Parcel 3 Remedial Action Work Plan

1130 Niagara Street, NYSDEC Site No.C915284

Jenesis Development, LLC

December 17, 2021

→ The Power of Commitment

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1. Introduction

GHD Consulting Services Inc. (GHD) was retained by Jenesis Development, LLC (Jenesis) to prepare this Remedial Action Work Plan (RAWP) under the guidelines of the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) for Parcel 3 of the 1130 Niagara Street Site (Site) located in Buffalo, New York. A Site Location Map is presented on Figure 1.1. A Site Plan showing the parcels that comprise the Site is presented on Figure 1.2. The boundaries are based on tax map data for the property.

1.1 Purpose of this report

The purpose of this RAWP is to present the proposed plans to implement the selected remedy as stated in the NYSDEC Decision Document dated June 2021.

1.2 Scope and limitations

This report: has been prepared by GHD for Jenesis Development, LLC and may only be used and relied on by Jenesis Development, LLC for the purpose agreed between GHD and Jenesis Development, LLC as set out in section 1.0 of this report.

GHD otherwise disclaims responsibility to any person other than Jenesis Development, LLC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

2. Site Description and History

The Site is situated on 3 acres of land at 1130 Niagara Street in Buffalo, New York, and is owned by Jenesis. Gull Street bisects the Site creating a northern portion (Parcel 3) and southern portion (Parcels 1 and 2). Parcel 3 contains an approximately 1,200 square foot storage garage and an asphalt-covered parking lot. The storage garage is constructed with block walls, a slab-on-grade concrete floor, and a flat steel deck roof. Current Site cover is shown on Figure 2.1.

2.1 Physical Setting

The Site is located in the City of Buffalo, New York, in a mixed-use area zoned M1 - Light Industrial. The surrounding area is a mix of commercial and industrial use, with residential properties located approximately 750 feet to the east. The Site is relatively flat and is bordered by the following properties:

North: by Rich Products Corporation with Robert Rich Way and additional commercial properties located beyond

East: by Niagara Street with commercial and residential properties located beyond

South: by Oliver Gear with additional commercial properties located beyond

West: by railroad tracks with Interstate 190 and the Black Rock Canal located beyond

There are no surface water bodies or water courses located on or immediately adjacent to the Site. The nearest surface water body/water course is the Black Rock Canal, located approximately 100 yards to the west.

2.1.1 Site Geology

The overburden geology in the immediate vicinity of the site is classified as urban land and is mostly covered by streets, parking lots, and buildings. The native regional overburden consists of glacial till and glacial lacustrine deposits, predominately silts and clays. The site overburden geology was found to be generally consistent with the regional overburden geology. The overburden consists of the following materials listed from the ground surface to bedrock:

- Ground surface covering consisting of concrete, asphalt, or soil;
- Fill material consisting of a mixture of varying amounts of sand and gravel with brickfragments, wood, and cinders. This material is typical of historic urban fill;
- Native clay with fine gravel and sand; and
- Discontinuous sand with silt was observed in a few soil boring/well locations at thebedrock interface.

The overburden is approximately 18 feet thick on Parcel 3. The fill material within the overburden averages 5 feet thick on Parcel 3.

Bedrock is encountered at approximately 18 feet below ground surface (bgs) on Parcel 3. The bedrock encountered during the remedial investigation (RI) is consistent with the regional bedrock, with the upper unit consisting of limestone.

2.1.2 Hydrology

Groundwater was encountered in the overburden and in bedrock. The groundwater in both units flows generally in a westerly direction towards the Blackrock Canal/Niagara River.

3. Remedial Investigations

Several environmental investigations were conducted at the Site between 2004 and 2014. The NYSDEC approved RI, and supplemental RI were completed between 2015 and 2020. Historical and RI investigation results were presented in the Remedial Investigation/Alternatives Analysis/Interim Remedial Measure (RI/AA/IRM) report dated August 2020.

4. Parcel 3 Extent of Contamination

The contamination identified on Parcel 3 consists of polycyclic aromatic hydrocarbons (PAHs) and metals above 6 NYCRR Part 375 Restricted Use Soil Cleanup Objectives for the Protection of Human Health – Commercial Use (RUSCO-C) criteria. These areas are depicted on Figure 4.1.

5. Standards, Criteria, and Guidance

The Standards, Criteria, and Guidelines (SCGs) applicable to the selected remedy for Parcel 3 are 6 NYCRR Part 375 RUSCO-C for Site soils and City of Buffalo ordinances and building codes for any structural component included in the design.

6. Parcel 3 Selected Remedy

The selected engineering control (EC) remedy for Parcel 3 includes covering areas of exposed soil containing low level PAH and metals impacts above RUSCO-C criteria with a demarcation layer and 1-foot of clean fill or riprap/armor stone, as appropriate, to prevent direct contact with impacted soils. These areas are shown on Figure 6.1. It is estimated that an area of approximately 25,000 SF will require capping as shown on Figure 6.1. Imported soil/fill material will meet the requirements for imported backfill in Appendix 5 of DER-10. A copy of DER-10 Appendix 5 is provided as Appendix A. Existing engineering controls (concrete, asphalt surfaces) will be maintained to prevent contact with impacted soils.

Institutional Controls (ICs), including an environmental easement, restriction of the future use of the Site to commercial use, prohibition of the use of groundwater, and a Site Management Plan (SMP) would be used to ensure direct contact with remaining impacted soil and/or groundwater is prevented and any future intrusive activities, such as new building construction, are conducted so as to prevent migration of contaminants and reduce risk to Site workers.

Jenesis, as a volunteer in the BCP, is required to implement the remedy to the property line. Jenesis is not required to install, construct, operate, or maintain any remedial elements beyond the property line for Parcel 3.

7. Remedial Action

The exposed surfaces on Parcel 3 have been designated Areas 1 through 4. The area designations are shown on Figure 7.1. Project Plans are provided in Appendix B.

7.1 Area 1

Area 1 is located at the southwest corner of Parcel 3 and is the strip of land along the west side of the storage building. This area extends from the western side of the garage building to the property line, which is approximately 3 feet to the west of the building at the north end and 8 feet west of the building at the south end as shown on Sheet C001 in Appendix B.

The EC construction for Area 1 will include:

1. Clearing and grubbing;
2. Placement of a demarcation layer;
3. Placement of 6 inches of clean fill;
4. Placement of 6 inches of topsoil; and
5. Seeding/planting with a low growing ground cover.

Details can be found in the design drawings provided in Appendix B.

7.2 Area 2

Area 2 is the slope located on Gull Street shown on Figure 7.1. This area currently has a demarcation layer and a stone cover. As part of this remedial action, the existing cover system on Area 2 will be repaired and enhanced.

The repair and enhancement of the existing EC at Area 2 will include:

1. Removal of existing stone material and store for reuse;
2. Installation of a curb stop at the toe of the slope to contain stone and prevent material from sliding onto Gull Street;

3. Maintaining and preserving the existing demarcation layer and replacement of any damaged or missing sections; and
4. Replacing the existing stone cover and supplementing with additional crushed stone to obtain the appropriate 12-inch thickness.

Details can be found in the design drawings provided in Appendix B.

7.3 Area 3

Area 3 is located on the north side of Parcel 3 and encompasses the slope from the edge of the existing parking lot down to the sidewalk on West Ferry Street/Robert Rich Way on the north and Haggert Alley to the east.

The EC construction for Area 3 will include:

1. Clearing and grubbing;
2. Removal a 1-foot wide by 1-foot-deep section of material from along the top of the slope. Material is to be regraded on the existing slope;
3. Removal a 1-foot wide by 1-foot-deep section of material from along the toe of the slope. Material is to be regraded on the existing slope;
4. Installation of 8-inch by 8-inch pressure treated lumber retaining wall along the toe of the slope;
5. Maintain existing drainage feature and place fabric and 12 inches of 4 to 6 inch stone;
6. Placement of a demarcation layer across the entire slope;
7. Placement of 6 inches of approved clean fill on the entire slope;
8. Installation of a geocell-type product for slope stabilization (see Appendix C for example product information);
9. Placement of 6 inches of topsoil into the geocell; and
10. Seeding/planting with a low growing ground cover (e.g., pachysandra). The groundcover to be selected will be of a hearty variety and will be low maintenance as the slope will not be mowable.

Details can be found in the design drawings provided in Appendix B.

7.4 Area 4

Area 4 is located at the northwest corner of Parcel 3. This area extends from the western edge of the parking lot to the property line which is approximately seven feet to the west of the existing fence at the north end and 10 feet west of the existing fence at the south end as shown on Sheet C001 in Appendix B.

The EC construction for Area 4 will include:

1. Clearing and grubbing;
2. Removal of asphalt to one foot west of the fence to maintain the fence structure;
3. Placement of a demarcation layer;
4. Placement of 12 inches of cover; either 6 inches of fill and 6 inches of topsoil or 12 inches of topsoil;
5. Seeding/planting with a low growing ground cover if soil is used as cover material; and
6. Installation of semi-permanent stakes/markers to identify the edges of the cover system during future inspections.

Details can be found in the design drawings provided in Appendix B.

7.5 Site Survey

The remedial work areas will be surveyed to mark the property lines prior to the start of construction activities. The area will be surveyed during, and once construction is complete to document the location and extent of each of the cover systems and prepare as built drawings.

7.6 Waste Management and Disposal

Brush, asphalt, and debris will be generated during the clearing and grading operations. These materials will be managed as non-hazardous waste and disposed off Site.

It is anticipated that all soils removed for the timber installation, and anchor system installation will be regraded and incorporated into the slope or moved to Area 1 and placed under the cover system. If it becomes necessary to remove soils from the Site, they will be staged and sampled for waste characterization and off-Site disposal.

All wastes that are generated during the work will be stored, transported, and disposed in accordance with applicable state and federal regulations.

7.7 Imported Soils

All soils that are imported to the Site must meet the requirements of:

- NYSDEC DER-10 Section 5.4(e);
- NYSDEC DER-10 Appendix 5;
- 6 NYCRR Part 375-6.7(d);
- 6 NYCRR Part 360; and
- NYSDEC Guidance - Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDE's Part 375 Remedial Programs (January 2021) (NYSDEC PFAS Guidance).

Samples will be collected from proposed sources in accordance with DER-10 Section 5.4(e). Analysis will include the following parameters:

- Target Compound List (TCL) volatile organic compounds;
- TCL semi organic compounds including Perfluorooctanoic acid (PFOA), Perfluorooctane sulfonic acid (PFOS), and 1-4 Dioxane;
- Target analyte List (TAL) metals;
- Polychlorinated biphenyls (PCBs);
- Pesticides; and
- Herbicides.

Results must be compared to the Allowable Constituent Levels for Imported Fill or Soil in DER-10 Appendix 5 and the PFAS guidance values in the NYSDEC PFAS Guidance.

A request to import/reuse soil will be completed and submitted for each soil type proposed to be imported to the Site for cover system construction. A copy of the request is provided as Appendix D.

7.8 Temporary Construction Facilities

All temporary construction facilities required to complete the work (e.g., office trailer, lavatories, and equipment and material staging areas) will be located within the existing paved parking area. The proposed locations of the temporary construction facilities is shown on Drawing X of the Project Plans in Appendix B.

8. Institutional and Engineering Controls

Upon completion of the construction of the remedial components for all Parcels at the Site, an environmental easement will be established for the controlled property that:

– Requires the remedial party or Site owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3).
– Allows the use and development of the controlled property for commercial use as defined by Part 375-1.8(g), though land use is subject to local zoning laws.
– Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC, New York State Department of Health (NYSDOH), or Erie County Department of Health.
– Prohibits agriculture or vegetable gardens on the controlled property.
– Requires compliance with the NYSDEC-approved SMP.

NYSDEC guidance DER-33 “Institutional Controls, A Guide to Drafting and Recording Institutional Controls” will be followed when drafting and recording the environmental easement.

Since the selected remedy results in contamination remaining at the Site that does not allow for unrestricted use, a SMP is required, which includes the environmental easement and an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the Site including:

– Any cover systems installed as part of this remedy or future Site development.
– Existing cover systems (existing buildings, paved areas, and sidewalks, etc.).
– Future cover systems (proposed buildings, paved areas, and sidewalks, etc.).
– Fencing if used to prevent public access.

It is anticipated that the SMP will include:

– A Soil Management Plan which details the provisions for management of future excavations in areas of remaining contamination.
– Descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions.
– A provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address potential exposures related to soil vapor intrusion.
– Provisions for the management and inspection of the identified engineering controls.
– Maintaining Site access controls and NYSDEC notification.
– The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
– An Operations, Maintenance & Monitoring (OM&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting for any mechanical or physical components of the remedy and to assess the performance and effectiveness of the remedy including:
    - Monitoring of groundwater and surface water to assess the performance and effectiveness of the remedy.
    - A schedule of monitoring and frequency of submittals to the NYSDEC.
    - Monitoring for vapor intrusion for any buildings occupied or developed on the Site, if necessary.
    - Compliance monitoring of treatment systems to ensure proper OM&M as well as providing the data for any necessary permit or permit equivalent reporting.
    - Maintaining Site access controls and NYSDEC notification.
    - Providing the NYSDEC access to the site and OM&M records.

The SMP will be submitted in conjunction with the Final Engineering Report (FER) that will be prepared once the remedy for Parcels 1 and 2 is complete.

9. Health and Safety Plan

The project Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) are presented in Appendix E.

These plans have been prepared consistent with applicable governmental and non-governmental regulations and guidelines. In particular, the amended rules of OSHA Subpart H of Part 1910 (Title 29 Code of Federal Regulations (CFR) Part 1910.120), and the New York State Department of Health Generic Community Air Monitoring Plan. The HASP may be revised or updated based on the contractor selected and the means and methods to be used for construction of the remedy.

Contractors will be required to provide Health and Safety Plans for their employees working at the Site that meet the minimum standards set forth in Appendix E.

10. Reporting

Reporting associated with the remedial action shall consist of:

– Construction Completion Report (CCR).
– Final Engineering Report (FER).
– Site Management Plan (SMP).

A CCR will be prepared to document the completion of the remedy for Parcel 3, as this work will be completed before the remedy for Parcels 1 and 2 is complete.

10.1 Construction Completion Report

A Construction Completion Report (CCR) will be prepared within 60 days of completion of the Parcel 3 remediation.

The CCR shall include:

– Descriptions of all work performed.
– Descriptions of deviations from the Work Plan with explanations of why the deviations were required.
– An evaluation of the satisfaction of the remedial goals and objectives.
– "As Built" drawings delineating the area(s) excavated and restored, underground utilities relocated (if any), area of in-situ groundwater treatment, and remaining appurtenances.

The report shall be prepared in accordance with DER-10.

10.2 Final Engineering Report

The FER shall be submitted to the NYSDEC within 90 days following completion of the full Site remediation to include Parcels 1 and 2.

The FER shall include:

– Descriptions of all work performed and reference to the CCR for Parcel 3.
– Descriptions of deviations from the Work Plan with explanations of why the deviations were required.
– An evaluation of the satisfaction of the remedial goals and objectives.
– "As Built" drawings delineating the area(s) excavated and restored, underground utilities relocated (if any), area of in-situ groundwater treatment, and remaining appurtenances.

The report shall be prepared in accordance with DER-10.

10.3 Site Management Plan

The SMP shall be prepared as previously discussed in Section 8.0.

11. Schedule

The tentative project schedule is presented on Figure 11.1.

Actual scheduling and sequencing of project activities will be revised, as necessary, based on approvals, access to off-Site areas, contractor availability, etc. The schedule will be adjusted as preparations proceed and NYSDEC will be advised at least 7 days prior to beginning a new activity.

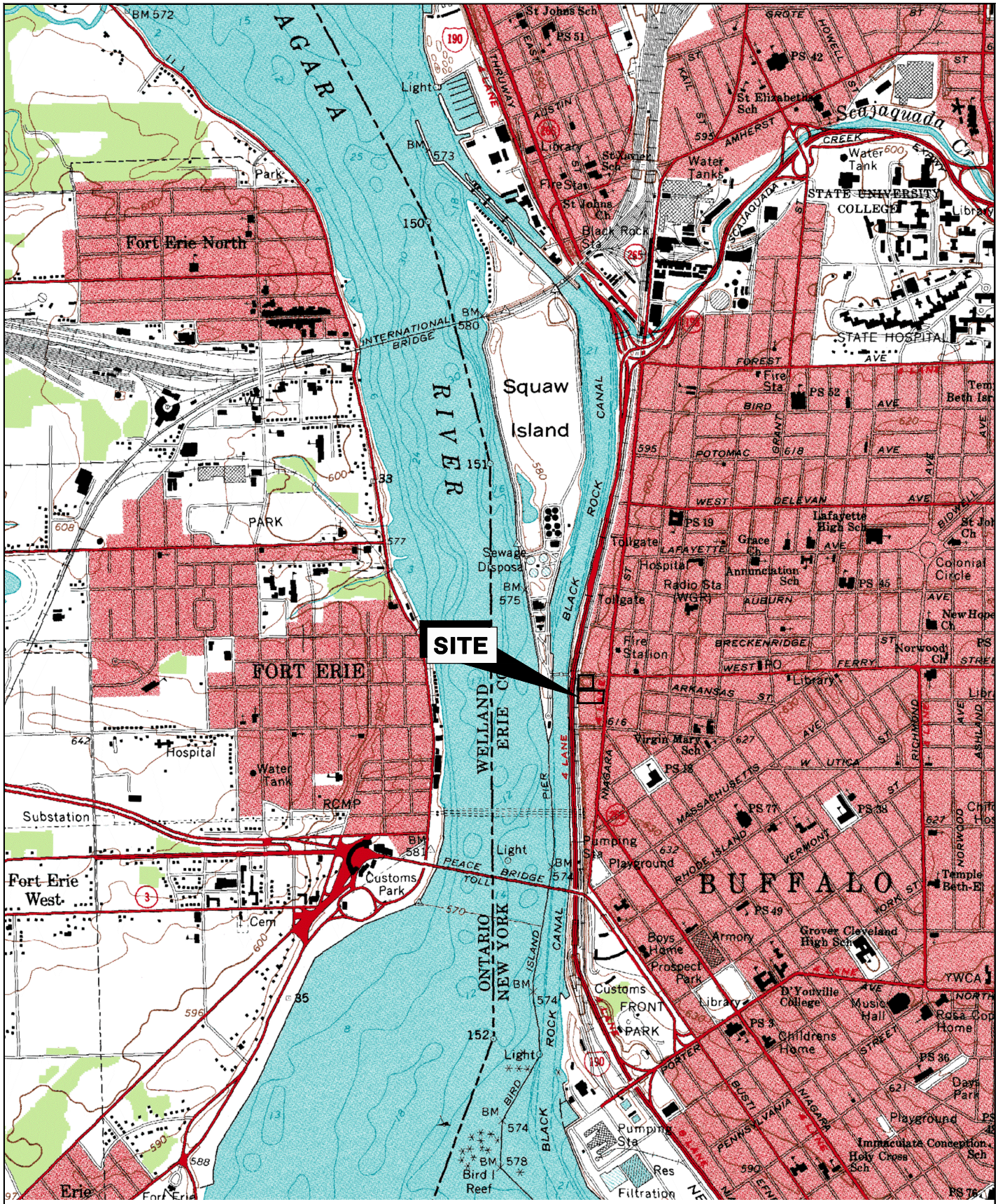
12. Certification

I, Richard J. Snyder, P.E., certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Signature: _____ Date: December 15, 2021

STATE OF NEW YORK
RICHARD J. SNYDER
No. 66242
LICENSED PROFESSIONAL ENGINEER

Figures



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BUFFALO, NEW YORK
1130 NIAGARA STREET SITE - C915284
PARCEL 3 REMEDIAL ACTION WORK PLAN

SITE LOCATION MAP

Project No. 11219347
Date

FIGURE 1.1

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BUFFALO, NEW YORK
1130 NIAGARA STREET SITE - C915284
PARCEL 3 REMEDIAL ACTION WORK PLAN

SITE PLAN

Project No. **11219347**
Date

FIGURE 1.2

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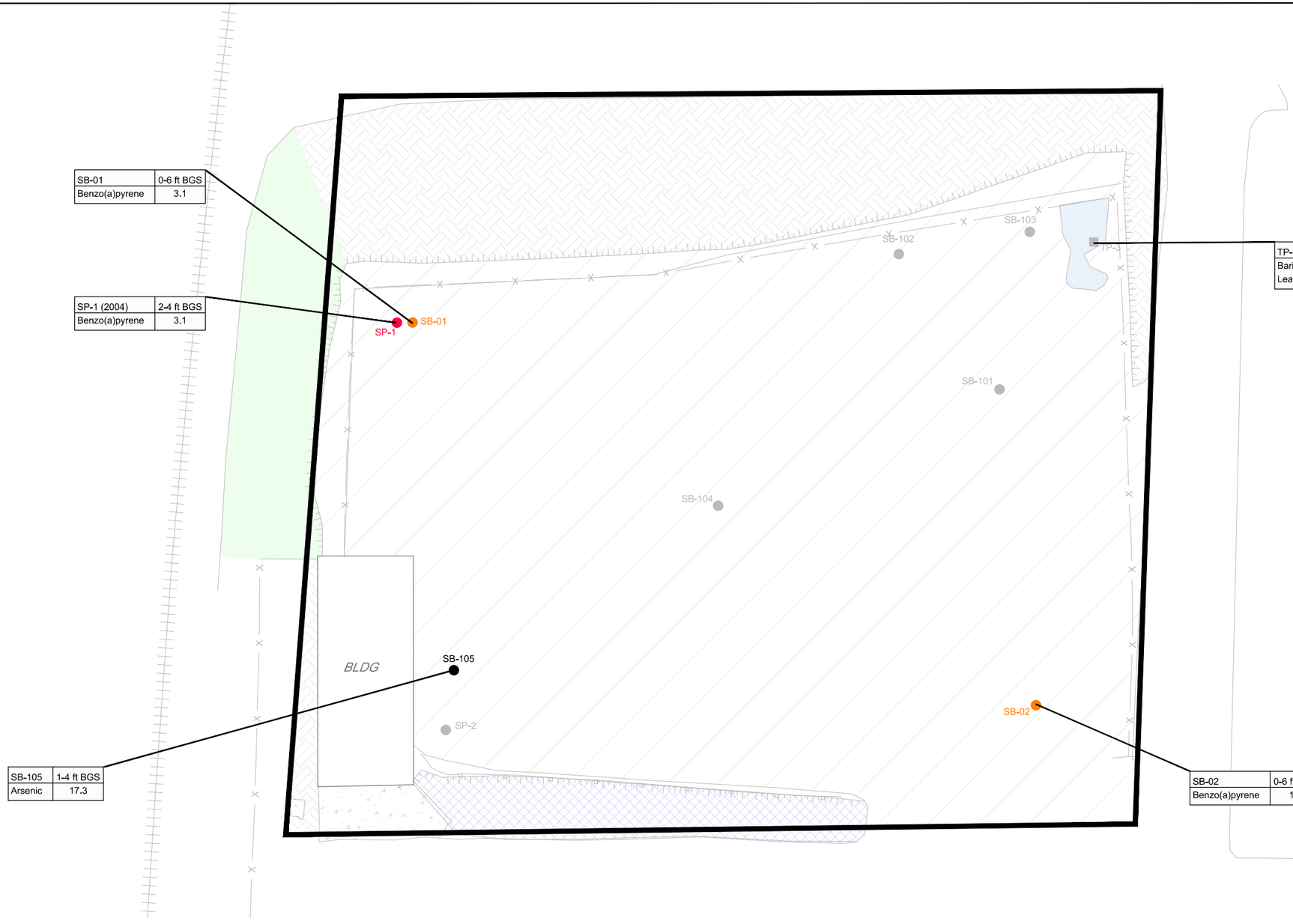

LEGEND

- BCP SITE BOUNDARY
- LIMIT OF CEM EXCAVATION
- MW-105 / SB-110 GHD SAMPLING LOCATIONS
- RAILROAD TRACKS
- IRM EXCAVATION

HISTORICAL SAMPLING LOCATIONS

- SP-4 GZA 2004
- SB-07 CRA 2009
- SP-5 GZA 2010
- MW-7 CEM 2014

Parameter	NYSDEC Part 375 RUSCO-C Criteria	
Benzo(a)anthracene	5.6	mg/kg
Benzo(a)pyrene	1	mg/kg
Benzo(b)fluoranthene	5.6	mg/kg
Dibenz(a,h)anthracene	0.56	mg/kg
Indeno(1,2,3-c,d)perylene	5.6	mg/kg

NOTES:

1. CONCENTRATIONS IN mg/kg.
2. ONLY EXCEEDANCES OF NYSDEC OF PART 375 RUSCO-C CRITERIA ARE SHOWN.
3. J INDICATES ESTIMATED VALUE
4. SHADOWED LOCATION SYMBOL INDICATES NO SVOC EXCEEDANCE OF RUSCO COMMERCIAL CRITERIA

N

0 50'

GHD

BUFFALO, NEW YORK
1130 NIAGARA STREET SITE - C915284
PARCEL 3 REMEDIAL ACTION WORK PLAN

OVERBURDEN EXCEEDANCES OF RUSCO COMMERCIAL CRITERIA -SVOCS

Project No. **11219347**
Date

FIGURE 4.1

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Plot Date: 01 October 2021 2:57 PM

LEGEND

- BCP SITE BOUNDARY
- RAILROAD TRACKS
- PROPOSED AREAS TO BE CAPPED WITH 1 FT CLEAN COVER / VEGETATION OR ARMOR STONE
- PROPOSED AREAS TO BE REPAVED

SITE COVER LEGEND:

- ASPHALT
- EXPOSED SOIL/VEGETATION
- BRUSH
- ARMOR STONE
- CONCRETE
- LOW AREA

N

0 50'

GHD

BUFFALO, NEW YORK
1130 NIAGARA STREET SITE - C915284
PARCEL 3 REMEDIAL ACTION WORK PLAN

REMEDIAL WORK AREAS

Project No. **11219347**
Date

FIGURE 6.1

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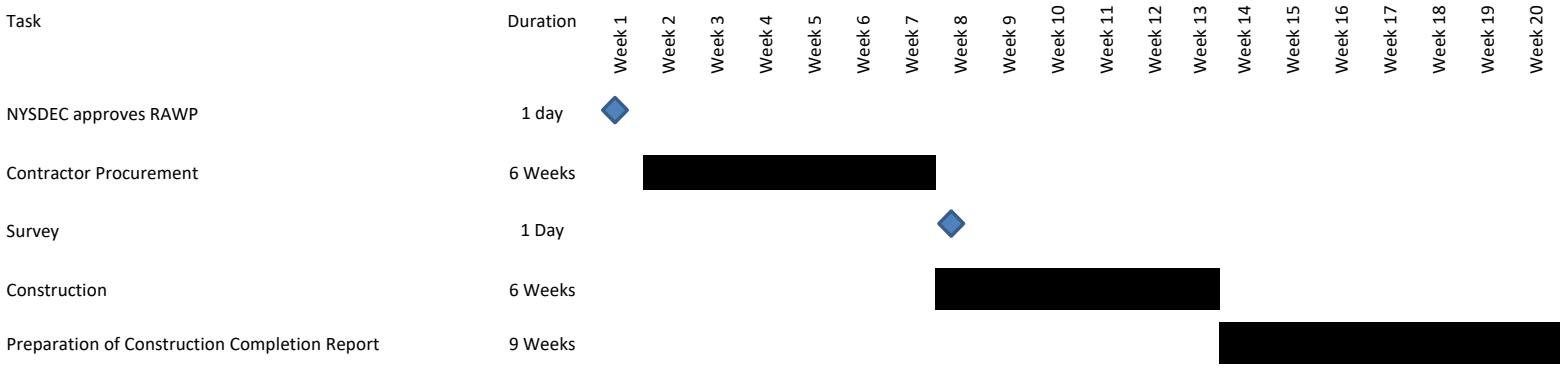
Figure 11.1
Project Schedule

1130 Niagara Street Parcel 3
NYSDEC Sit No. 915284
Buffalo, New York



Appendix A

NYSDEC DER-10 Appendix 5

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

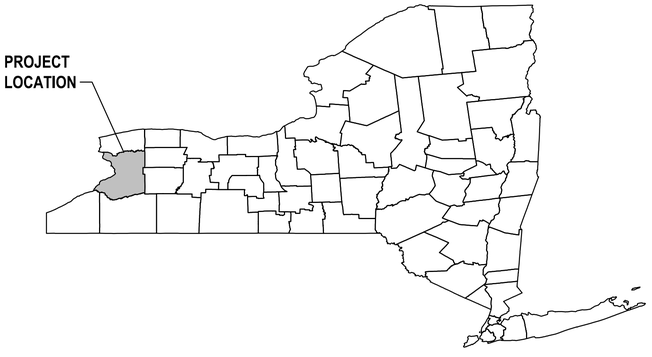
All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

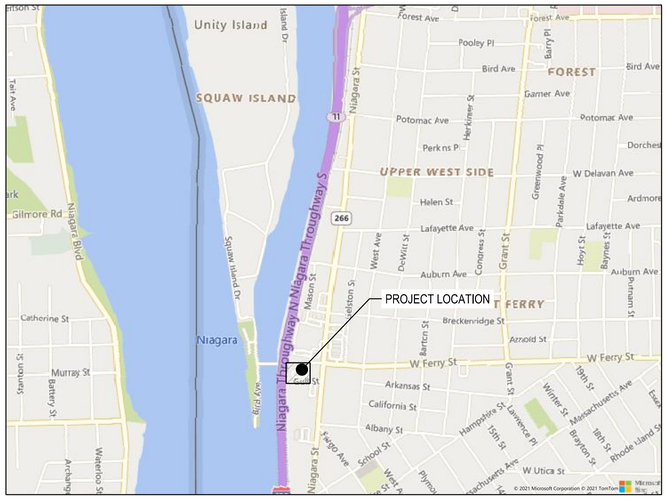
Appendix B

Project Drawings

JENESIS DEVELOPMENT LLC
1130 NIAGARA STREET SITE
BUFFALO, NEW YORK
PARCEL 3 COVER DESIGN
DECEMBER 2021
11219347



AREA MAP



LOCATION MAP

DRAWING INDEX	
DWG NO	**DRAWING TITLE**
G001	COVER SHEET
G002	GENERAL NOTES
C001	EXISTING CONDITIONS
C002	PROPOSED FINAL COVER
C003	EROSION AND SEDIMENT CONTROL PLAN
C004	COVER, RETAINING WALL SECTIONS AND DETAILS
C005	EROSION AND SEDIMENT CONTROL DETAILS

No.	Issue		Checked	Approved	Date
A	ISSUED FOR 100% DESIGN		KG	RS	12/17/21
Author	**S. PIKE**	Drafting Check	**C. BARTON**	Project Manager	**K. GALANTI**
Designer	**R. SNYDER**	Design Check	**K. GALANTI**	Project Director	**C. MARTIN**

Notes

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Client **JENESIS DEVELOPMENT LLC**
1130 NIAGARA STREET SITE
Project **PARCEL 3 COVER DESIGN**

Title **COVER SHEET**

Size **ANSI D**

Project No. **11219347**
Date **DECEMBER 2021**
Scale

Sheet No. **G001**

Plot Date: 16 December 2021 - 5:12 PM
Plotted By: Sean Pike
Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\General\11219347-G001.dwg

GENERAL NOTES:

1. CONTRACTOR MUST NOTIFY AND COORDINATE PROPOSED WORK ZONE RESTRICTIONS WITH ALL LOCAL POLICE, FIRE, EMERGENCY DEPARTMENTS, AND UTILITIES PRIOR TO ESTABLISHING SAID RESTRICTIONS.
2. ACCESS/USE OF SIDEWALK WILL BE RESTRICTED DURING WORK ALONG WEST FERRY STREET. VERIFY ALL SITE CONDITIONS BEFORE START OF WORK. CONTRACTOR TO OBTAIN PERMITS FOR THE CLOSURE OF THE SIDEWALK ALONG WEST FERRY STREET FOR THE PERIOD WORK IS BEING PERFORMED. CONTRACTOR TO OBTAIN PERMITS FOR LANE CLOSURE IF CONTRACTOR ACCESS FROM ROADWAY WILL BE REQUIRED TO COMPLETE WORK.
3. REMEDIAL AREA BOUNDARIES ARE TO BE FIELD VERIFIED BY SURVEY AND APPROVED BY ENGINEER.

UTILITIES:

1. CONTRACTOR SHALL IDENTIFY, LOCATE AND VERIFY ALL UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF WORK. CONTRACTOR SHALL CALL DIG SAFELY NY AT 1-800-962-7962 OR 811.
2. PROTECT ALL UTILITIES. WORK PERFORMED DURING PROJECT MOBILIZATION, CONSTRUCTION OR DEMOBILIZATION SHALL NOT DISTURB EXISTING OVERHEAD UTILITIES, UNDERGROUND UTILITIES, MANHOLES, SANITARY SEWER, WATER LINES, STORM SEWERS OR CATCH BASINS WITHOUT PRIOR NOTIFICATION TO AND APPROVAL OF THE UTILITY CONCERNED. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED TO THE SATISFACTION OF THE UTILITY OWNER AT THE CONTRACTOR'S SOLE EXPENSE.
3. PROMPTLY NOTIFY THE ENGINEER AS WELL AS THE UTILITY OWNER IF UNMAPPED OR UNKNOWN UTILITIES ARE FOUND ON-SITE.

SITE SECURITY

1. THE CONTRACTOR SHALL PROVIDE SITE SECURITY FOR MATERIALS AND EQUIPMENT. OWNDER WILL NOT BE RESPONIBLE FOR ANY EQUIPMENT DAMAGE OR THEFT OF MATERIALS.
2. THE CONTRACTOR SHALL PROTECT THE PUBLIC FROM ALL WORK AREAS.

TRAFFIC CONTROL

1. CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF BUFFALO.

EXCAVATION AND MATERIAL HANDLING:

1. CONTAMINATED SOIL STOCKPILES AND CLEAN FILL MATERIAL STOCKPILES SHALL BE PLACED ON POLY SHEETING. THE BASE SHALL HAVE RAISED EDGES TO CONTAIN RUNOFF FROM PRECIPITATION. ANY ACCUMULATED LIQUIDS MUST BE DRUMMED AND CHARACTERIZED FOR OFF-SITE DISPOSAL. ALL PILES MUST BE COVERED AT THE END OF EACH DAY.
2. OPEN WORK AREAS SHALL BE SECURED AT THE END OF EACH WORK DAY TO PROTECT AGAINST ACCIDENTAL OR INTENTIONAL TRESPASS INTO THE EXCLUSION ZONE. CONTRACTOR SHALL UTILIZE MEASURES TO PREVENT CROSS-CONTAMINATION: E.G. CLEAN FILL MATERIAL STOCKPILES WILL BE PLACED UPGRADIENT OF CONTAMINATED SOIL STOCKPILES.
3. THE BEDS OF ALL TRUCKS HAULING CONTAMINATED SOILS SHALL BE WATERTIGHT AND COVERED TO PREVENT SOIL FROM LEAVING THE TRUCK BY WIND OR RAIN ACTION.
4. THE CONTRACTOR IS WHOLLY RESPONSIBLE FOR CONFIRMING SITE SAFETY FOR THE WORK CREW AND THE PUBLIC. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE LAWS.

FENCE:

1. TEMPORARY FENCE: FOR THE PURPOSES OF THIS PROJECT, TEMPORARY FENCE SHALL BE DEFINED AS SECURITY FENCE THAT SHALL BE INSTALLED AROUND ANY WORK AREA, MATERIAL STOCKPILING OR EQUIPMENT STAGING AREA, INCLUDING FIELD OFFICES, FOR THE DURATION OF THE WORK. TEMPORARY FENCING SHALL BE ERECTED BY THE CONTRACTOR DURING MOBILIZATION FOR THE WORK, AND REMOVED AT SUBSTANTIAL COMPLETION.

EXCAVATION AND RESTORATION:

1. CONSTRUCTION WORK LIMITS FOR EXCAVATION AND RESTORATION AS SHOWN ON DESIGN DRAWINGS MUST BE FIELD SURVEYED TO VERIFY AND BE APPROVED BY THE ENGINEER.
2. PROTECT ALL PRIVATE PROPERTY, MUNICIPAL RIGHTS-OF-WAY, AND UTILITY FEATURES OUTSIDE OF THE WORK AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DAMAGE TO PROPERTY STRUCTURES, LANDSCAPING, HARDSCAPING, CURBS, DRIVEWAY APRONS, UTILITIES, OR INFRASTRUCTURE AND ASSOCIATED COSTS.
3. PROTECT IN PLACE ALL MUNICIPALLY OWNED FEATURES WITHIN THE WORK AREA, INCLUDING BUT NOT LIMITED TO, STREET SIGNS, SIDEWALKS AND CURBS. IF DAMAGED, REPLACE IN KIND AS DIRECTED BY ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT AND ASSOCIATED COSTS.
4. NON-CONTAMINATED WOODY VEGETATION FROM CLEARING SHALL BE CHIPPED AND USED AS MULCH.
5. PROVIDE EROSION AND SEDIMENT CONTROL AT PROPERTY LINE/EXCAVATION LIMIT AT THE DIRECTION OF THE ENGINEER. SEE SILT FENCE AND SILT SOCK DETAIL ON SHEET C005.

GENERAL EROSION AND SEDIMENT CONTROL (ESC) NOTES

1. CONTRACTOR SHALL INSTALL INLET PROTECTION IN ALL EXISTING CATCH BASINS AND YARD DRAINS LOCATED ADJACENT TO OR WITHIN WORK AREAS PRIOR TO SURFACE DISTURBANCE.
2. CONTRACTOR SHALL INSTALL PERIMETER PROTECTION (I.E. SILT FENCE, SILT SOCK OR HAY BALES) DOWN GRADIENT OF ANY DISTURBED AREA, BETWEEN ANY EXCAVATION AND ADJACENT DRAINAGE DITCHES, AND ALONG THE WORK AREA BOUNDARY DEPENDING ON FIELD CONDITIONS.
3. CONTRACTOR SHALL UTILIZE STANDARD PRACTICES TO CONTROL DUST, LITTER, CONSTRUCTION WASTE, SPILLS, ETC.
4. CONTRACTOR SHALL MAINTAIN PUBLIC ROADWAYS FREE OF DEPOSITED SOIL, INCLUDING DECONTAMINATION OF ALL TRUCKS LEAVING THE WORK AREAS.
5. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL ESC MEASURES IN ACCORDANCE WITH NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (LATEST REVISION).
6. CONTRACTOR SHALL REMOVE ESC MEASURES ONCE DISTURBED SURFACES HAVE BEEN RESTORED TO STABLE CONDITION AT ENGINEERS SATISFACTION.

No.	Issue	Checked	Approved	Date
A	ISSUED FOR 100% DESIGN	KG	RS	12/17/21

Author **S. PIKE** | Drafting Check **C. BARTON** | Project Manager **K. GALANTI**
Designer **R. SNYDER** | Design Check **K. GALANTI** | Project Director **C. MARTIN**

Notes

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December 15, 2021

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1130 NIAGARA STREET SITE
Project **PARCEL 3 COVER DESIGN**

Title **GENERAL NOTES**

Size **ANSI D**

Project No. **11219347** | Date **DECEMBER 2021** | Scale

Sheet No. **G002**

Plot Date: 16 December 2021 - 5:13 PM | Plotted By: Sean Pike | Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\General\11219347-G002.dwg

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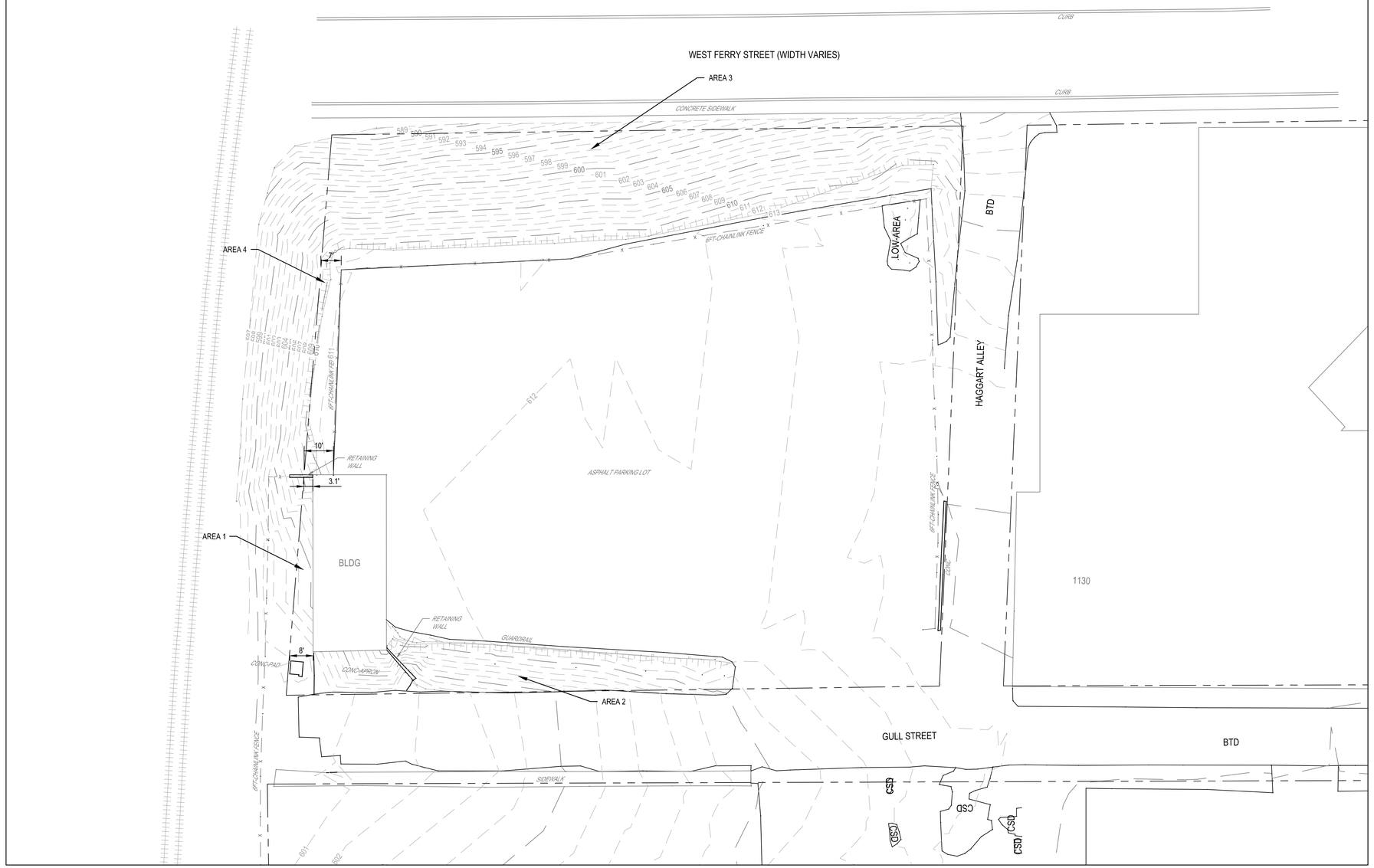

N

SITE PLAN

SCALE 1" = 20'-0"

0 10' 20' 40'

SOURCE: TOPOGRAPHY SURVEY BY GHD, 11/03/2016.
PROPERTY BOUNDARY SURVEY BY FOITALBERT ASSOCIATES, 02/11/2015

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Client: JENESIS DEVELOPMENT LLC
Project: 1130 NIAGARA STREET SITE
PARCEL 3 COVER DESIGN

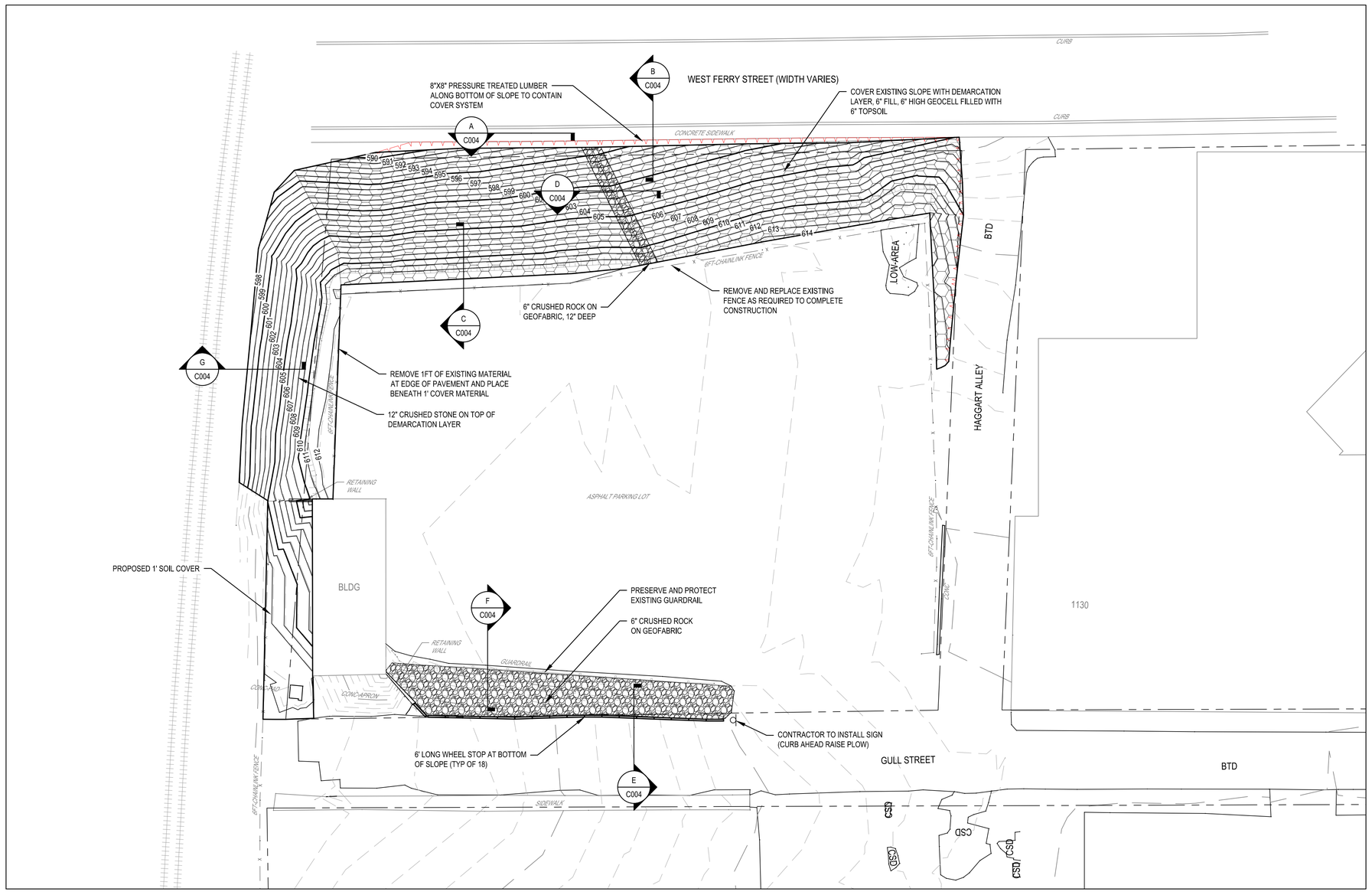
Title: EXISTING CONDITIONS

Size: ANSI D

Project No.: 11219347
Date: DECEMBER 2021
Scale:

Sheet No.: C001

Plot Date: 16 December 2021 - 5:13 PM Plotted By: Sean Pike Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\Civil\11219347-C001.dwg



N

SITE PLAN

SCALE 1" = 20'-0"

0 10' 20' 40'

NOTE:
ALL SOILS IMPORTED TO THE SITE MUST BE SAMPLED AND APPROVED FOR USE BY NYSDEC BEFORE BEING BROUGHT TO THE SITE. SEE SECTION 7.7 AND APPENDIX D OF THE WORK PLAN.

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Project **PARCEL 3 COVER DESIGN**

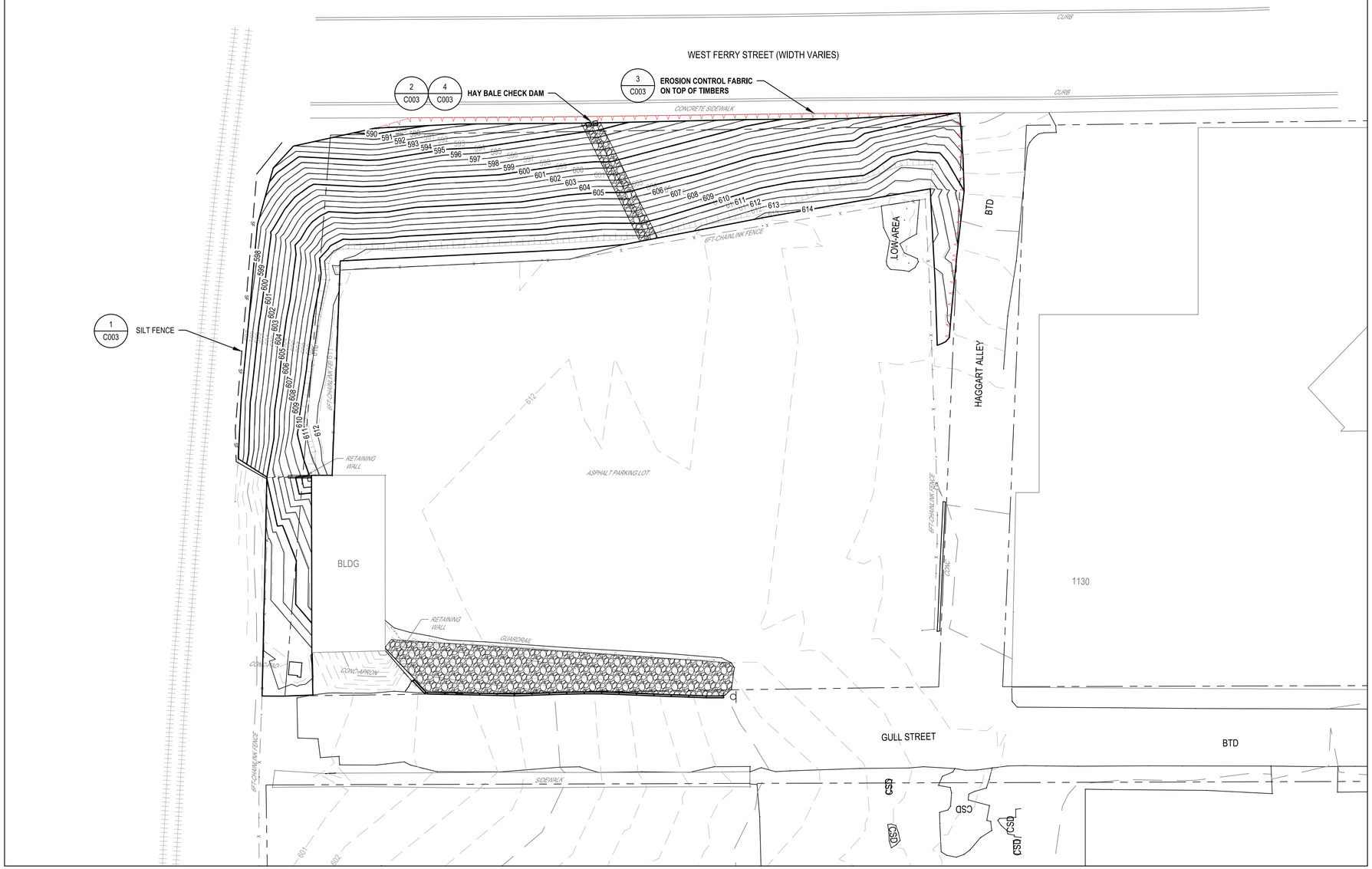
Title **PROPOSED FINAL COVER**

Size **ANSI D**

Project No. **11219347** | Date **DECEMBER 2021** | Scale

Sheet No. **C002**

Plot Date: 16 December 2021 - 5:13 PM | Plotted By: Sean Pike | Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\Civil\11219347-C002.dwg



N

SITE PLAN

SCALE 1" = 20'-0"

0 10' 20' 40'

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1130 NIAGARA STREET SITE
Project PARCEL 3 COVER DESIGN

Title EROSION AND SEDIMENT CONTROL PLAN

Size ANSI D

Project No. 11219347

Date DECEMBER 2021

Scale

Sheet No. C003

Plot Date: 16 December 2021 - 5:13 PM

Plotted By: Sean Pike

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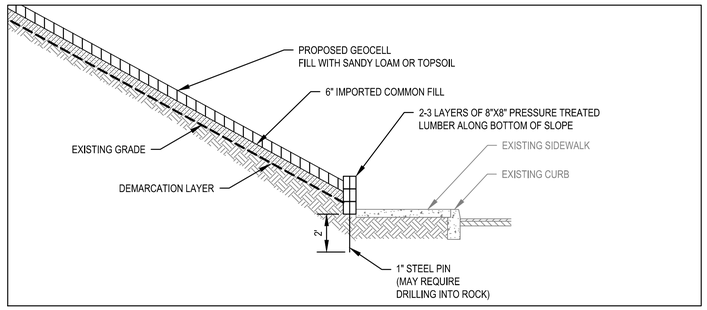
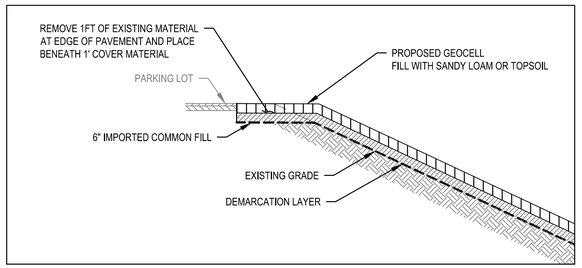


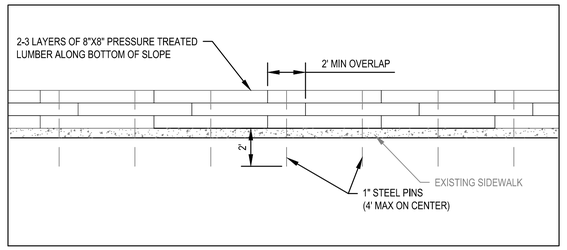
BOTTOM OF SLOPE SECTION (FERRY STREET)

A / C002 **SCALE: 1" = 4'**



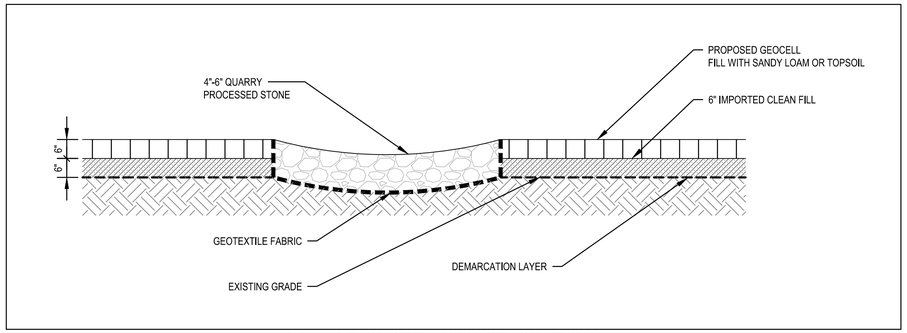
TOP OF SLOPE SECTION

B / C002 **SCALE: 1" = 4'**



BOTTOM OF SLOPE SECTION

C / C002 **SCALE: 1" = 4'**



MID-SLOPE CHANNEL SECTION

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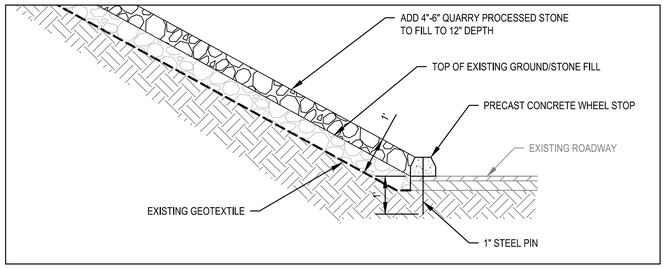

BOTTOM OF ROCK SLOPE SECTION

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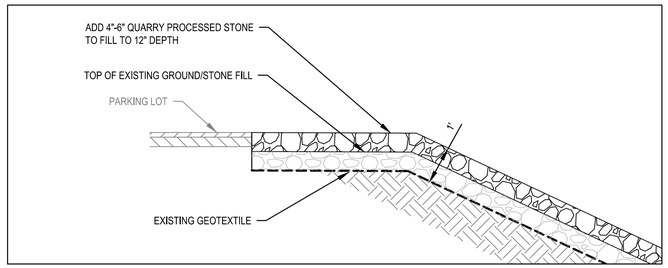
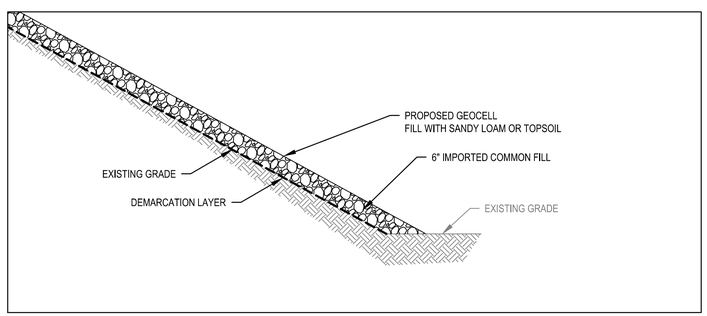


TOP OF ROCK SLOPE SECTION

F / C002 **SCALE: 1" = 2'**



BOTTOM OF SLOPE SECTION (WEST SIDE)

G / C002 **SCALE: 1" = 4'**

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1130 NIAGARA STREET SITE
Project **PARCEL 3 COVER DESIGN**

Title **COVER, RETAINING WALL SECTIONS AND DETAILS**

Size **ANSI D**

Project No. **11219347** Date **DECEMBER 2021** Scale

Sheet No. **C004**

Plot Date: 16 December 2021 - 5:14 PM Plotted By: Sean Pike Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\Civil\11219347-C004.dwg

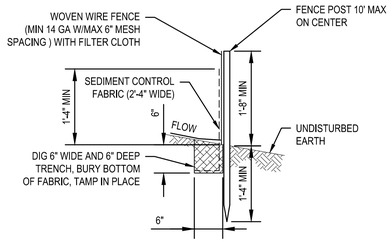


FIGURE 1

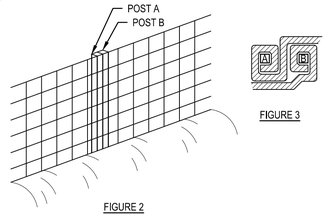


FIGURE 2

FIGURE 3

NOTES:

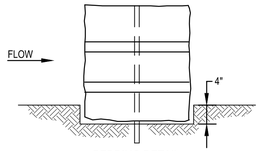
1. SILT FENCE HEIGHT TO BE 1'-8" MIN ABOVE GROUND, CONSTRUCTED OF FABRIC WITH MINIMUM TENSILE STRENGTH OF 136LBS.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL "T" OR "U" TYPE OR HARDWOOD.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE. SILT FENCE TO HAVE FACTORY ATTACHED FENCE POSTS.
4. REFER TO DRAWING FOR LOCATION OF SILT FENCE.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

INSTALLATION SEQUENCE:

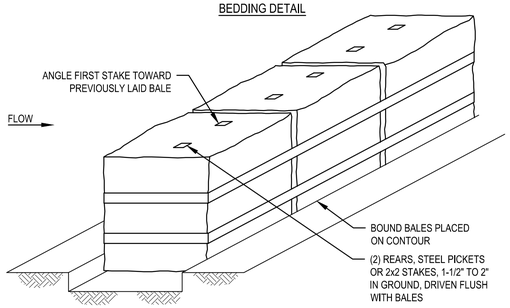
1. DIG A 6" X 6" TRENCH ALONG SILT FENCE LOCATIONS SHOWN.
2. UNROLL SILT FENCE POSITIONING THE POSTS ON THE DOWNSTREAM SIDE.
3. DRIVE POSTS INTO THE GROUND AS SHOWN ON FIGURE 1.
4. LAY THE BOTTOM 12" OF FABRIC FLAP IN THE BOTTOM OF THE TRENCH, BACKFILL AND COMPACT.
5. ADJACENT SECTIONS OF THE SILT FENCE ARE JOINED AS SHOWN IN FIGURE 3. A COUPLER CAN BE USED TO SECURE ADJACENT POSTS AS SHOWN IN FIGURE 2.

1 C003 SILT FENCE

SCALE: 3/4" = 1'-0"



BEDDING DETAIL



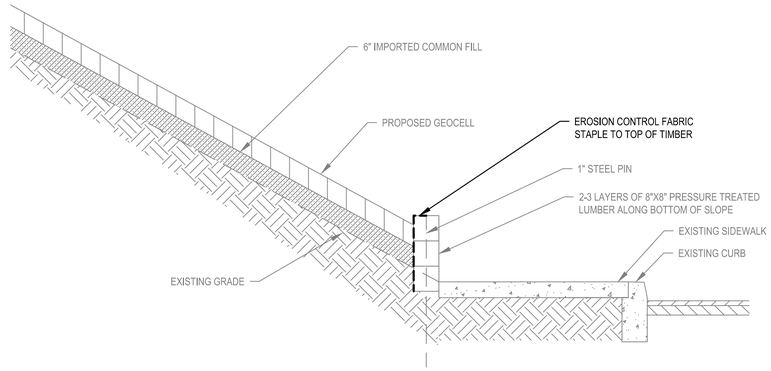
ANCHORING DETAIL

NOTES:

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4 INCHES AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR REBARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL NOT BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

2 C003 STRAW BALE DIKE

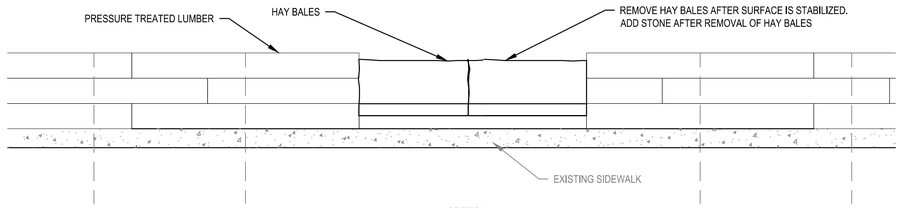
SCALE: 3/4" = 1'-0"



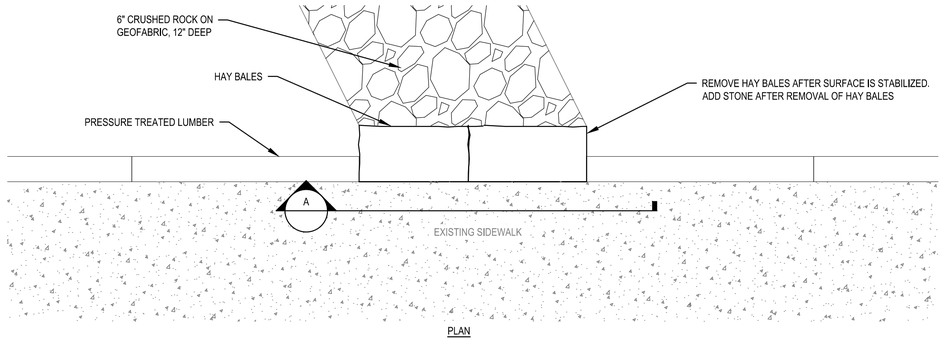
NOTE:
REMOVE EROSION CONTROL FABRIC WHEN SURFACE IS STABILIZED.

3 C003 EROSION CONTROL FABRIC

SCALE: 1" = 2'



SECTION A



PLAN

4 C003 HAY BALE CHECK DAM

SCALE: 1" = 2'

No.	Issue	Checked	Approved	Date
A	ISSUED FOR 100% DESIGN	KG	RS	12/17/21

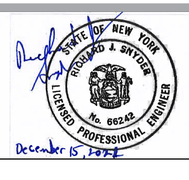
Author **S. PIKE** Drafting Check **C. BARTON** Project Manager **K. GALANTI**
Designer **R. SNYDER** Design Check **K. GALANTI** Project Director **C. MARTIN**

Notes

Underground facilities, structures, and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. There may be others, the existence of which is presently not known.

It is violation of New York State education law for any person, unless acting under the direction of a licensed professional engineer, to alter an item on this drawing in anyway. If an item is altered, the altering engineer shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and date of such alteration and a specific description of the alteration.

Bar is one inch on original size sheet
0 1"



GHD Consulting Services Inc.
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Buffalo NY 14202 USA
T 1 716 856 2142 F 1 716 856 2160 W www.ghd.com
www.ghd.com

Client **JENESIS DEVELOPMENT LLC**
1130 NIAGARA STREET SITE
Project **PARCEL 3 COVER DESIGN**

Title **EROSION AND SEDIMENT CONTROL DETAILS**

Size **ANSI D**

Project No. **11219347** Date **DECEMBER 2021** Scale

Sheet No. **C005**

Plot Date: 16 December 2021 - 5:14 PM Plotted By: Sean Pike Path and Filename: C:\US\Buffalo\Projects\564\11219347\Digital_Design\ACAD 2017\Sheets\Civil\11219347-C005.dwg

Appendix C

Geocell Product Data

Slope

INTRODUCTION

GeoCells were invented in the early 80's and patented by the United States Army Corps of Engineers to stabilized soft soils and construct roads for heavy load applications. Since their inception they are now used for various civil applications such as slope and channel protection and retaining walls.

On slope applications the BaseLok™ GeoCells can be filled with angular rock, concrete or with soil and vegetated, angular rock or concrete. The GeoCells confine the infill material creating a stable layer protecting the slope or channel from sheet flow. The GeoCells can be installed on slopes as steep as 60 degrees and on channels with flow velocities greater than 25 fps depending on infill material. BaseLok™ GeoCells is a flexible system that will contour to the sub-grade of a slope or channel reducing preparation time. When filled with soil and vegetated or rock the system is permeable reducing water runoff.

The BaseLok™ Geocell is the perfect system to protect impervious and fragile geomembrane liners. It can be installed directly over the liner without the use of stakes and filled with concrete for impact and puncture protection or filled with soil and APPLICATIONS vegetated to create a natural landscape.

APPLICATIONS

- **Slopes/ Embankments**
- **Pond Slopes**
- **Containment Berms**
- **Geomembrane Protection**
- **Shoreline Protection**
- **Landfill Caps**
- **Complete design review.**
- **On site installation assistance.**

KEYPOINTS

- **Complete design review.**
- **On site installation assistance.**
- **Value engineered designs that are project specific and reviewed by experienced professional geotechnical engineers.**
- **Construction possible on slopes greater than 1:1.**
- **On channel applications our GeoCells can be filled with rock for velocities up to 10 fps, vegetated soil up to 20 fps and concrete for velocities greater that 20 fps.**
- **For shore protection the GeoCell allows for the use of a smaller aggregate vs costly rip rap.**
- **On a concrete application the individual blocks become a flexible system that can conform to sub-grade settlement.**

TEAM SUPPORT

- 39 years as a leader in the Geosynthetic Industry
- 25 years of experience with geocells
- Design assistance
- Complete project evaluation
- Project specific value engineered designs reviewed by professional geotechnical engineers
- On site installation and site assessment assistance

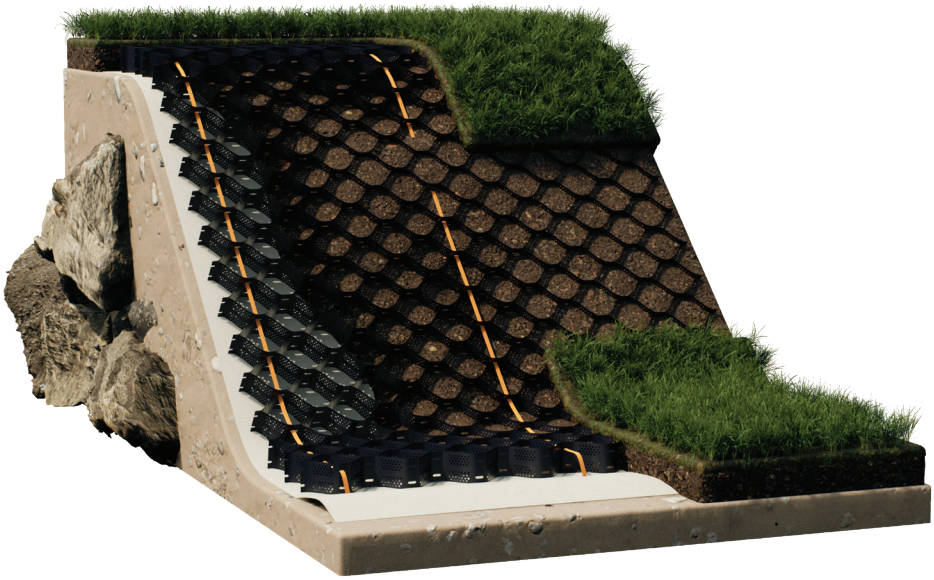
BENEFITS

- 100% manufactured in the USA
- Complete installation accessories
- Meets or exceeds industry standards

> **BaseLok™ GeoCell is a confinement system that can be used on slopes creating a stabilized and permeable layer. We offer an engineered system complete with anchoring components.**

CUSTOMIZATION

- BaseLok™ GeoCell panels can be manufactured to cover the length of the slope or width of the channel to be protected. Evaluation of the soil conditions and geometry of the slope or channel will determine appropriate cell depth for the application as well as anchoring requirements. BaseLok™ GeoCell can be manufactured with depths of 3", 4", 6", or 8" to meet specific project needs.



EXPERT TECHNICAL SUPPORT

- The superior effectiveness of GeoCell is made even better thanks to our BaseLok™ team's proficiency and technical support. We believe a solution is more than just a product we manufacture or sell; you deserve an attentive and knowledgeable team of professionals working alongside you every step of the way. Our experienced engineers and sales team are fully equipped to cater to your every need, no matter the project.

INDUSTRIAL FABRICS, INC.

Industrial Fabrics, Inc.
510 O'Neal Lane Ext
Baton Rouge LA 70819
800 848 4500
www.baselok.com

Appendix D

Request to Reuse/Import Soil

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that would pass a size 80 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised August 2014

Appendix E

Health and Safety Plan

Site-Specific Health and Safety Plan

Parcel 3 Remediation

Jenesis Development, LLC

October 5 2021
11219347|30|--
Approval Date: 10-05-2021

HEALTH AND SAFETY PLAN

Signature page

This HASP was electronically signed by the Project Manager and Safety Group within the HASP Builder Software. Fully approved HASP is printed without a DRAFT watermark.

Project Name: Parcel 3 Remediation

Project Manager Approval Date: Katherine (kathy) Galanti, 10-05-2021
Safety Group Approval Date: John Maurer, 10-05-2021

Project Number: 11219347

Emergency Information

Contact	Phone Number	
Local Police City of Buffalo Police Department 669 Hertle Ave Buffalo, New York United States 14207	911	
Fire Department City of Buffalo Fire Department 500 Rhode Island Street Buffalo, New York United States 14213	911	
Ambulance AMR WNY 481 William Gaiter Pkwy Buffalo, New York United States 14215	911 716-882-8400	
Local Hospital Buffalo General Hospital 100 High Street Buffalo, New York United States 14203	716-859-5600	
National Poison Center		GHD - HSE Help Line Please call **(866) 529-4886** and provide: • Name and location of caller • Description of incident • Name of injured person(s) • Description of injuries • Phone number for return call
Project Manager Katherine (kathy) Galanti	Work: 716-362-8839 Cell: 716-583-5720	
Site Supervisor TBD	Work: TBD Cell: TBD	
GHD Regional S&H Manager John Maurer	Work: 716-297-6150 Cell: 716-545-0112	
Client Contact **Darryl Burgess**	**Darryl Burgess**	
Client Site Contact Darryl Burgess	Work: 716-878-8106 Cell: 716-864-9094	
Other Contact Katherine Galanti	Work: 716-362-8839 Cell: 716-583-5720	
Site Health Officer	Phone:	
Person to verify hospital route:	Signature:	

Table of Contents

Appendix

Surveying-Land Surveying
Mobilization-Demobilization
Environmental-Site Recon and Walkthrough
Construction Oversight
1 JSA-Construction-Mobile Equipment-General.pdf
2 JSA-Construction Oversight-Rev. 0.pdf
3 JSA-Driving-Mobilization-Demobilization-Rev. 0.pdf
Environmental-Decontamination of Sampling Equipment and Personnel (PPE Level D)

Appendix C - Safety Data Sheets (SDS)

Alconox SDS

Appendix D - Training Records

Record of Training Form

Other

COMMUNITY AIR MONITORING PLAN

1. Introduction

1.1 GHD Values and Integrity Management Policy

At GHD, we commit to safe, ethical and respectful business behaviour in regard to both the internal conduct of our business and our engagement with external stakeholders and the public. The core values of Safety, Teamwork, Respect and Integrity will guide all of our activities. We will only seek work and participate in business transactions under high standards of corporate ethics and with complete integrity. Our projects will be undertaken in a manner that places safety as the top priority, with each of our employees empowered with Stop Work Authority throughout the execution of project work. GHD expects that all of its projects will be undertaken in an environment of teamwork and mutual respect, free from discrimination, harassment, bullying or other inappropriate behavior. We foster an open environment in which our people can report any improper practices or behaviour without fear of reprisal. All reported incidents will be investigated promptly with appropriate and equitable follow-up. GHD's integrity management policy and guidelines are available at http://www.ghdcanada.com/global/about-us/integrity-management.

1.2 Purpose

The purpose of this site specific health and safety plan (HASP) is to provide guidelines and establish procedures for reducing and controlling hazard exposure to the public, property, and personnel. The HASP is a living document and must continually evolve as site conditions and knowledge of the site activities develop.

This document has been developed to meet or exceed the requirements set forth by federal, state, and provincial legislation. If any procedure outlined in this plan conflicts with federal, state/provincial, and/or municipal law, prescribed standards, or client requirements, then the most stringent set of standards applies.

1.3 Stop Work Authority

All employees are empowered and expected to stop the work of coworkers, subcontractors, client employees, or other contractors if any person's safety or the environment are at risk. No repercussions will result from this action. Reporting of unsafe acts/condition (UA or UC) or Stop Work Authority (SWA) is completed with BWise and/or the GHD HSE app. Unsafe acts, conditions, stop work authority are now reported via the GHD HSE app.

The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated results in the removal of site personnel from that area and re-evaluation of the hazard and the levels of protection.

1.4 Short Service Employee

The Employee is considered a Short Service Employee (SSE) if he/she has less than 6 months experience with his/her present employee, or in his/her present role. The individual is required to wear a fluorescent orange hardhat, as an obvious indicator of SSE status. Training and mentoring allows them to gain knowledge and experience in procedures and methods. In order for a new employee to work in the field, the following minimum training requirements must be met:

1. GHD New Employee Safety & Health Orientation training (on-line).
2. GHD HAZCOM (US)/WHIMIS (Canada)(on-line).
3. On-boarding completed with Human Resources.
4. Compliance training defined on the QSF-20 as it applies to field work to be conducted.
5. Client specific safety training.

A SSE's primary mentor is their direct Supervisor. GHD Supervisors are responsible for ensuring that a SSE completes the safety, field method, and quality training as appropriate to the work they are assigned. A SSE requires an On-site Mentor for all fieldwork. The On-site Mentor must have experience in the work they are mentoring and they are responsible for the close monitoring of the SSE.

Project team SSE make-up requirements are:

- A one-person project team cannot be a SSE.
- A two-person to four-person project team can have only one SSE.
- A five-person or more project team cannot have more than 20 percent SSE without a written variance from the GHD Corporate Manager of Safety & Health.

New hire employees that can provide sufficient documentation supporting previous experience in working under HSE program(s) similar to GHD's may be exempt from GHD's SSE program These exemptions are handled on a case-by-case basis and must be authorized by one of the following staff: the Corporate Manager of Safety & Health or a Senior Regional Safety & Health Manager. Details of the exemptions are covered in the full SSE Policy.

Clients may define specific SSE requirements for work at their facility or on their project. It is the responsibility of the Project Manager to communicate a client's specific requirements to the appropriate staff within GHD and project subcontractors. Client-specific SSE standards shall be posted on the Safety & Health Portal SSE Folder.

1.5 Project Management And Safety Organization

Project Manager – GHD – Katherine (kathy) Galanti

The GHD Project Manager (PM) is responsible for the overall implementation, review, and approval of the HASP, and for ensuring that all safety and health (S&H) responsibilities are carried out. The PM will also ensure that appropriate resources are provided to support the project.

Site Supervisor – GHD – TBD

The Site Supervisor (SS) is responsible for:

- Ensuring that the HASP is reviewed, approved, and implemented.
- Communicating site requirements to site project personnel and subcontractors through site orientation.
- Consulting with the client/site representative regarding appropriate changes to the HASP.

- Conducting a daily tailgate safety meeting that communicates the site specific hazards. This meeting must be documented on the Tailgate Safety Meeting form in the appendix.
- Ensuring that all necessary cleanup and maintenance of safety equipment is conducted by project personnel.
- Verifying emergency phone numbers and services, including hospital and clinic locations.
- Completing, filing, and correctly submitting the forms attached to the HASP, including daily tailgate meetings, job safety analysis, and daily inspection checklists.
- Implementing risk-based safety procedures on all activities and enforcing safe work practices for project employees
- Observing ill effects on any crew member, especially those symptoms caused by cold/heat stress or chemical exposure.
- Overseeing the safety of visitors who enter the site.
- Maintaining communication with the client/site representative(s) and/or government inspectors/agencies.
- Providing and enforcing the use of safety equipment, personal protective equipment (PPE), and other items necessary for employee or community safety.
- Conducting job site inspections as a part of quality assurance for safety and health.
- Ordering the immediate shutdown of site activities in case of a medical emergency, unsafe condition, or unsafe practice.
- Reporting safety and health concerns to site and/or project management as necessary.

Regional HSE Manager GHD – John Maurer

The Regional HSE Manager is a full time GHD employee who is trained as a safety and health professional and serves in a consulting role to the PM and SS regarding potential safety and health issues. The HSE Manager or trained designee must review, coordinate required changes with PM and provide the final approval of the HASP prior to work beginning on site.

Site personnel

All employees have a role in GHD's HSE program and a responsibility to implement the program. GHD personnel are responsible for:

- Engaging in all aspects of their tasks and jobs when they are prepared to do the job safely, well rested, and mentally prepared for work.
- Utilizing the STAR process before initiating work.
- Implementing Stop Work Authority for any operations that may cause injury, illness, or unsafe conditions to employees, subcontractors, or others.
- Assisting in the development and revision of Job Safety Analysis (JSA) forms that are appropriate to their current scope of work.
- Use, inspect and maintain PPE as required by JSA and site conditions.
- Preparing, submitting and reviewing safety observations using the GHD HSE app or appropriate forms
- Inspecting tools and other equipment before each use or as manufacturer dictates and documenting any defects.
- Correcting job site hazards when possible without endangering life or health.
- Reporting safety and health concerns to the SS, PM, HSE Manager, or SHO (if appointed).

Subcontractors

Subcontractors are responsible for:

- Developing and implementing their own HASP and complying with its contents.
- Attending an initial site orientation and subsequent safety meetings.
- Ensuring that their employees adhere to all site personnel requirements.
- Submitting required documentation to the SS regarding federal, state, or provincial requirements before beginning any work.

- Obtaining approval for the use of GHD's equipment.
- Observing and obeying all GHD/client requirements as well as any specific direction given by GHD's management team.
- Wearing any personal protective equipment required by their HASP and GHD at all times.
- Meeting all governing legislation/regulation/industry standards for equipment used on GHD projects.
- Verifying that all subcontractor employees have required training, medical clearance, and substance abuse testing as required by project.
- Not being in possession or under the influence of alcohol, incapacitating drugs, or medications.

In the event of conflicting safety procedures or requirements, personnel must implement those safety practices that afford the highest level of safety and protection. In addition, noncompliance with safety and health policies and procedures may subject the subcontractor to disciplinary action up to and including termination of their contract with GHD.

Equipment Operators

All equipment operators must meet all the requirements of site personnel listed above and are responsible for the safe operation of heavy equipment. Operators are responsible for conducting documented daily inspections on their equipment to ensure safe performance. Brakes, hydraulic lines, backup alarms, and fire extinguishers must be inspected routinely throughout the project. Equipment will be taken out of service if an unsafe condition occurs. Daily inspections must be provided to the GHD site supervisor prior to the equipment being used.

Authorized Visitors

Authorized visitors, as approved by **Katherine (kathy) Galanti**, are provided with all relevant information regarding site operations and hazards as applicable to the purpose of their visit. Visitors may be required to be accompanied by authorized personnel.

1.6 Site Safety And Health Officer

The site safety and health officer (SHO) is responsible for assisting in the communication of site requirements to site project personnel and subcontractors and for carrying out the health and safety responsibilities include the ones listed under the site supervisor. The SHO has prior experience in working at similar sites. The SHO operates under the supervision of the PM, SS, and HSE Manager.

1.7 Recordkeeping

The SS shall establish and maintain records of all necessary and prudent monitoring activities as described below:

- Name and job classification of the employees involved on specific tasks.
- Air monitoring/sampling results and instrument calibration logs.
- Records of training acknowledgment forms (site specific training, toolbox meetings, etc.).
- Documentation of site inspections, results of inspections, and corrective actions implemented.
- Emergency reports describing any incidents or accidents.

1.8 Site HASP Amendments

Any change to the scope of work must be evaluated for its impact on the overall health and safety of the project and associated personnel. A minor change is one that adjusts already-documented hazards within the HASP and does not expose site personnel to chemicals above exposure limits, such as the introduction of a new JSA, or PPE that does not involve a change in respiratory protection. Amendments must be documented on the Site Health and Safety Plan Amendment Form located in Appendix, in addition to notifications to key personnel.

Significant changes to the scope of work require a rewrite by the PM and review/approval of the HASP by a HSE Manager.

1.9 Training Requirements

All personnel conducting work at this site shall have completed the appropriate safety and health training, as applicable to their job/task duties as it relates to the GHD Tiered Training System. The required training is referenced throughout the HASP and identified on each JSA form

1.10 Site Specific Training

An initial site specific training session or briefing shall be conducted by the PM or SS prior to commencement of work activities. During this initial training session, employees shall be instructed on the following topics:

- Personnel responsibilities
- Content and implementation of the HASP
- Site hazards and controls
- Site specific hazardous procedures (e.g., drilling, excavations, etc.)
- Training requirements
- PPE requirements
- Emergency information, including local emergency response team phone numbers, route to nearest hospital, incident reporting procedures, and emergency response procedures
- Instruction in the completion of required inspections and forms
- Location of safety equipment, such as portable eyewash, first aid kit, fire extinguishers, etc.

The various components of the project HASP will be presented, followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel will not be permitted to enter or work in potentially contaminated areas of the site until they have completed the site specific training session. Personnel successfully completing the training session shall sign the HASP Acknowledgement Form, which is presented as an Appendix.

In addition to the initial site briefing conducted at the commencement of the project, supplemental brief safety meetings shall be conducted by the SS to discuss potential safety and health hazards associated with upcoming tasks and necessary precautions to be taken.

1.11 Safety Meeting/ HASP Review

"Tailgate" safety meetings will take place each day prior to beginning the day's work. All site personnel will attend these safety meetings conducted by the SS. The safety meetings will cover specific safety and health issues, including the appropriate JSAs, site activities, changes in site conditions, and a review of topics covered in the site specific pre-entry briefing. The safety meetings will be documented each day with written sign in sheets containing a list of topics discussed. To assist with the compliance of documentation of the Tailgate safety meetings, there is a Tailgate Safety Meeting form located in the Appendix.

1.12 Fatigue Management

GHD employees and subcontractors are responsible for ensuring they are both physically and mentally fit to perform their job functions safely as part of GHD's Fatigue Management Program. GHD will use the following control measures to minimize fatigue during the project:

- Alter the work schedule to reduce the overall time a worker will perform physically demanding work.
- Monitoring employee behaviors for signs of fatigue.
- Eliminate or reduce where practicable the need to work extended hours, night shifts, or overtime.
- Use work-rest patterns during repetitive tasks to control fatigue and increase mental fitness.

GHD's work/rest balance requirements are referenced based on weight of the vehicle. Less than 10,000 lbs/4536 kg (passenger cars, pickup trucks, SUV) will follow the following guidelines:

- Maximum working time and/or driving and working time within one work day: 14 hours (extendable up to 16 hours if drive time < 4 hours and/or airplane travel is involved; this approach can be taken three times in a 7 day period)
- Maximum continuous drive time: 3 hours followed by a 15 minute break
- Maximum drive time per day: 9 hours (extendable up to 10 hours twice in 7 day period)

Employees that drive vehicles greater than 10,000 lbs/4,536 kg must meet the requirements of the transportation agency for which they work and travel.

Management, as represented by an employee's manager, Project Manager or any Principal, may grant a documented variance to the standard work/rest balance for specific employees for a period covering no longer than one week. Additional variances can be issued after for each week. For further information see Fatigue Management Program on the portal.

1.13 Management Of Change

Safety incidents are known to occur when key changes are not communicated to all stakeholders related to a project. Management of Change is covered by the GHD Quality Manual Section 7.3.7 Control of Project Changes and is documented using QSF-006 Management of Change Form (see Appendix).

The types of changes that are to be documented and communicated are:

- Project management/Resources (key personnel)
- Equipment
- Safety – this would not include daily changes to JSA when dirtied in the field.
- Field Operations/SOP

Form QSF-006 is the tool to document and communicate the change. The completed QSF-006 is to be filed in the GHD field folder of the project file.

1.14 Field Notes

All activities undertaken in the field must be correctly and completely recorded in bound field books, Quality System Field Data Record forms (QSF 200, QSF 400 , and QSF 500 Series D), or in some other GHD approved format (i.e., electronically, loose paper). All records will be kept in the GHD approved format specified for the activities undertaken. The formats have been established to ensure completeness and to provide consistency amongst the field staff regardless of which office they are from. Refer to Section 7 - Control of Monitoring and Measuring Equipment of the GHD Quality System Manual and Section 3.4.1 – Field Notes of the GHD Field Training Manual for more information regarding field note content requirements.

These field notes may be called as evidence in a court of law.

In addition to the formal field notes, field personnel are expected to keep running tables that summarize the field activities so that when questioned at any time during the project, a detailed status of the work completed and that yet to be done can be provided. These lists also serve as checklists to confirm that the correct number and sequence of samples, wells, boreholes, etc. have been collected or completed.

Upon completion of each project, all of the field documentation is brought back and suitably stored at the GHD office in which the field staff who performed the field work are located.

> *GHD demands that all field note entries are factual and accurate. Everyone recognizes that errors and omissions will be made on occasion. While GHD does not condone a level of effort that is incomplete or inaccurate, it is recognized that it may happen and most of our clients will understand these situations. However, anyone who is caught falsifying any record, no matter how small, will be immediately dismissed.*

2. History & Scope

2.1 Site History/Background

The Site is situated on three acres of land at 1130 Niagara Street in Buffalo, New York. Gull Street bisects the Site creating a northern portion (Parcel 3) and southern portion (Parcels 1 and 2). The northern portion of the Site contains an approximately 1,200 square foot storage garage, and an asphalt-covered parking lot. The Southern portion of the Site was formerly occupied by an approximately 45,000 square foot warehouse building, which covered the majority of the property, an asphalt covered loading dock area, and a vegetated area. The warehouse structure was demolished in early 2016. The concrete floor slab remains in place.

The site was purchased in 2015 and is currently owned by Jenesis Development, LLC

Historical information reviewed indicated that the former warehouse building (Parcels 1 and 2) was constructed between 1925 and 1927 and portions of the Site have been in industrial use since prior to 1889. Historical uses include woodworking, machining activities, foundry activities, and vehicle sales and repair. Autocar Sales and Service occupied the structure from the 1930s until the mid 1950s. The rear portion of the structure was used as a bowling alley/restaurant during the 1950s. Namor Products, a manufacturer of chrome plated kitchen sets, purchased the property in the 1950s until selling to Curtis Screw in 1960. Curtis Screw used the facility for manufacturing/metal machining.

On June 2, 2008 a four-alarm fire occurred at the Site. The fire occurred in the original Curtis Screw manufacturing building formerly located on Parcel 2. That portion of the Site complex was separate from the warehouse structure (Parcel 1), but connected through covered walkways. The burned structure was damaged severely enough to require immediate demolition after the fire was extinguished. After demolition, the basement of the building was reportedly backfilled with fill material imported from an off-Site source. According to Leisure Living personnel, the building contained pool chemicals and vinyl pool liners at the time of the fire.

Several environmental investigations have been completed at the Site. The primary Site contaminants are TCE and 1,1,1-TCA on Parcels 1 and 2. Low-levels of SVOCs and metals above criteria are present in soil and groundwater at sporadic locations across the Site including Parcel 3.

2.2 Scope of Work Tasks

The scope of work for this project includes grading, installation of slope stabilization materials, capping with clean fill and/or stone as appropriate, and seeding of unpaved areas of Parcel 3.

This HASP covers the specific site activities that will be conducted by GHD personnel and their subcontractors. These activities listed here, and in the attached JSAs cover the tasks being performed onsite.

Site Reconnaissance and Walk through Activities, Mob/Demob of personnel, material, and equipment, Decontamination of Sampling Equipment and Personnel, Land Surveying for elevation and location, Site Inspection(Construction)

If site operations are altered or if additional tasks are assigned, an addendum to this HASP shall be developed to address the specific hazards associated with these changes.

All addendums will be required to be developed in conjunction with project management and a GHD safety professional.

3. Chemical Hazards

3.1 Introduction To Chemical Hazards

This section identifies and evaluates the potential chemical hazards that may be encountered during the completion of this project. These hazards and the anticipated initial exposure levels are based on client data, historical data, etc.

Chemical exposures occur via four major routes of entry: absorption, inhalation, ingestion, and injection. A listing of the chemical contaminants of concern is found in the **Chemical Table** (Table 1) and The **Safety Data Sheets (SDSs),** for chemical products used on site, are also included in the Appendices. Both the Chemical Table and SDSs include exposure limits, signs and symptoms of exposure, chemical properties, and physical characteristics.

3.2 Control Measures

Before the proper control(s) can be selected, GHD personnel conduct a hazard evaluation of the process, activity, or material. A hazard evaluation may include reviewing information from a chemical container label, SDS, manufacturer, National Institute for Occupational Safety and Health (NIOSH) website, and other resources as needed; identifying route(s) of exposure; and evaluating the process/activity to determine if an exposure evaluation is needed. If necessary, a HSE Manager conducts and documents exposure evaluations.

Exposure to potential on site contaminants/chemicals, such as those listed in Table 1.0 and SDSs, include the following methods:

- Engineering controls such as wetting methods, ventilation, elimination, or substation.
- Administrative controls such as work rotation, training, or proper hygiene practices (washing facilities).
- Monitoring air concentrations with appropriate equipment in the breathing zone.
- Selecting and using personal protective equipment (PPE) such as gloves or respiratory protection.

JSAs are developed and revised to list the associated hazard controls on a task-specific basis.

3.3 Safety Data Sheets

SDSs are documents created by the chemical manufacturer that describe the substance. Some information found on an SDS includes: hazardous and physical characteristics, handling requirements, storage and disposal information, and signs and symptoms of exposure.

When working with hazardous chemicals, readily available and up-to-date SDSs are required for each chemical. GHD personnel and its subcontractors are responsible for obtaining and maintaining SDSs for their controlled products and for products that they are bringing onto site. All projects maintain an inventory of SDS and are made readily available to all employees and visitors.

3.4 Container Labels

All hazardous materials, hazardous waste, chemical containers, and chemical storage areas are appropriately labeled indicating the chemical identity, hazards present, and any relevant regulatory requirements. Labeling of all chemical containers assists emergency personnel and others in identifying hazards if a spill occurs or emergency situation arises.

Chemical container labeling is the responsibility of the individual who fills and/or uses the chemicals. All containers into which chemicals are transferred are legibly labeled in the language that can be understood by the employees who work with or in proximity (English, French, Spanish, etc.) and include the name of the chemical and appropriate hazard warnings.

3.5 Workers Training

All employees who may work in proximity to controlled products has and maintains current applicable training as appropriate to client, state, provincial or federal requirements, which may include: HAZCOM, WHMIS, TDG, or DOT. Records of training are readily available upon request.

4. Physical Hazards

4.1 Introduction To Physical Hazards

Physical Hazards are factors within the environment that can harm the body without necessarily touching it. Vibration and noise are examples of physical hazards. Physical hazards for this site have been identified in the following section. If the hazards change due to site conditions or additions to the scope of work, a Stop Work must be implemented and the conditions identified to the PM and RHSM.

In addition, personnel must be aware that the protective equipment identified in the JSA may limit dexterity and visibility and may increase the difficulty of performing some tasks.

4.2 Heavy Equipment

The following practices are adhered to by personnel operating heavy equipment (such as backhoes, excavators, bull dozers, rock trucks) and personnel working in the vicinity of heavy equipment.

- Heavy equipment is only operated by authorized, qualified operators.
- All equipment is inspected when equipment is initially mobilized, delivered to a job site, or after it is repaired and returned to service, to ensure that it meets all manufacturer and legislative specifications. Documentation of maintenance records must be available upon request.
- The operator inspects the equipment prior to each use and documents the first use on a daily basis. Documentation of this daily pre operational inspection is available upon request, and, if required, filed with the project files.
- Ensure operator conducts a 360-degree walk around of the equipment prior to entering the equipment
- Seat belts/restraining devices are used on heavy equipment that is not designed for stand up operation.
- Equipment/vehicles that are loaded by crane, excavator, loader, etc. have a cab shield and/or canopy to protect the operator.
- Personnel only ride in equipment that is designed for transporting individuals and have a fully functional seat and available restraining devices. “Piggybacking,” such as riding on fender steps or any place outside the cab, is not allowed.
- Personnel are not raised/lowered in buckets.
- Before leaving the equipment controls, the equipment is in its safe resting position or cribbed in a “dead” or neutral position. No controls are abandoned while under load.
- Before raising any booms, buckets, etc., overhead obstructions are checked.
- A competent spotter is used when moving heavy equipment, working within 10 feet of a stationary object, encroaching overhead utilities clearance minimums, in tight quarters, or with limited visibility.
- Employees involved in the operation do not wear any loose fitting clothing, as it can be caught in moving machinery.
- Personnel must wear an approved high-visibility safety vest where any vehicular traffic occurs.
- The work site should be designed to limit the operations being performed in reverse.
- Working areas are properly delineated to keep unauthorized individuals out. Personnel should never proceed into a work zone without making eye contact and receiving authorization from the operator or spotter to cross the path of heavy equipment. Authorization is given from outside the blind or crushing zones of the equipment.

4.3 Utility Clearances - OSHA

Extreme caution is needed when working around electrical power lines. Electricity flows through metal, wood, and many other conducting materials, including human beings. Elevated equipment such as drill rigs, backhoes, scaffolding, ladders, etc must remain the required distance away

according to the local/state/provincial regulations.

These minimum requirements are:

Occupational safety and health act 1926.550(a)(15)

Operating voltage of overhead power	Operating voltage of overhead power safe limit of approach distance for persons and equipment
<50 kv	10 feet
>50 kv	20 feet

For lines rated over 50 kv, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kv, over 50 kv, or twice the length of the line insulator, but never less than 10 feet.

- If any part of a machine may encroach these parameters, SWA is implemented, a review of the SOW is conducted with the PM and RHSM, and a spotter is used.
- If the client has requirements that exceed the above minimums, then the client requirements are used.

Underground Utilities

Underground utilities, if present, are to be clearly marked and identified prior to commencement of work. Follow applicable regulations and client requirements with regards to utility-locating requirements (e.g., One Call).

Personnel involved in intrusive work will:

- Confirm proposed excavation(s) and heavy truck routes are not in the area of subsurface utilities. This meeting is to be documented.
- Review and adhere to GHD's Subsurface Utility Clearance Protocol SOP at a minimum. Use air knifing or vacuum truck digging techniques inside 5 feet of the outside edge of an underground facility.
- Pre-clear holes to 120% of the drill diameter to a minimum depth of 5 feet below ground surface. Consider pre-clearing to greater depths in close proximity to process piping such as loading racks
- Locate boreholes a minimum distances of 5 feet perpendicular from utility mark-out lines
- **Complete the Property Access/Utility Clearance Data Sheet (QSF 019) prior to initiating excavation activities.**
- On private property, request that the owner of the service, locate and mark the service.
- If a service may pose a hazard and cannot be shut off or disconnected, request that the owner of the service supervise the uncovering of the service during the work.
- Identify the work that can be conducted with the assistance of the locator line service, coordinate document/drawing review, and inspect the site for manholes, catch basins, valve boxes, etc. that may indicate the direction/depth of underground installations. Marking indicates only the approximate location of buried lines.

The following are the Uniform Color Codes for utility locates

white proposed excavation
pink temporary survey marking
red electrical power lines,cables, conduit and lighting cables
yellow gas,oil, steam,petroleum or gaseous material
orange communication, alarm or signal lines,cables or conduit
blue potable water
purple reclaimed water, irrigation and slurry lines
green sewers and drain lines

4.4 Railroad

Main Track And Sidings

Machinery and equipment cannot be operated within 25 feet (8.12 meters) of a main track (nearest rail) or siding without Railroad authority and protection. Written authority and Safety Guidelines for Contractors as per specific company can be found in the Appendix. Materials, snow piles, equipment, or other obstructions must not be left where they can affect the ability to see approaching train traffic at public or private railroad crossings. This applies to all manner of equipment, including snow clearing equipment. Contract railroad site representative in advance to arrange protection.

Train Movements and Working Near Tracks

Be alert to train movement. Expect the movement of trains, engines, cars, or other equipment at any time, on any track, and in either direction, even cars on sidings that appear to be stationary, and never climb on, under, or between cars.

- Never rely on others to protect you from train or car movement. Watch for yourself!
- Do not stand on the track in front of an approaching engine, car, or other equipment.
- Be aware of the location of structures or obstructions where clearances are close.
- Never stand or walk on railway tracks, either between the rails or on the ends of ties, unless absolutely necessary. Stay clear of tracks whenever possible. Trains can approach with little or no warning. You may not be able to hear them due to atmospheric conditions, terrain, noisy work equipment, or passing trains in multiple track territory.
- Increased vigilance is required near railway tracks when visibility is poor, such as during fog or blizzard conditions.
- Before undertaking any work on or about railway infrastructure, or that will encroach within 25 feet (8.12 meters) of any railway track prior notification and approval is required.

Protection of Railway Traffic and Work Site

Signs, signals, and flags are necessary for the safe operation of the railway, and shall not be obstructed, removed, relocated, or altered in any way without proper authorization. Blue flag protection on tracks signifies railway employees are on, under, or between rolling equipment. Blue flags are important safety devices and must not be touched or obstructed.

Anyone other than qualified railroad employees, unless specifically authorized by the rail company, you are prohibited from handling track switches, derails, electric locking mechanisms, or other appliances. Personnel operating equipment of any type on the railway tracks must comply with all applicable federal rules and regulations, including but not limited to Canadian Railway Operating Rule (CROR) qualifications.

4.5 Material Handling

Material handling and storage practices are conducted at the project site. Proper lifting reduces the hazard out of moving objects. No one person should handle, lift, or move 50 pounds or more by themself. Even if the object weighs less than 50 pounds, the configuration or shape of the object should be evaluated to see if two people should be used to lift the object.

Manual Lifting

Consider the following prior to a lift.

- Establish that you can lift the load safely.
- Inspect route to be travelled, confirming sufficient clearance.
- Look for any obstructions or spills.
- Inspect the object to determine how it should be grasped.
- Select and use containers with handles where practical.
- Look for any sharp edges, slivers, or other things that may cause personal injury.
- Do not move any object that will obstruct your field of vision when transporting the load.
- When lifting objects, use proper lifting techniques. Position the body so that the weight of the body is centered over the feet, which provides a more powerful line of thrust and ensures better balance. Start the lift with a thrust of the rear foot. Do not twist.

General Storage Practices

Storage of materials and supplies must not create a hazard. General storage area practices include the following:

- Bags, containers, bundles, etc. stored in tiers must be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
- All stacked materials, cargo, etc. must be examined for sharp edges, protrusions, signs of damage, or other factors likely to cause injury to persons handling these objects. Defects are to be corrected as they are detected.
- Storage areas must be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage.
- Storage areas have provisions to minimize manual lifting and carrying. Aisles and passageways provide for the movement of mechanical lifting and conveyance devices.
- Stored materials do not block or obstruct access to emergency exits, fire extinguishers, alarm boxes, first aid equipment, lights, electrical control panels, or other control boxes.
- Hazardous materials are stored in accordance with the details outlined in the MSDS, or accepted guidelines from reputable agencies. Guidelines include details about the materials reactivity, corrosivity, flammability, etc., as well as appropriate signage.

4.6 Noise

Hearing protection is required for project activities when working in close proximity to machinery, drilling operations, or impact/power tools where noise levels may exceed the decibel range of 85 dBA.

When hearing a coworker at normal conversation distance is difficult or the noise level is approaching or exceeding 85 dBA, hearing protection such as earplugs or muffs must be available/worn by all site personnel and visitors that may be exposed to elevated levels of noise. Individuals who wear hearing protection are to be adequately trained in the safe use and handling of hearing PPE.

GHD employees who have the potential to be exposed to noise exceeding 85dba in the work environment will be enrolled in the GHD Hearing Conservation Program.

4.7 Electrical Safety

Employees do not accept unnecessary exposure to hazards, such as working on energized electrical installations. When possible, circuits are de - energized according to the GHD Lockout/Tagout program and client requirements to achieve safe working conditions. When it is not possible to de - energize circuits, the Workplace Electrical Safety Program (WESP) requirements ensure that safe conditions and work practices are implemented.

The WESP is the electrical safety program that covers all electrical work performed at GHD facilities and work performed by GHD at client facilities. It also provides mandatory program requirements and is used in conjunction with all other procedures and practices on the site to ensure that electrical work is accomplished safely.

To protect employees from shock and/or arc flash hazards, only individuals who are "qualified" in accordance with the NFPA 70E or CSA Z462 Standards will be allowed to perform Arc Flash Hazards Analysis, LOTO, diagnostic testing, work on live electrical circuits or perform electrical work on equipment. The term "qualified" does not relate to a job title or job assignment, but rather to the activity being performed. Employees who perform electrical work must successfully complete the “Electrical Safety for Qualified Persons” training to be authorized as “qualified”. Only persons who have received this training and are knowledgeable in the construction and operation of equipment or a specific work method, and are trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or work practice are allowed to perform this type of work. Consult the GHD Workplace Electrical Safety Program for additional program requirements and permits.

4.8 Control Of Hazardous Energy (Loto)

Hazardous energy sources may be encountered during the servicing and maintenance of machines and equipment, in which the unexpected energization or start-up of the machines or equipment could cause injury to employees.

The minimum performance requirements to control hazardous energy requires that employers develop and implement an energy control program. The elements of an energy control program are as follows:

- Lockout/tagout
- Employee protection
- Energy control procedure
- Protective materials and hardware
- Periodic inspections
- Training and communication
- Energy isolation
- Employee notification

Project personnel who are required to conduct operations and maintenance activities that will require the isolation of an energy hazard through the use of a lockout/tagout device shall follow the GHD program requirements and written procedures for that operation. The program requirements can be located in the Appendix.

Employee Training

Employees authorized to attach and remove lockout/tagout devices shall be provided with initial training regarding the safe application, usage, and removal of such devices. Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the associated energy, and the methods necessary for energy isolation and control.

All authorized employees will be provided with refresher training annually, or at more frequent intervals whenever the following conditions apply:

- A job assignment change.
- A change in machinery or equipment, or a process change that presents new hazards.
- A change in the energy control procedures.
- Possible deficiencies in the employee's understanding of the following:
  - The hazards associated with the energy that controls the machinery or equipment in the employee's work area.
  - Application and removal procedures for lockout/tagout devices.

Employees who work in areas where lockout/tagout procedures are used shall receive initial and annual refresher training in the purpose and use of lockout/tagout devices and principles behind their use.

4.9 Heat Stress

Heat stress is one of the most common illnesses faced by project personnel when working in elevated temperatures and/or humidity.

Prevention

The following procedures will be carried out to reduce heat stress:

- Heat stress monitoring.
- Acclimatization.
- Sun exposures.
- Work/rest regimes (schedule of breaks) in accordance with Occupational Health Clinics for Ontario Workers (OHCOW).
- Humidex Heat Stress Response Plan – mandatory breaks scheduled in summer months or during high risk activities for heat stress (based on ACGIH)
- Heat stress safety PPE (e.g., cool vests, bandanas)
- Cool potable water available
- Use of buddy system
- Seek shade - Shade is a good source of protection, but keep in mind that shade structures (e.g., trees, umbrellas, canopies) do not offer complete sun protection.

OHCOW Humidex Heat Stress Response Plan		
°F	**°C**	**Response**
77-84°F	25-29°C	•supply water to workers on an "as needed" basis
86-91°F	30-33°C	•post "heat stress alert" notice •encourage workers to drink extra water •start recording hourly temperature and relative humidity
93-98°F	34 37°C	•post "heat stress warning" notice •notify workers that they are drinking extra water •ensure workers are trained to recognize symptoms
100-102°F	38 39°C	•provide 15 minutes relief per hour •provide adequate cool (10 15°C) water, at least 1 cup (240 ml) of water every 20 minutes •workers with symptoms should seek medical attention
104-107°F	40 42°C	•provide 30 minutes relief per hour in addition to the provisions listed previously
109-111°F	43 44°C	•if feasible provide 45 minutes relief per hour in addition to the provisions listed above •if a 75% relief period is not feasible then stop work until the humidex is 42°C or less
113°F	45°C or over	•stop work until the humidex is 44°C or less
Note: Humidex plan is a simplified way of protecting workers from heat stress which is based on the 2007 ACGIH heat stress TLV® (threshold limit value®) which uses wet bulb globe temperatures (WBGT) to estimate heat strain. These WBGT's were translated into humidex		

Sun Exposure

Overexposure to sunlight is a common concern when field activities occur during warm weather

conditions. Overexposure can occur on clear, sunny days, as well as on overcast and cloudy days. The following steps should be taken to protect against overexposure to sunlight:

- Always use sunscreen on exposed body parts.
- Cover up.
- Wear safety rated sunglasses.
- Limit time in the midday sun.

4.10 Cold Stress

Cold stress is similar to heat stress in that it is caused by a number of interacting factors including environmental conditions, clothing, and workload, as well as the physical and conditioning characteristics of the individual.

Prevention

A variety of measures can be implemented to prevent or reduce the likelihood of employees developing cold related ailments and disorders.

- Acclimatization.
- Fluid and electrolyte replenishment.
- Eat a well-balanced diet.
- Wear warm clothing.
- Follow work/rest regimes.

The parts of the body most important to keep warm are the feet, hands, head, and face. As much as 40 percent of body heat can be lost when the head is exposed.

TLVs Work/Warm Up Schedule for 4 Hour Shift

THRESHOLD LIMIT VALUES WORK/WARM-UP SCHEDULE FOR FOUR-HOUR SHIFT*

Air Temperature Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°C (approx)	°F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm breaks) 1		(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5		
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5			Non-emergency work should cease ↓	
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5			Non-emergency work should cease ↓			
-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease ↓		Non-emergency work should cease ↓					
-43° to below	-45° & below	Non-emergency work should cease									

*2014 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2014

4.11 Hand And Power Tools

Hand Tools

- Hand tools must meet the manufacturer's safety standards.
- Hand tools are not to be altered in any way.
- At a minimum, appropriate eye and face protection that meets current applicable standards (ANSI/CSA) must be used.
- Wrenches, including adjustable, pipe, end, and socket wrenches, are not used when jaws are sprung to the point that slippage occurs.
- Impact tools such as drift pins, wedges, and chisels are kept free of mushroom heads.
- Wooden handles are free of splinters or cracks and secured tightly to the tool.
- Any damaged or defective tools are immediately removed from service and tagged for destruction.

Power Tools

- All power tools must be inspected regularly and used in accordance with the manufacturer's instructions and the tool's capabilities.
- Electric tools are not used in areas subject to fire or explosion hazards, unless they are approved for that purpose.
- Corded portable electric tools are connected to a ground fault circuit interrupter (GFCI) when working in wet areas.
- Coiled cords/extension cords are uncoiled when plugged in to allow for dissipation of heat.
- Cords/extension cords rated appropriately for the temperature are used.
- Appropriate eye and face protection that meets current applicable standards (ANSI/CSA) are used.
- Personnel are trained in the proper use of the tool.
- Any damaged or defective power tools must be immediately tagged and removed from service.
- Repairs to hand or power tools are only made by qualified individuals and in accordance with the manufacturer’s standards.
- Field or shop modifications to tools or equipment are only made by qualified individuals and in accordance with either manufacturer or engineer-approved specifications.

4.12 Portable Ladders

When portable ladders are in use on work sites, the following guidelines apply as a minimum standard.

- Use the 4 to 1 ratio. The ladder feet are 1 foot away from what it leans against for every 4 feet in height to the point where the ladder rests.
- Never use a ladder in a horizontal position as a runway or a scaffold.
- Never place a ladder in front of a door that opens toward it unless the door is locked, blocked, or guarded by a person.
- Place a portable ladder so that both side rails provide secure footing on soft ground to prevent the ladder from sinking.
- Place the ladder's feet on a substantial and level base, not on a movable object.
- On uneven surfaces, use a block, wedge, or ladder foot.
- Always lash, block, or otherwise secure a ladder's footing on wet or oily pavement, a smooth floor, or an icy or metal surface..
- Do not lean a ladder against unsafe backing, such as loose boxes or barrels.
- Securely lash or otherwise fasten the ladder to prevent it from slipping when using a ladder to access to high places.
- Always extend the ladder at least three rungs (3 feet) above the point of support when gaining access to a roof or elevated platform.
- Always maintain three points of contact when ascending or descending. If material must be handled, place in a bag or bucket and raise or lower it with a rope.
- Always face the ladder when ascending or descending.
- Maintain clean, dry footwear as much as possible to prevent slipping on the rungs.

4.13 Slip, Trip, Hit, Fall

Slip/trip/hit/fall injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but can be minimized by the following prudent practices:

- Spot-check the work area to identify hazards and communicate hazards to on site personnel.
- Update/dirty the JSA to reflect changes.
- Keep work areas clean and free of clutter, especially in storage areas and walkways.
- Secure all loose clothing and ties, and remove jewelry that may pose an entanglement hazard.
- Establish, maintain, and utilize walkways that are free of slip and trip hazards.
- Utilize/install appropriate lighting for walking paths and working areas.
- Beware of slip/trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain.
- Carry only loads you can see over (Refer to Material Handling for additional information).
- Refrain from the use of portable communication devices (cell phones, two-way radios) while traversing the site.
- Keep a safe buffer zone between workers using equipment and tools.

4.14 Aggressive Or Menacing Behavior

When confronted by an individual whose behavior becomes aggressive or menacing, remain as calm as possible. Avoid arguing with or physically confronting the individual. Attempt to distance yourself from the individual. Advise others in the area to leave the scene and request police assistance by having someone call the emergency number listed on the Emergency Contact Sheet. Use the team approach. A staff member who is physically unable to break away from an attacker should shout for help.

The use of physical force is justified when a person believes that such force is necessary to protect himself or herself against the use or imminent use of unlawful physical force by another person.

Should an aggressor only be interested in the taking or damaging of property, do not interfere. Obtain a description of the individual to provide to local authorities, including height, weight, race, sex, clothing, accent, unusual markings such as tattoos, piercings, scars, hair color, and weapon, if any.

Contact the HSE Help Line and file an incident report with your immediate supervisor as soon as it's safe to do so.

4.15 Adverse Weather Conditions

Adverse weather is the existence of or impending weather conditions such as heavy rain, freezing rain, sleet, snow, high winds (50km/30mph), dust storms, tornadoes, hurricanes, lightning, or any combination of weather that is either not reasonable or not safe for employee exposure. Stop Work Authority (SWA) is executed prior to these conditions as reasonably possible. The site is evacuated according to the emergency plan developed and listed in this Health and Safety Plan.

Based on their expertise and knowledge of manufacturer’s recommendations for the equipment being operated, heavy equipment operators such as crane and drill rigs are responsible for advising the site supervisor whether it is safe to continue operations.

The site supervisor decides on the continuation or discontinuation of work based on current and pending weather conditions, the equipment manufacturer recommendations, and the equipment operator’s recommendations.

4.16 Special Conditions

GHD may be asked to conduct work that requires special precautions/considerations. Potential exposure factors are identified on the left, with associated mandatory conditions identified on the right.

- Remote work locations
  - Working alone is not permitted. Submit a Journey Management Plan. Use call-in procedure to include use of satellite phone if no cell or direct line access.
- Project site is in an area known for high crime or violence activity
  - Working alone is not permitted. A police or security escort is required.
- Entry into abandoned buildings
  - Working alone is not permitted. Use call-in procedure.
- Entry into wooded areas during hunting season
  - Working alone is not permitted. Use a reflective vest. Submit a Journey Management Plan. Use call-in procedure.
- Project work involving single employees (lone worker)
  - Use call-in procedure.

If these situations are possible, please consult with your RSHM to develop a plan prior to your project's start date.

5. Biological Hazards

5.1 Introduction To Biological Hazards

GHD employees conduct numerous project activities where they may encounter biological hazards such as listed in the following table. This section identifies the problems associated with these biological hazards and the precautions to be taken if these hazards are encountered.

The biological hazards identified are applicable to this site. If you are bitten, stung, or attacked by any of the listed hazards, contact the GHD HSE Help Line at 1-866-529-4886

5.2 Wildlife

Tick and Chiggers	•Wear light colored clothing •Keep clothing buttoned or zipped •Keep socks tucked in •Apply repellent containing DEET or Permethrin to clothing and exposed skin •Check hair and clothing periodically using buddy system	•Remove tick with tweezers or fingers and tissue •Grab tick as close as possible to attachment site and pull firmly •Inspect tick to ensure that no parts remain in attachment site •Apply AfterBite containing antiseptic to affected areas •Call GHD HSE Help Line
Flying, Stinging, Biting Insects: Bees, Wasps	•Avoid wearing perfume, hairspray, cologne, and scented deodorant while working outside •If eating outside, keep all food and drinks covered; sweet foods and strong scents attract stinging insects •Never swat or swing at the insect; wait for it to leave, softly blow it away, or gently brush it aside •Inspect areas carefully as bees, wasps, and hornets can nest both in the ground and above ground •If the nests pose a threat, have them professionally removed	•Apply AfterBite containing antiseptic to affected areas or place an ice cube or ice pack over the sting to reduce pain •Remove the stinger with tweezers or scratch with a credit card (catch barbs with card and pull out) •Seek medical attention when the reaction to a sting includes swelling, itching, dizziness, and shortness of breath •Call GHD HSE Help Line
Mosquitoes	•Wear light colored clothing •Keep your body covered as much as possible; wear a hat or mosquito screen •Apply repellent containing DEET or Permethrin to clothing and exposed skin	•Apply AfterBite containing antiseptic to affected areas •If moderate to extreme itchiness is experienced, use over the counter antihistamines
Threatening Dogs	•Stop walking, face the dog, and be relaxed •Keep the dog in your peripheral vision as it circles •If it tries to bite – yell "NO" in a loud stern voice •If you have an item such as a briefcase or field book, keep it between you and the dog •If the dog continues to nip or attacks, fight back; protect your throat and if possible hit the dog in the nose, or kick it in the rib cage, which may stun it and deter it from continuing the attack	•If bitten and the skin is not broken, clean with antiseptic •Notify Supervisor/PM •If skin is broken, clean with antiseptic, cover, and seek medical attention •Notify Supervisor/PM •Call GHD HSE Help Line

5.3 Poisonous Plants

Vegetation Overgrowth	•common weeds and tall grasses •increase in trip hazard, and entanglement •risk of fire during summer season •wear proper PPE, long pants, eye protection •increase in rodent, snake, stinging insect hazards	•discuss clearing area with management to reduce risks •use extra caution when walking due to unseen holes or trip hazards •watch for grass cuts on arms, contact GHD HSE Help Line if reaction occurs

5.4 Biological

Histoplasmosis	Look for evidence of bird or bat colonies. •Before you work in or dig soil that's likely to harbor the fungus that causes histoplasmosis, spray it thoroughly with water. •Wear appropriate PPE for the task. •Clean footwear before leaving the site to prevent spore dissemination in cars, the office, at home, and elsewhere	•Wash hands with soap and warm water after removing your gloves. •If you have persistent flu like symptoms, see your doctor. Tell then if you have been around a bird or bat colony. •Call GHD HSE Help Line
Hantavirus	•Inspect work area for rodent droppings •For low amounts of droppings, use Level C with N95 disposable respiratory protection •For heavy accumulation, use Level C Full Face PAPR with P100 cartridge or, in severe cases, Level B •Soak dead mice, nests, and droppings thoroughly with a 1:10 solution of sodium hypochlorite (household bleach); bleach kills the virus and reduces the chance of further transmission •Place contaminated material in a plastic bag and seal for disposal •Disinfect all equipment	•Wash gloved hands with soap and water or spray a disinfectant or bleach solution on gloves before taking them off. •Wash hands with soap and warm water after removing your gloves. •If you have been around rodents and have symptoms of fever, deep muscle aches, and severe shortness of breath, see your doctor immediately •Call GHD HSE Help Line
Blood-borne Pathogens	• Exposure comes through work activities such as landfill, sewage treatment, sewers, contaminated medical waste • Virus, Bacteria, Fungus, and Parasites are considered blood-borne • Proper hygiene is extremely important to prevent ingestion • Wear proper PPE in known areas (gloves, long sleeves, long pants, safety glasses)	• All human blood and human body fluids treated as infectious • Cover all nicks and cuts to prevent cross-contamination. • Disinfect hands with sanitizer • Proper hygiene extremely important to prevent ingestion and eye contact • More information review GHD blood-borne policy • Call GHD HSE Help Line if exposed.
Psitticosis - Bird Droppings	• Breathing in the organism when the urine, respiratory secretion, or dried feces • Other sources of exposure include mouth-to-beak contact, a bite from an infected bird. • Bacteria starts an infection that varies in severity from a mild flu-like illness to severe pneumonia • PPE may include gloves, protective clothing, boots, and where appropriate, a respirator	• Adequate ventilation systems including the use of high efficiency particulate air (HEPA) filters to reduce the spread of contaminated air. • Disinfectants area with ammonium compounds, isopropyl alcohol, 70% ethanol, household bleach (diluted to 1%) • Wetting the wastes before removal decreases aerosolization • Call GHD HSE Help Line if exposed

Legionella	•Minimize water misting, stagnant water, and dead zones •Manage water temperature •Implement a preventative maintenance and inspection program to monitor equipment •Conduct Legionella testing of water systems and equipment	•If you are suffering a respiratory ailment, notify your supervisor and contact the GHD HSE Help Line

6. Personal Protective Equipment

6.1 Introduction To PPE

Controlling a hazard at the source is the best way to protect employees. When engineering, work practice, and administrative controls are not able to protect our employees, GHD provides personal protective equipment (PPE) to its employees and ensures that the PPE is used appropriately. PPE is equipment worn as a barrier to minimize exposure to a variety of hazards.

This section covers applicable PPE requirements, which include eye, face, hand, head, foot, and respiratory protection.

6.2 Types of Personal Protective Equipment (PPE)

The type of PPE required for work varies based on the task being performed. The specific PPE required for each individual task is documented in the appropriate task-specific JSA. The recommended minimum PPE for GHD site work is as follows:

- Shirts with a minimum 6-inch sleeve.
- Long pants made from suitable sturdy material .
- Grade 1 protective footwear meeting CSA Z195 M92 (Canada)/ ANSI Z41.1 (US), green patched (triangle), steel-toed/puncture-resistant and electric shock-resistant sole with a 6-inch cuff, fully laced and secured, in material appropriate for weather and task.
- Safety glasses or goggles (based on the type of hazard – dust, splash, etc.), meeting CSA Z94.3 (Canada) or ANSI Z87.1 (US) standards.
- Hand protection such as gloves meeting standards EN 388 and ANSI 105-2000 as appropriate for the task as per JSA, with selection based on the hazards (abrasion, blade cut, tearing, puncture, and impact) associated with the task being performed.
- Reflective garment meeting CSA Z96 02 or ANSI 107 (as required).
- Type 1 Class E hardhat, meeting either CSA Z94.1 05, Z94.1 92, ANSI Z89.1, or Z89.1.
- Hearing protection meeting CSA/ANSI approved NRR of at least 20 dBA if noise levels exceed 85 dBA.

Additional minimum requirements for PPE include:

- All PPE are maintained in good condition with no rips, tears, or damage that compromise integrity.
- PPE is not loose fitting as to avoid entanglement issues.
- All PPE is disposed of and/or decontaminated at the conclusion of each workday. The most contaminated PPE is decontaminated first.
- All disposable equipment is removed before meal breaks and at the conclusion of the workday, and replaced with new equipment prior to commencing work.
- Reusable equipment (safety glasses, hard hats, goggles, etc.) is cleaned and sanitized according to GHD and/or manufacturer guidelines.
- Eating, drinking, chewing gum or tobacco, and smoking are prohibited while working in areas where the potential for chemical and/or explosive hazards may be present. Personnel must wash thoroughly before initiating any of the aforementioned activities.

6.3 Types Of Protective Material

No universal protective material exists. All materials will decompose, be permeated, or otherwise fail to protect under certain circumstances. Protective clothing can be constructed from a variety of materials for protection against exposure to specific physical, chemical, or biological hazards.

Fortunately, most manufacturers list guidelines for the use of their products. These guidelines usually concern gloves or coveralls and generally only measure rate of degradation, which is failure to maintain structure. A protective material may not necessarily degrade, but may allow a particular chemical to permeate its surface. For this reason, guidelines must be used with caution. When permeation tables are available, they are used in conjunction with degradation tables.

To obtain optimum usage from PPE, the following procedures are followed by all site personnel using PPE:

- When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift
- Inspect all clothing, gloves, and boots both prior to and during use for:
  - Imperfect seams
  - Non uniform coatings
  - Tears
  - Poorly functioning closures
- Inspect reusable garments, boots, and gloves both prior to and during use for:
  - Visible signs of chemical permeation
  - Swelling
  - Discoloration
  - Stiffness
  - Brittleness
  - Cracks
  - Any sign of puncture
  - Any sign of abrasion

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above are discarded. PPE used in areas known or suspected to exhibit elevated concentrations of chemicals are not reused.

6.4 Respiratory Protection

Respiratory protection is sometimes required for personnel during project activities when action levels exceed the occupational exposure levels. When respirators are required, personnel identify and select the appropriate air purifying respirator and supporting cartridge medium, and follow the procedures and guidelines in their respective written Respiratory Protection program.

At a minimum, all personnel required to use this equipment are:

- Instructed in how to properly fit a respirator to achieve the required face piece to face seal for respiratory protective purposes.
- Medically cleared for the use of respiratory protection.
- Appropriately fitted for the selected respirator through established recognized fit testing methods (quantitative/qualitative), and documentation of fit is readily available.
- Free of beards, sideburns, eyeglasses, and upper or lower dentures that could affect the face seal.

Further regulations for the use of respiratory protection include:

- Cartridges are changed prior to breakthrough, daily, or when personnel begin to experience increased inhalation resistance or breakthrough of a chemical warning property.
- Respiratory equipment and other non disposable equipment are fully decontaminated.
- Appropriate action levels are established and documented based on the applicable occupational exposure limits.

NOTE: This HASP is not intended for the use of supplied air operations. For supplied air operations, the project manager and a GHD safety professional conduct a review of the scope of work.

GHD identifies the type of respirator and cartridge and documents on the applicable JSA for the affected tasks and on Table 2.

6.5 Respirator Cleaning

Respirator decontamination is conducted once daily at a minimum. Face pieces are disassembled, the cartridges are thrown away, and all other parts are placed in a cleansing solution. After an appropriate amount of time in the solution, the parts are removed and re seated with tap water.

Face pieces are allowed to air dry before being placed in sanitized bags and stored in a clean area.

6.6 Levels Of Protection

Protection levels provided by PPE selection are upgraded or downgraded based upon a change in site conditions or the review of the results of air monitoring or the initial exposure assessment monitoring program, if one was conducted.

When a significant change occurs, the hazards are reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase.
- Change in job tasks during a work phase.
- Change of season/weather.
- Temperature extremes or individual medical considerations limiting the effectiveness of PPE.
- Chemicals other than those expected to be encountered are identified.
- Change in ambient levels of chemicals.
- Change in work scope that affects the degree of contact with areas of potentially elevated chemical presence MUST be re-evaluated.

All proposed changes to protection levels and PPE requirements are reviewed and approved prior to implementation by the SS.

7. Site Control

7.1 Introduction To Site Control

The purpose of site control is to minimize potential contamination of workers and protect the public from hazards found on site. Site control also includes site security for the protection of GHD employee and subcontractor when working in public areas. Site Control is especially important in emergency situations.

Site control, work area demarcation, and site security will be achieved through posting of signage and placement of barricades and or personnel. All controlled areas will have the appropriate signage posted. Barricades and warning signs will be placed to warn personnel of potential hazards. A standby person (spotter) may be utilized in place of barricades, where appropriate. The following materials may be used to barricade the work area and protect both public and GHD:

- Temporary Fence
- High Visibility Tape, Rope or Chain
- Flagging
- Warning Signs
- Traffic Cones

Approved pedestrian and vehicle traffic paths will be determined during Tailgate Safety Meetings based upon current site conditions and work locations. When applicable, one pathway should be established for heavy equipment and one for personnel decontamination.

The majority of site operations, as well as access to the site, could be controlled from the support zone. The support zone will provide for team communications, emergency response, and sanitary facilities. Appropriate safety and support equipment also will be located in this zone.

The support zone will be located upwind of site operations if possible, and would be used as a potential evacuation point if appropriate. No potentially contaminated personnel or materials are allowed in this zone.

7.2 Work Zone Demarcation

When performing work that could put yourself or others at risk, you must demarcate an Exclusion Zone around your work. This is typically done with yellow and black plastic "barricade tape." Use signs, placards, and other postings as necessary to warn others not to enter the demarcated area unless they have business in the area and have authorization to enter. Where appropriate, post special requirements for entry.

The levels and requirements for work zone demarcation is based on the task being performed or the requirements of the client.

7.3 Work Zone Demarcation Level 1

Task such as:

- Monitoring Well Sampling
- Inspection of Equipment
- Tasks that Distract Attention from Vehicle Traffic

These task require the use traffic cones, high visibility tape or temporary barricades such as sawhorses.

7.4 Two-Person Crew/Buddy System

A Two-Person Crew or Buddy System shall be implemented to protect the employees and public when conducting high risk activies such as:

- Working near traffic
- Working ON or NEAR water
- Excessive noise to which hearing traffic or communication is difficult
- Confined or restricted spaces
- In an isolated area such as landfills or wooded areas
- Areas with high crime rates

When using the buddy system, visual contact must be maintained between crew members at all times, and crew members must observe each other for signs of chemical exposure, heat, or cold stress. Indications of adverse effects include, but are not limited to:

- Changes in complexion and skin coloration
- Changes in coordination
- Excessive salivation and pupillary response
- Changes in speech pattern.

Project personnel must also be aware of potential exposure to possible safety hazards, unsafe acts, or noncompliance with safety procedures. Individuals must inform their partners or fellow team members of non visible effects of exposure to toxic materials. The symptoms of such exposure may include:

- Headaches
- Dizziness
- Nausea
- Blurred vision
- Cramps
- Irritation of eyes, skin, or respiratory tract.

If protective equipment or noise levels impair communications, prearranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

7.5 Communication

Each member of the project team will be able to communicate with other team members at all times. Communications will be by way of:

- Cell Phones/Smart Phones

The primary means for external communication are telephones and radio. If telephone lines are not installed at a site, all team members should:

- Know the location of the nearest telephone
- Have the necessary telephone numbers readily available

Note: The authorized use of cellular phones must be cleared by the client prior to entering site.

The following procedures will be followed by all site workers when using a cell phone on site:

- No cell phone use while driving or operating equipment.
- No cell phone use while in the Exclusion Zone.
- If using a cell phone on site, find a location where you can safely use the phone. Do not walk around the site while using a cell phone.

Understanding of the following standard hand signals will be mandatory for all employees, regardless of other means of communication:

- Hand gripping throat — Cannot breathe
- Hands on top of head — Need assistance
- Thumbs up — OK, I'm alright, I understand
- Thumbs down — No, negative
- Gripping partner's wrist, or gripping both of your own hands on wrist (if partner is out of reach) – Leave area immediately

7.6 Decontamination And Hygiene

Decontamination

In general, everything that enters the site must either be decontaminated or properly discarded upon exit from the site. Prior to demobilization, potentially contaminated equipment will be decontaminated on a wash pad (decontamination pad), drum, or containment pad which then will be placed into appropriate container and labeled as hazardous waste and will be stored in a designated area until disposal arrangements are made.

The type of decontamination solution to be used is dependent on the type of chemical hazards. The decontamination solution for heavy equipment and for any reusable PPE is Alconox/Liqui nox soap. The MSDSs for Alconox/Liquinox will be located in the Appendix.

Personnel Decontamination Procedures

Personnel decontamination will be completed in accordance with the GHD Safety and Health Program for personnel decontamination. Wash water and sediments will be collected and stored with any runoff water collected for subsequent treatment/disposal. PPE, trash, etc. will be sent off-Site for disposal. It will be kept separate from trash generated in clean areas of the Site.

All disposable equipment shall be doffed before meal breaks and at the conclusion of the workday and replaced with new equipment prior to commencing work.

Procedures for decontamination must be followed to prevent the spread of contamination and to eliminate the potential for chemical exposure.

Personnel - Decontamination will take place prior to exiting the contaminated work area.

Decontamination procedures are as follows:

Step 1 Remove all visible contamination and loose debris by washing with clean water.

Step 2 Remove all outer clothing that came in contact with the contamination (i.e., boot covers and outer gloves) and either dispose of in disposable container or wash in detergent solution and rinse.

Step 3 Remove protective clothing; dispose of in disposable container.

Step 4 Remove respirator, sanitize prior to reuse.

Step 5 Remove inner gloves, dispose of in disposable container.

Step 6 Wash and rinse hands.

General Safety and Personnel Hygiene

1. Eating at the site is prohibited, except in specifically designated areas. Designation of eating areas will be identified to each employee. The location of these areas may change over the duration of the project to maintain adequate separation from the active work area(s).
2. Smoking at the site is prohibited.
3. Individuals getting wet to the skin with effluent from the washing operation must wash the affected area immediately. If clothes in contact with skin are wet, then these must be changed.
4. Hands, face, neck, and other exposed areas must be washed with soap and water before eating, drinking, smoking, before using toilets, and before leaving the site.
5. All disposable coveralls and soiled gloves will be placed in covered containers at the end of every shift or sooner, if deemed necessary by the SHO. Wastes will be stored until proper disposal arrangements have been made.
6. Personnel working on site will not be permitted to wear facial hair that interferes with the mask to face seal on air purifying respirators.
7. All personnel performing or supervising work within the EZ must wear appropriate PPE, observe, and adhere to the personal hygiene related provisions of this section.
8. Personnel found to be disregarding the personal hygiene related provisions of this HASP will, at the discretion of the SHO, be barred from the site.

7.7 Social Protection

Security Measures

A site assessment should be made prior to performing work in high risk areas for violent crime. Additionally, it may be important to gather as much information as possible from the client, describing the location and social conditions of the area where work will be performed.

In the event it has been determined that this work will occur in an area of high risk, consideration shall be given to providing on site security for the protection of the employee. This option may

include services from a security agency, local law enforcement (if available), or the services of an off duty law enforcement officer. The Project Manager and/or Project Coordinator shall be contacted and provide authorization prior to making these arrangements.

Anti-social behavior means different things to different people – noisy neighbors who ruin the lives of those around them, 'crack houses' run by drug dealers, loitering by drunkards, people begging by cash points, abandoned cars, litter and graffiti, young people using airguns to threaten and intimidate or people using fireworks as weapons.

When in this situation, there is no single strategy that always works. Remember these tips when faced with work conditions in volatile neighborhoods:

Street Precautions

When walking to and from your vehicle, or in and around the work site:

- Be alert to your surroundings and the people around you, especially if you are alone or it is dark
- Whenever possible, travel with a colleague
- Stay in well lighted areas as much as possible
- Walk close to the curb; avoid doorways, bushes, and alleys where someone could hide
- Walk confidently, and at a steady pace; make eye contact with people when walking
- Do not respond to conversation from strangers on the street, continue walking

Harm Reduction

Do as much as you can to avoid a confrontation "anticipation and avoidance" are the key words.

- If you get caught up in a situation, try to talk to an aggressor without provoking them.
- Practice relaxation, as appearing fearful or stressed can actually provoke an attack.
- Remember that body language is important in aggressive situations, so maintain a comfortable distance between you and the aggressor.
- It may be more advisable to submit than to resist and risk severe injury or death. You will have to make this decision based on the circumstances. Be especially careful, if your attacker has a weapon.
- Avoid arguing with or physically confronting the individual. Attempt to distance yourself from the individual. Advise others in the area to leave the scene and request police assistance by having someone call the emergency number listed on the Emergency Contact Sheet. Use the team approach. A staff member who is physically unable to break away from an attacker should shout for help.
- Steady yourself if danger threatens. Panic can disable you, so again it's useful to learn how to keep control in a difficult situation.
- If you must fight back, adopt what police term the "bash and dash" approach. Primary targets are the eyes, nose, mouth, ears, throat, groin, knees, or shins; choose whichever is easiest to get to.
- Be aware that your attacker might be stronger than you, or may take what you are using in self defense and use it against you. It is often better just to shout loudly and run away.
- When confronted by an individual whose behavior becomes aggressive or menacing, remain as calm as possible. Avoid arguing with or physically confronting the individual. Attempt to distance yourself from the individual. Advise others in the area to leave the scene and request police assistance by having someone call the emergency number listed on the Emergency Contact Sheet. Use the team approach. If you are physically unable to break away from an attacker, shout for help.
- The use of physical force is justified when a person believes that such force is necessary to protect him or herself against the use or imminent use of unlawful physical force by another person. The use of physical force is also justified in the defense of another party, such as a co worker, who is being subjected to unlawful physical force. You can use any technique of legal self defense in order to halt or distract an attacker until law officers arrive on the scene.
- Should an aggressor only be interested in taking or damaging property, do not interfere. Obtain a

description of the individual to provide to local authorities, including height, weight, race, sex, clothing, accent, unusual markings such as tattoos, facial piercing, scars, hair color, and weapon, if any.
- Shout 'fire' rather than 'help' – it can get more results.
- Stay alert and observant so that you can better describe your attacker and the assault to the police.
- Report the incident to the GHD Help Line and BWise and work with your PM and HSE Manager to complete the investigation

Drug Activity

The safe retrieval and disposal of used hypodermic needles and syringes:

- GHD employees must not handle or remove any hypodermic needles or syringes. You should contact the local Police Department, Fire Department, or Health Department for removal from the job site.
- If you are injured by a discarded needle you can receive a vaccination against Hepatitis B within 48 hours of the incident. Notify the GHD Help Line and seek medical attention, call 911 if necessary.
- If an accident occurs where a needle or other sharp object has punctured the skin, then the injured person should:
  - Encourage the wound to bleed gently
  - Wash well with soap under cold running water
  - Cover the wound with a waterproof dressing
  - Seek medical attention as soon as possible
  - Inform the SS and/or PM
  - Complete a GHD Incident Reporting Form

Car Jacking

You can help prevent yourself being a victim of car jacking by:

- Keeping your doors locked in built up areas, and trying to keep the windows wound up, especially at traffic lights
- Being aware of what people are doing around you
- Using the middle lane, if there is one, when waiting at junctions or lights, so that your car is harder to get to from the pavement
- Not stopping to help someone who has broken down (if you really want to help, pull over at the next garage or police station and call for help)
- Driving to the next garage or police station and reporting them if someone tries to pull you over for no reason

A car jackers may 'accidentally' bump into your car, aiming to get you out of the car so they can steal it. If this happens, you may choose not to get out of the car – especially if you do not think it is a genuine accident. Wind the window down a little bit to talk to them if you want to.

Aggressive or Menacing Behavior

Report to the GHD HSE Help Line, BWise and work with your PM and HSE Manager to complete the investigation.

7.8 Site Security

Site security is necessary to prevent the exposure of unauthorized, unprotected people to site hazards and to avoid interference with safe working procedures. Security shall be maintained outside of the actual work area(s) so as to prevent unauthorized entry into the work area(s). Members of the general public are to be protected from site hazards.

7.9 HAZWOPER Addendum

General Safety Practices

Duration of Work Tasks

The duration of activities involving the usage of PPE will be established by the SS or SHO based upon ambient temperature and weather conditions, the capacity of personnel to work in the designated level of PPE and limitations of the protective equipment (i.e., ensemble permeation rates, life expectancy of the APR cartridges, etc.) As a minimum, rest breaks will be observed at the following intervals:

i) 15 minutes midway between shift start-up and lunch

ii) One-half to one hour for lunch

iii) 15 minutes in the afternoon, between lunch and shift end

All rest breaks will be taken in the clean area (Support Zone [SZ]) after full decontamination and PPE removal. Additional rest breaks will be observed based upon the heat stress monitoring guidelines presented in Section 4.2.

Site Control

Authorization to Enter

All personnel working in Exclusion Zones (EZs) must have completed hazardous waste operations initial training as defined under OSHA Regulation 29 CFR 1926.65; have completed their training or refresher training within the past 12 months, and have been certified by a physician as fit for hazardous waste operations in order to enter a site area designated as an EZ or Contaminant Reduction Zone (CRZ).

Personnel without such training or medical certification may enter the designated Support Zone (SZ) only. The SS or SHO will maintain a list of authorized persons; only personnel on the authorized list will be allowed within the EZ or CRZ.

Site Orientation and Hazard Briefing

No person will be allowed in the general work area during project operations without first being given a Site orientation and hazard briefing. This orientation will be presented by the SS or SHO, and will consist of a review of this HASP. This review must cover the chemical, physical, and biological hazards, protective equipment, safe work procedures, and emergency procedures for the project. A Training Acknowledgement Form is provided in Appendix A for documentation purposes. In addition to this meeting, Daily Safety Meetings will be held each day before work begins. All individuals on the Site, including visitors, must document their attendance to the initial briefing as well attending the Daily Safety Meetings. Appendix A also presents the forms that will be used for documenting the Daily Safety Meeting.

Certification Documents

The PM, SS and SHO are responsible for ensuring that all personnel working at the Site meet the training and medical surveillance requirements. Subcontractor personnel must provide their

training and medical documentation to the SHO prior to the start of fieldwork.

Entry Requirements

In addition to the authorization, hazard briefing and certification requirements listed above, no person will be allowed to enter the Site unless he or she is wearing the minimum support zone PPE as described in Section 4.0. Personnel entering the EZ or CRZ must wear the required PPE for those locations.

Emergency Entry and Exit

Individuals who must enter the Site on an emergency basis will be briefed of the hazards by the SS or SHO. All hazardous activities will cease in the event of an emergency and any sources of emissions will be controlled, if possible.

People exiting the Site because of an emergency will gather in a safe area for a head count. The SS or SHO is responsible for ensuring that all people who entered the work area have exited in the event of an emergency.

Contamination Control Zones

Contamination control zones are maintained to prevent the spread of contamination and to prevent unauthorized people from entering hazardous areas.

Exclusion Zone (EZ)

The EZ consists of the specific work area, or may be the entire area of suspected contamination. All personnel entering the EZ must use the required PPE, and must have the appropriate training and medical clearance for hazardous waste work. The EZ is the defined area where there is a possible respiratory and/or contact health hazard. Cones, caution tape, or other appropriate means will identify the location of each EZ.

Contamination Reduction Zone (CRZ)

The CRZ or transition area will be established, if necessary, to perform decontamination of personnel and equipment. All personnel entering or leaving the EZ will pass through this area to prevent any cross- contamination. Tools, equipment, and machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on-Site adjacent to the EZ. Personal protective outer garments and respiratory protection will be removed in the CRZ and prepared for cleaning or disposal.

This zone is the only appropriate corridor between the EZ and the SZ.

Support Zone (SZ)

The SZ is a clean area outside the CRZ located to prevent personnel from exposure to hazardous substances. Eating and drinking will be permitted in the support area only after proper decontamination. Smoking may be permitted in the SZ, subject to Site requirements.

Buddy System

All project personnel must use the buddy system. Visual contact must be maintained between crew members at all times, and crew members must observe each other for signs of chemical

exposure, heat, or cold stress. Indications of adverse effects include, but are not limited to:

i) Changes in complexion and skin coloration

ii) Changes in coordination

iii) Excessive salivation and pupillary response

iv) Changes in speech pattern.

Project personnel must also be aware of potential exposure to possible safety hazards, unsafe acts, or noncompliance with safety procedures. Individuals must inform their partners or fellow team members of non-visible effects of exposure to toxic materials. The symptoms of such exposure may include:

i) Headaches

ii) Dizziness

iii) Nausea

iv) Blurred vision

v) Cramps

vi) Irritation of eyes, skin, or respiratory tract.

If protective equipment or noise levels impair communications, prearranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

Site Monitoring

Air Monitoring

Personal Air Monitoring Program

The PM, SS and SHO shall also implement a personnel air-monitoring program for those project personnel who have the highest risk of potential for exposure to chemicals present on Site. This monitoring will be done in compliance with 1926.65(h). Samples will be collected during startup of those project activities where personnel face potential exposure. The PM, SS and/or SHO will determine the number and frequency of sampling events. Appropriate NIOSH methodology will be followed and all samples are to be sent to an American Industrial Hygiene Association (AIHA) accredited laboratory.

Results for all personnel air sampling will be posted for all project personnel to review.

Personnel Training

General

Required project personnel as discussed in Section 1.0 must have completed hazardous waste operations-related training, as required by the OSHA Standard 29 CFR 1926.65. Field personnel also receive a minimum of 3 days of actual field experience under the direct supervision of a trained,

experienced supervisor. Personnel who completed their training more than 12 months prior to the start of the project must have, if required, completed an 8-hour refresher course within the past 12 months. The SS must also have completed an additional 8 hours of training that is required by OSHA for supervisors.

Basic 40-Hour Course

The following is a list of the topics typically covered in a 40-hour training course:

i) General safety procedures

ii) Physical hazards (fall protection, noise, and heat stress, cold stress)

iii) Names and job descriptions of key personnel responsible for Site health and safety

iv) Safety, health, and other hazards typically present at hazardous waste sites

v) Use, application, and limitations of PPE

vi) Work practices by which individuals can minimize risks from hazards

vii) Safe use of engineering controls and equipment on site

viii) Medical surveillance requirements

ix) Recognition of symptoms and signs, which might indicate overexposure to hazards

x) Worker right-to-know (Hazard Communication OSHA 1926.59/1910.1200)

xi) Routes of exposure to contaminants

xii) Engineering controls and safe work practices

xiii) Components of a Site HASP

xiv) Decontamination practices for personnel and equipment

xv) Confined space entry procedures

xvi) General emergency response procedures

Supervisor Course

Management and supervisors receive an additional 8 hours of training which typically includes:

i) General Site safety and health procedures

ii) Emergency procedures

iii) PPE programs

iv) Air monitoring techniques

Medical Surveillance Program

Medical Examination

All required personnel who will enter a Site EZ or CRZ must have successfully completed a pre-placement and/or annual physical examination prior to entering one of these work zones. This medical surveillance program must comply with OSHA 29 CFR 1926.65(f).

Pre-Placement Medical Examination

All on-Site project personnel who will enter an EZ or CRZ must have completed a comprehensive medical examination within the past 12 months that meets the requirements of applicable OSHA Regulations. The annual medical examination typically includes the following elements:

i) Medical and occupational history questionnaire

ii) Physical examination

iii) Complete blood count, with differential

iv) Liver enzyme profile

v) Chest X-ray, once every 3 years, for non-asbestos workers

vi) Pulmonary function test

vii) Audiogram

viii) Electrocardiogram for persons older than 45 years of age, or if indicated during the physical examination

ix) Drug and alcohol screening, as required by job assignment

x) Visual acuity

xi) Follow-up examinations, at the discretion of the examining physician or the corporate medical director

The examining physician provides the individual and employer with a report summarizing the findings confirming the worker's fitness for work and ability to wear a respirator. Documentation of medical clearance will be available for project personnel during all project work.

Subcontractors will certify that all of their personnel have successfully completed a physical examination by a qualified physician. The physical examination must meet the requirements of 29 CFR 1926.65 and 29 CFR 1910.134 as described above. Subcontractors will supply copies of the medical examination certificate for each of their on-Site workers.

Other Medical Examination

In addition to pre-employment, annual, and exit physicals, personnel may be examined:

i) At any individual’s request after known or suspected exposure to toxic or hazardous materials

ii) At the discretion of the client, SS, SHO, or occupational physician in anticipation of, or after known or suspected exposure to toxic or hazardous materials

iii) At the discretion of the occupational physician

1.1.1 Periodic Exam

Following the placement examination, all personnel must undergo a periodic examination, similar in scope to the placement examination. For individuals potentially exposed over 30 days per year, the frequency of periodic examinations will be annual. For personnel potentially exposed less than 30 days per year, the frequency for periodic examinations may be 24 months or as determined by the physician.

1.1.2 Medical Restriction

When the examining physician identifies a need to restrict work activity, the individual's supervisor must communicate the restriction to the individual, the individual’s supervisor, and the SHO. The terms of the restriction will be discussed with the individual and his/her supervisor. Every attempt should be made to keep the individual working, while not violating the terms of the medical restriction.

8. Emergency Procedures

8.1 Introduction Emergency Procedures

Emergencies can range from minor to serious conditions. Various procedures for responding to site emergencies are listed in this section. The PM or SS is responsible for contacting local emergency services, if necessary, for specific emergency situations. Various individual site characteristics will determine preliminary action to ensure that these entry procedures are successfully implemented in the event of an emergency. The project team will address necessary facility/client emergency protocols to ensure compatibility between this document and facility/client programs and expectations.

Field employees will identify the primary (on site) and secondary (off site) evacuation routes to muster locations prior to initiating work. A site map is provided in the Appendix.

At client facilities, site emergencies may be indicated by a fog horn or other loud audible sound. If an adjacent facility's alarm is activated, work will stop immediately, equipment will be de energized and/or secured as necessary for safety reasons and personnel will go immediately to the secondary evacuation location as indicated in pre-start and tailgate meetings.

Emergency evacuation drills will be conducted as deemed necessary by the SS, and documentation of the drills will be maintained by the SS in project file.

An Emergency Information Sheet containing the hospital location, directions, government agency phone numbers, emergency phone numbers, and a map with directions to the hospital is located in the Appendix.

8.2 Incident, Injury, Illness Reporting And Investigation

Any work related incident, injury, illness, exposure, vehicle accident, property loss and or security issues must be reported to your supervisor, the SS immediately. Stop Work Authority will be implemented. Provide care for any injured persons and secure the scene.

GHD will call the GHD PM and the GHD HSE Help Line. Personnel on site should maintain the work area as it was at the time of the incident until further directions are given by the GHD PM, a GHD Safety Professional. No GHD person on site has the authority to call a regulatory agency (environmental or OSHA); this shall be completed by GHD Leadership Team in conjunction with the client. Emergency medical care or support of fire departments is not a restricted call if immediately necessary to protect life and property.

The GHD PM and HSE Manager will coordinate with on site personnel to gather critical information. The GHD PM is responsible (or their designee) to enter the information into BWise within a 24 period from time of incident. The GHD PM is also responsible to contact the client, which a positive verbal contact is required. The GHD staff listed above will coordinate the completion of the investigation and placement of information into BWise. This same group of GHD staff will manage further communications with the client.

The report must be filed for the following circumstances:

- Incident, injury, illness, or exposure of an employee.
- Injury of a subcontractor.
- Damage, loss, or theft of property.
- Any motor vehicle accident, regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while the employee is acting in the course of employment.
- Any sting, involving a puncture of the skin must immediately be reported to Work Care and follow all GHD reporting requirements
- Security Issues
- Environmental releases or loss of containment.

Occupational incidents resulting in employee injury or illness will be investigated by the SS. This investigation will focus on determining the cause of the incident and modifying future work activities to eliminate the hazard.

All employees have the right and obligation to report unsafe work conditions, previously unrecognized safety hazards, or safety violations of others. If you wish to make such a report, it may be made orally to your supervisor or other member of management, or you may submit your concern in writing, either signed or anonymously.

8.3 Emergency Equipment/First Aid

Safety equipment will be available for use by site personnel, located within 30 feet of the work area(s), and maintained at the site.

- First Aid kit(s), compliant with local jurisdictional requirements according to number of workers present
- Automated External Defibrillators (AEDs) are optional first aid response equipment for conditions related to heart stoppage. If a unit is on site, designated personnel must be trained in the specific AED unit in addition to First Aid and CPR certification, conduct monthly inspections, and contact listed AED Unit coordinator.
- Emergency eyewash bottles and/or an eyewash station lasting 15 minutes.
- Emergency alarms as a means to alert all personnel instantaneously for an emergency.
- Fire extinguisher (at a minimum, a 2A/10BC will be on site).

8.4 Emergency Procedures For Contaminated Personnel

Whenever possible, personnel should be decontaminated in the contamination reduction zone before administering first aid, without causing further harm to the patient.

- Skin Contact: Remove contaminated clothing, wash immediately with water, and use soap, if available.
- Inhalation: Remove victim from contaminated atmosphere. Remove any respiratory protection equipment. Initiate artificial respiration, if necessary. Transport to the hospital.
- Ingestion: Remove from contaminated atmosphere. Do not induce vomiting if victim is unconscious. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Transport to the hospital, if necessary.

Any person transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and a listing of the contaminants of concern to which they may have been exposed.

Any vehicle used to transport contaminated personnel will be cleaned or decontaminated, as necessary.

8.5 Site Evacuations

In the event of an emergency situation such as fire, explosion, or significant release of toxic gases, project personnel in the field will be notified by established communications to evacuate the area. In the event of an emergency, GHD personnel will gather at their primary mustering point for a head count. The SS will determine a primary and secondary muster point to be used as an assembly area in the event of an emergency. The secondary muster point will be located at least 90 degrees from the primary. These locations will be communicated to the work crew(s) during the Tailgate Safety Meeting (TGSM) as part of the site specific training prior to commencement of work activities, weekly thereafter, and prior to the advent of potentially threatening weather. Muster points will be identified in the site map attached to the HASP.

8.6 Spill And Release Contingencies

If a spill has occurred, the first step is personal safety, then controlling the spread of contamination, if possible. GHD personnel will immediately contact site management to inform them of the spill and activate emergency spill procedures.

9. Environmental Control Program

9.1 Introduction

This section of the HASP outlines measures to be implemented at the site to prevent hazards associated with environmental conditions.

9.2 Weather Monitoring

The SS will be responsible for checking weather forecasts for the next day and week of work to provide advance notification of any severe weather conditions. Severe weather conditions (e.g., heavy rains) may cause unsafe conditions at the site and in some situations work may have to be stopped.

9.3 Tornado Safety Policy And Procedures

Tornadoes occur most frequently between April and October from 3:00 to 7:00 p.m. but can occur any time. In most cases, tornadoes move from a west/southwest direction. A typical tornado is a swirling storm of short duration with winds up to 300 miles per hour and a near vacuum at its center. It appears as a rotating funnel shaped cloud, from gray to black in color, extending towards the ground from the base of a thundercloud.

Tornadoes usually only cover a limited geographical area and give off a roaring sound. A tornado is the most concentrated and destructive potential weather event at the Site. Tornadoes are usually the result of the interaction of a warm, moist air mass with a cool or cold air mass. Secondary effects of tornadoes include flash flooding, electric power outages, transportation system and communication system disruption, and fires.

Whenever weather conditions develop that indicate tornadoes are expected, the National Weather Service will issue a tornado watch to alert people in a designated area for a specific time period (normally 6 hours) to remain alert for approaching storms. The tornado watch is upgraded to a tornado warning when a funnel cloud (tornado) is actually sighted or indicated by weather radar.

When a tornado is approaching, Site personnel will only have a short time to react. Therefore, Site personnel must be prepared to react during periods of severe weather. Memorize the following tornado danger signs:

i) Approaching clouds of debris can mark the location of a tornado even if a funnel cloud is not visible

ii) Before a tornado hits, the wind may die down and the air can become very still/calm

iii) It is not uncommon to see clear, sunlit skies behind a tornado as they usually occur at/near the trailing edge of thunderstorms.

Tornado Evacuation Procedures

GHD and contractor personnel monitor weather related information provided by National Weather Service. If the National Weather Service issues a tornado warning, Site supervisor will activate the emergency response plan.

The "take shelter" warning signal is a "slow wail" of the alarm system. GHD Site personnel will evacuate the work zone(s) when a tornado watch has been issued by the National Weather Service. Personnel will contact the Project Management team to inform them they are leaving the site and provide them a location of the muster point (shelter) they are going. The Site Supervisor are responsible for work areas, they will check remote areas of the work zone(s) to ensure personnel have reacted to the alert. Personnel must proceed to the Site mustering point (shelter) and wait for further instructions. If a tornado watch is upgraded to a tornado warning, personnel will proceed to the designated tornado shelters. Once inside the shelter, conduct a head count to ensure that personnel are accounted for. In general, stay away from all windows and doors that lead to the outside. Remain in the shelter until the "all clear" signal is given by the Site Supervisor.

The tornado shelter most accessible to GHD personnel should be noted on the site map attached to this HASP

Directions to the shelter are to be communicated to Site personnel during initial Site safety orientation and throughout the tornado season during subsequent safety meetings.

If unable to reach the designated shelter, the best protection in a tornado is usually an underground area. If an underground area is not available, consider small interior rooms on the lowest floor without windows, hallways on the lowest floor away from doors and windows, rooms constructed with reinforced concrete/brick/block with a heavy concrete floor and roof, and protected areas away from doors and windows.

9.4 Rain And Snow

Excessive amounts of precipitation may cause potential safety hazards for work tasks. The hazards that would be most commonly associated are slipping, tripping, or falling due to slippery surfaces.

Severe weather conditions will result in work stoppage and the implementation of further emergency measures.

9.5 Temperature

Site activities are expected to be conducted year round. Temperature extremes may be experienced which require measures to be implemented to prevent health and safety hazards from occurring. Potential hazards arising from temperature extremes are heat stress and cold exposure.

9.6 Wind

High winds may be encountered at the site and these can cause hazards that may affect site personnel health and safety. Preventative measures that will be implemented if necessary are as follows:

i) Restrict site activities.

ii) Batten down light equipment or building materials.

iii) Partially enclose work areas.

iv) Reduce or Stop Work activities.

9.7 Lightning & Thunder

Light travels at a faster speed than sound, you can see a lightning bolt before the sound of thunder reaches you.

To judge how close lightning is, count the seconds between the flash and the thunder clap. Each second represents about 328 yards/300 meters. If you can count less than 30 seconds between the lightning strike and the thunder, the storm is less than 6.2 miles/10 km away and there is an 80 percent chance the next strike will happen within that 6.2 miles/10 kilometers.

Lightning may strike several miles/kilometers away from the parent cloud and therefore precautions should be taken even if the thunderstorm is not directly overhead.

If you hear thunder or see lightning, stop work immediately and seek safe shelter.

Remain sheltered for 30 minutes after hearing the last thunder before returning to work.

9.8 Outdoor Precautions During Severe Weather

- Keep a safe distance from tall objects, such as trees, hilltops, and telephone poles.
- Avoid projecting above the surrounding landscape. Seek shelter in low lying areas such as valleys, ditches, and depressions, but also be aware of flooding.
- Stay away from water. Don't go boating if a storm threatens. Move to land as quickly as possible if you are on the water. Lightning can strike the water and travel some distance from its point of contact. Don't stand in puddles even if you are wearing rubber boots.
- Stay away from objects that conduct electricity, such as tractors, metal fences, motorcycles, lawnmowers, and tall metal objects.
- Avoid being the highest point in an open area. Holding a conductive tool, holding an umbrella, can make you the tallest object and a target for lightning.
- You are safe inside a car during lightning, but don't park near or under trees or other tall objects, which may topple over during a storm. Be aware of downed power lines, which may be touching your car.
- In a forest, seek shelter in a low lying area under a thick growth of small trees or bushes.
- Be alert for flash floods, which are sometimes caused by heavy rainfall, if seeking shelter in a ditch or low lying area.
- If caught in a level field far from shelter and you feel your hair stand on end, lightning may be about to hit you. Kneel on the ground immediately, with feet together, place your hands on your knees and bend forward. Don't lie flat.
- If you are in a group in the open, spread out, keeping people several yards/meters apart.

9.9 Indoor Precautions During Severe Weather

- Before the storm hits, disconnect electrical appliances including radios and television sets. Do not touch them during the storm.
- Don't go outside unless absolutely necessary.
- Stay away from doors, windows, fireplaces, and anything that will conduct electricity, such as radiators, stoves, sinks, and metal pipes. Keep as many walls as possible between you and the outside.
- Don't handle electrical equipment or telephones. Use battery operated appliances only.

9.10 Flash Flooding

Floods are one of the most common hazards in low lying areas, however not all floods are alike. Some floods develop slowly, while others such a flash floods, can develop in just a few minutes and without visible signs of rain. Additionally, floods can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states.

Flash floods can occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Flash floods often have a dangerous wall of roaring water carrying rocks, mud and other debris.
Be aware of flood hazards no matter where you live or work, but especially if you are in low-lying areas, near water, behind a levee or downstream from a dam. Even very small streams, gullies, creeks, culverts, dry streambeds or low-lying ground that appear harmless in dry weather can flood.

During the flood

- If any possibility of a flash flood, move immediately to higher ground. Do not wait for instructions to move.
- Be aware of stream, drainage channels, canyons and other areas known to flood suddenly.

If you must prepare to evacuate, you should do the following:

- Do not walk through moving water. Six inches of moving water can make you fall.
- If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness or depth of the ground in front of you.
- Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely.
- Observe weather in the distance, rain in the hills can cause flooding in the valleys..Do not park your vehicle along streams, rivers or creeks, particularly during threatening conditions.

APPENDIX DOCUMENTS

Chemical Table

Chemical/CAS #	Chemical Name (Synonyms)	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics	Concentration at Site
Arsenic CAS-7440-38-2	Arsenic CAS-7440-38-2	TLV: 0.01 mg/m3 PEL: 0.010 mg/m3 STEL: NE IDLH: 5 mg/m3 (as As)	Inhalation Absorption Ingestion	ACUTE: Contact dermatitis, gastrointestinal disturbances, ulceration of the nasal septum, and respiratory irritation. CHRONIC: Hyperpigmentation of the skin and cancers of the skin, lungs, and lymphatic system.	(FP) NA (VP) 0 mm (approx.) (IP) NA (UEL) NA (LEL) NA	Silver-gray or tin-white, brittle, odorless, solid.	17.3 mg/kg
Barium CAS-7440-39-3	Barium and soluble compounds as BA (excluding barium sulfate) CAS-7440-39-3	TLV: 0.5 mg/m3 PEL: 0.5 mg/m3 STEL: NE IDLH: 50 mg/m3	Inhalation Ingestion Skin/eye contact	ACUTE: Irritation to the eyes, skin, upper respiratory system; skin burns CHRONIC: Gastroenteritis; muscle spasms; slow pulse; extrasystoles; hypokalemia (low blood potassium)	(FP) NE (VP) 0 mm (IP) NE (UEL) NE (LEL) NE	Yellow-white, slightly lustrous solid.	3230 mg/kg
Lead (metal) CAS-7439-92-1	Lead (metal) CAS-7439-92-1	TLV: 0.05 mg/m3 PEL: 0.05 mg/m3 STEL: NE IDLH: 100 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Lead is a cummulative poison, however, it may cause eye and skin irritation. CHRONIC: Effects blood, bone marrow, CNS, PNS and kidneys resulting in anemia, convulsions, peripheral nerve disease and kidney impairment. Toxicity to human reproduction or development.	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	A heavy, ductile, soft, gray solid. Turns tarnished on exposure to air.	3880 mg/kg

Chemical/CAS #	Chemical Name (Synonyms)	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics	Concentration at Site
Mercury - Elemental and inorganic forms CAS-7439-97-6	Mercury (metal) Quicksilver Liquid silver CAS-7439-97-6	TLV: 0.025 mg/m3 PEL: 0.1 mg/m3 STEL:N/A IDLH: 10 mg/m3	Inhalation Absorption (skin) Ingestion	ACUTE: Irritation to skin. Vapor inhalation may cause pneumonitis. May effect CNS and kidneys. CHRONIC: May effect CNS and kidneys, resulting in irritability, tremors, speech disorders, mental/memory disturbances. Inflammation/discoloration of gums. Danger of cumulative effects.	(FP) NA (VP) 0.0012 mm (IP) NE (UEL) NA (LEL) NA	Odorless, heavy and mobile silvery-white liquid metal	0.75 mg/kg
PAHs CAS-65996-93-2	Polyaromatic Hydrocarbons PAHs Coal Tar Pitch Volatiles CAS-65996-93-2	TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: 80 mg/m3	Inhalation Ingestion	ACUTE: Bronchitis. CHRONIC: Dermatitis, may cause damage to bladder, kidneys and lungs. Potential occupational carcinogen.	(FP) Varies (VP) NA (IP) Varies (UEL) NA (LEL) NA	Black or dark brown amorphous residue. Properties vary depending upon specific compound.	42.7 mg/kg
Zinc (metal) CAS-7440-66-6	Zinc (metal) Zinc Oxide CAS-7440-66-6	TLV: 2 mg/m3 [respirable] PEL: 5 mg/m3 [respirable] STEL: 10 mg/m3 [respirable] IDLH: 500 mg/m3	Inhalation	ACUTE: Metal fume fever; muscle aches, nausea, fever, dry throat, weakness, and lassitude; metallic taste; headache; blurred vision; low back pain. Effects may be delayed. CHRONIC: Decreased pulmonary function. Tightness in chest.	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	White, odorless solid. Slowly decomposed by water.	3940 mg/kg

Table 2

On-Site Air Monitoring Program Action Levels
Health and Safety Plan
Parcel 3 Remediation, Buffalo, New York

Monitoring Device	*Action Level*	*Action*
Photoionization Detector (PID)		
10.6 or greater eV lamp	<1.0 ppm or Background	Full-Face Respirator Available
To be used to investigate any odors	≥1.0 ppm and ≤5 ppm	Full-face air purifying respirator Level C PPE MSA GME P100 Cartridge
	≥5 ppm	Shut down activities. Notify SHO. Implement additional engineering controls
Dust/Particulate - (Impacted Soils/Sludges/Sediments)	<2.0 mg/m³ or Background	Full-Face Respirator Available
	≥2.0 mg/m³ and <50 mg/m³	Wear Full-Face Respirator - Level C PPE
	>50 mg/m³	Shut down activities. Notify SHO.
Carbon Monoxide	>35 ppm	Shut down activities. Notify SHO. Implement additional engineering controls
Combustible Gas Indicator	>10 Percent LEL	Cease operations and move to a safe place. Notify SHO. Do not continue working until conditions are constantly below 10 percent LEL
Oxygen Meter	<19.5 Percent or >23.5 Percent When oxygen levels are outside this range, percent LEL readings are not reliable	Cease operations and move to a safe place. Notify SHO. Do not continue working until oxygen levels are between 19.5 and 23.5 percent

Notes:

SHO Safety and Health Officer
LEL Lower Explosive Limit
PPE Personnel Protective Equipment
ppm parts per million

Revised: August 12, 2020

COVID-19 Guidance for GHD Field Personnel

As you are aware, the COVID-19 outbreak is affecting our people, our clients, and all organizations across the globe. GHD has implemented a comprehensive business continuity plan (BCP) to keep our employees safe while we continue to support our clients through this difficult time. Elements of the BCP will be monitored and adjusted as new information becomes available.

GHD will maintain regular communication with field staff and clients to gather information for project sites, fieldwork and travel.

Symptoms of COVID-19 range from mild to severe flu, and other common respiratory infections, and can include:

- Fever
- Cough
- Difficulty breathing
- Muscle aches
- Fatigue
- Headache
- Sore throat
- Runny nose
- Recent loss of taste or smell
- Nausea or vomiting
- Diarrhea

Guidance for All NA Field Personnel

Outlined below are guidelines for GHD field staff to mitigate exposure to COVID-19 when engaged in fieldwork in North America. If you have **any** of the symptoms related to COVID-19, you are to remain at home and notify your supervisor.

For all employee mobilization and project site work, the following mitigation measures must be implemented:

Travel

- Check local area restrictions to determine if work can be initiated or continued.
- Check with the GHD Project Manager to ensure the project site work is continuing. Ensure to follow all client guidelines and policies.
- All travel via land, air, or water requires RGM approval.
- No more than one person per vehicle when to and from project sites or traveling within the project site
- The interior (cab) vehicle surfaces (i.e., steering wheel, dash, gearshift, door handles, etc.) must be disinfected daily.
- When refuelling a vehicle, wear gloves and sanitize hands once completed.
- Make as few stops as possible during travels limiting exposure to public spaces; and adhere to Journey Management Plan requirements.
- Avoid close contact with anyone experiencing flu like symptoms during your rest/fuel stops.
- When traveling by air, print and carry a boarding pass rather than electronic boarding pass to prevent airport staff from handling your personal phone.
- Disinfect the aircraft trays and arm rests prior to use.
- A face mask must be worn at all times in the airport, while on the aircraft, in rental car lobbies and while using public transportation.

Site Operations

- All GHD personnel must attend GHD Boarding Pass training and must sign the acknowledgement of training.
- All GHD personnel working at a project site must complete the GHD Boarding Pass Application daily.
- All GHD subcontractors must participate in the completion of the GHD Project Site COVID-19 Screening Questionnaire. Those subcontractor employees who do not pass the screening assessment must immediately leave the site.
- Maintain a distance of 2 m/6 ft. between on-site workers whether in the field or in a meeting setting (video meetings and conference calls are preferable)
- In-person meetings should be limited to key individuals who absolutely need to attend as long as physical distancing is maintained.
- Alternate meeting methods must be used in place of face-to-face meetings, such as conference calls, WebEx, Skype or MS Teams.
- Discontinue entering contractor's project site office/trailer.
- Practice physical distancing between GHD field staff, GHD subcontractors, client and client contractors. In-person meetings will be eliminated where possible.
- If site meetings are required, request they be conducted outdoors while maintaining physical distance.
- During receipt of deliveries at a project site, workers must ensure physical distancing is maintained. The GHD Receiver will not sign or provide a record of sample receipt as a precaution to reduce exposure to contact surfaces (e.g., pens, clipboard, paper, etc.).
- Wear gloves when handling/opening delivery packages.
- During sample deliveries to laboratories, workers must follow the laboratory COVID-19 protocols. Communicate with onsite personnel via text messages, emails, phone calls or two-way radio
- Avoid physical greetings (e.g. shaking hands).
- Avoid touching your face. The mucus membranes in your eyes nose and mouth are the primary pathways for the virus to gain entry into your body.
- Cover your mouth and nose with a tissue when you cough, sneeze, or use the inside of your elbow.
- Carry a supply of facial tissues and properly dispose in a receptacle after use.
- Avoid close contact with anyone experiencing flu-like symptoms.
- Sites with stairway access to work task locations are to establish one-way staircases where practicable to minimize worker's contact.
- Projects where multiple work crews are conducting work tasks, evaluate the need to stagger work schedules/shifts, breaks and lunches to maintain physical distancing (2 meters/6 feet)
- Consider total number of workers and where they are allowed to work.
- Where workers cannot maintain physical distance (2 meters/6 feet) to conduct a work task, nitrile gloves, a half face respirator with N95 cartridges and safety glasses must be worn.
- Workers required to wear respiratory protection must complete respiratory protection training (inspection, fit, care, use, cleaning and limitations) and have a current fit test.
- Adequate supply of cleaning and disinfecting products must be available for sanitation of respirator.
- Surgical style or cloth face coverings must be worn in the field at all times when others are present. Wearing of either type does not provide you with sufficient protection to breach the 2m/6 ft. physical distancing requirement.
- Face coverings are not substitutes for respiratory protection (e.g. half face respirator and N95 cartridge). Workers who choose to wear face coverings must understand the limitation of use, as they do not provide total protection from the COVID-19 virus inhalation hazard.
- The on-site trailer/facilities (at GHD controlled sites) shall be cleaned on a daily basis with surfaces disinfected several times a day, on an ongoing basis. Personal sanitation and cleaning supplies shall be available on site (i.e. hand sanitizer and sanitizing wipes) and used frequently to wipe down surfaces such as handles on doors, desks, fridges, microwaves, light switches, thermostats, surfaces in/on portable bathrooms and other equipment they come in contact with.
- Mobile and stationary equipment interior (cab) surfaces shall be disinfected prior to entering the cab and when exiting the cab.

- GHD employees must wear gloves while on site and wash and or/sanitize their hands upon removing them.
- Do not touch your face with gloved hands.
- Clean and disinfect frequently touched surfaces daily, for example, cell phones, computer equipment, headsets, tables, doorknobs, light switches, countertops, handles, railings, desks, toilets, faucets, sinks, and/or other frequent contact surfaces.
- Monitor supply of detergent/disinfectant solution/wipes and PPE to ensure adequate inventory is maintained.
- Do not share personal items such as pens/pencils, phones, notebooks or other equipment between project personnel unless they have been disinfected
- Tools and equipment shall be disinfected often and at the end of each use.
- If tools must be shared, they must be sanitized at the end of each use, prior to being used by others.
- To the extent possible, do not interact with the public during work tasks.
- Practice physical distancing when conducting Daily Tailgate Safety Meetings/Pre-Work Assessments.
- HASPs and JSEAs shall include this guideline and JSA – COVID-19 Field Precautions.
- Where required by local jurisdiction, post the current version of the "COVID-19 Guidance for GHD Field Personnel" or where no trailer is available maintain a copy in the HASP or JSEA.
- Teams working under a HASP must not circulate the daily tailgate sign in sheets. Designate one person to document those in attendance on the sheet.
- Teams working under a JSEA must not circulate the pre-work assessment sheet. Designate one person to document those in attendance on the sheet. As an alternate, staff may document their pre-work assessment using the HSE SMART App (pre-work assessment button).
- If an employee requires First-Aid treatment, the injured employee is to self-administer. If they are unable to self-administer and if the injury is substantial, then Emergency Services may be required.
- The latest information and updates to company operating procedures and precautions regarding COVID - 19 shall be discussed at all safety meetings/pre-work assessments and incorporated into the HASP, JSAs and Job Safety Analysis (JSEA's).
- Upon completion of work, ensure all PPE has been either cleaned/decontaminated or properly disposed of.

Sanitary Facilities

- Project manager must ensure field staff have access to washroom facilities with adequate soap and water and/or alcohol based hand sanitizer for proper hygiene in accordance with local jurisdictional requirements.
- Washroom facilities must be serviced often as required and supplies are to be maintained. (e.g., hand sanitizer (at least 60% alcohol), hand soap, paper towels, water, disinfectant spray/wipes, waste receptacle, etc.).
- Wash your hands with soap and water for at least 20 seconds.
- Post signage on hygiene in English and in the majority workplace language (where jurisdictionally required).

Reporting

- All GHD employees are to self-monitor for flu-like symptoms (cough and shortness of breath) and an increase in their temperature.
- If you or a GHD subcontractor, client or client contractor feel unwell or develop flu-like symptoms, contact your supervisor immediately and email using the Contact Table below to notify your assigned contact persons for your Region. Once notified, an HSE or PT member will then conduct a risk assessment and recommend appropriate preventative measures. Recommend seeking medical evaluation guided by Public Health.

- Notify your Supervisor and Regional GM (using the Contact Table below) if you have had close contact with an individual who tested positive for COVID-19. Once notified, an HSE or PT member will conduct a risk assessment and recommend appropriate preventative measures.

Meals/Breaks

- Prohibit food/coffee trucks from accessing work sites.
- Where there are frequent touch points (e.g. water cooler lid), paper towels should be provided to allow users to avoid skin contact.
- Bring water, meals and snacks with you to avoid stopping at a store or restaurant (where possible). Dine in your vehicle or outside alone. Avoid using the project trailer or site facilities.
- Wash your hands frequently with soap and water for at least 20 seconds, especially after you have been in a public place, blown your nose, coughed, sneezed, or used the rest room, and before eating, drinking or smoking.
- Meals shall be eaten alone or at a minimum distance of approximately 2 m/6 ft., and not in groups.
- Project teams should consider staggering break and lunch schedules to minimize the number of people in close proximity to one another.

Hotel/Accommodations

- Project managers and staff shall avoid independent hotels (where possible) and alternative accommodations. Book rooms at reputable hotel chains and should verify with the hotel appropriate protocols are in place to limit the potential exposure and spread of the virus.
- If an overnight stay is required in a hotel, disinfectant shall be available to clean common contact surfaces in the hotel room (i.e. light switches, remote control, doorknobs, thermostat, toilet handle etc.).

Return to Personal Residence

- Wash/Sanitize hands before entering the home or as soon as you enter.
- Upon return to personal residence remove clothing and launder; wash/shower self in order to practice proper and effective hygiene.
- Remove/change clothing in the same location at home each day to avoid spreading any potential exposure of work apparel in multiple areas of your home (bedding, furniture, etc.).

Canada: Additional Requirements

If fieldwork requires travel between other Provinces and Territories, verify with your RHSEM if the Province/Territory has imposed a mandatory 14-day isolation requirement. If so, this may impede fieldwork.

Contact Table

Canada Regions

Region	e-mail Group	HSE Contact	Regional People Leader
Eastern (Francais)	GMQAR@ghd.com	marylene.provost2@ghd.com	teresa.mambro@ghd.com
Eastern(English)	GMQAR@ghd.com	marylene.provost2@ghd.com	teresa.mambro@ghd.com
Ontario	GMOntario@ghd.com	sandy.serena@ghd.com	alison.bondy@ghd.com mirella.perri@ghd.com
Northwest	malcolm.dixon@ghd.com	wayne.stdenis@ghd.com	alison.bondy@ghd.com

US Regions

	e-mail Group	HSE Contact	Regional People Leader
Mid-Con	midcongmdirect@ghd.com	vicky.pickard@ghd.com	nikki.mcghee@ghd.com
Mid-West	ihsan.alfayyomi@ghd.com	craig.gebhardt@ghd.com	janell.goskey@ghd.com
South East	steven.davie@ghd.com	alan.gallaway@ghd.com	sandra.mcjilton@ghd.com
North East	tom.klin@ghd.com	john.maurer@ghd.com	jennifer@carney@ghd.com
West	ted.whiton@ghd.com	ken.chavez@ghd.com	jim.klein@ghd.com

Job Safety Analysis (JSA)

COVID-19 Precautions – Field Work

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).**

Date issued/revised:	March 27, 2020	**Client:**			
Project number:		**Created by**	Micheal Dixon	**Sim OPS Yes/No**	**SSE on site? Yes/No**
Project address:					
Specific task	Field Work				
Key equipment:	Alcohol-Based Hand sanitizer >60% Alcohol, Disinfectant (e.g. spray bottle/paper towels, wipes, etc.) Nitrile gloves., Surgical or cloth style face coverings				
Task-specific training:					

Hard hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
☐ Type I (top impact)	☒ Chemical protective (i.e. nitrile)	☒ ANSI/CSA safety glasses	☐ Harness	☐ Full face mask	☒ Class II	☐ Coveralls
☐ Type II (side impact)	☐ Level 1 light duty	☐ Goggles/spoggles	☐ Shock absorb lanyard	☐ Half face mask	☐ Class III	☐ Fire retardant clothing (FRC)
☒ Class E (standard)	☐ Level 2 light duty with protection	☐ Face shield	☐ Lifeline		☐ Anti-static	☐ High viz clothing
☐ Class G	☐ Level 3 medium duty	☐ Other*		**Cartridges**	☐ FRC	☒ Long pants
	☐ Level 4 heavy duty			☐ N95		☒ Long sleeve shirts
Foot protection	☐ High viz	**Hearing protection**	**Arc flash**	☐ P100		☐ Paper tyvek
☒ Industrial grade safety boot	☐ Other*	☐ NOT Required	☐ Haz.cat 2	☐ P95		☐ Polyethyene tyvek
☐ Rubber boots (industrial grade)		☐ Required	☐ Haz cat 4	☐ R95		☐Other *
☐ Hip waders				☐ Organic vapor		
	*see key equipment			☐ Specialty/other*		

Project development team		Modified by	Reviewed by	Date
Name	**Signature**			
Sandy Serena			Wayne St. Denis	3-26-2020
		Sandy Serena	Wayne St. Denis	4-06-2020
		Sandy Serena	Wayne St. Denis	5-13-2020
		Wayne St Denis		08-12-2020

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
1	Travel to GHD Jobsite	• Transmission/exposure on client site • Transmission/exposure across provinces and territories • Transmittal/exposure of COVID-19 between passengers • Transmittal/exposure of COVID-19 from previous occupants (rental and fleet vehicles) • Transmittal/exposure of COVID-19 while refueling/rest stop • Transmittal/exposure of COVID-19 while traveling by air	• Complete GHD Boarding Pass Application for Field daily. • Check with the GHD Project Manager to ensure the project site work is continuing. Ensure to follow all client guidelines and policies. • All travel via land, air, or water requires RGM approval. • Canada - If fieldwork requires travel between other Provinces and Territories, verify if the Province/Territory has imposed a mandatory 14-day isolation requirement. If so, this may impede fieldwork. • Where more than one staff member is travelling to a project site, staff members must travel in separate vehicles to ensure social distancing is maintained. This includes on-site vehicle use to complete work tasks. • The interior (cab) vehicle surfaces (i.e., steering wheel, dash, gearshift, door handles, etc.) of all GHD fleet, leased or owned vehicles must be disinfected prior to each entry into the cab and upon return. Wiped over with disinfectant solution/wipe (use manufacturer recommended PPE). • When traveling by vehicle, ensure to wear gloves when refueling and sanitize hands once complete. • Make as few stops as possible during travels to limit exposure to public spaces; and adhere to Journey Management Plan requirements. • Avoid close contact with anyone experiencing flu like symptoms during your rest/fuel stops. • When traveling by air, print and carry a boarding pass rather than electronic boarding pass to prevent airport staff from handling a personal phone. • When traveling by plane, disinfect the trays and arm rests prior to use.	Field personnel
2	Conduct Tailgate Safety Meeting/Pre-work assessment & Complete H&S Paperwork	• Transmittal/exposure of COVID-19 between meeting participants	• Surgical style or cloth face coverings must be worn in the field at all times. • All GHD subcontractors must participate in the completion of the GHD Project Site COVID-19 Screening Questionnaire. Those subcontractor employees who do not pass the screening assessment must immediately leave the site. • Practice physical distancing, maintaining at least 2 metres/6 feet of distance between yourself and others. • Hold meetings outside and keep in mind wind direction. To the extent possible, remain cross-wind from other people. • Do not circulate the daily tailgate/pre-work assessment sign in sheet. Designate one person to document those in attendance on the sheet.	Field personnel

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			• The latest information and updates to company operating procedures and precautions regarding COVID - 19 shall be discussed at all tailgate meetings and incorporated into the HASP JSAs	
3	All Activities	• Transmittal/exposure of COVID-19	• Ask yourself and your Project Managers – is this work essential? Can this be done remotely? Can it be rescheduled? • Ensure project team follow all client guidelines and policies. • Where required by local jurisdiction, post the current version of the "COVID-19 Guidance for GHD Field Personnel" or where no trailer is available maintain a copy in the HASP or JSEA. • Carry nitrile gloves, alcohol-based hand sanitizer, and disinfectant wipes/spray during fieldwork. • Carry a supply of facial tissues and properly dispose in a receptacle after use. • Avoid social greetings (e.g. shaking hands). • Avoid touching your face. The mucus membranes in your eyes nose and mouth are the primary pathways for the virus to gain entry into your body. • Know the symptoms of COVID-19 (Symptoms include fever, cough, and difficulty breathing). • Stay home from work if sick or presenting flu like symptoms or symptoms of COVID-19 • Practice social distancing, maintaining at least 2 metres/ 6 feet of distance between yourself and others. • Cover your mouth and nose with a tissue when you cough, sneeze or use the inside of your elbow. • Clean and disinfect frequently touched surfaces daily, for example, cell phones, computer equipment, headsets, tables, doorknobs, light switches, countertops, handles, railings, desks, toilets, faucets, sinks, and/or other frequent contact surfaces. Wipe over with disinfectant solution/wipe (use manufacturer recommended PPE). If visibly dirty, clean visible dirt/debris before disinfecting. Monitor supply of disinfectant solution/wipes and PPE to ensure an adequate supply.	Field personnel
4	Conduct Site Work	• Transmittal/exposure of COVID-19 between site workers and public.	• Avoid close contact with anyone experiencing flu like symptoms. • Wear gloves while on site and wash and or/sanitize their hands upon removing them. Properly dispose of gloves. • Do not touch your face with gloved hands. Take care when removing gloves. • Carry a supply of facial tissues and properly dispose in a receptacle after use. • Discontinue face-to-face Site Meetings. Alternate meeting methods must be used in place of face-to-face meetings, such as conference calls, WebEx, Skype or MS Teams. • Practice social distancing between GHD field staff, GHD subcontractors, client and client contractors. In-person meetings will be eliminated where possible. • If multiple work crew are conducting work tasks, evaluate the need to stagger work schedules/shifts to maintain physical distancing (2 meters/ 6 feet). • Where workers cannot maintain physical distance (2 meters/6 feet) to conduct a work task; in addition to nitrile gloves; a half face respirator with N95 cartridges and safety glasses must be worn. Workers required to wear respiratory protection must complete respiratory protection	Field personnel

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			training (inspection, fit, care, use, cleaning and limitations) and have a current fit test. Adequate supply of cleaning and disinfecting products must be available for sanitation of respirator. • Face coverings are not substitutes for respiratory protection (e.g. half face respirator and N95 cartridge). Workers who choose to wear face coverings must understand the limitation of use as they do not provide protection from the COVID-19 virus inhalation hazard. Workers who choose to wear a face covering must maintain physical distancing (2meters/ 6 feet) from other workers while wearing them. Sites with stairway access to work task locations, establish one-way staircases where practicable to minimize worker's contact. • Communicate with onsite personnel via text messages, emails, phone calls or two-way radio. • If site meetings are required, request they be conducted outdoors while maintaining social/physical distancing. • Mobile and stationary equipment interior (cab) surfaces shall be disinfected prior to entering the cab and when exiting the cab. • Tools and equipment shall be disinfected often and at the end of use. If tools must be shared, they must be sanitized before use by the next user. Wiped over with detergent/disinfectant solution/wipe before and after each use (use manufacturer recommended PPE). If visibly dirty, clean visible dirt/debris before disinfecting. • To the extent possible, do not interact with the public. If it is necessary, politely explain you are practicing social distance and request they stay at least 2m/ 6 feet away and they do not attempt to pass objects to you. Ensure work zone demarcation is in place to avoid them entering your work space • Do not share personal items such as pen/pencils, phones, notebooks or other equipment between project personnel unless they have been disinfected. • Teams working under a HASP must not circulate the daily tailgate sign in sheets. Designate one person to document those in attendance on the sheet. • Teams working under a JSEA must not circulate the pre-work assessment sheet. Designate one person to document those in attendance on the sheet. As an alternate, staff may document their pre-work assessment using the HSE SMART App (pre-work assessment button). • Due to N-95 respirators being in short supply and social distancing, if an employee requires First Aid treatment, the injured employee should self-administer. If they are unable to self-administer and if the injury is substantial, then Emergency Services may be required. • During receipt of deliveries at the project site, workers must ensure physical distancing is maintained. Request delivery personnel place the package down rather than handing the item directly to the GHD Receiver to maintain physical distancing. The GHD Receiver will provide their name to the Delivery personnel to log GHD's receipt of the items. The GHD Receiver will not sign or provide a record of sample receipt as a precaution to reduce exposure to contact surfaces (e.g., pens, clipboard, paper, etc.). • If required to sign, wear gloves and use your own pen. After signing, remove gloves, dispose of in waste receptacle and wash/sanitize hands. Do not share pens. • Wear gloves when handling/opening delivery packages. Wipe down all exterior surfaces with disinfectant spray/wipes. Dispose of the packaging (as applicable) and gloves in a waste receptacle. Wash/sanitize hands.	

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			• Upon completion of work ensure all PPE has been either cleaned/decontaminated or properly disposed of. Wash/sanitize hands. • At the conclusion of the work day/shift before GHD field staff, GHD subcontractors, visitors, clients, client contractors leave the worksite, inquire if they have any flu-like symptoms. • All GHD field staff, GHD subcontractors, visitors, clients, client contractors must wash/sanitize hands before leaving the worksite.	
5	Sanitary Facilities	• Transmittal/exposure of COVID-19	• Project manager must ensure staff have access to washroom facilities with soap and water or alcohol based hand sanitizer for proper hygiene in accordance with local jurisdictional requirements. • Washroom facilities must be serviced as often as required and supplies maintained. • Ensure adequate clean-up supplies are available (e.g., hand sanitizer (at least 60% alcohol), hand soap, paper towels, water, disinfectant spray/wipes, waste receptacle, etc.). Remove garbage often. • Clean your hands frequently with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, sneezing, or before using the rest room or eating and drinking or smoking. • If soap and water are not available, apply alcohol-based (at least 60%) hand sanitizer and remove visible soiling with paper towels, then re-apply alcohol-based hand sanitizer. Cover all surfaces of your hands and rub them together until they feel dry. • Post signage on hygiene in English and in the majority workplace language (where jurisdictionally required).	
6	Use of Construction Trailers/site office	• Transmittal/exposure of COVID-19 between site workers and others.	• Discontinue entering contractor's project site office/trailer. All meetings/discussions are to be completed by telephone or teleconference/videoconference. If in-person meetings are required, request they be conducted outdoors. • Discontinue face-to-face Site Meetings. Alternate meeting methods must be used in place of face-to-face meetings, such as conference calls, WebEx, Skype or MS Teams. • Practice social distancing between GHD field staff, GHD subcontractors, client and client contractors. In-person meetings will be eliminated where possible. Where onsite meeting are required they are to be held outdoors while maintaining social distance. • The on-site trailer/facilities (at GHD controlled sites) shall be cleaned on a daily basis with surfaces disinfected several times a day on an ongoing basis. Personal sanitation and cleaning supplies shall be made available on site (i.e. hand sanitizer and sanitizing wipes) and used frequently to wipe down surfaces such as handles on doors, desks, fridges, microwaves, light switches, thermostats, surfaces in and on portable bathrooms and other equipment that they come in contact with. Wiped over with detergent/disinfectant solution/wipe (use manufacturer recommended PPE).	Field personnel
7	Meals and Breaks	• Transmittal/exposure of COVID-19 from food establishment, customers, staff, surfaces.	• Prohibit food/coffee trucks from accessing work sites. • Where there are frequent touch points (e.g. water cooler lid) paper towels should be provided to allow users to avoid skin contact. • Bring water, meals and snacks with you to avoid stopping at a store or restaurant. Dine in your vehicle or outside alone. Avoid using the project trailer or site facilities. • Wash hands and sanitize, before and after eating.	Field personnel

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			• Meals shall be eaten alone or at a minimum distance of approximately 2 m (6 ft.) and not in groups. • Project teams should consider staggering break and lunch schedules to minimize the number of people in close proximity to one another. • If you must visit a restaurant, call ahead for take-out or “contactless delivery”. Do not dine in. • Use drive-through when this is an option.	
8	Return to personal residence	• Transmittal/exposure of COVID-19 at personal residence	• Wash/Sanitize hands before entering the home or as soon as you enter. • Upon return to personal residence remove clothing and launder; and wash/shower to practice proper hygiene. • Remove change clothing in the same location at home each day to avoid exposure of work apparel to multiple areas with your home (bedding, furniture, etc.) • Place removed work clothes in a bag to keep separate, then wash with detergent prior to re-use. • Maintain regular and thorough hand hygiene while at home.	Field personnel
9	Laboratory Sample Drop	• Transmittal/exposure of COVID-19	• During sample deliveries to laboratories, workers must follow the laboratory COVID-19 protocols. Workers must ensure physical distancing is maintained at all times. Request a copy of the chain of custody be emailed to confirm sample receipt as a precaution to reduce exposure to contact surfaces (e.g., pens, clipboard, paper, etc.). • If required to sign paper work, wear gloves and use your own pen. After signing, remove gloves, dispose of in waste receptacle and wash/sanitize hands.	Field personnel
10	Hotel Stay	• Transmittal/exposure of COVID-19 from occupants, previous occupants, hotel staff, common areas.	• Avoid independent hotels and alternative accommodations and book rooms at reputable hotel chains and should verify with the hotel that appropriate protocols are in place to limit the potential exposure and spread of the virus. • Verify the hotel chain/brand has modified cleaning procedures to reflect risk of COVID-19. Most hotel companies have issued statements on their websites and in email blasts reflecting these new procedures. • Use the front door, and not peripheral entrances. Front doors of hotels are generally automatic. • Request ground floor room to avoid elevator use. • If elevator use is required, do not directly touch elevator buttons with your hands. Do not ride elevators with other people, to the extent possible. • Bring disinfecting wipes or sanitizing spray. Upon arrival, disinfect high “hand-traffic” areas of the hotel room: Door handles, light switches, shower/sink faucet handles, TV remote, curtain/blind handles or other surfaces. Clean these surfaces daily. • Place the “Do Not Disturb” Sign on your door to prevent people (housekeeping) from entering your room. • Practice social distancing. Maintain a distance of 2 m or 6 ft. Avoid common spaces and hotel sponsored events where crowds will be present. • Confirm hotel cleaning procedures have been modified to address COVID-19. Confirm no COVID-19 cases have occurred in hotel. • Avoid close contact with anyone experiencing flu like symptoms.	Field personnel

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			• Upon return to hotel at end of shift, remove clothing and launder; and wash/shower to practice good hygiene.	
11	Reporting	• Illness • Exposure to COVID-19	• All GHD employees are to self-monitor for flu-like symptoms (cough and shortness of breath) and an increase in their temperature. • If you or a GHD subcontractor, client or client contractor feel unwell or develop flu-like symptoms, contact your supervisor immediately and email using the Contact Table below to notify your assigned contact persons for your Region. Once notified, an HSE or PT member will then conduct a risk assessment and recommend appropriate preventative measures. Recommend seeking medical evaluation guided by Public Health. • Notify your Supervisor and Regional GM (using the Contact Table below) if you have had close contact with an individual who tested positive for COVID-19. Once notified, an HSE or PT member will conduct a risk assessment and recommend appropriate preventative measures.	

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

(2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".

(3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JSA review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.

Supervisor signature: _____ Date/Time: _____

Location of mustering point: _____ Wind direction (current): _____

GHD emergency contact (Name and verified phone number): _____

Supervisor signature documenting daily debrief has been completed: _____

GHD

Standard Operating Procedure - HSE

Infection Control
HSE339

March 2020

Table of contents

1. Introduction

The intent of the Infection Control SOP (procedure) is to decrease the spread and impact of infection (e.g. epidemic or pandemic virus) within GHD. This document identifies key objectives, including reducing potential transmission among our people, clients and the communities we operate and maintaining business operations.

During an infectious outbreak (e.g. epidemic or pandemic virus), all persons experiencing flu-like symptoms should stay home and away from the workplace to protect others. Persons, who believe they have been exposed to a person illustrating symptoms, should contact their manager, People Manager or HSE Manager for advice.

Over time, communities will be tested by infectious outbreaks and will likely affect GHD's operations. This procedure aims to address actions to be taken by GHD to minimise further spread within our population and the effect on our business operations.

2. References

World Health Organization COVID-19 page

https://www.who.int/emergencies/diseases/novel-coronavirus-2019

US Center for Disease Control COVID-19 page

https://www.cdc.gov/coronavirus/2019-ncov/index.html

GHD COVID-19 iConnect page

https://iconnect.ghd.com/en/BusinessServices/HSE/incident-management/Pages/Coronavirus.aspx

US Department of Labor COVID-19 Resource page

https://www.osha.gov/SLTC/covid-19/standards.html

CDC Interim Guidance for Risk Assessment and Public Health Management of Persons with Potential COVID-19 Exposure

https://www.cdc.gov/coronavirus/2019-ncov/php/risk-assessment.html

3. Scope and application

This SOP is applicable to all operations of GHD, Joint Venture and Alliance partners and other key business relationships where GHD maintains control of the work processes and should influence discussion and decisions where GHD is a general partner. This procedure also has application in the activities of our vendors and visitors, as they provide a means of contact with our business.

As GHD has more than one business location, local Regional General Managers, HSE Managers and People Managers will provide the appropriate authority, necessary resources and support to implement this procedure and the other GHD-issued informational materials based on the condition in each locality.

Note: The intensity of an outbreak may differ according to geographic location. Local health officials will be issuing guidance specific to their communities.

Items to consider as part of the application of this procedure are:

- Infection severity (i.e., number of people who are experiencing related symptoms, hospitalisation and death rates) in the community where the office is located;
- Impact of infection on employees that are vulnerable and may be at higher risk of infection and adverse health complications. For example:
  - people 60 and older
  - people with underlying health conditions including heart disease, lung disease, or diabetes
  - people who have weakened immune systems
  - people who are pregnant
- Prepare for possible increased numbers of employee absences due to illness in employees and their family members, closures of early childhood programs and schools due to high levels of absenteeism, illness or quarantine policies:
  - Regional Leadership Teams should monitor and respond to absenteeism at the workplace in order to implement plans to continue essential business functions in case of higher than usual absenteeism.
    - When possible, plan to cross-train personnel to perform essential functions so that the workplace is able to operate even if key staff members are absent.
    - Prepare for alternative working arrangements. Review employees ability to work from home, the equipment required and the processes for accessing GHD systems remotely.
    - Assess essential functions and the reliance that others (e.g., clients, vendors, etc.) and the community have on our services. Be prepared to change our business practices if needed to maintain critical operations (e.g., identify alternative suppliers, prioritize customers, or temporarily suspend some of our local/Regional operations if needed).

4. Risk management

As part of our overall Enterprise risk management strategies, certain key infection control strategies will be put in place to protect our people. These key infection control strategies are obtained from reputable sources such as World Health Organization (WHO) and US Center for Disease Control (CDC) and are to be implemented at the Business, Region and office level as needed to protect GHD employees. If local jurisdictional regulations and orders require the use of additional controls then GHD will implement those additional control measures at the local level.

As a starting point, during a significant infectious outbreak, all persons experiencing related symptoms will be encouraged to stay home and away from the workplace to protect others. In addition, based on a risk assessment GHD will deploy key strategies to minimise the risk of transmission of contagious viruses or similar.

If the measures in this procedure/SOP differ from any of the control measures referenced by a local jurisdiction or government body then the more stringent requirement will be followed.

4.1 Seasonal Flu Vaccine program

- Each Region (managed by the People and HSE Team) will implement an annual Flu vaccination program delivered as close to the date the vaccine becomes available as possible.
- Typically, the flu vaccine process is delivered towards the onset of winter in each hemisphere.
- Measures to track who has been immunised, who missed out due to being out of office (and making alternative arrangements for these people) and who chose not to take up the immunization opportunity will be implemented by the People Manager and in keeping with jurisdictional privacy laws.

4.2 In the event of infectious outbreak in the community

4.2.1 GHD

- GHD will encourage employees to:
  - Not to attend work if they have related symptoms.
  - Sneeze and cough into their sleeve or a tissue which is then disposed of.
  - Wash their hands with soap and water for at least 20 seconds. Soap and water should be used preferentially if hands are visibly dirty.
  - Use tissues and dispose of in no-touch receptacles for use by employees.
  - Supplement hand washing with use of an alcohol-based hand sanitizer that contains greater than 60% alcohol (placed in multiple locations and foyers and in conference rooms). Should a shortage of hand sanitizer occur, additional focus on soap and water washing should be communicated.
- Communicate key infection control measures via email, iConnect and Safety Shares.
- Each office will post informational posters that encourage staying home when experiencing related symptoms, cough and sneeze etiquette, and hand hygiene at key locations within our offices and in other workplace areas where they are likely to be seen.
- Communications via email will be sent to GHD staff from the relevant executive member of GHD management or designee. Email notifications are to be reviewed and approved by GHD Group Manager HSE, Business HSE Leader or designee prior to sending to GHD staff.
- Business Group Leaders will ensure that adequate supplies are maintained and consider the potential future difficulties to obtain items in the future.
- Perform routine environmental cleaning - Each office will frequently clean and disinfect high use areas such as kitchen and bathroom surfaces, workstations and printers and eating areas. Dishwashers must be run on hot water.
  - Use the cleaning agents that are usually used in these areas and follow the directions on the label.
  - No additional disinfection beyond routine cleaning is recommended at this time.
- Provide disposable cleaning disinfecting wipes and encourage employees to wipe down commonly used surfaces (for example, counter tops doorknobs, keyboards, remote controls, desks) on a regular basis.

4.2.2 Employees

- Follow all reasonable instruction of GHD in its efforts to minimise the transfer of the infection amongst our people, clients and communities.
- Should not attend GHD offices or workplaces if illustrating symptoms. Preference for staff to work from home if able to work and if appropriate for role. See Global Flexible Work Policy.
- In the situation of a 'seconded/embedded' employee working in a client's office, the person must follow the conditions established by the client and notify their GHD manager if illustrating symptoms. Further action may be required if the client does not have established protocols in place.
- If outside their home country, experiencing related symptoms employees should:
  - With permanent operations – contact the local People Team Manager and follow GHD policy for obtaining medical care. In the event of emergency, GHD employee will immediately contact an emergency healthcare provider to receive emergency and/or critical care treatment.
  - Without permanent operations – contact Chubb Assist for advice and also your manager.
- In the event of a family member being exposed or school shutdown as a result of exposure etc., and a GHD employee is required to take care of said family members, GHD will maintain flexible procedures such as permitting employees to work from home etc., to care for a family member experiencing flu-like symptoms.
- Persons travelling on annual/PTO leave may inadvertently return from leave and either be illustrating symptoms on return or soon after return. People returning from leave:
  - Are encouraged to illustrate common-sense and not attend work until symptom free.
  - May in certain circumstances, be required to undertake additional measures prior to returning to work (e.g. 'self-isolate').
  - If returning from overseas travel then GHD employees will be required to self-isolate for a period of 14 days upon arrival in country (home or abroad). See Global Flexible Work Policy and GHD's coronavirus (COVID-19) iConnect page for more information.

  If late onset of symptoms are experienced (post return into work), employees should immediately leave the workplace and then contact their manager, People Manager or HSE Manager for advice.

4.2.3 Employees travelling

- Check GHD Travel Insurance provisions to confirm if travel is insured.
- Attempt to minimize contact with members of the public and try and maintain at least one metre (three feet) of personal space.
- Follow hygiene and handwashing guidance listed above.
- Check GHD source material (e.g. GHD's coronavirus (COVID-19) iConnect page) for information as self-isolation may be required.
- Check GHD's Riskline portal and GHD's coronavirus (COVID-19) iConnect page for the latest guidance and follow all travel advisories of GHD and governmental recommendations for each country of travel.
- Check themselves for symptoms before starting travel. GHD employees are responsible for notifying their Manager and staying home if they are experiencing flu-like symptoms.
- Employees who experience flu-like symptoms while traveling or on temporary assignment understand that they should immediately self-isolate, notify their Manager and should promptly call a Chubb Assist for advice if needed. See next section for more details.

4.2.4 Sharing of personal details

Personal Information will be treated in accordance with local privacy laws and the GHD Privacy Policy. For further information, please contact local legal counsel. Personal information will be treated confidentially, however details may be shared to prevent risk to the health and safety of other employees.

In the event a person is being tested for or illustrating symptoms a contact tree will be developed (based on set criteria listed below) and identified employees, clients or other personnel who meet these criteria will be advised of the potential exposure.

Only information relating to the health risk should be shared, and only shared with people impacted by the risk. Employee names should not be included in any written correspondence to people not directly impacted by the health breach.

Employees with concerns around the release of information should advise their Manager, who will escalate this to the Region GM.

4.2.5 Employees exposed to confirmed COVID-19 cases – outside the workplace

Employees may be exposed to persons who are either known or later confirmed as being COVID-19 positive. People who have been in 'first degree' contact with confirmed COVID-19 cases should be isolated in their home for 14 days after exposure.

As this is a known 'first degree' exposure of a GHD employee, a contact tree (see 4.2.6 below) of those close to or working in direct vicinity to the affected person is created, those on the list informed and asked to work from home for 14 days after exposure.

If the person exposed or any one on the contact tree illustrates symptoms while in isolation, they must immediately seek medical attention and notify the People of HSE Manager, so others on the contact tree may be contacted and do the same.

4.2.6 Employees illustrating "related" symptoms

- Employees who have flu-like symptoms are recommended to stay home and not return to work until they are free of fever (100.4° F/37.8° C or greater using an oral thermometer), signs of a fever, and any other symptoms for at least 24 hours, without the use of fever reducing or other symptom-altering medicines (e.g. cough suppressants). Consult with the Regional People Team as to whether medical clearance is required prior to returning to work.
- When an employee is first identified in the workplace to be illustrating related symptoms (i.e. have not "self-isolated):
  - If available, an appropriate N95/P2 respirator mask will be issued to people experiencing flu-like symptoms immediately upon identification.
  - Will be asked to move to an isolated area of the office (e.g. meeting room) and implement international hygiene practices (cover their noses and mouths with a tissue when coughing or sneezing or an elbow or shoulder if no tissue is available), regular hand washing etc., until work from home arrangements are made.
  - Employees will be required to work from home (i.e., a lower risk environment) until they are free of symptoms (asymptomatic) if they are well enough to work.
  - All leave associated with symptomatic individuals will be taken in accordance with People policies (e.g., sick leave). Protocols regarding return to the office prior will be based upon local People policy (e.g., supply of medical certificate).
  - Where there is likelihood of epi/pandemic (i.e., announced by peak health authority) in accordance with GHD's Pandemic Trigger Action Plan, Region GMs will be required to ensure that staff have the ability to, and are trained/familiar with working from home, in advance of any potential outbreak.

- Persons illustrating related symptoms to seek medical attention and be screened for testing.
- GHD Project Directors that use contract or temporary employees will contact the employment company or agency to discuss the importance of persons experiencing flu-like symptoms staying home and encourage the employment agency to develop non-punitive leave policies.

If the affected person satisfies the Medical Authority COVID-19 screening criteria and is tested for COVID-19 this must be made known to the People Manager or HSE Manager immediately.

A contact tree of those close to or working in direct vicinity to the affected person is created, those on the list informed and asked to work from home pending results (if results come back as positive, see 4.2.7 Employee confirmed as COVID-19 positive protocols below).

Close Contact

The definition of close contact (1)(2) is as follows:

- *greater than 15 minutes face-to-face contact in any setting with a suspected / confirmed case in the period extending from 24 hours before onset of symptoms in the confirmed case, and/or*
- *sharing of a closed space with a suspected/confirmed case for a prolonged period (e.g. more than 2 hours) in the period extending from 24 hours before onset of symptoms in the confirmed case*

In a non-office setting, a close contact includes a person meeting any of the following criteria:

1. *Living in the same household or household-like setting (e.g. in a boarding school or hostel).*
2. *A person who spent 2 hours or longer in the same room (such as a GP or ED waiting room; a school classroom; communal room in an aged care facility).*
3. *A person in the same hospital room when an aerosol generating procedure is undertaken on the case, without recommended PPE.*
4. *Aircraft passengers who were seated in the same row as the case, or in the two rows in front or two rows behind a confirmed COVID-19 case.*
5. *Contact tracing of people who may have had close contact on long bus or train trips should also be attempted where possible, using similar seating/proximity criteria.*

Note that healthcare workers and other contacts who have taken recommended infection control precautions, including the use of full PPE, while caring for a symptomatic confirmed COVID-19 case are not considered to be close contacts.

Relevant references:

- *New South Wales Government Fact Sheet for Close Contacts (updated 15 March 2020) – https://www.health.nsw.gov.au/Infectious/factsheets/Pages/novel-coronavirus-close-contact.aspx*
- *The Communicable Diseases Network Australia (CDNA) Coronavirus Disease 2019 National Guidelines for Public Health Units (Version 2.0, date 13 March 2020) - https://www1.health.gov.au/internet/main/publishing.nsf/Content/7A8654A8CB144F5FCA2584F8001F91E2/$File/interim-COVID-19-SoNG-v2.0.pdf*

The RGM will inform the rest of the Region's office that is affected (along with other offices if the person had travelled), using the template communications provided and the Privacy conditions listed in section 4.2.4 above.

Full clean of all high use areas that the person may have contacted by professional cleaners.

Once the results are known:

- *Negative - all return to work (once symptom free)*
- *Positive - refer to Positive Result protocols below*

4.2.7 Employee confirmed as COVID-19 positive

- If a person is diagnosed as COVID-19 positive, they must immediately report this to their Manager, People Manager or HSE Manager, leave the office and self-isolate.
- The People Manager will ensure that employees with a positive COVID-19 diagnosis have access to flexible leave policies which are flexible and consistent with public health guidance.
- The People Manager and HSE Manager will inform other employees who may have come into contact with the infected person of their potential exposure to COVID-19 and commence development of an “exposure tree”.
- Confidentiality must be maintained as per jurisdictional legislation and GHD policy.
- Asymptomatic employees potentially exposed to COVID-19 will undergo a risk assessment using either local Health Department provided risk assessment or the CDC guidance for how to conduct a risk assessment. However, local government policies may take precedence in determining whether employees remain in an office and what medical consultation is required.
  - Designated member(s) of the HSE and People Teams will perform the exposure risk assessment and determine any protective measures and safeguards. Based upon the results of the risk assessment, high-risk employee(s) will be asked to seek medical consult and asked to work from home for 14 days after their last potential exposure.
  - Region GMs may determine that all potentially exposed persons quarantine themselves for the 14-day period.
- All absences as a result of ‘home isolation’ will be documented and maintained by the relevant HSE Manager in the Infection Control Personnel Register. Protocols regarding return to the office following will be based upon local People Policy (e.g. supply of medical certificate).
- It is appreciated that confirmed diagnosis may trigger anxiety and unrest. The People Manager will remind affected persons of GHD’s EAP program provisions.
- All surfaces that a confirmed COVID-19 case may have come into contact with require a ‘deep clean’, prior to employees re-entering. A professional cleaner using the appropriate products and practices must undertake this.

  A ‘deep clean’ is a standard term used for an elevated cleaning scope and includes disinfecting and sanitising of the following (including screens and keyboards):
  - High dusting or all vents and light fixtures.
  - Vacuum all blinds, drapes, windowsills, tracks, etc.
  - Dust all walls and clean all light switches.

- Dust all doors and clean all doorknobs.
- Dust all baseboards.
- Move all furniture and thoroughly vacuum all carpets or scrub all floors. (Make sure to clean all baseboards behind furniture that is usually not cleaned on a regular basis).
- Dust and wipe down all surfaces (as employees to remove everything from their desks).
- Clean and sanitize all computer keyboards and screen.
- Clean all kitchen cabinets, appliances, refrigerator, etc.
- Clean all restroom walls, toilets, urinals, sinks.
- Do a machine scrub on restrooms floors. This will help eliminate urine smell.
- Inspect caulk around the toilets and sinks and address as appropriate.
- Window cleaning.
- Carpet cleaning.
- High ceiling dusting (especially if you have a warehouse).
- Strip and wax

4.2.8 Visitors to GHD offices

- Screening questions appropriate to the nature of the outbreak, local Health advisories and also GHD's local condition will be asked of all visitors at reception prior to being permitted to entering the office.

4.3 Office reduction

The condition facing a GHD office, the isolation measures considered and the public health orders will vary by jurisdiction. However, the decision to reduce operations in an office may be the result of key considerations:

- Directed - Local or national authorities have issued a public health order that prohibits people from gathering in public places where close contact may occur, also known as congregate settings. Congregate settings include settings such as shopping centres, movie theatres, stadiums, workplaces, and schools and classroom settings.
- Based on risk - If multiple office staff are symptomatic then there is a risk that the office may have widespread dispersion of the virus and thus require large scale disinfection. The office operations should be reduced to an appropriate level (e.g., to increase social distancing). However, specific essential personnel may be provided access based upon Regional GM and HSE approval. A risk assessment and control measures must be in place prior to allowing essential staff to remain in a potentially contaminated building.

In the event of a decision (or requirement) to reduce office operations:

- Refer to GHD Crisis Management Plan:
  - Incident Classification Matrix
  - Office Out of Commission Specific Incident Guide
  - Pandemic Specific Incident Guide

In the case where GHD has determined to reduce based on risk, the Region GM will notify other building occupants and clients of this decision, including the potential impacts.

In all cases, the Crisis Management Team Leader is responsible for determining the frequency of review of the decision to "reduce".

- The Region will have made the necessary arrangements to enable our people to work from home. Persons working from home during this period will be provided with a laptop only for this purpose unless other arrangements are agreed by the Region GM.
- It must be noted that during this period IS Support will be restricted to internet and phone enquiries only.
- Switchboards will be diverted to the closest GHD office.

The intensity of a localised or regional outbreak may differ. There may be an opportunity for GHD employees affected by an office closure to work at other GHD office locations. In order for an office reassignment to occur an exposure risk assessment must occur and the office reassignment be approved by the Executive GM. Any affected employee must possess a No Risk or Low Risk exposure assessment result prior to any office reassignment.

5. Communication and training resources

GHD Coronavirus (COVID-19) iConnect page

https://iconnect.ghd.com/en/BusinessServices/HSE/incident-management/Pages/Coronavirus.aspx

GHD Infection Control Safety Share

https://iconnect.ghd.com/en/BusinessServices/HSE/building-capability/_layouts/15/WopiFrame.aspx?sourcedoc=/en/BusinessServices/HSE/building-capability/Documents/Safety%20Share%20-%20Infection%20Control%20Feb%202020.pptx&action=default

GHD Coronavirus (2019-nCOV) Safety Share

https://iconnect.ghd.com/en/BusinessServices/HSE/building-capability/_layouts/15/WopiFrame.aspx?sourcedoc=/en/BusinessServices/HSE/building-capability/Documents/Safety%20Share%20-%20Coronavirus%20Feb%202020.pptx&action=default

GHD

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\\ghdnet\ghd\AU\Newcastle\Service\Support Services\Corporate Regional HSE Management\0.0 Final iConnect docs\300. SOPs\HSE339 Infection Control\HSE339 Infection Control.docx

Document Status

Rev	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	C Harrison	J Maranciak		C Harrison		Mar 2020

COVID-19 Social Distancing
Office guidelines

The recent Safety Share: Pandemic highlights the Social Distancing as a key initiative for implementation. This Guideline unpacks the practical measures to be implemented to reduce exposure within our operations (outside of existing measures to voluntarily isolate):

Working from Home

- Refer to relevant Governmental initiatives regarding social distancing (e.g. mass gatherings)
- Laptops stored for recycling are retrofitted with up to date software – ready for loan
- Staff with laptops instructed to take home every day (including peripherals – charger cords, mouse)
- Where available, excess laptops will be retrofitted and made available as necessary
- Until bandwidth capacity initiatives are complete RGMs to enforce the following:
    - Until an office / floor is required to close please constrain the number of people working from home.
    - If an office or floor within the Region needs to close then prioritize those who require VPN access to meet client obligations.
    - Practices that support the economical use of the VPN – i.e. people do not need to remain on the VPN all of the time. Employees should connect, download (etc. to laptop), and then disconnect.

Minimising movements in our buildings

- Reduce non-essential movements between floors in multi-story buildings
- Greater utilisation of phones and WebEx for in-office meetings and discussions
- Limiting face-to-face meetings to critical project meetings only – limited to 8 people
- Antibacterial cleaning of high use surfaces 3 times a day, including elevator buttons and door handles (may involve disinfectant wipes and sprays)
- Reception Screening Guidelines enforced
- No ‘personal’ parcel deliveries to GHD buildings
- Discuss and agree on communication methodologies with Clients – as they are concerned about the same things we are.

Cancellation of mass gatherings

- Face-to-face Business School activities cancelled – replacing with virtual medium as necessary
- Face-to-face Region activities above 8 people cancelled or re-organised
- International Travel conditions remain per current conditions
- Domestic Travel conditions to be restricted to “essential travel only” and Regional GM approval required.

Thank you for your cooperation and understanding on this matter.

COVID-19 Visitor Screening

Office access guidelines

Dear visitor,

With the rise in the number of confirmed cases of COVID-19 (coronavirus), we have implemented a number of measures in GHD offices to help prevent and slow the spread of the virus and to protect the health of our employees and anyone else visiting our offices.

These measures include advice on increased hygiene in the offices and at home, restricting overseas travel to business critical visits, requesting staff who have visited high-risk areas to work from home.

We are also asking all visitors (clients, vendors and GHD visitors) to our offices, to read and answer the questions below:

Please read the following questions:

1. Have you travelled internationally or been in close contact with, anyone who has travelled internationally in the past 14 days?
2. Have you, in the last 14 days, had contact with anyone who has confirmed or suspected symptoms of COVID-19 (fever, dry cough, body aches, headache, sore throat, runny nose, tiredness, shortness of breath)?
3. Do you have any of the following symptoms? Fever, dry cough, body aches, headache, sore throat, runny nose, tiredness, shortness of breath.

If you answer YES to any of the questions above, we ask you respectfully to postpone your visit, and to inform your GHD contact.

Thank you for your cooperation and understanding on this matter.

Daily Project Site COVID-19 Subcontractor Screening Questionnaire

To be completed by GHD Site Supervisor daily who will ask the following questions listed below and complete a temperature check for all Subcontractors working at a GHD controlled site.

No other person is to touch this form to prevent the transmission of viruses.

Item No.	Questions Please circle the answer	Yes	No
1.0	Are you currently sick?	Yes	No
2.0	Do you currently have any of the following symptoms: sneezing, fever, dry cough, body aches, headache, sore throat, runny nose, tiredness, shortness of breath, new loss of taste or smell?	Yes	No
3.0	Have you, in the last 14 days, had contact with anyone who has confirmed or suspected symptoms of COVID-19 (sneezing, fever, dry cough, body aches, headache, sore throat, runny nose, tiredness, shortness of breath, new loss of taste or smell?	Yes	No
4.0	Have you travelled internationally or been in close contact with anyone who has travelled internationally in the past 14 days?	Yes	No
5.0	What is person's temperature? Please circle **Below 37.4ºC/99.32ºF** **Between 37.4ºC/99.32ºF and 38ºC/100.4ºF** **Above 38ºC/100.4ºF**		

If the person has answered yes to any of these questions, or if their temperature exceeds 38ºC/100.4ºF they will not be allowed to enter/work at a GHD project site. They must leave the site immediately and notify their supervisor for further instructions.

If their temperature is between 37.4ºC/99.32ºF and 38ºC/100.4ºF, they will need to have their temperature taken a second time throughout the day to determine the onset of a fever. If the second temperature is still in the yellow range or red, the subcontractor will be asked to leave the site immediately.

Please review with subcontractor:

While on a GHD controlled site you are required to:

- Immediately notify the GHD site supervisor if you start to exhibit any flu-like symptoms.
- Review GHD's COVID-19 site requirements with the GHD Site supervisor.
- Communicate GHD's COVID-19 site requirements to all subcontractors hired by your company.
- Maintain a physical distance of (2 meters/ 6 feet) between site workers.
- Practice proper personal hygiene.
- Clean and disinfect tools and equipment on a regular basis.

Subcontractor	Employee Name	Meets Requirements Yes/No	If No Action Taken?

GHD Site Supervisor Name:_____ Signature: _____

Date: _____ Project Number:_____

Tailgate Safety Meeting Form
Large Group Format - Single Day

Date:		Time:		Project No.:	
Presenter:		Project Name:			

Safety topics/items discussed:

Emergency preparedness:

First Aid Provider(s):		Muster Point:	
		Method of Communication:	
AED Responder:		Fire Extinguisher Location:	
First Aid Kit Location:		Eye Wash Location:	

Site personnel in attendance:

Print Name:	Signature:	Company:

Tailgate Safety Meeting Form
Small Group Format - Multiple Days

Date:		Time:		Project No.:	
Presenter:		Project Name:			

Safety topics/items discussed:

Emergency preparedness:

First Aid Provider(s):		Muster Point:	
		Method of Communication:	
AED Responder:		Fire Extinguisher Location:	
First Aid Kit Location:		Eye Wash Location:	

Print Name	Signature	Company

Date:		Time:		Project No.:	
Presenter:		Project Name:			

Safety topics/items discussed:

Emergency preparedness:

First Aid Provider(s):		Muster Point:	
		Emergency Communication:	
AED Responder:		Fire Extinguisher Location:	
First Aid Kit Location:		Eye Wash Location:	

Print Name	Signature	Company

Management of Change Form
(QSF-006)

Form initiated by: _____ Date initiated: _____

Initiator's role/responsibility: _____ Project number: _____

Affected location(s): _____

Client's management of change documentation attached, if required or applicable: ☐ Yes ☐ N/A

Type of change:

- ☐ Field operations/SOPs
- ☐ Equipment
- ☐ Safety
- ☐ Project management/resources

Duration of change:

- ☐ Permanent
- ☐ Temporary (specify how long change will be in place): _____
- ☐ Emergency

Describe the change:

Describe the procedure/task(s) required to complete the change:

Who needs to know about the change and how will you communicate this to them?

Is additional training for GHD people required as a result of this change? ☐ Yes ☐ No

If yes, please describe training needs and those who require it:

Coordination with Business School Learning Centre underway: ☐ Yes ☐ No

Identify any associated risks/hazards/impacts as a result of this change:

This completed form is a quality record

Does the change need to be approved by a client? ☐ Yes ☐ No

If Yes, state client's name: _____

Client role/responsibility: _____

Date authorized by client: _____
(mm/dd/yyyy)

Change approved by project manager: _____
(please print)

_____ _____
(signature) (approval date – mm/dd/yyyy)

Summary:

Item	Completion date	Confirmed by
1. Task(s) to execute change have been completed		
2. Those who need to know have been notified		
3. Additional training has been completed		
4. Risk(s) have been mitigated		
5. Change has been approved by all required parties		

Notes:

Scope: GHD may use the Management of Change Form (QSF-006) to identify and record project additions, revisions, changes, or updates regarding field operations, field SOPs, equipment, safety, resources, or project management.

Detail: The level of detail to a documented project change is ultimately determined by the project manager and/or any client expectations.

File location: Correspondence folder of the project file.

Underground Utilities Checklist

(QSF-019)

Pre-Drilling/Excavation Checklist and Utility Clearance Log

Project number:	**Project name:**
Date:	**Project location:**
Public utility locator:	**Public utility locator phone number:**
Date of public utility locator request:	**Public locator call reference number:**
Private utility locator (If applicable):	**Private utility locator phone number:**

Utilities (indicate that location/utility presence was checked)

Borehole/ Excavation location	Date (mm/dd/yyyy)	Telephone	Water	Storm sewer	Sanitary sewer	Process sewer	Gas	Electrical	Cable	Overhead utilities	Other	Comments/Warnings
Utility owner												

Instructions: This checklist is to be completed by GHD personnel prior to initiation of field activities as a safety measure, to ensure that all underground utility lines, other underground structures, and above-ground power lines are clearly marked in the area selected for boring or excavation.

Notes: _____

Client: _____ **Client representative:** _____ **Phone number:** _____

Client or property owner acknowledgement of utility clearance: _____ **(Client, property owner, or authorized agent signature)**

Subcontractor acknowledgement of utility clearance: _____ **(Subcontractor or subcontractor representative signature)**

GHD field representative name: _____ **Signature:** _____

GHD project manager's review/confirmation of locate completion: _____

In the event that client or property owner acknowledgement cannot be obtained, all boreholes shall be hydro vacuumed and the costs passed on to the client. Attach any clearance documentation from utility owner/operator to this document.

Underground Utilities Checklist for GHD Personnel

Pre-Drilling/Excavation Checklist and Utility Clearance Log

Drilling or excavation work may not proceed if any of the questions answered below are answered "No." Implement stop work authority and contact the GHD project manager to discuss and resolve any concerns or issues. Document the reason for a "No" answer in the comments section below.

Yes	No	N/A	Pre-Mobilization
☐	☐	☐	1. Has a utility locator request been completed within the last 30 days (verify time limit with state or provincial law)? If no, stop work and comment below.
☐	☐	☐	2. Is a scaled site plan, map or drawing showing the proposed borehole locations attached to this form?
☐	☐	☐	3. Does each borehole and excavation location allow for clear entry and exit, adequate workspace, and a clear path for raising the mast (or boom) and operating the drill rig and all support equipment? Ensure that the minimum OSHA/state/provincial utility clearance requirements between the mast or boom and the power line(s) are met. For instance, OSHA requires a minimum approach distance of 10 feet for systems below 50 kV and an increase of 4" for every 10 kV over 50 kV. Confirm if additional permits are required if the boom or mast will be working 5 meters (15 feet) or less from the electrical lines.
☐	☐	☐	4. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface or above-ground utilities shown on client's building plans? Check here ☐ if plans not provided by client (therefore not applicable to this job.
☐	☐	☐	5. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface or above-ground utilities shown on public right-of-way street improvement or other public property plan or site map?
☐	☐	☐	6. Has the site representative, familiar with the site, indicated no knowledge of any subsurface or above-ground utilities within 3 metres (10 feet) of the proposed borehole and excavation locations? (Review locations with site representative)
☐	☐	☐	7. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface utilities identified during a geophysical survey? Check here ☐ if no geophysical survey has been completed (therefore not applicable to this job).
☐	☐	☐	8. Have all utility locating service providers, notified by the public line locator, marked out their facilities in the vicinity of the borehole and excavation locations or otherwise notified us that they do not have any facilities near the proposed locations? (Attached confirmation and utility locate sheets from public locator)
☐	☐	☐	9. Are all proposed borehole and excavation locations at least 1.5 meters (5 feet) from a visual line connecting two similar looking manhole covers?
☐	☐	☐	10. Are all proposed borehole and excavation locations at least 1.5 meters (5 feet) from a visual line perpendicular to the street from the water, gas, and electrical meters?
☐	☐	☐	11. Are all proposed boring and excavation locations clear of pavement joints, curbs, crash posts, or other engineered structures?
☐	☐	☐	12. Does the ground surface/pavement lack signs of previous excavation (e.g., no pavement subsidence, no differences in pavement texture or relief, no pavement patching)?
			Pre-Drilling and Excavation
☐	☐	☐	13. Has it been verified that the proposed drilling or excavation work will not affect any work currently in progress?
☐	☐	☐	14. Has the drill rig or heavy equipment been inspected prior to use and documented? (See Drill Rig Inspection Checklist or Mobile Equipment Safety Inspection Checklist)
			15. Have barricades been erected to prevent unauthorized access, where applicable?
☐	☐	☐	16. Have all known live electrical or product lines within 3 meters (10 feet) of the dig path been visually verified? If no, comment below.
			17. For boreholes that have not been cleared or are within 3 meters of a utility:
☐	☐	☐	a. Before drilling have you cleared a hole to 2.4 meters (8 feet) below grade using an air-knife, or equivalent, before drilling and is the diameter of this hole greater than the final outside diameter of the boring? If not required comment below.
☐	☐	☐	b. Does the soil you encountered in the hand-dug hole appear to be native material (i.e., free of clean gravel, clean sand, aggregate base [gravelly sand ~ 10% fines] or other non-native looking material)? If not required comment below.

Have the above concerns been discussed with the GHD project manager?	☐ Yes	☐ No	☐ Not Applicable
Has the start of subsurface work been communicated to the GHD project manager?	☐ Yes	☐ No	☐ Not Applicable
Have the above concerns been discussed with the client?	☐ Yes	☐ No	☐ Not Applicable
Has the scope of work been approved by the client?	☐ Yes	☐ No	☐ Not Applicable

Comments: _____

GHD field representative name: _____ **Date:** _____

Site Health and Safety Plan Amendment Form

This document is to be completed for ANY changes that occur within the Site Health and Safety Plan (HASP). This document is to be sent to the Regional Safety & Health Manager (RSHM) for review, verification and sign off of the HASP.

Amendment #	
Site Name/Project ID	
Date	
Client Contact (same/change)	
Reason for Amendment (SOW change, JSA addition, Chemical, etc.)	
Alternate or Additional Safeguard Procedures	
Required changes in PPE	
Additional Comments:	

Project Manager Notified	☐
RSHM Notified	☐
Client PM Notified (if necessary)	☐

Site HSE Officer (sign above)	Date

The Project Manager is ultimately responsible for the accuracy of the information on this amendment and ensuring any changes to the original HASP is discussed with all affected site personnel prior to commencing work

This original form must be placed in the project file and a copy needs to be attached to the Site Health and Safety Plan (HASP).

HASP Acknowledgment Sheet

Project Name:_____ Project Number: _____

This is to certify that I have received a pre-entry briefing regarding this HASP, and I understand its contents. My failure to follow and comply with the requirements contained in this plan may result in disciplinary action and/or termination.

Print Name	Signature	Date

Job Safety Analysis (JSA)

Insert Name : Surveying-Land Surveying

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).** Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date Issued/Revised:	09/21/2021 22:13:50	**Client:**	Jenesis Development, LLC		
Project Number:	11219347	**Created By:**	System - Copy	SIM OPS? YES/NO	SSE on site? YES/NO
Project Address:	1130 Niagara Street Buffalo				
Key Equipment:	Flag or paddle Additional PPE: Class II vest; leather gloves to mob/demob equipment				
Task-specific Training:	Flagger Safety; Traffic Control Devices; Personal Protective Equipment				

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Type 1 (Top Impact)	☐ Chemical Protective (ie.Nitrile)	☑ ANSI/CSA Safety Glasses	☐ Harness	☐ Full Face Mask	☑ Class II (standard)	☐ Coveralls
☐ Type 2 (Side Impact)	☑ Level 1 - Light Duty	☐ Goggles/Spoggles	☐ Shock Absorbing Lanyard	☐ Half Face Mask	☐ Class III (Night or Highway Traffic)	☐ Fire Retardent Clothing (FRC)
☑ Class E (standard)	☐ Level 2 - Light Duty with Protection	☐ Face Shields	☐ Lifeline		☐ Anti-Static	☐ High Viz Clothing
☐ Class G	☐ Level 3 - Medium Duty	☐ Other*		**Cartridges**	☐ FRC	☐ Long Pants
	☐ Level 4 - Heavy Duty			☐ N95	☐ PFD	☐ Long Sleeve Shirts
Foot Protection	☐ High Viz	**Hearing Protection**	**Arc Flash/Shock Protection**	☐ P100		☐ Paper Tyvek (disposible)
☑)Industrial Grade Safety Boot	☐ Other*	☐ NOT Required for this task	☐ Hazard Category 2	☐ P95		☐ Polyethyene Tyvek

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Rubber Boots (industrial grade)		☑ Required	☐ Hazard Category 4	☐ R95		☐ Other*
☐ Hip Waders				☐ Organic Vapour		
	* see key equipment			☐ Speciality*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature			
Katherine (kathy) Galanti				

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
1	Mob equipment to surveying area with GHD vehicle	• Lifting hazards • Manual material handling • Back injury • Pinch points • Moving or flying projectiles inside vehicle while transporting equipment • Slip/trip/fall hazards • Biological hazards	• Reduce travel distance when there is a need to carry/lift materials • Make sure grip is adequate; wear leather/cotton gloves • Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required • Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position • Avoid one handed carrying if possible; maintain awareness of footing • Review JSA and HASP • Practice STAR • Properly secure all equipment inside the vehicle	Survey Team
2	Note traffic flow	• Struck by oncoming traffic • Slip/trip/fall • Biological hazards • Threatening dogs	• Stage the GHD vehicle to aid in the protection of the survey crew if they need to set up a Temporary Traffic Control Zone (TTCZ) • Review JSA and HASP • Practice STAR	Survey Team
3	Develop the Temporary Traffic Control Plan (TTCP) and set up the Temporary Traffic Control Zone (TTCZ)	• Struck by oncoming traffic • Slip/trip/fall • Biological hazards • Threatening dogs • Lifting hazards • Manual material handling • Back injury • Heat/cold stress	• Review the requirements of the TTCP ahead of time • Make sure that all temporary traffic control equipment (signs/cones/etc.) is available • Carefully set up TTCZ using the buddy system • Refer to step 1 and HASP for additional lifting methods/information • Position truck with flashers on for added protection • Follow hot/cold stress procedures presented in the HASP • Review JSA and HASP • Practice STAR	Survey Team
4	General use of tools	• Struck by oncoming traffic • Slip/trip/fall hazards • Biological hazards • Threatening dogs • Potential injuries from misuse of tools or use of tools in disrepair	• Wear ANSI Class II reflective safety vest, safety toed boots, and hard hat • Do not use old or faded PPE • Inspect tools • Repair/replace tools as necessary • Review JSA and HASP • Practice STAR	Survey Team
5	Conduct survey activities	• Struck by oncoming traffic • Slip/trip/fall hazards • Biological hazards • Threatening dogs	• Surveyor will enter roadway after clearance from flag person • Surveyor will maintain contact with flag person during survey • Make sure that proper PPE is being worn • Review JSA and HASP • Practice STAR	Survey Team
6	Exit roadway	• Struck by oncoming traffic • Slip/trip/fall hazards • Biological hazards • Threatening dogs	• Surveyor should exit roadway first, followed by flag person nearest oncoming traffic (spotter) • Review JSA and HASP • Practice STAR	Survey Team

1. Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.
2. A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
3. Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site Personnel Participating in JSA Review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a Stop Work Authority (SWA) if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter Signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.
Supervisor Signature: _____ Date/Time: _____

Location of Mustering Point: _____ Wind direction (current): _____

GHD Emergency contact (Name and verified phone number): _____

Supervisor Signature documenting Daily Debrief has been completed: _____

Job Safety Analysis (JSA)

Insert Name : Mobilization-Demobilization

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).** Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date Issued/Revised:	09/21/2021 22:13:50	**Client:**	Jenesis Development, LLC		
Project Number:	11219347	**Created By:**	System - Copy	SIM OPS? YES/NO	SSE on site? YES/NO
Project Address:	1130 Niagara Street Buffalo				
Key Equipment:	#360 degree topper				
Task-specific Training:	#				

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Type 1 (Top Impact)	☐ Chemical Protective (ie.Nitrile)	☐ ANSI/CSA Safety Glasses	☐ Harness	☐ Full Face Mask	☐ Class II (standard)	☐ Coveralls
☐ Type 2 (Side Impact)	☑ Level 1 - Light Duty	☐ Goggles/Spoggles	☐ Shock Absorbing Lanyard	☐ Half Face Mask	☐ Class III (Night or Highway Traffic)	☐ Fire Retardent Clothing (FRC)
☐ Class E (standard)	☐ Level 2 - Light Duty with Protection	☐ Face Shields	☐ Lifeline		☐ Anti-Static	☐ High Viz Clothing
☐ Class G	☐ Level 3 - Medium Duty	☐ Other*		**Cartridges**	☐ FRC	☐ Long Pants
	☐ Level 4 - Heavy Duty			☐ N95	☐ PFD	☐ Long Sleeve Shirts
Foot Protection	☐ High Viz	**Hearing Protection**	**Arc Flash/Shock Protection**	☐ P100		☐ Paper Tyvek (disposible)
☑)Industrial Grade Safety Boot	☐ Other*	☐ NOT Required for this task	☐ Hazard Category 2	☐ P95		☐ Polyethyene Tyvek
☐ Rubber Boots (industrial grade)		☐ Required	☐ Hazard Category 4	☐ R95		☐ Other*

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Hip Waders				☐ Organic Vapour		
	* see key equipment			☐ Speciality*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature			
Katherine (kathy) Galanti				

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
1	Discuss STAR and SWA	• Site personnel not aware of STAR and SWA	• Project team (GHD) discusses importance of and documentation procedures for SWA during pre job safety meeting • Use SWA to stop any work that is unsafe	
2	Check weather	• Unexpected storm • Fog, rain, snow; lightening/thunder • Heat/cold stress	• Check local weather forecast • If adverse weather conditions are likely, prepare a contingency plan for lodging, etc. with project manager • Discuss weather issues and precautions to take while driving and on site during the pre job safety meeting • If weather conditions (e.g., fog, rain, snow, etc.) impair the ability/vision of the driver, exit at nearest safe location and assess the situation • While on site, at first sign of lightening/thunder utilize SWA and assess weather conditions • In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers)	
3	Load equipment into vehicle	• Lifting hazards • Manual material handling • Back injury • Cuts • Pinch points • Hand/foot injury • Forgotten or damaged equipment	• Reduce travel distance when there is a need to carry/lift materials • Make sure grip is adequate; wear leather/cotton gloves • Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required • Maintain neutral back posture - Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and make sure to shift with the feet rather than twisting at the back • Maintain neutral wrist posture when lifting, carrying, pushing or pulling. The wrist is the strongest and most stable when it is straight. • Avoid one handed carrying if possible; maintain awareness of footing • Avoid placing hands/fingers in pinch point locations • Wear safety toed boots • Verify requested equipment against warehouse form • Load equipment in an organized manner to prevent shifting during transport or use cargo netting	

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
4	Complete GHD Daily Operator Vehicle Checklist	• Damaged vehicle lights, tires, windows, mirrors, horn • Inadequate vehicle documents and/or safety items	• Check for fluid leaks under vehicle • Test operation of headlights, front/rear turn signals, backup lights, brake lights, and emergency flashers • Visually check the pressure/wear of tires • Ensure the vehicle has a spare tire • Assure windshield and window glass is clean and free from obstructions • Test the windshield wipers and horn • Verify vehicle registration, insurance card, and inspection sticker is present and valid • Ensure the vehicle contains a first aid kit, fire extinguisher, and road hazard kit • Check immediate vehicle perimeter and initial path of travel for obstructions (360 walk around)	
5	Check and adjust seat, steering wheel, headrest, and mirrors	• Back/body strain • Blind spot • Impaired vision	• Adjust seat, headrest, and steering wheel height so body is fully supported/comfortable and pedals are within easy reach • Ensure mirrors are properly adjusted	
6	Fasten seat belt(s) and ensure passenger(s) seat belts are fastened	• Serious injury, ejection, or death from collision and/or traffic citation	• Verify driver and passenger(s) seat belts are in good condition and properly latched	
7	Ensure vehicle doors are locked	• Serious injury, ejection, or death from collision • Unwanted intrusion • Lost equipment	• Manually lock all doors to vehicle	
8	Start engine and check gauges and warning lights	• Vehicle breakdown	• Verify sufficient fuel and other hazard lamps (e.g., battery, oil, and temperature) are not lit	
9	Mobilize to site	• Arriving late • Collision • Injury or death to occupants or other parties	• Do not use cell phones or perform other distracting activities while vehicle is in motion • Constantly scan intersections, move eyes, check mirrors, and assess traffic lights (fresh vs. stale) • Maintain safety cushion around vehicle (front, sides, and rear) and 4 second following distance • Utilize all driving defensive techniques	
10	Arrive at site	• Pedestrian injury • Collision	• Maintain awareness of pedestrian/vehicular traffic when entering site and traveling to work zone	

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
11	Park vehicle	• Pedestrian injury • Collision • Property damage	• Maintain awareness of pedestrian/vehicular traffic • Park vehicle in pull through parking space or facing the exit • Parking in a parking space that is not a designated parking space will require the placement of the 360 degree topper on the hood of the vehicle • Use caution and mirrors/spotter when backing vehicle • Set parking brake	
12	Demobilization	• Collision • Injury or death to occupants or other parties	• Check immediate vehicle perimeter and initial path of travel for obstructions (360 walk around) • Maintain awareness of pedestrian/vehicular traffic when exiting site • Utilize defensive driving techniques	

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Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter Signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.
Supervisor Signature: _____ Date/Time: _____

Location of Mustering Point: _____ Wind direction (current): _____

GHD Emergency contact (Name and verified phone number): _____

Supervisor Signature documenting Daily Debrief has been completed: _____

Job Safety Analysis (JSA)

Insert Name : Environmental-Site Recon and Walkthrough

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).** Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date Issued/Revised:	09/21/2021 22:13:52	**Client:**	Jenesis Development, LLC		
Project Number:	11219347	**Created By:**		SIM OPS? YES/NO	SSE on site? YES/NO
Project Address:	1130 Niagara Street Buffalo				
Key Equipment:	Basic PPE, hand/power tools based on site condition, site inspection checklist or notebook, JSA forms, pens, flashlight. Additional PPE: Insect repellant. Coveralls may be necessary based on type of brush/plants/insects in work area(s) being inspected. Leather gloves if overgrown vegetation or rundown buildings.				
Task-specific Training:	SMART Safety training (STAR), JSA development, Poison Plant Identification				

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Type 1 (Top Impact)	☐ Chemical Protective (ie.Nitrile)	☑ ANSI/CSA Safety Glasses	☐ Harness	☐ Full Face Mask	☑ Class II (standard)	☑ Coveralls
☐ Type 2 (Side Impact)	☑ Level 1 - Light Duty	☐ Goggles/Spoggles	☐ Shock Absorbing Lanyard	☐ Half Face Mask	☐ Class III (Night or Highway Traffic)	☐ Fire Retardent Clothing (FRC)
☑ Class E (standard)	☐ Level 2 - Light Duty with Protection	☐ Face Shields	☐ Lifeline		☐ Anti-Static	☐ High Viz Clothing
☐ Class G	☐ Level 3 - Medium Duty	☐ Other*		**Cartridges**	☐ FRC	☐ Long Pants
	☐ Level 4 - Heavy Duty			☐ N95	☐ PFD	☐ Long Sleeve Shirts
Foot Protection	☐ High Viz	**Hearing Protection**	**Arc Flash/Shock Protection**	☐ P100		☐ Paper Tyvek (disposible)

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☑)Industrial Grade Safety Boot	☐ Other*	☑ NOT Required for this task	☐ Hazard Category 2	☐ P95		☐ Polyethyene Tyvek
☐ Rubber Boots (industrial grade)		☐ Required	☐ Hazard Category 4	☐ R95		☑ Other*
☐ Hip Waders				☐ Organic Vapour		
	* see key equipment			☐ Speciality*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature			
Katherine (kathy) Galanti				

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
1	Discuss STAR and SWA	• Site personnel not aware of STAR and SWA	• Project team discusses importance of and documentation procedures for SWA during pre-job safety meeting • Use SWA to stop any work that is unsafe	All persons on project team
2	Check weather	• Unexpected storm, fog; rain; snow; lightening, thunder • Heat/cold stress, including frostbite and sunburn	• Check local weather forecast • Discuss weather issues and precautions to take while driving and on site during the pre job safety meeting • If weather conditions (e.g., fog, rain, snow) impair the ability/vision of the driver, exit at nearest safe location and assess the situation • While on site, at first sign of lightning/thunder utilize SWA and assess weather conditions • In extreme temperatures, ensure all personnel have proper clothing, which includes either a helmet liner or hat/mask that will cover exposed skin on one's face and ears, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers) • Implement the "Buddy System." The site supervisor shall also keep close tabs on all project personnel working in extreme temperatures.	Assessor
3	Sign in	• Client/site security not aware of GHD staff presence at site	• Sign in at front desk • Ensure client PM notified of site visit in advance	
4	Don necessary GHD and client required PPE	• Contact with impacted soil, brush, sharp/rough stones	• Wear all required PPE (hard hat, vest, boots, and glasses) at all times while in the facility	
5	Unload equipment from vehicle	• Lifting hazards • Back injury • Manual material handling • Cuts • Pinch points • Hand/foot injury • Forgotten equipment • Damaged equipment	• Reduce travel distance when there is a need to carry/lift materials • Make sure grip is adequate; wear leather/cotton gloves • Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required • Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position • Avoid one handed carrying if possible; maintain awareness of footing • Wear leather/cotton gloves and avoid placing hands/fingers in pinch point locations • Wear steel toed boots • Verify requested equipment against warehouse form • Load equipment in an organized manner to prevent shifting during transport or use cargo netting	Assessor

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
6	Complete site inspection and walkover of the property and work areas – Note any hazards that will impact site personnel and/or their operations	• Slip/trip/fall hazards • Insects • Pedestrian injury • Poisonous plants	• Check in with site personnel and sign appropriate visitor or safety log (may require watching safety video [i.e., plant]) • Check with site contact to determine safely accessible areas and areas where PPE are required • Wear PPE as directed by site personnel or dependent upon your evaluation of conditions • If building(s) looks dilapidated or in poor condition, do not enter • Watch for vehicles or other mobile equipment moving around • Make sure areas are well lit and you are accompanied by a site representative (if applicable) • Watch where you step on pavement (potholes, dips, or obstructions) and in vegetated/wooded areas (dips, holes, branches, vines, etc.) • Do not take photographs while walking • Do not talk on cell phone while walking • If in vegetated or wooded areas, watch for beehives, wear insect repellent (if area and season dictate) as needed, be mindful of gopher holes/tunnels, small animal dens, snakes, stray dogs/cats, transient/homeless individuals, poison ivy/oak/sumac, etc.	Assessor
7	Sign out	• Client/site security not aware that GHD staff have left facility	• Sign out at front desk	
8	Demobilization	• Collision • Injury or death to vehicle occupants or other parties	• Perform perimeter vehicle check • Maintain awareness of pedestrian/vehicular traffic when exiting the site • Utilize defensive driving techniques • Complete post departure checklist and report vehicle problems to company vehicle maintenance manager or rental car agency	Assessor

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Site Personnel Participating in JSA Review:
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Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter Signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.
Supervisor Signature: _____ Date/Time: _____

Location of Mustering Point: _____ Wind direction (current): _____

GHD Emergency contact (Name and verified phone number): _____

Supervisor Signature documenting Daily Debrief has been completed: _____

Job Safety Analysis (JSA)

Insert Name : Construction Oversight

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).** Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date Issued/Revised:	09/22/2021 19:15:05	**Client:**	Jenesis Development, LLC		
Project Number:	11219347	**Created By:**	cra\cmbarton	SIM OPS? YES/NO	SSE on site? YES/NO
Project Address:	1130 Niagara Street Buffalo				
Key Equipment:	Modified Class D Personal Protective Equipment, Field notebook, Pen/Pencil, Paper, Camera, Hand Sanitizer				
Task-specific Training:	Introduction to the CRA SMART Program, CRA Annual Safety Training, HAZCOM/WHMIS, HAZWOPER				

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Type 1 (Top Impact)	☐ Chemical Protective (ie.Nitrile)	☑ ANSI/CSA Safety Glasses	☐ Harness	☐ Full Face Mask	☑ Class II (standard)	☐ Coveralls
☐ Type 2 (Side Impact)	☑ Level 1 - Light Duty	☐ Goggles/Spoggles	☐ Shock Absorbing Lanyard	☐ Half Face Mask	☐ Class III (Night or Highway Traffic)	☐ Fire Retardent Clothing (FRC)
☑ Class E (standard)	☐ Level 2 - Light Duty with Protection	☐ Face Shields	☐ Lifeline		☐ Anti-Static	☑ High Viz Clothing
☐ Class G	☐ Level 3 - Medium Duty	☐ Other*		**Cartridges**	☐ FRC	☑ Long Pants
	☐ Level 4 - Heavy Duty			☐ N95	☐ PFD	☐ Long Sleeve Shirts
Foot Protection	☐ High Viz	**Hearing Protection**	**Arc Flash/Shock Protection**	☐ P100		☐ Paper Tyvek (disposible)
☑)Industrial Grade Safety Boot	☐ Other*	☐ NOT Required for this task	☐ Hazard Category 2	☐ P95		☐ Polyethyene Tyvek
☐ Rubber Boots (industrial grade)		☑ Required	☐ Hazard Category 4	☐ R95		☐ Other*

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Hip Waders				☐ Organic Vapour		
	* see key equipment			☐ Speciality*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature			
Katherine (kathy) Galanti				

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
1	Review STAR and SWA	• Personnel not aware of STAR and SWA • Traffic hazards, unfamiliar locations	• Reminder of importance of and documentation procedures for SWA; use SWA to stop any unsafe or illegal work practices • Discuss inspection activities with construction site supervisor and appropriate subcontractors • Sign in with general contractor • Review CRA's and contractors site-specific HASP/orientation • Take time to map quest/plot route to and from site. Drive defensively, allow plenty of time for unforeseen traffic conditions	Inspector
2	Traversing the site, construction oversight	• Slip/trip hazards • Falling debris and materials • Heavy equipment (dozers, excavator, etc.) • Heat/Cold stress	• Spot check to identify hazards, establish pathways which is most free of slip and trip hazards, beware of trip hazards, keep work areas free of clutter, communicate hazards to on site personnel, • Be aware of your surroundings at all times; know where the heavy equipment is at all times while walking the site • Stay clear of heavy equipment swing radius (excavator) • Make eye contact with heavy equipment operators • Look for and obey all commands from flagmen • Look for loose debris • Always yield right of way to workers carrying materials • Do not cross barrier tape • Take frequent water breaks to stay hydrated. Adhere to GHD's H&S guidelines on heat/cold stress	Inspection
3	General activities	• Distractions • Slip/trip/fall hazards (see step 2) • Entanglement	• Do not answer or make calls from your cell phone; let your cell phone take a message • When talking to a contractor or other worker; stop walking; find a place to talk where you do not interfere with ongoing construction activities • Spot check to identify hazards, establish pathway which is most free of slip and trip hazards, beware of trip hazards, keep work areas free of clutter, communicate hazards to on site personnel • Wear appropriate clothing (no loose fitting clothing, tuck in draw strings, shoes/boots tied appropriately, sleeved shirts, long pants, etc.) • Never put your hand into a void or wall space • Do not wear a "hoody" under your hard hat as it may obstruct your peripheral vision	Inspectors

1. Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.
2. A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
3. Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site Personnel Participating in JSA Review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a Stop Work Authority (SWA) if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter Signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.
Supervisor Signature: _____ Date/Time: _____

Location of Mustering Point: _____ Wind direction (current): _____

GHD Emergency contact (Name and verified phone number): _____

Supervisor Signature documenting Daily Debrief has been completed: _____

Job Safety Analysis (JSA)

Mobile Equipment - General

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).**

Date issued/revised:	09/29/21	**Client:**	Jenesis Development. LLC		
Project number:	11219347	**Created by**	Christine Barton	**Sim OPS** Yes/No	**SSE on site?** Yes/No
Project address:	1130 Niagara Street Buffalo, NY				
Specific task	Moving and operating mobile/heavy equipment				
Key equipment:	Hydraulic excavator; bulldozer; skid steer; protective gloves; protective hard toe type logging boots; properly fitted clothing				
Task-specific training:	Equipment specific training				

Hard hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
☐ Type I (top impact)	☐ Chemical protective (i.e. nitrile)	☒ ANSI/CSA safety glasses	☐ Harness	☐ Full face mask	☒ Class II	☐ Coveralls
☐ Type II (side impact)	☒ Level 1 light duty	☐ Goggles/spoggles	☐ Shock absorb lanyard	☐ Half face mask	☐ Class III	☐ Fire retardant clothing (FRC)
☒ Class E (standard)	☒ Level 2 light duty with protection	☐ Face shield	☐ Lifeline		☐ Anti-static	☐ High viz clothing
☐ Class G	☐ Level 3 medium duty	☐ Other*		**Cartridges**	☐ FRC	☐ Long pants
	☐ Level 4 heavy duty			☐ N95		☐ Long sleeve shirts
Foot protection	☐ High viz	**Hearing protection**	**Arc flash**	☐ P100		☐ Paper tyvek
☒ Industrial grade safety boot	☐ Other*	☐ NOT Required	☐ Haz.cat 2	☐ P95		☐ Polyethyene tyvek
☐ Rubber boots (industrial grade)		☒ Required	☐ Haz cat 4	☐ R95		☐Other *
☐ Hip waders				☐ Organic vapor		
	*see key equipment			☐ Specialty/other*		

Project development team		Modified by	Reviewed by	Date
Name	**Signature**			
Christine Barton				

Job steps[1]	Task activity	Potential hazard(s)[2] Include energy sources from hazard wheel -	Corrective measure(s)[3]	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Perform STAR process; refer to the mobile/heavy equipment manufacturer's operators manual before operating equipment.	• Slip/trip/fall hazards • Situational risks • Short service employees	• Verify personnel training is sufficient for scheduled task(s) • Is Job Instruction Training (hands on) training necessary? • Employees should remove finger rings, necklaces, or jewelry which may be hazardous in equipment operation		
2a	Perform daily (pre-shift) equipment inspection include area around the equipment and PPE and perform a complete walk around inspection	• Equipment failure • PPE failure	• Don all necessary PPE • Provide training to personnel on inspection procedures • Document daily inspection • Defects must be corrected before operating unit		
2b	Mount/dismount the equipment (Note: The most common cause of injury for equipment operators is slipping/falling while mounting/ dismounting the machine. **Never jump from the machine**.)	• Slip/trip/fall hazards • Sprains • Strains	• Use three points of contact • Clear tracks and personnel access points of debris and mud as necessary • Only a trained operator will be allowed on equipment • Never carry riders unless unit is so designed		
3a	Starting heavy/mobile equipment (Note: All operators manuals should be available for each piece of equipment and used in employee training)	• Struck-by • Caught between • Equipment failure	• Perform inspection (see Task 2) • Check to be certain all workers and equipment are a safe distance from unit • Allow proper warm up and wait for gauges to register properly • Raise the blade, cable and chokers, boom, grapple, or other attachments before moving the unit		

Job steps[1]	Task activity	Potential hazard(s)[2] Include energy sources from hazard wheel -	Corrective measure(s)[3]	Person responsible (Print first and last names)	Verified by (Print first and last names)
3b	Operation of heavy/mobile equipment	• Struck-by • Caught between • Overhead/underground utilities • Flying debris • Rollover • Fire • Improper housekeeping • Winch failure	• Appropriate guarding (according to machine type and use) shall be in place at all times unit is in operation • Backup alarms shall be functional • Seat belts shall be provided and their use enforced • Fire extinguishers and first aid kits shall be provided on each unit • Fire extinguishers shall be inspected for functionality on a daily basis • Do not overload winch		
4a	Perform equipment maintenance	• Equipment failure/loss • Sharp objects • Pinch points	• Use STAR process • Follow equipment manufacturer's preventive maintenance procedures and instructions • Only qualified individuals should perform maintenance activities on equipment		
4b	Cleaning and housekeeping of equipment	• Fire • Slip/trip/fall hazards • Equipment failure	• Remove loose items from operator's compartment • At least once per day remove trash from equipment • Clean equipment as necessary to prevent buildup of debris, wood chips, etc. that may cause fire		

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(2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".

(3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JSA review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter signature: _____ Date/time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.

Supervisor signature: _____ Date/time: _____

Location of mustering point: _____ Wind direction (current): _____

GHD emergency contact (Name and verified phone number): _____

Supervisor signature documenting daily debrief has been completed: _____

Job Safety Analysis (JSA)

Construction Oversight

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).**

Date issued/revised:	09/29/21	**Client:**	Jenesis Development, LLC		
Project number:	11219347	**Created by**	Christine Barton		**SSE on site? Yes/No**
Project address:	1130 Niagara Street Buffalo, NY				
Specific task	Oversight of subcontractor construction activities				
Key equipment:	Clipboard, pen/paper, camera; hearing protection to be used as needed for specific tasks (when exceed 85 dB)				
Task-specific training:	Heavy/Mobile Equipment Safety, PPE				

Hard hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
☐ Type I (top impact)	☐ Chemical protective (i.e. nitrile)	☒ ANSI/CSA safety glasses	☐ Harness	☐ Full face mask	☒ Class II	☐ Coveralls
☐ Type II (side impact)	☒ Level 1 light duty	☐ Goggles/spoggles	☐ Shock absorb lanyard	☐ Half face mask	☐ Class III	☐ Fire retardant clothing (FRC)
☒ Class E (standard)	☐ Level 2 light duty with protection	☐ Face shield	☐ Lifeline		☐ Anti-static	☐ High viz clothing
☐ Class G	☐ Level 3 medium duty	☐ Other*		**Cartridges**	☐ FRC	☒ Long pants
	☐ Level 4 heavy duty			☐ N95		☐ Long sleeve shirts
Foot protection	☐ High viz	**Hearing protection**	**Arc flash**	☐ P100		☐ Paper tyvek
☒ Industrial grade safety boot	☐ Other*	☐ NOT Required	☐ Haz.cat 2	☐ P95		☐ Polyethyene tyvek
☐ Rubber boots (industrial grade)		☒ Required	☐ Haz cat 4	☐ R95		☐Other *
☐ Hip waders				☐ Organic vapor		
	*see key equipment			☐ Specialty/other*		

Project development team		Modified by	Reviewed by	Date
Name	**Signature**			
Christine Barton			Wayne St. Denis	8/12/2016

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
1	Review STAR and SWA	• Personnel not aware of STAR and SWA • Traffic hazards, unfamiliar locations	• Reminder of importance of and documentation procedures for SWA; use SWA to stop any unsafe or illegal work practices. • Discuss inspection activities with subcontractors' supervisor. • Conduct tailgate meeting. • Review GHDs and subcontractor site specific HASP/JSAs/orientation.	Site Supervisor
2	Traversing the site, accessing work area(s) (ladder/scaffold/stairs/climbing)	• Fall hazard (working at heights, floor openings, etc.) • Slip/trip/fall hazards • Falling debris and materials • Heavy equipment (cranes, dozers, excavator, etc.) • Blunt force trauma • Potential for death • Severe weather • Heat/cold stress	• Spot check to identify hazards, establish pathways free of slip/trip/fall hazards, beware of trip hazards, keep work areas free of clutter, communicate hazards to on-site personnel. • Ensure appropriate railings/guarding/delineations are in place around any temporarily open pits or that a spotter is in attendance. • Inspect ladder before use to ensure safe working condition. • Test ladder for stability and ensure it is tied off in safe manner. • Maintain three points of contact. • Ensure scaffold has been cleared for use before climbing (planks inspected, etc.). • Never climb scaffolding on the structure - always use the integral scaffold ladder or external ladder. • Adhere to GHD's Fall Protection Program - follow the most stringent fall protection requirements (proper protection systems) if no systems are in place, use your SWA. • In high winds do not go onto a roof. • Practice good housekeeping. • Wind is also amplified in high rise buildings when window installation is incomplete. • Watch where you step on pavement (potholes, dips, or obstructions) and in vegetated/wooded areas (dips, holes, branches, vines, etc.). • Maintain awareness of pedestrian/vehicular traffic. • Implement/follow work zone demarcation outlined in HASP to prevent unauthorized personnel and vehicles/equipment from entering the work zone. • Be aware of your surroundings at all times; know where the heavy equipment is at all times while walking the site.	Site Supervisor

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
	Traversing the site, accessing work area(s) (ladder/scaffold/stairs/climbing) - Continued		• Stay clear of heavy equipment swing radius. • Make eye contact with heavy equipment operators. • Look for and obey all commands from flagmen. • Look ahead and plan your walking route in advance (snow, ice, or mud can cover up a multitude of hazardous items such as boards with nails and metal object). • Look for loose debris which may be resting on ceiling tiles or framing. • Stairs may have temporary railings; keep to the wall side of the steps. • Stairs may have tarps draped to keep the heat on a particular floor; listen for people on the other side before entering. • If worker is performing a task in the stair take another stair; do not try to walk around. • Always yield right of way to workers carrying materials. • Do not cross barrier tape without permission. • While on site, at first sign of lightning/thunder utilize SWA and assess weather conditions. If severe weather occurs, stop working; sit inside vehicle until storm passes. Wait 30 minutes after seeing the last lightning bolt or hearing the last thunder clap before continuing work. • In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers). • Wear sunscreen, as required. • Follow heat/cold stress procedures in HASP.	
3	Inspection activities	• Working at heights • Slip/trip/fall hazards, (see Step 2)	• Carry a flashlight and cell phone or obtain a radio (as required). • Assess the risk versus benefit. • Is there any other way to observe what you need to observe? • Observe from location out of the way of workers? • Is it possible to take a picture instead? • Can worker use your camera to take a photo for you? • Look for and obey all commands from flagmen	Site Supervisor
4	General activities	• Distractions • Slip/trip/fall hazards (see Step 2) • Entanglement	• Do not answer or make calls from your cell phone; let your cell phone take a message. • When talking to a subcontractor or other worker; stop walking; find a place to talk where you don't interfere with ongoing construction activities. • Wear appropriate clothing (no loose fitting clothing, tuck in draw strings, boots tied appropriately, sleeved shirts, long pants, etc.). • Carry flashlight in your hand, not hanging from your hip. • Carry your camera in a pocket under sweater/coat/jacket, remove any strap from camera; ensure you secure it again once finished taking pictures. • Never put your hand into a void	Site Supervisor

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
			• Do not wear a “hoody” under your hard hat as it may obstruct your peripheral vision. • Do not wear cell phone on your hip in a holster; place it in your shirt/sweater/coat pocket and remove any strap from cell phone.	

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

(2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".

(3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JSA review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter signature: _____ Date/time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.

Supervisor signature: _____ Date/time: _____

Location of mustering point: _____ Wind direction (current): _____

GHD emergency contact (Name and verified phone number): _____

Supervisor signature documenting daily debrief has been completed: _____

Job Safety Analysis (JSA)

Driving/Mobilization/Demobilization

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).**

Date issued/revised:	09/29/21	**Client:**	Jenesis Development, LLC		
Project number:	11219347	**Created by**	Christine Barton		**SSE on site? Yes/No**
Project address:	1130 Niagara Street Buffalo, NY				
Specific task	Travel to/from site with company/rental/personal vehicles without trailers				
Key equipment:	Vehicle, valid driver's license, seatbelt				
Task-specific training:	Defensive Driving				

Hard hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
☐ Type I (top impact)	☐ Chemical protective (i.e. nitrile)	☐ ANSI/CSA safety glasses	☐ Harness	☐ Full face mask	☐ Class II	☐ Coveralls
☐ Type II (side impact)	☒ Level 1 light duty	☐ Goggles/spoggles	☐ Shock absorb lanyard	☐ Half face mask	☐ Class III	☐ Fire retardant clothing (FRC)
☐ Class E (standard)	☐ Level 2 light duty with protection	☐ Face shield	☐ Lifeline		☐ Anti-static	☐ High viz clothing
☐ Class G	☐ Level 3 medium duty	☐ Other*		**Cartridges**	☐ FRC	☐ Long pants
	☐ Level 4 heavy duty			☐ N95		☐ Long sleeve shirts
Foot protection	☐ High viz	**Hearing protection**	**Arc flash**	☐ P100		☐ Paper tyvek
☒ Industrial grade safety boot	☐ Other*	☐ NOT Required	☐ Haz.cat 2	☐ P95		☐ Polyethyene tyvek
☐ Rubber boots (industrial grade)		☐ Required	☐ Haz cat 4	☐ R95		☐Other *
☐ Hip waders				☐ Organic vapor		
	*see key equipment			☐ Specialty/other*		

Project development team		Modified by	Reviewed by	Date
Name	**Signature**			
Christine Barton			Wayne St. Denis	April 21, 2016

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
1	Discuss STAR and SWA	• Site personnel not aware of STAR and SWA	• Project team (GHD) discusses importance of SWA during pre-job safety meeting. • Use SWA to stop any work that is unsafe.	Driver and Passenger
2	Check weather	• Unexpected storm • Fog, rain, snow; lightening/thunder • Heat/cold stress	• Check local weather forecast. • If adverse weather conditions are likely, prepare a contingency plan for lodging, etc. with project manager. • Discuss weather issues and precautions to take while driving and on site during the pre-job safety meeting. • If weather conditions (e.g., fog, rain, snow, etc.) impair the ability/vision of the driver, exit at nearest safe location and assess the situation. • While on site, at first sign of lightening/thunder utilize SWA and assess weather conditions. • In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers). • Follow heat/cold stress procedures in HASP.	Driver or Passenger
3	Load equipment into vehicle	• Lifting hazards • Manual material handling • Back injury • Cuts • Pinch points • Hand/foot injury • Forgotten or damaged equipment • Materials or equipment leaving the vehicle bed during travel create hazards for other drivers	• Reduce travel distance when there is a need to carry/lift materials. • Make sure grip is adequate; wear leather/cotton gloves. • Maintain neutral wrist posture when lifting, carrying, pushing or pulling. The wrist is the strongest and most stable when it is straight. • Avoid one-handed carrying if possible; maintain awareness of footing. • Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required. • Maintain neutral back posture - lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and make sure to shift with the feet rather than twisting at the back. • Avoid placing hands/fingers in pinch point locations. • Wear safety-toed boots and proper gloves. • Verify requested equipment against warehouse form. • Load equipment in an organized manner to prevent shifting during transport or use cargo netting. • Secure materials or equipment with cargo netting. Ensure netting does not loosen during travel by securing the straps with plastic wire ties or equivalent measures.	Driver or Passenger

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
4	Complete GHD Daily Operator Vehicle Checklist	• Damaged vehicle lights, tires, windows, mirrors, horn • Inadequate vehicle documents and/or safety items	• Check for fluid leaks under vehicle. • Test operation of headlights, front/rear turn signals, backup lights, brake lights, and emergency flashers. • Visually check the pressure/wear of tires. • Ensure the vehicle has a spare tire. • Assure windshield and window glass is clean and free from obstructions. • Test the windshield wipers and horn. • Verify vehicle registration, insurance card, and inspection sticker is present and valid. • Ensure the vehicle contains a first aid kit, fire extinguisher, and road hazard kit. • Check immediate vehicle perimeter and initial path of travel for obstructions.	Driver or Passenger
5	Check and adjust seat, steering wheel, headrest, and mirrors	• Back/body strain • Blind spot • Impaired vision	• Adjust seat, headrest, and steering wheel height so body is fully supported/comfortable and pedals are within easy reach. • Ensure mirrors are properly adjusted.	Driver
6	Fasten seat belt(s) and ensure passenger(s) seat belts are fastened	• Serious injury, ejection, or death from collision and/or traffic citation	• Verify driver and passenger(s) seat belts are in good condition and properly latched.	Driver and Passenger
7	Ensure vehicle doors are locked	• Serious injury, ejection, or death from collision • Unwanted intrusion • Lost equipment	• Manually lock all doors to vehicle.	Driver
8	Start engine and check gauges and warning lights	• Vehicle breakdown	• Verify sufficient fuel and other hazard lamps (e.g., battery, oil, and temperature) are not lit.	Driver
9	Driving/mobilizing to site - Use defensive driving techniques and stay alert	• Arriving late • Collision • Blind spots of other vehicles • Injury or death to occupants or other parties • Biological hazards	• Acknowledge and comply with all traffic regulations, laws, and ordinances. • Do not use two-way communicating devices or perform other distracting activities while vehicle is in motion. • Constantly scan intersections, move eyes, check mirrors, and assess traffic lights (fresh vs. stale). • Recognize other vehicle's blind spots and minimize time spent within these zones. • Maintain safety cushion around vehicle (front, sides, and rear) and 4-second following distance (add an extra second for each hazardous condition, triple following distance in poor weather conditions). • Signal well in advance before changing lanes or turning. • Utilize all driving defensive techniques. • Heightened awareness for deer in rural areas, especially at dusk and dawn.	Driver
10	Arrive at site	• Pedestrian injury • Collision	• Maintain awareness of pedestrian/vehicular traffic when entering site and traveling to work zone.	Driver

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible
11	Park vehicle – assign a spotter if necessary (when in doubt use a spotter)	• Pedestrian injury • Collision • Property damage	• Maintain awareness of pedestrian/vehicular traffic. • Park vehicle in pull-through parking space or facing the exit. • Use caution and mirrors/spotter when backing vehicle. • Set parking brake.	Driver
12	Demobilization – also refer to Steps 3-11	• Collision • Injury or death to occupants or other parties	• Check immediate vehicle perimeter and initial path of travel for obstructions. • Maintain awareness of pedestrian/vehicular traffic when exiting site. • Utilize defensive driving techniques. • Complete post-departure checklist and report vehicle problems to company vehicle maintenance manager or rental car agency.	Driver

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(2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".

(3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JSA review:
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Name/Company	Sign	Date

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter signature: _____ Date/time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.

Supervisor signature: _____ Date/time: _____

Location of mustering point: _____ Wind direction (current): _____

GHD emergency contact (Name and verified phone number): _____

Supervisor signature documenting daily debrief has been completed: _____

Job Safety Analysis (JSA)

Insert Name : Environmental-Decontamination of Sampling Equipment and Personnel (PPE Level D)

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. **Stop, Think, Act, Review (STAR)** must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use **Stop Work Authority (SWA).** Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date Issued/Revised:	10/05/2021 18:16:09	**Client:**	Jenesis Development, LLC		
Project Number:	11219347	**Created By:**	cra\jmaurer	SIM OPS? YES/NO	SSE on site? YES/NO
Project Address:	1130 Niagara Street Buffalo				
Key Equipment:	Alconox/Liquinox, brushes				
Task-specific Training:	Decontamination/Site Control; Quality Control/Sampling Plan				

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☐ Type 1 (Top Impact)	☑ Chemical Protective (ie.Nitrile)	☑ ANSI/CSA Safety Glasses	☐ Harness	☐ Full Face Mask	☑ Class II (standard)	☐ Coveralls
☐ Type 2 (Side Impact)	☐ Level 1 - Light Duty	☐ Goggles/Spoggles	☐ Shock Absorbing Lanyard	☐ Half Face Mask	☐ Class III (Night or Highway Traffic)	☐ Fire Retardent Clothing (FRC)
☑ Class E (standard)	☐ Level 2 - Light Duty with Protection	☐ Face Shields	☐ Lifeline		☐ Anti-Static	☐ High Viz Clothing
☐ Class G	☐ Level 3 - Medium Duty	☐ Other*		**Cartridges**	☐ FRC	☑ Long Pants
	☐ Level 4 - Heavy Duty			☐ N95	☐ PFD	☑ Long Sleeve Shirts
Foot Protection	☐ High Viz	**Hearing Protection**	**Arc Flash/Shock Protection**	☐ P100		☐ Paper Tyvek (disposible)

Hard Hat	Gloves (ANSI/EN 388)	Eye Protection	Fall Protection	APR	Vest	PPE Clothing
☑)Industrial Grade Safety Boot	☐ Other*	☑ NOT Required for this task	☐ Hazard Category 2	☐ P95		☐ Polyethyene Tyvek
☐ Rubber Boots (industrial grade)		☐ Required	☐ Hazard Category 4	☐ R95		☐ Other*
☐ Hip Waders				☐ Organic Vapour		
	* see key equipment			☐ Speciality*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature			
Katherine (kathy) Galanti				

Job steps[1]	Task activity	Potential hazard(s)[2]	Corrective measure(s)[3]	Person responsible (Print first and last names)
1	Decontamination of sampling equipment (including pumps, bailers, tubing, etc.)	• Contaminant exposure • Pinch points • Slip/trip/hit/fall hazards • Lifting hazards • Back injury • Manual material handling	• Set up decon station to capture any spills to avoid cross contamination and manage wastes • Wear appropriate PPE • Scrub equipment clean then rinse and verify it is clean and free of contamination • Avoid putting hands in or near pinch points • Maintain good housekeeping and be aware of surroundings • Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical means, such as a dolly, cart, or a buddy lift) will be required • Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position • Refer to the HASP for additional lifting techniques	Sampling Personnel
2	Decontamination of personnel	• Contaminant exposure • Slip/trip/hit/fall hazards	• Refer to the HASP for specific procedures but in general start with most contaminated article and remove until inner gloves are the last item left • Dispose of used PPE in accordance with site requirements • Wash hands and face before eating, drinking, or using tobacco products • Take care when removing PPE (boots, gloves, etc.); sit down to remove/change boots as necessary	Sampling personnel
3	Management of waste derived from decontamination activities	• Contaminant exposure • Lifting hazards • Back injury • Manual material handling	• Containerize decon waste (e.g., water, used PPE) as required • Properly dispose of decon fluids (e.g., sediments) • Refer to step 1 and the HASP for additional lifting information	Sampling personnel

1. Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.
2. A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
3. Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site Personnel Participating in JSA Review:
I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a Stop Work Authority (SWA) if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SAFE YOU ME GHD
ENVIRONMENT & PEOPLE

SSE(s) on job: _____ **Assigned mentor:** _____

Presenter Signature: _____ Date/Time: _____

My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.
Supervisor Signature: _____ Date/Time: _____

Location of Mustering Point: _____ Wind direction (current): _____

GHD Emergency contact (Name and verified phone number): _____

Supervisor Signature documenting Daily Debrief has been completed: _____

SAFETY DATA SHEET

Version 5.5
Revision Date 03/31/2016
Print Date 11/14/2016

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Alconox® detergent

Product Number : 242985
Brand : Aldrich
Product Use : For laboratory research purposes.

Supplier : Sigma-Aldrich Canada Co.
2149 Winston Park Drive
OAKVILLE ON L6H 6J8
CANADA

Manufacturer : Sigma-Aldrich Corporation
3050 Spruce St.
St. Louis, Missouri 63103
USA

Telephone : +1 9058299500
Fax : +1 9058299292
Emergency Phone # (For both supplier and manufacturer) : +1-703-527-3887 (CHEMTREC)
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

WHMIS Classification

D1B	Toxic Material Causing Immediate and Serious Toxic Effects	Toxic by ingestion
D2B	Toxic Material Causing Other Toxic Effects	Moderate skin irritant Severe eye irritant

GHS Classification

Acute toxicity, Oral (Category 4)
Skin corrosion/irritation (Category 2)
Serious eye damage/eye irritation (Category 1)
Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H401	Toxic to aquatic life.

Precautionary statement(s)

P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of water.

P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P501	Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification

Health hazard:	2
Flammability:	0
Physical hazards:	0

Potential Health Effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS-No.	EC-No.	Index-No.	Concentration
Tetrasodium pyrophosphate			
7722-88-5	231-767-1	-	>= 10 - <= 30 %
Sodium dodecylbenzenesulfonate			
25155-30-0	246-680-4	-	>= 10 - <= 30 %
Sodium carbonate			
497-19-8	207-838-8	011-005-00-2	>= 7 - <= 13 %
Pentasodium triphosphate			
7758-29-4	231-838-7	-	>= 10 - <= 30 %

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products

Explosion data - sensitivity to mechanical impact
No data available

Explosion data - sensitivity to static discharge
No data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Tetrasodium pyrophosphate	7722-88-5	TWA	5.000000 mg/m3	Canada. British Columbia OEL
		TWAEV	5.000000 mg/m3	Canada. Ontario OELs
		TWA	5.000000 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
Remarks	Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required			
		TWAEV	5.000000 mg/m3	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	5.000000 mg/m3	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
		TWA	5 mg/m3	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm

Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls
Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	granular, powder
Colour	white

Safety data

pH	9.5 at 10 g/l
Melting point/freezing point	No data available
Boiling point	No data available
Flash point	No data available
Ignition temperature	No data available
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	No data available
Density	No data available
Water solubility	soluble
Partition coefficient: n-octanol/water	No data available
Relative vapour density	No data available
Odour	odourless
Odour Threshold	No data available
Evaporation rate	No data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
No data available

Conditions to avoid
No data available

Materials to avoid
No data available

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides, Oxides of phosphorus, Sodium oxides
Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
No data available

Inhalation LC50
No data available

Dermal LD50
No data available

Other information on acute toxicity
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
Eyes: No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available

Teratogenicity

No data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
No data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
No data available

Aspiration hazard
No data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	Toxic if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
No data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity

No data available

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

PBT and vPvB assessment
No data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

WHMIS Classification

D1B	Toxic Material Causing Immediate and Serious Toxic Effects	Toxic by ingestion

D2B	Toxic Material Causing Other Toxic Effects	Moderate skin irritant Severe eye irritant

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Records of Training

Date: ____________ Project Name:________________________________Project Number: _____________

Project Location: ____

Project Description ____

The Project Manager is ultimately responsible for the accuracy of the information on this Record of Training and ensuring GHD Employees and Subcontractors are familiar with the site and have the required training to do the task

Employee's Name:	Confined Space Entry	Excavation Safety	Fall Protection	GHS (HazCom/WHMIS)	Lock Out Tag Out (LOTO)	Motor Vehicle Safety	Aerial Lift	Other -	Other -	Other -	Other -
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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COMMUNITY AIR MONITORING PLAN
FOR THE 1130 NIGARA STREET SITE – BUFFALO, NEW YORK
DEVELOPED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF HEALTH'S GENERIC COMMUNITY AIR MONITORING PLAN

Overview

This site-specific Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of intrusive work activities. The action levels specified herein require increased monitoring and corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP will help to confirm that work activities do not spread contamination off site through the air.

Designated air monitoring station locations will be established around the perimeter of the site for use as monitoring locations. The site-specific CAMP presented below will be implemented during ground intrusive activities at the site. Each day that this activity is in progress upwind and downwind air monitoring stations will be set up to collect data. The instruments that will be used to collect the air monitoring data will have data logging capabilities. The data will be downloaded periodically, stored electronically and will be available to agency personnel for their review.

Reliance on this CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Real-time air monitoring for VOCs and particulate levels at the perimeter of the site will be necessary, as described below.

Continuous monitoring will be required during all ground intrusive activities at the Site. Ground intrusive activities include the installation of soil borings, monitoring wells, and test trenches.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil sample and groundwater samples. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while sample collection and then taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the site on a continuous basis. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The specific type of air monitoring equipment that will be used at the site for VOC monitoring will be a MiniRae 3000, or equivalent. The equipment will be calibrated in accordance with the manufacturer's guidelines. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of VOCs at the downwind perimeter of the site exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the site persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the designated work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the site, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (New York State Department of Environmental Conservation [NYSDEC] and the New York State Department of Health [NYSDOH]) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate/Fugitive Dust Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at upwind and downwind monitoring stations on the site perimeter. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The particulate monitor that will be used will be a TSI 8520 DustTrak, or equivalent. The equipment will be equipped with an audible and/or visible alarm to

indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the designated work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the designated work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.
3. All readings must be recorded and be available for State (NYSDEC and NYSDOH) personnel to review.

The following fugitive dust suppression and corrective procedures will be employed at the site.

1. Reasonable fugitive dust suppression techniques will be employed during all remedial activities, which may generate fugitive dust.
2. The following techniques are generally effective for the controlling of the generation and migration of dust during construction activities and may be employed as necessary:
   (a) Applying water on haul roads
   (b) Wetting equipment and excavation faces
   (c) Spraying water on buckets during excavation and dumping
   (d) Hauling materials in properly tarped or watertight containers
   (e) Restricting vehicle speeds to 10 mph
   (f) Covering excavated areas and material after excavation activity ceases
   (g) Reducing the excavation size and/or number of excavations

   When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.


GHD