will be performed daily. Due to the high-profile nature of the project, it is anticipated that government agencies (*local, state and federal*), customer representatives, stakeholders, and other interested parties will be inspecting the site activities at infrequent intervals.
- Inspection visitors will sign-in at the site and must be escorted through the site by an authorized representative.

SPILL RESPONSE

Table 6 outlines the response procedures that GrayMar shall follow for the scenarios described in the tables below, indicating that if hazardous materials are encountered or spilled to soil or water during construction, GrayMar shall do everything possible to control and contain the material until appropriate measures can be taken. The response procedures include a description of the actions that GrayMar shall take to address each task shown in the tables as well as the specific onsite, spill response equipment that shall be used to perform each task.

- GrayMar does not anticipate using any subcontractor in the event of a release on the subject property. If GrayMar encounters unanticipated pre-existing contamination within the Project area during Project work, GrayMar shall immediately notify the Golder Construction Manager.

Table 6 - SPILL RESPONSE PROCEDURES

NON-HAZARDOUS MATERIAL AND LOCATION	SPILL RESPONSE TASK			
	ASSESS THE SPILL	SECURE THE AREA	CONTAIN AND ELIMINATE THE SPILL SOURCE	CLEAN UP SPILLED MATERIAL DECONTAMINATE EQUIPMENT DISPOSE OF SPILLED & CONTAMINATED MATERIAL ¹
Diesel Fuel	Determine Size & Footprint	Exterior Area secure	Fuel-Pad area graded level (No Sharp Incline)	Containerized Waste Media Staged in "Outbound"
Motor Oil	How much material was lost	Cordon-off spill-area	Ensure Leak has stopped (Auto or manual)	Label Waste (if known) on drum-lid & Label(s)
Hydraulic Fluid	Still Leaking?	Check for Wind Dir.	Collect all spilled material (Solidify liquids)	Prepare After-Action Report (Note Cause if known)
Glycol (Coolant)	Stop Spill	Note Material & Quantity	Collect solidified materials in 55DMs	Ensure both UPRR & Golder Receive Updates
	Cleanup Release	Time of Release	Complete Waste Generation Log (Date)	Notify before waste Scheduled to go offsite T&D

NOTES:

- Spilled fuel, petroleum product and hazardous materials, contaminated stormwater, contaminated soil and water, and all cleanup supplies shall be transported off site for disposal at a facility approved by the Department of Ecology.*
- No potentially hazardous materials, contaminated soil or water, or cleanup supplies may be discharged to any sanitary sewer without approval of the local sewer authority.*
- Contaminated stormwater will not be discharged to any sanitary sewer without approval of the local sewer authority.*
- Petroleum products, fuel, and hazardous material spills shall be addressed and shall be prevented from reaching storm drains or other discharge points.*
- It is acceptable to combine materials covered by the same response procedures, as long each material is clearly identified*

APPENDIX



GrayMar Environmental Services, Inc.,
Corporate Address: 601 S Pioneer Way, Suite F#218, Moses Lake, WA 98837
Primary Project Field Office: 11023 E. Mt. Spokane State Park Drive, Mead, WA 99201
Emergency Response 24/7 Phone Number: (866) 472-9627

APPENDIX A • PROJECT SITE MAP

LOCATION OF 2,000-GALLON DOUBLE-WALLED AST



LEGEND

	Truck Route (Proposed)	
	Truck Traffic Direction	
	Rumble/Shaker Plates 12' W x 14' L (3) Each	
	Trackout Armor Rock 4"- 8" in Diameter, 12" deep	
	Geofabric to be used under trackout	
	Check Dams (Ecology Blocks)	
	Check Dams (Hay Bales)	
	Silt Fencing	

Spokane River (Running W/SW)



Name: EROSION AND SEDIMENT CONTROL PLAN (MODIFICATION)	Drawing: 801507	Project: TRENTWOOD	Drawn: Steve Sitton	Notes:
Date:	Scale: NOT TO SCALE	Date: 10/17/2022	Rev: 6	GRAYMAR ENVIRONMENTAL 601 S PIONEER WAY STE F #218 MOSES LAKE, WA 98837

LOCATION OF 2,000-GALLON DOUBLE-WALL RED-DYE DIESEL AST STORAGE TANK

See above Drawing for location of the 2,000-gallon Diesel AST

NOTE: This is the same location where the 55-gallon Spill-Kit will be staged during all operating hours.

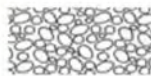
The kit may be returned to the 40' Conex Box during Non-working hours - (weather dependent), or remain stationary

APPENDIX B • UPRR TRENTWOOD DROSS SITE

**SITE AERIAL AND PLOT PLAN SHOWING OWNERSHIP
AND SITE ENTRANCE AND EXIT**



Corrugated Steel Plate or Equivalent If Needed



3\" - 6\" Washed Rock

***Length of Right of Way 50' Min**

***Width of Right of Way to Accomodate Anticipated Traffic**

APPENDIX C • 2,000-GALLON AST FUELING PROCEDURES

Unloading 2K AST Fuel Tank into Onsite (Non-DOT) Construction Equipment

GrayMar will ensure that the construction equipment diesel-tank is properly vented before starting to load (*refill*). If you are not certain that the construction equipment, or the 2,000-gallon AST “Day-Tank” are both being properly vented, you must contact your supervisor and ask for assistance from a trained equipment operator or above ***before starting to refuel any equipment***.

To Load from 2,000-Gallon #2 (RED-DYE DIESEL) Storage Tank to Construction Equipment

ALL RED-DYE DIESEL-FIRED EQUIPMENT REFUELED DIRECTLY / INDIRECTLY FROM 2K AST.

- 1) Attach ground cable or bonding clamp from AST Tank to Equipment being filled (*if applicable*).
- 2) Use wheel chocks or other similar barrier to prevent premature departure.
- 3) Hookup the fuel hose and open all appropriate valves from storage tank to dispenser
- 4) Loosen loading hose to allow enough air to drain loading hose dry.
- 5) Ensure that drips from the hose drain into the spill bucket at the loading area.
- 6) Disconnect loading hose completely, close load valve, plug and fasten securely.
- 7) Close belly valve on 2,000-gallon AST, if required
- 8) Disconnect ground cable.
- 9) Promptly clean up any spilled oil or drips on tank or equipment with oil-pad
- 10) Deposit soiled oil-pads into a 55-gallon non-hazardous waste drum for further disposition.
- 11) Inspect lowermost drains and valves of the vehicle for discharges/leaks and ensure that they are tightened, adjusted, or replaced as needed to prevent discharges while vehicle is in transit.

ALL GASOLINE & NON-RED-DYE DIESEL-FIRED EQUIPMENT (DOT WATER TRUCK)

(INCLUDING ALL 87-OCTANE GASOLINE / E85 ETHANOL/GASOLINE BLENDED FUELS)

- 1) Follow Instructions at Gas-Station (*off premises from project location*)
- 2) Ensure the DVIR (Pre-Trip and Post-Trip Inspection) Form is Completed online

APPENDIX D • INSPECTION CHECKLIST

Further description and comments, if needed, should be provided on a separate sheet of paper and attached to this sheet. Any item answered "YES" needs to be promptly reported, repaired, or replaced, as it may result in non-compliance with regulatory requirements. Records are maintained with the SPCC Plan at the Trentwood, (Spokane Valley) field office.

DATE: _____

SIGNATURE: _____

AST TANK CONDITION	YES	NO	DESCRIPTION & COMMENTS (NOTE TANK/EQUIPMENT ID)
Storage tanks and Separation Equipment			
Tank surfaces show signs of leakage			
Tanks show signs of damage, rust, or deterioration			
Bolts, rivets or seams are damaged			
Aboveground tank supports are deteriorated or buckled			
Aboveground tank foundations have eroded or settled			
Gaskets are leaking			
Level gauges or alarms are inoperative			
Vents are obstructed			
Thief hatch and vent valve does not seal airtight			
Containment berm shows discoloration or stains			
Berm is breached or eroded or has vegetation			
Berm drainage valves are open/broken			
Tank area clear of trash and vegetation			
Equipment protectors, labels, or signs are missing			
Piping/Flowlines and Related Equipment			
Valve seals or gaskets are leaking.			
Pipelines or supports are damaged or deteriorated.			
Buried pipelines are exposed.			
Transfer equipment			
Loading/unloading lines are damaged or deteriorated.			
Connections are not capped or blank-flanged			
Secondary containment is damaged or stained			
Response Kit Inventory			
Discharge response material is missing or damaged or needs replacement			

Additional Remarks (Include Below):

APPENDIX E • RECORD OF 2K AST DIKE-DRAINAGE

This record must be completed when rainwater from diked areas is drained into a storm drain or into an open watercourse, lake, or pond, and bypasses the water treatment system. The bypass valve must normally be sealed in closed position and opened and resealed following drainage under responsible supervision. Records are maintained with the SPCC Plan at the Trentwood field office.

DATE	NAME OF DIKE	PRESENCE OF OIL	TIME STARTED	TIME FINISHED	SIGNATURE OF GRAYMAR EMPLOYEE

APPENDIX F • DISCHARGE NOTIFICATION PROCEDURES

Circumstances, instructions, and phone numbers for reporting a discharge to the National Response Center and other federal, state, and local agencies, and to other affected parties, are provided below. They are also posted at the facility in the storage shed containing the discharge response equipment.

NOTE: Any discharge to water must be reported immediately to the National Response Center.

Field Operations Supervisor, Mike Murphy (24 hours)

208-304-0487

Local Emergency (*fire, explosion, or other hazards*)

911

AGENCY ORGANIZATION	AGENCY CONTACT	CIRCUMSTANCES	WHEN TO NOTIFY
FEDERAL AGENCIES			
NRC (National Response Center)	800-424-8802	Discharge reaching navigable waters.	Immediately (verbal)
EPA Region X (Hotline)	800-424-4372		Immediately (verbal)
EPA Region X Regional Administrator (Casey Sixkiller)	1200 Sixth Avenue Suite 155 Seattle, WA 98101	Discharge 1,000 gallons or more; or second discharge of 42 gallons or more over a 12-month period.	Written notification within 60 days (see Section 2.1 of this Plan)
STATE AGENCIES			

AGENCY ORGANIZATION	AGENCY CONTACT	CIRCUMSTANCES	WHEN TO NOTIFY
Office of State Police, Dept. of Transportation (DOT) & Environmental Safety-Section, Hazardous-Materials Hotline	509-227-6566 or 509-324-6000	<ul style="list-style-type: none"> Any Injury that requires a hospitalization or any fatality. Fire, explosion, or other impact that could affect public-safety. Release exceeding 24-hour reportable quantity. Impact to areas beyond the facility's confines. Any Discharges that pose any form of an emergency condition, regardless of the volume discharged. 	<p>Immediately (verbal)</p> <p>Written notification to be made within 5 days.</p> <p>Within 1 hour of discovery (verbal).</p>

The person reporting the discharge must provide the following information:

- Name, location, organization, and telephone number
- Name and address of the owner/operator
- Date and time of the incident
- Location of the incident
- Source and cause of discharge
- Types of material(s) discharged
- Total quantity of materials discharged
- Quantity discharged in harmful quantity (to navigable waters or adjoining shorelines)
- Danger or threat posed by the release or discharge
- Description of all affected media (e.g., water, soil)
- Number and types of injuries (if any) and damaged caused
- Weather conditions
- Actions used to stop, remove, and mitigate effects of the discharge
- Whether an evacuation is needed
- Name of individuals and/or organizations contacted; and
- Any other information that may help emergency personnel respond to the incident

Whenever the facility discharges more than 1,000 gallons of oil in a single event, or discharges more than 42 gallons of oil in each of two discharge incidents within a 12-month period, the Manager of Field Operations must provide the following information to the U.S. Environmental Protection Agency's Regional Administrator within 60 days.:

- Name of the facility.
- Name of the owner or operator.
- Location of the facility.
- Maximum storage or handling capacity and normal daily throughput.
- Corrective actions and countermeasures taken, including a description of equipment repairs and replacements.
- Description of facility, including maps, flow diagrams, and topographical maps.
- Cause of the discharge(s) to navigable waters, including a failure analysis of the system and subsystems in which the failure occurred.
- Additional preventive measures taken or contemplated to minimize possibility of recurrence.
- Other pertinent information requested by the Regional Administrator.

APPENDIX G • DISCHARGE NOTIFICATION FORM ***

*** Notification must not be delayed if information or individuals are not available.

LOCATION: UPRR DROSS CLEANUP SITE
 2317 NORTH SULLIVAN ROAD
 SPOKANE VALLEY, WA 99016

DESCRIPTION OF DISCHARGE		
Date/time	Release date: Release time: Duration:	Discovery date: Discovery time:
Reporting Individual	Name: Tel. #:	
Location of discharge	Latitude: Longitude:	Description:
Equipment source	<ul style="list-style-type: none"> pipng flowline well unknown stock, flare 	Description: Equipment ID:
Product	<ul style="list-style-type: none"> crude oil saltwater other*** 	*** Describe other:
Appearance and description		
Environmental conditions	Wind direction: Wind speed:	Rainfall: Current:
IMPACTS		
Quantity	Released:	Recovered:
Receiving medium	<ul style="list-style-type: none"> water** land other (describe): 	<ul style="list-style-type: none"> Release confined to company property. Release outside company property. ** If water, indicate extent and body of water:
Describe circumstances of the release		
Assessment of impacts and remedial actions		
Disposal method for recovered material		
Action taken to prevent incident from reoccurring		

Safety issues	<ul style="list-style-type: none"> • Injuries • Fatalities • Evacuation 	
NOTIFICATIONS		
AGENCY	NAME	DATE/TIME REPORTED & COMMENTS
Company Spill Response Coordinator		
National Response Center 1-800-424-8802		
State police		
County Emergency Response Commission		
Oil Spill Removal Organization / Cleanup Contractor		

APPENDIX H • DISCHARGE PREVENTION BRIEFING LOG

DATE	TYPE OF BRIEFING	INSTRUCTOR(S)

GRAYMAR ENVIRONMENTAL SERVICES
SPILL / EMERGENCY RESPONSE (ER) REPORT FORM
GRAYMAR PROJECT NO: 10-03-22R-UPRR-TW

NOTE: *The oil spill contingency plan is maintained separately at the Trentwood office.*

A) GENERATOR INFORMATION:

Generator Name and Address:

Generator Contact: _____

Phone #: _____

Cell #: _____

Fax #: _____

B) E/R INFORMATION:

E/R Call Received By: _____

Date: _____ Time: _____

Location of E/R: _____

C) INCIDENT DESCRIPTION:

Scene Description: _____

Substances/Pollutants Involved: _____

Chemical Hazards: _____

Physical Hazards: _____

Spill Dimensions (L x W x D): _____

Spill Quantity: _____

- Contaminated Media: _____

D) ON SCENE INFORMATION: _____

Contractor Personnel on Scene: _____

- Technician I: _____

- Technician II: _____

- Technician III: _____

- Chemist/Biologist: _____

- Industrial Hygienist: _____

- Equipment Operator: _____
- Project Supervisor: _____
- Field Service Manager: _____

Generator Personnel on Scene:

- _____

Additional on Scene Personnel:

- _____

E) RESPONSE ACTIONS TO CONTAIN/CLEAN UP HAZARDOUS SUBSTANCES:

- _____

F) EQUIPMENT/MATERIALS BEING USED, PPE INVOLVED, AND VEHICLES:

- _____
- _____

G) SUBCONTRACTORS BEING USED:

- _____

H) MATERIALS REMOVED AND DISPOSED FROM SITE:

I) LOCATION AND METHOD OF DISPOSAL/RECYCLING:

J) ADDITIONAL ON-SCENE INFORMATION:

APPENDIX J: SPCC ACKNOWLEDGEMENT PLAN

This SPCC Plan is supported by the executives, project manager and the superintendents of GrayMar Environmental Services, Inc. having the authority to commit the necessary resources, including labor, equipment, and materials, to expeditiously control and remove any harmful quantity of fuel, petroleum product or hazardous materials spilled or released to the waters or land of the State of Washington.

Robert N. Seitz

Executive

GrayMar Environmental Services

20 October 2022

Michel Gipson

Project Manager

GrayMar Environmental Services

20 October 2022

Michel Murphy

Project Supervisor

GrayMar Environmental Services

20 October 2022

Colton Bennett

Project Supervisor

GrayMar Environmental Services

20 October 2022

SPCC PLAN ACKNOWLEDGEMENT FORM

(TO BE SIGNED BY ALL PROJECT PERSONNEL)

This is to certify that I have read this Project SPCC Plan and understand its contents. I have attended a Project orientation meeting discussing the elements of this SPCC Plan and the safety and health hazards associated with SPCC operations to be performed at this Project. Failure to comply with the requirements contained in this SPCC Plan may result in my removal from the Project.

PRINT NAME	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

SPCC PLAN ACKNOWLEDGEMENT FORM

(Continuation Sheet)

(TO BE SIGNED BY ALL PROJECT PERSONNEL)

This is to certify that I have read this Project SPCC Plan and understand its contents. I have attended a Project orientation meeting discussing the elements of this SPCC Plan and the safety and health hazards associated with SPCC operations to be performed at this Project. Failure to comply with the requirements contained in this SPCC Plan may result in my removal from the Project.

PRINT NAME	SIGNATURE	DATE

SPCC PLAN - REVISION HISTORY			
Rev	Description of Change	Author	Date
A	Initial SPCC Plan Composition and Draft #1	Bob Seitz	29 SEPT 2022
B	WSP Golder - Submittal Review for Finalizing	Vanessa Nancarrow	11 OCT 2022
C	WSP Golder – Final-Draft (Revision) Approval	Bob Seitz	20 OCT 2022
D		Vanessa Nancarrow	24 OCT 2022
E		Bob Seitz	
F			



SUBMITTAL REVIEW

Date: 1/5/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Geotextile

Submittal No. 008.B

Specification No: Drawing 021 – Geotextile

Specification Section: A-D

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The geotextile product resubmittal (SKAPS GT-180) has been approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 1/5/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Kelly Ottmar | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |

SKAPS GT-180
NON-WOVEN GEOTEXTILE



SKAPS INDUSTRIES

335 Athena Drive,
Athens, GA 30601
Ph: (706)-354-3700
Fax: (706)-354-3737
Email: contact@skaps.com

SKAPS GT-180 is a needle-punched nonwoven geotextile made of 100% virgin polypropylene staple fibers, which are formed into a random network for dimensional stability. SKAPS GT-180 resists ultraviolet deterioration, rotting, biological degradation, naturally encountered alkalis and acids. Polypropylene is stable within the pH range of 2 to 13. SKAPS GT-180 is NTPEP certified and meets requirements as per AASHTO Standards and/or D.O.T. Standards.

SKAPS GT-180 conforms to the Minimum Average Roll Values (MARV) listed below:

PROPERTY	TEST METHOD	ENGLISH (MARV ²)	METRIC (MARV ²)
Grab Tensile Strength	ASTM D 4632	205 lbs.	0.911 kN
Grab Elongation	ASTM D 4632	50%	50%
Trapezoid Tear Strength	ASTM D 4533	85 lbs.	0.378 kN
CBR Puncture Resistance	ASTM D 6241	535 lbs	2.370 kN
Permittivity ⁺	ASTM D 4491	1.40 sec ⁻¹	1.40 sec ⁻¹
Water Flow ⁺	ASTM D 4491	95 gpm/ft ²	3870 l/min/m ²
Apparent Opening Size (AOS) ^{3&4}	ASTM D 4751	80 Std. U.S. Sieve	0.180 mm
UV Resistance	ASTM D 4355	70%/500 hrs.	70%/500 hrs.

PACKAGING

Roll Dimensions (W x L)	12.5 x 360 ft. 15 x 300 ft.	3.81 m x 109.8 m 4.6 m x 91.4 m
Area Per Roll	500 sq. yards	418.3 sq. meters
Estimated Roll Weight	250 lbs.	114 kg

NOTES:

1. The property values listed above are subject to change without notice.
2. Minimum Average Roll Values (MARV) is calculated as the average minus two standard deviations. Statistically, it yields approximately 97.5% degree of confidence that any samples taken from quality assurance testing will meet or exceed the values described above.
3. Maximum Average Roll Value (MaxARV)
4. At time of manufacturing, Handling may change these properties.

This information is provided for reference purposes only and is not intended as a warranty or guarantee. SKAPS assumes no liability in connection with the use of this information.



SUBMITTAL REVIEW

Date: 2/8/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Ecological Cap Gravel

Submittal No. 009

Specification No: Drawing 021 – Earth Materials

Specification Section: D

Submitted by: Michael Gipson

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The product submittal for ecological cap gravel is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 2/8/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |



WSDOT MATERIALS LAB

06/24/2020

Aggregate Source Approval Report

Owner: Spokane Raceway Park, Inc. Aggregate Source: PS-C-308
 Lessee: Inland Asphalt Co. Known as: Hayford Road Pit
 Located in: SW1/4 SW1/4 Section 13 T25N R41E County: Spokane

Remarks:

Mineral Agg. and Surfacing: Test Date: 04/19/2018 Expiration Date: 04/19/2023
 Absorption: 2.63 Apparent Sp. G.: 2.882 Bulk Sp. G. (SSD): 2.75 Bulk Sp. G.: 2.679
 Deg: 42 LA: 21

Remarks:

Currently approved as a source of aggregate for:

ATB	Ballast	BST Crushed Cover Stone
BST Crushed Screenings	Crushed Surfacing Base Course	Crushed Surfacing Key Stone
Crushed Surfacing Top Course	Gravel Backfill for Foundation Class A	HMA Other Courses
HMA Wearing Course	Maintenance Rock	Permeable Ballast

Acceptance tests need to be performed as necessary.

Aggregates for Concrete: Test Date: 10/31/2018 Expiration Date: 10/31/2023
 ASR - 14 Day : 0.60 ASR - One Year: 0.021 CCA Absorption: 2.15 CCA Sp.G: 2.775
 Deg: 80 FCA Absorption: FCA Organics: FCA Sp. G:
 LA: 19

Remarks: 1-Year ASR Result expires 10/9/2024

Currently approved for:

Coarse Concrete Aggregates

Acceptance tests need to be performed as necessary

NOT approved for:

Riprap, Quarry Spalls, Rock for Rock Wall, Erosion and Scour Protection: Test Date: 04/29/2013 Expiration
 Date: 04/29/2014
 Absorption: 2.9 Apparent Sp. G.: 2.823 Bulk Sp. G. (SSD): 2.733 Bulk Sp. G.: 2.656
 Deg: 47 LA: 23

Remarks:

NOT APPROVED AS A SOURCE OF AGGREGATE FOR:

6/24/2020

Aggregate Source Approval Report.

Riprap Quarry Spalls Rock for Erosion and Scour Protection Stone 9-27.3(6)
Rock for Rock Walls

Streambed Aggregates: Test Date: 04/19/2018 Expiration Date: 04/19/2023
Absorption: 2.63 Apparent Sp. G.: 2.882 Bulk Sp. G. (SSD): 2.75 Bulk Sp. G.: 2.679
Deg: 42 LA: 21

Remarks:

Currently Approved for:
Streambed Aggregate

Gravel Borrow for Structural Earth Walls: Test Date: 04/19/2018 Expiration Date: 04/19/2023
Bulk Sp. G. (SSD): 2.75 Deg: 42 LA: 21

Remarks: For geosynthetic reinforcement, the gravel borrow shall be tested for pH prior to placement. For metallic reinforcement, the gravel borrow shall be tested for pH, resistivity, chlorides, and sulfates prior to placement. If the resistivity of the backfill material equals or exceeds 5,000 ohm-cm, the specified chloride and sulfate limits may be waived. If the aggregate source has variable quality, additional testing may be required. Contact the Regional Materials Engineer or the State Geotechnical Engineer for direction.

Currently Approved for:
Gravel Borrow for Str Earth Walls

ALL OTHER PIT RUN MATERIALS:

Project Engineer may request preliminary samples but Aggregate Source Approval is not required.

AGGREGATE MATERIALS NOT REQUIRING ASA APPROVAL :

Aggregate for Gravel Base 9-03.10
Gravel Backfill for Foundation Class B 9-03.12(1)B
Gravel Backfill for Walls 9-03.12(2)
Gravel Backfill for Pipe Zone Bedding 9-03.12(3)
Gravel Backfill for Drains 9-03.12(4)
Gravel Backfill for Drywells 9-03.12(5)
Backfill for Sand Drains 9-03.13
Sand Drainage Blanket 9-03.13(1)
Gravel Borrow 9-03.14(1)
Select Borrow 9-03.14(2)
Common Borrow 9-03.14(3)
Native Material for Trench Backfill 9-03.15
Foundation Material Class A and B 9-03.17
Foundation Material Class C 9-03.18
Bank Run Gravel for Trench Backfill 9-03.19
Commercial Concrete Aggregate 6-02.3(2)B



CENTRAL PRE-MIX
MEMPHIS, TN

Basic Quality Statistical Summary Report

Plant 120_01138-Hayford AGG
Product 2304 - 1 1/4" - 1/4" Chip
Specification 9-03.9(2) Permeable Ballast
Period 11/11/2021 - 11/11/2022

Sieve/Test	Tests	Average	St Dev	Specification
1 1/2" (37.5mm)	26	100	0.0	100-100
1 1/4" (31.5mm)	26	99	3.0	
1" (25mm)	27	82	11.4	
3/4" (19mm)	27	46	11.0	40-80
5/8" (16mm)	27	24	9.1	
1/2" (12.5mm)	27	8	4.4	
3/8" (9.5mm)	27	4	2.1	
#4 (4.75mm)	27	3	1.1	0-5
#8 (2.36mm)	26	2	0.9	
#16 (1.18mm)	26	2	0.9	
#40 (.425mm)	23	2	0.9	
#100 (.15mm)	27	2	0.7	0-2
Pan	27	0.0	0.00	





SUBMITTAL REVIEW

Date: 3/28/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Topsoil – Topsoil Source #1

Submittal No. 010

Specification No: Response to Bidder Questions #5

Specification Section: Response #4

Submitted by: Michael Gipson

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: This topsoil source is rejected based on environmental testing results for barium and comparison to a calculated barium screening level of 810 mg/kg (approved by Ecology for the evaluation of topsoil for import and use at the site).

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 3/28/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |



GOLDER

MEMBER OF WSP

- Frank Shuri
- James Roman

Golder Design Engineer
Golder SAL

SUBMITTAL REVIEW



LABORATORY SUMMARY

PROJECT NAME:	Herns Iron Works	PROJECT NO:	120-239T		
CLIENT NAME:	Peck & Peck Excavating, Inc.	DATE:	7/30/2020		
LOCATION:	Stockpile	SOURCE:	Onsite		
LAB SAMPLE NUMBER:	S120-0656				
SAMPLED BY:	Client				
DATE SAMPLED:	7/28/2020				
MATERIAL:	Topsoil				
SAMPLE LOCATION:	Stockpile				
TEST DESCRIPTION	SPEC.	Results	Results	Results	Results
Organic Content in Soils by Loss on Ignition (AASHTO T267 / ASTM D2974) Organic Content, %		6.3			
pH of Soils (AASHTO T289 / ASTM D4972) pH		6.8			

Remarks: MATERIAL WAS OVEN DRIED TO A CONSTANT MASS PRIOR TO IGNITION Reviewed By: **PRELIMINARY**

Hayden Testing Manager : Chris McKissen
Hayden Engineering Manager: James Thomasson, P.E.
 690 W. Capstone Court • Hayden, ID 83835 • (208) 762-4721 • Fax (208) 762-0942
www.allwesttesting.com

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SUBMITTAL REVIEW

Date: 3/6/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Backfill from Offsite Sources – Backfill Source #3

Submittal No. 012

Specification No: Drawing 021 – Earth Materials

Specification Section: C

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: Backfill Source #3 is approved for use based on the attached gradation report and Ecology’s approval of the environmental sampling results. GrayMar will need to demonstrate a firm and unyielding surface can be achieved on-site.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 3/6/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |



Plant 121_01702-Post Falls AGG

Product 2322-Seed Rock

Period: 07/23/2022 - 01/23/2023

Name/Title Brett Howell / QC Technician

Report Date 01/23/2023

Procedure	Sieve/Test	Result	Unit
	2" (50mm)	100.0	%
	1 1/2" (37.5mm)	100.0	%
	1" (25mm)	96.5	%
	3/4" (19mm)	81.1	%
	5/8" (16mm)	71.4	%
	1/2" (12.5mm)	60.0	%
	3/8" (9.5mm)	50.1	%
	1/4" (6.3mm)	35.8	%
	#4 (4.75mm)	29.6	%
	#8 (2.36mm)	18.4	%
	#16 (1.18mm)	10.3	%
	#30 (.6mm)	6.7	%
	#50 (.3mm)	5.7	%
	#100 (.15mm)	5.3	%
	#200 (75µm)	4.94	%
AASHTO T176	SE	67	%



SUBMITTAL REVIEW

Date: 3/6/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Backfill from Offsite Sources – Backfill Source #4

Submittal No. 013

Specification No: Drawing 021 – Earth Materials

Specification Section: C

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: Backfill Source #4 is rejected based on petroleum-related compound exceedances of Washington State MTCA Method A Unrestricted Use Criteria.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 3/6/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |



REPORT TRANSMITTAL

ATTENTION: Mike Gipson

2/13/2023 4:41:23 PM

COMPANY: Graymar

PROJECT #: 223-028L

PROJECT NAME: Graymar Enviromental Testing

FROM: Cynthia Slocumb

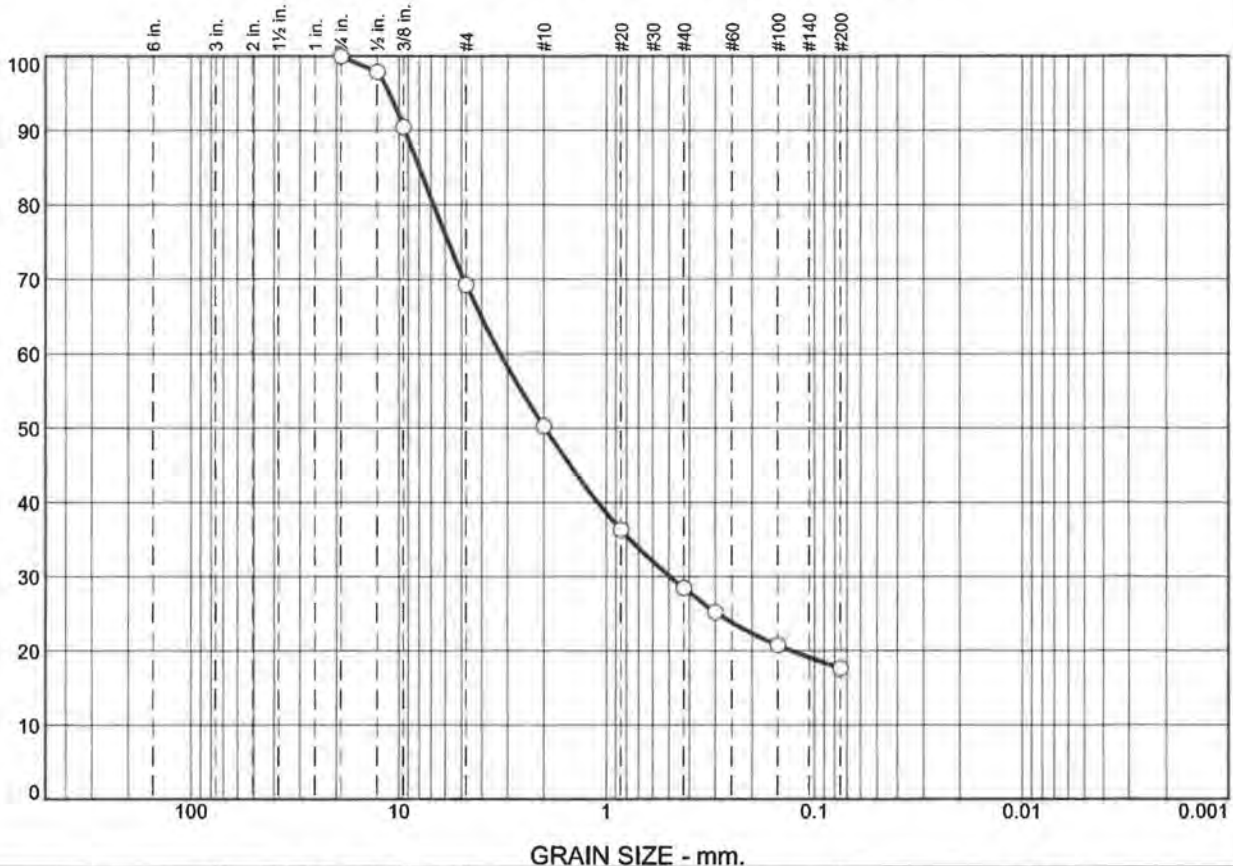
DATE	DESCRIPTION
	Wash Gradation

CC:

Includes:
S223-0025 Particle Size Distribution Report.pdf

Particle Size Distribution Report

PERCENT FINER



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	31	19	22	10	18	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	98		
3/8"	90		
#4	69		
#10	50		
#20	36		
#40	28		
#50	25		
#100	21		
#200	18		

Material Description

Silty sand with gravel

Atterberg Limits

PL= - LL= - PI= -

Coefficients

D₉₀= 9.3802 D₈₅= 7.9937 D₆₀= 3.2627
 D₅₀= 1.9738 D₃₀= 0.4961 D₁₅=
 D₁₀= C_u= C_c=

Classification

USCS= - AASHTO=

Remarks

The sample was provided by the client on 2/10/23.

* (no specification provided)

Location: On-site sample **Depth:** unknown **Date:** 2/13/23
Sample Number: S223-0025



Client: Graymar Environmental
Project: Graymar Environmental Laboratory Testing 2023
Project No: 223-028L

Tested By: D. Schmitz **Checked By:** C. Warrick

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SUBMITTAL REVIEW

Date: 3/6/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Backfill from Offsite Sources – Backfill Source #5

Submittal No. 014

Specification No: Drawing 021 – Earth Materials

Specification Section: C

Submitted by: Michael Gray

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: Backfill Source #5 is approved for use based on the attached gradation report and Ecology’s approval of the environmental sampling results. GrayMar will need to demonstrate a firm and unyielding surface can be achieved on-site.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

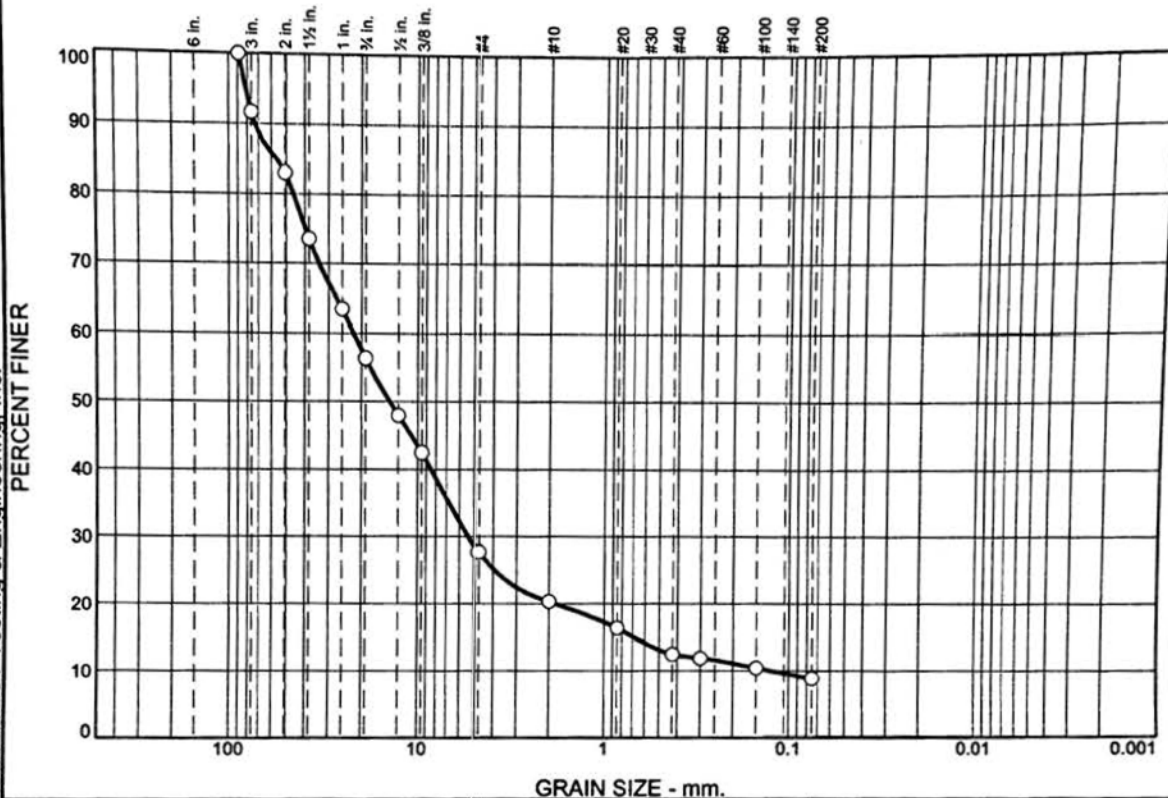
Golder Associates USA Inc.: Vanessa Nancarrow

Date: 3/6/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
8	36	28	8	8	3	9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 1/2	100		
3	92		
2	83		
1 1/2	73		
1	63		
3/4	56		
1/2	48		
3/8	42		
#4	28		
#10	20		
#20	16		
#40	12		
#50	12		
#100	10		
#200	8.9		

Soil Description
poorly graded gravel with silt and sand

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 72.7615 D₈₅= 56.2811 D₆₀= 22.0729
 D₅₀= 14.1467 D₃₀= 5.3688 D₁₅= 0.6804
 D₁₀= 0.1254 C_u= 176.00 C_c= 10.41

Classification
 USCS= GP-GM AASHTO=

Remarks

* (no specification provided)

Location: Unknown - Client Sampled
 Sample Number: S223-0042

Date: 2/23/23



Client: Graymar Environmental
 Project: Graymar Environmental Laboratory Testing 2023
 Project No: 223-028L Figure

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Tested By: M.Schofield Checked By: C. Warrick



SUBMITTAL REVIEW

Date: 3/28/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Topsoil – Topsoil Source #2

Submittal No. 015

Specification No: Response to Bidder Questions #5

Specification Section: Response #4

Submitted by: Michael Gipson

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: This topsoil source is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 3/28/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |



SUBMITTAL REVIEW

Date: 4/13/23

Project: Aluminum Recycling Trentwood Site – Dross Removal Project

Project No. 19119180

Submittal Name: Armor Rock

Submittal No. 016

Specification No: Drawing 021 – Earth Materials

Specification Section: E

Submitted by: Michael Gipson

Type of Submittal:

- For Approval:
 - As Specified
 - Substitution
- For Information

Disposition:

- Accepted as is
- Work may proceed, resubmit with additional information
- Work may not proceed, resubmit with additional information
- Rejected - Resubmit

Comments: The product submittal for armor rock is approved.

Review is for general conformance with the information given in the contract documents. Contractor is responsible for conformance with all requirements of the plans and specifications, including, but not limited to, dimensions which shall be conformed and correlated at the job site, fabrication processes and techniques of construction, coordination of work with that of all others, and satisfactory performance of all work.

Signed: *Vanessa Nancarrow*

Golder Associates USA Inc.: Vanessa Nancarrow

Date: 4/13/23

Distribution:

- | | | | |
|---|------------------------|--|---------|
| <input checked="" type="checkbox"/> John DeJong | UPRR PM | <input checked="" type="checkbox"/> Michael Gray | GrayMar |
| <input checked="" type="checkbox"/> Ted Norton | Golder PM | <input checked="" type="checkbox"/> Michael Gipson | GrayMar |
| <input checked="" type="checkbox"/> Kate DaPolito | Golder CM | | |
| <input checked="" type="checkbox"/> Vanessa Nancarrow | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> Frank Shuri | Golder Design Engineer | | |
| <input checked="" type="checkbox"/> James Roman | Golder SAL | | |

From: [Norton, Ted](#)
To: [Nancarrow, Vanessa](#)
Subject: FW: Quarry Spalls
Date: Thursday, April 13, 2023 4:13:00 PM

From: Methvin, Dave (Central Pre-Mix) <dave.methvin@centralpremix.com>
Sent: Thursday, April 13, 2023 4:12 PM
To: Norton, Ted <ted.norton@wsp.com>
Cc: Jennings, Patrick (Interstate Concrete and Asphalt) <patrick.jennings@interstate-ica.com>
Subject: Quarry Spalls

Ted,

The quarry spalls that we produce at our Hayford Rd pit are made in accordance to WSDOT spec 9-13.1(5). If you have any questions, please let me know.

Thanks.

Dave Methvin

Quality Control Manager
Central PreMix & Inland Asphalt Co

CRH Americas Materials, Inc.

5111 E Broadway
Spokane, WA 99212

O+1(509) 534-6221

C+1(509) 998-4725

E dave.methvin@centralpremix.com

www.centralpremix.com

Pineview Horticultural Services, Inc.

P.O. BOX 757
HAYDEN LAKE, ID. 83835
PHONE: 208-772-7294
FAX: 208-772-7598
EMAIL: pineviewhort@live.com

Message to: Bluegrass Hydroseeding
Attention: Rob
Date: July 6, 2023
From: Pat Zimmer
Subject: Greymar
No. of Pages: 1

Seed Certification:

This letter is written to certify that the seed mix shown below is true to label and have been duly tested by a fully accredited seed-testing laboratory using rules sanctioned by the Association of Official Seed Analysts. Further, the mix meets or exceeds the specifications of the project. Sample tag is shown below:

LAKESHORE BRAND Greymar Seed Mix

LOT #23062 PHS

PURE SEED	VARIETY/SPECIES	MIN GERM	ORIGIN	TEST DATE
57.76%	Slender Wheatgrass	90%	CAN	12/22
16.58%	Sturgeon Hard Fescue	92%	WA	10/22
16.63%	Basalt Milkvetch	91%	ID	9/22
8.28%	Mountain Brome	95%	MT	9/22

OTHER INGREDIENTS

0.02%	Other Crop Seed	Net Wt.	24 pbs/26.6 lbs
0.65%	Inert Matter	AMS #	6891
0.05%	Weed Seed		

Noxious Weed Seeds: None Found

PINEVIEW HORTICULTURAL SERVICES, INC.
Hayden, ID 83835

Please let me know if you have any questions regarding this mix.
Sincerely,

Patrick Zimmer