

**SOIL MANAGEMENT PLAN
FOR SEGMENT ONE OF THE
GREAT STONE VIADUCT PROJECT
BELLAIRE, OHIO
JULY 2021**

PREPARED

BY

**ms consultants, inc.
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GSV PROJECT – SEGMENT 1

SOIL MANAGEMENT PLAN

1.0 Purpose and Scope

This written soil management plan was developed in accordance with the purchase sale agreement, defining procedures for monitoring the corridor to ensure potential exposure pathways are controlled to reduce risk of exposure to the public during/after construction of a parking/trail head and extending a multi-use path trail from the trailhead to Hamilton Street. **(Figure-1.0 – Project Limits).**

The Soil Management Plan provides established protocols to be followed during implementation of the Great Stone Viaduct project. This plan will consist of the following:

- Site Plan clearly showing “capped” vs. “un-capped” areas of the corridor;
- A detailed description of the cap thickness and method of construction (clay or asphalt);
- A detailed description of methods and procedures to be used to prevent trail users from accessing uncapped areas of the corridor and potentially contacting site soils, by use of signage or physical barrier (ie, plantings, soil mounds);
- Procedures for testing (if required) and management of soil that is excavated as part of a construction phase on the property, such as underdrainage or underground utility installation;
- Inspection and reporting procedures to document (annually) the condition of the cap and reaffirm that un-capped areas of the site are not being accessed or used by the public. The annual inspection shall identify any deficiencies in the cap and document any changes or repairs made to the cap during the inspection period, and any other corrective actions warranted to protect the public from exposure to the site (corridor) soils.

2.0 Overview of Project

The Great Stone Viaduct (GSV) Trail project aims to preserve the historic arches of the B&O Railroad stone viaduct (NRHS 1976) with construction of a multi-use trail and park. Since acquisition of the arches from CSX Railroad, the GSV Society undertook cleanup, debris removal and maintenance. The Society now plans for future development of the site including minor repairs, enhanced lighting, and recreation amenities. The primary component of the comprehensive planned improvements is the construction of a multi-use trail on the railroad viaduct. The rail-to-trail project is designed to provide a pedestrian connection into downtown Bellaire, offer recreational opportunities to cyclists and other pedestrians, transform industrial land to open and accessible park space, and utilize recreation to celebrate the historic significance of the site.

2.1 Background Information

The GSV project consists of the construction of bike and hike trail (on the former CSX railway bed), a trailhead parking area and a market plaza area beneath the Great Stone Viaduct in Bellaire, Ohio using the “CSX Rails to Trails” protocol. In accordance with the CSX Rails to Trails protocol any/all soils disturbed/removed during the construction activities (cuts/fills or drainage system installation,

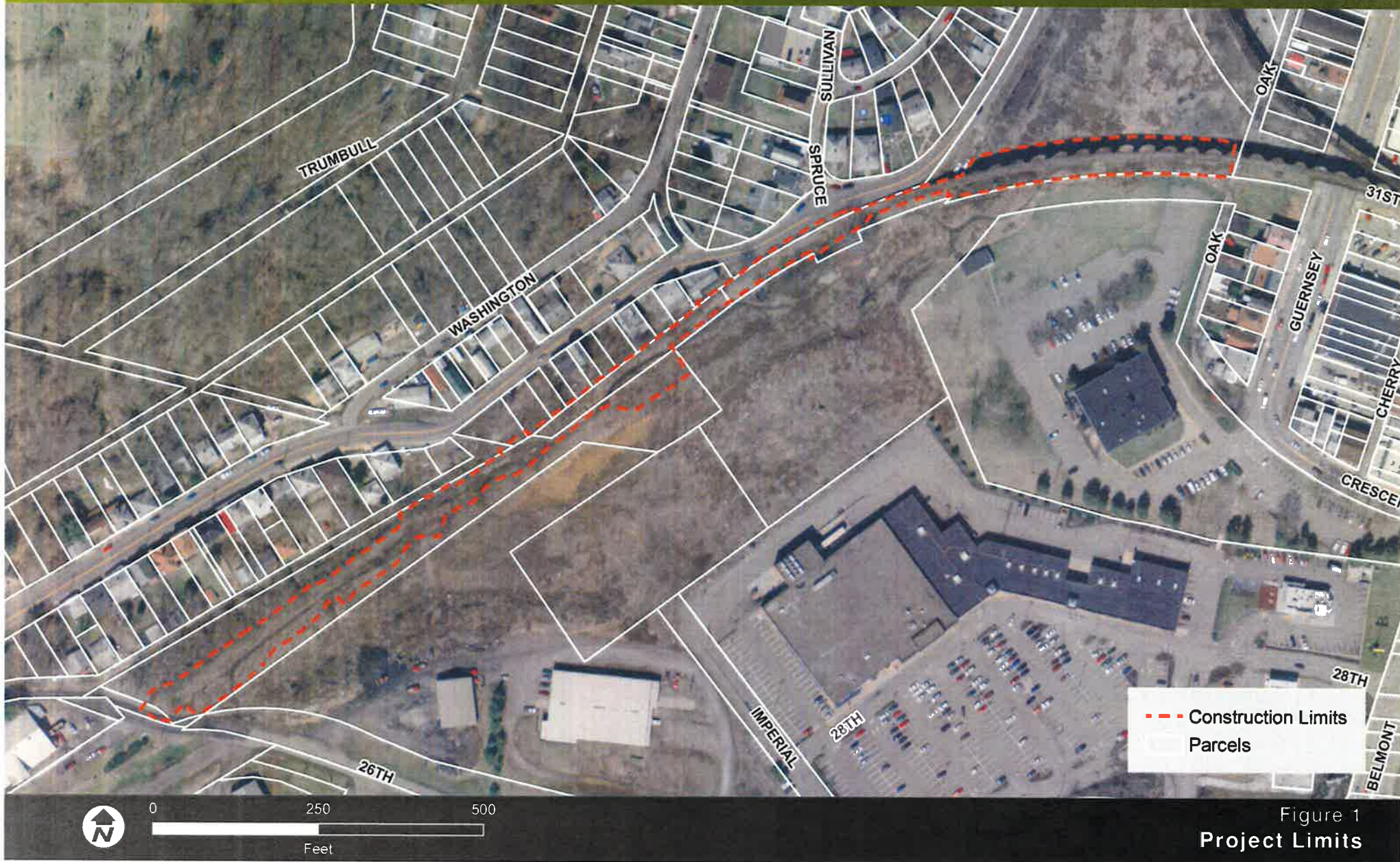


Figure 1
Project Limits

Aerial Source: OSIP11, 2014

etc.) shall remain on the property and be capped. For this project the areas being capped are the plaza area, parking lot area and SUP using clay, asphalt, concrete or other suitable material, all other areas shall be fenced off and signage installed to prevent users from entering the areas.

Soil analytical results were compared to the applicable Ohio EPA single-generic direct soil contact standards (DCSS) for residential (R), commercial/industrial (C/I), and construction/excavation (C/E) receptors in accordance with the Ohio EPA VAP rule OAC 3745-300-08. Concentrations of targeted COCs identified in soil samples above laboratory detection limits include PNAs, arsenic and lead; low concentrations of mercury in soil samples had been detected in prior environmental assessments, but mercury was not included as a COC in the CSX sampling protocol, see **Appendix A- Soil Sampling Results and Sampling Locations**.

Based on the analytical results obtained during the limited Phase II investigation (*BRG, LLC, May 2, 2019*) and the previous Phase II assessment reporting provided by Ohio EPA, it is determined that the near surface soils at the property have been environmentally impacted by hazardous substances associated with past railroad operations and/or the historical use of the project trail corridor. Concentrations of arsenic, lead, mercury, and benzo(a)pyrene in soil exceed generic single-chemical VAP DCSS.

2.2 Impacted Soil Areas of the Property (Segment 1)

- **Planned asphalt trail location –**

1. Arsenic concentrations above the laboratory detection limit (LDL) were detected in the composite soil samples ranging from 12-86 mg/kg. Arsenic concentrations ranging from 31-73 mg/kg in GSV-SB-C-01, 02, 03, 05 and 07, exceed the R DCSS of 12 mg/kg, and the arsenic concentration of 86 mg/kg in GSV-SB-C-06 exceeds the C/I DCSS of 77mg/kg, as well.
2. Lead concentrations above the LDL were detected in the composite samples ranging from 63-420 mg/kg. The lead concentration of 420 mg/kg in GSV-SB-C-04 exceeds the R and C/E DCSS of 400 mg/kg.
3. PNA concentrations above the LDL were detected in the composite soil samples ranging from 0.31-2.90 mg/kg, which are well below their applicable Ohio EPA DCSS, except benzo(a)pyrene concentrations. Benzo(a) pyrene concentrations in GSV-SB-C-02 through GSV-SB-C-08 exceed the R DCSS of 1.2 mg/kg.

- **Area beneath the stone viaduct arches –**

1. Arsenic concentrations above the LDL were detected in the composite soil samples ranging from 19-150 mg.kg. Arsenic concentrations of 25 mg/kg and 19 mg/kg in GSV-SB-C-09 and GSV-SB-C-10, respectively, exceed the R DCSS of 12 mg/kg, and the arsenic concentration of 150 mg/kg in GSV-SB-C-08 exceeds the C/I DCSS of 77 mg/kg, as well.
2. Lead concentrations above the LDL were detected in the composite soil samples ranging from 180-370 mg/kg, but do not exceed the R DCSS of 400 mg/kg.
3. PNA concentrations above the LDLs were detected in the composite soil samples ranging from 0.15-3.70 mg/kg, which are well below their applicable Ohio EPA DCSS.

- **Uncapped grassy and publicly accessible areas immediately adjacent to the proposed walking trail -**

1. Arsenic concentrations above the LDL were detected in the grab soil samples collected in uncapped grassy and publicly accessible areas immediately adjacent to the proposed walking trail ranging from 13 mg/kg to 390 mg/kg. Arsenic concentrations ranging from 13-76 mg/kg in GSV-SB-G –C, D, E, and F (Duplicate) and –I, exceed the R DCSS of 12 mg/kg, and arsenic concentrations ranging from 82-390 mg/kg in GSV-SB-G-A, B, G, H, and J, exceed the C/I DCSS of 77 mg/kg, as well.
2. Lead concentrations above the LDL were detected in the grab soil samples ranging from 75-3,800 mg/kg. Lead concentrations of 3,800 mg/kg, 1,100 mg/kg and 1,200 mg/kg in GSV-SB-G-E, F, F(Duplicate), respectively, exceed the R and C/E DCSS of 400 mg/kg and the C/I DCSS of 800 mg/kg, as well.
3. PNA concentrations above the LDLs were detected in the grab soil samples ranging from 0.15-4.70 mg/kg, which are well below their applicable Ohio EPA DCSS, except for benzo(a)pyrene concentrations. Benzo(a)pyrene concentrations of 1.30 mg/kg, 1.30 mg/kg and 1.50 mg/kg in GSV-SB-G-E, GSV-SB-G-F and GSV-SB-G-J, respectively, exceed the R DCSS of 1.2 mg/kg.

- **Prior Environmental Assessments -**

1. Arsenic concentrations exceeding the R DCSS of 12 mg/kg and the C/I DCSS of 77mg/kg were reported in prior environmental assessments ranging from 13-110 mg/kg.
2. Lead concentrations exceeding the R and C/E DCSS of 400 mg/kg, and the C/I DCSS of 800 mg/kg, were reported in prior environmental assessments ranging from 710-1,300 mg/kg.
3. A mercury concentration of 3.3 mg/kg exceeding the R, C/I and C/E DCSS of 3.1 mg/kg was reported in the prior environmental assessments.
4. PNA concentrations below their applicable Ohio EPA DCSS were reported in prior environmental assessments, except benzo(a)pyrene concentrations. Benzo(a)pyrene concentrations exceeding the R DCSS of 1.2 mg/kg were reported in prior environmental assessments ranging from 1.80-1.90 mg/kg.

3.0 Impacted Soil Management Procedures

A. General

- a. The contractor shall conduct impacted soil disturbance under the direction of the Owner's environmental consultant.
- b. The contractor shall conduct impacted-soil disturbance in accordance with the Site-specific, Work-specific Health & Safety Plan (refer to Section 4.0).
- c. All soil/ballast stone disturbed in the areas depicted on **Figure-2.0** shall be considered impacted soil.
- d. The contractor shall conduct impacted-soil disturbance activities in such a manner that limits:
 1. The amount of open excavation and exposed stockpiling.
 2. Storm water runoff into and from impacted-soil disturbance areas.
 3. The generation of contact water.
- e. The contractor shall ensure that all excavations shall comply with OSHA 29 CFR, Part 1926, including but not limited to Subpart P Excavations. Excavations shall be sloped as required to maintain excavation stability.
- f. The contractor shall place temporary plastic 4-foot high, Hi-Viz fencing around open excavations left unattended or remaining open at the end of the work day. Place "**DANGER NO TRESPASSING**" signage on the temporary fencing.
- g. The contractor shall conduct equipment and vehicle decontamination to prevent cross-contamination of on-site work areas and on-site and off-site tracking of contaminated materials. Decontamination activities shall include the removal of solids/debris from equipment and vehicles using a combination of physical/mechanical removal (to minimize wastewater generation) and high-pressure washing and rinsing. Water used for decontamination purposes shall be from a municipal water source.
- h. The contractor shall install and maintain decontamination pad and/or facilities. The decontamination pad/facility shall be constructed to facilitate the collection and removal of decontamination solids and liquids. (refer to Section 3 – F).

B. Impacted Soil Segregation/Disposal

- a. The contractor shall ensure that that impacted soil from the shared-use path, paved plaza, and parking lot (former railway bed and the beneath the stone arches) shall be managed by placing the soils in cut/fill areas along the shared-use path, plaza, or parking lot. Capping of the areas within the asphalt portions of the shared-use path, former rail bed, paved plaza, and parking lot shall be capped with pavement or other suitable material to prevent contact with the surface soil. The paved areas shall have a minimum of 6-inches of asphalt placed over the impacted soils.
- b. The contractor shall ensure that no impacted soils on site shall be permitted to leave the property per the CSX purchase agreement with the owner. All impacted soils must remain on the former CSX property.



Figure 2
Areas of Soil Capping

Aerial Source: OSIP II, 2014

C. Impacted Soil Reuse

- a. Impacted soil from the former railway bed and beneath the stone arches of the viaduct may be used to fill low areas within the limits on the former railway bed and/or capped in place.

D. Capping Limits/Requirements

- a. The rail bed, defined as extending from the opposite toes-of-slope of the ballast field, if present, or a minimum of 7 feet on either side of the centerline of the former track, shall be graded and capped with pavement or other suitable material to prevent contact with the surface soil. The paved areas (cap) shall have a minimum of 6-inches of asphalt placed over the impacted soils.

E. Management of Unexpected Subsurface Conditions

- a. Soil-disturbing activities shall immediately cease upon the discovery of unexpected subsurface conditions including, but not limited, to the following:
 - 1. Stained or discolored soil
 - 2. Significant odor
 - 3. Drums, underground storage tanks, piping, sumps, etc.
 - 4. Suspected regulated materials (eg. suspect asbestos containing debris)
 - 5. Significant uncharted utilities or subsurface obstructions/features.
- b. The contractor shall notify the Owner's environmental consultant immediately of encountering unexpected subsurface conditions.
- c. Should additional near-surface soils sampling be required the soils shall be analyzed in accordance with the Rail-To-Trails protocol. Parameters shall include: Arsenic (SW 846 Method 6010B), lead (SW 846 Method 6010B, and PAH (SW 846 8270C SIM).

E. Erosion, Storm Water and Dust Management

- a. The contractor shall comply with the storm water pollution prevention and control requirements specified in the project Stormwater Pollution Prevention Plan (SWPPP).
- b. The contractor shall implement erosion and storm water runoff control measures at all times during impacted soil disturbing and handling activities to prevent the erosion of impacted soil from impacted-soil disturbance areas.
- c. The contractor shall implement dust control measures at all times during impacted soil disturbing and handling activities to prevent the formation and migration of dust. Conventional methods shall be used to suppress dust generated during impacted soil disturbing and handling activities including, but not limited to, the following: applying a light water spray, covering impacted soil stockpiles, limiting vehicle speeds in impacted soil disturbance areas, and keeping the drop heights to a minimum while loading soils into vehicles.
- d. If the contractor is notified of or becomes aware of any public complaints regarding dust, the contractor shall immediately cease work in affected area, and inform Owner and the Owner's environmental consultant of the details of the complaint. The Owner's environmental consultant provide the contractor a proposed corrective action. The contractor shall resume work following corrective action and approval by the Owner's environmental consultant.

F. Equipment and Vehicle Decontamination

- a. The contractor shall conduct equipment and vehicle decontamination to prevent cross-contamination of on-site work areas and on-site and off-site tracking of contaminated materials.
- b. Decontamination activities shall include the removal of solids/debris from equipment and vehicles using a combination of physical/mechanical removal (to minimize wastewater generation) and high-pressure washing and rinsing.
- c. Water used for decontamination purposes shall be from a municipal water source.
- d. The contractor shall install and maintain decontamination pad and/or facilities. The decontamination pad/facility shall be constructed to facilitate the collection and removal of decontamination solids and liquids.
- e. Accumulated decontamination solids shall be removed and managed in accordance with Section 3-B.
- f. If decontamination liquids are accumulated, the liquids shall be contained in labeled 55-gallon drums. The Owner's environmental consultant will conduct decontamination liquid characterization sampling, if required and support the contractor in establishing the management plan for the decontamination liquid.

G. Contact Water Management

- a. Contact water shall be considered groundwater or storm water that comes in contact with impacted soils.
- b. The contractor shall ensure that contact water management complies with the project SWPPP.
- c. Removal of contact water from disturbed impacted soil areas shall only be conducted, as required to facilitate the completion of the work, and as directed by the Owner's environmental consultant.
- d. The contractor shall notify the Owner's environmental consultant prior to the removal of any contact water. The Owner's environmental consultant will conduct contact water characterization sampling, if required, and support the contractor in establishing the management plan for contact water.

4.0 Health and Safety

- a. The contractor shall prepare and implement a Site-Specific, Work-specific Health and Safety Plan. The contractor is solely responsible for the adequacy of the Health and Safety Plan preparation, monitoring, management, and enforcement. At a minimum, the Health and Safety Plan shall address the following: project site conditions, project work activities, hazard evaluation, on-site safety responsibilities, work zones, personnel training, medical monitoring, air monitoring, personal protective clothing and equipment, decontamination procedures, and emergency procedures.
- b. The contractor shall comply with all applicable local, State, and Federal regulations regarding health and safety including, but not limited to, 29 CFR 1910 Occupational Safety and Health Act (OSHA) Safety and Health Standards and 29 CFR 1926 OSHA General Construction Standards.
- c. The contractor shall ensure that site workers conducting soil management activities have OSHA 29 CFR 1910.120 Hazardous Waste Operations (HAZWOPER) training.

- d. The contractor shall appoint a representative (Site Safety Supervisor) who is competent/qualified and authorized to supervise and enforce compliance with the Site-specific Health and Safety Plan.

5.0 Annual Property Inspection and Reporting

- a. Per the purchase sale agreement, the GSV Society shall conduct an annual inspection of the property to document the condition of the capped areas and to reaffirm that the un-capped areas of the property are not being accessed or utilized by the public. The annual inspection report shall identify any deficiencies in the cap and document (photos) any changes or repairs made to the cap during the inspection period, and any other corrective actions warranted to protect the public from exposure to property soils. The Annual Inspection form is provided in **Appendix B.**

6.0 Communications

The following are the primary Owner and Consultant contacts for this Soil Management Plan:

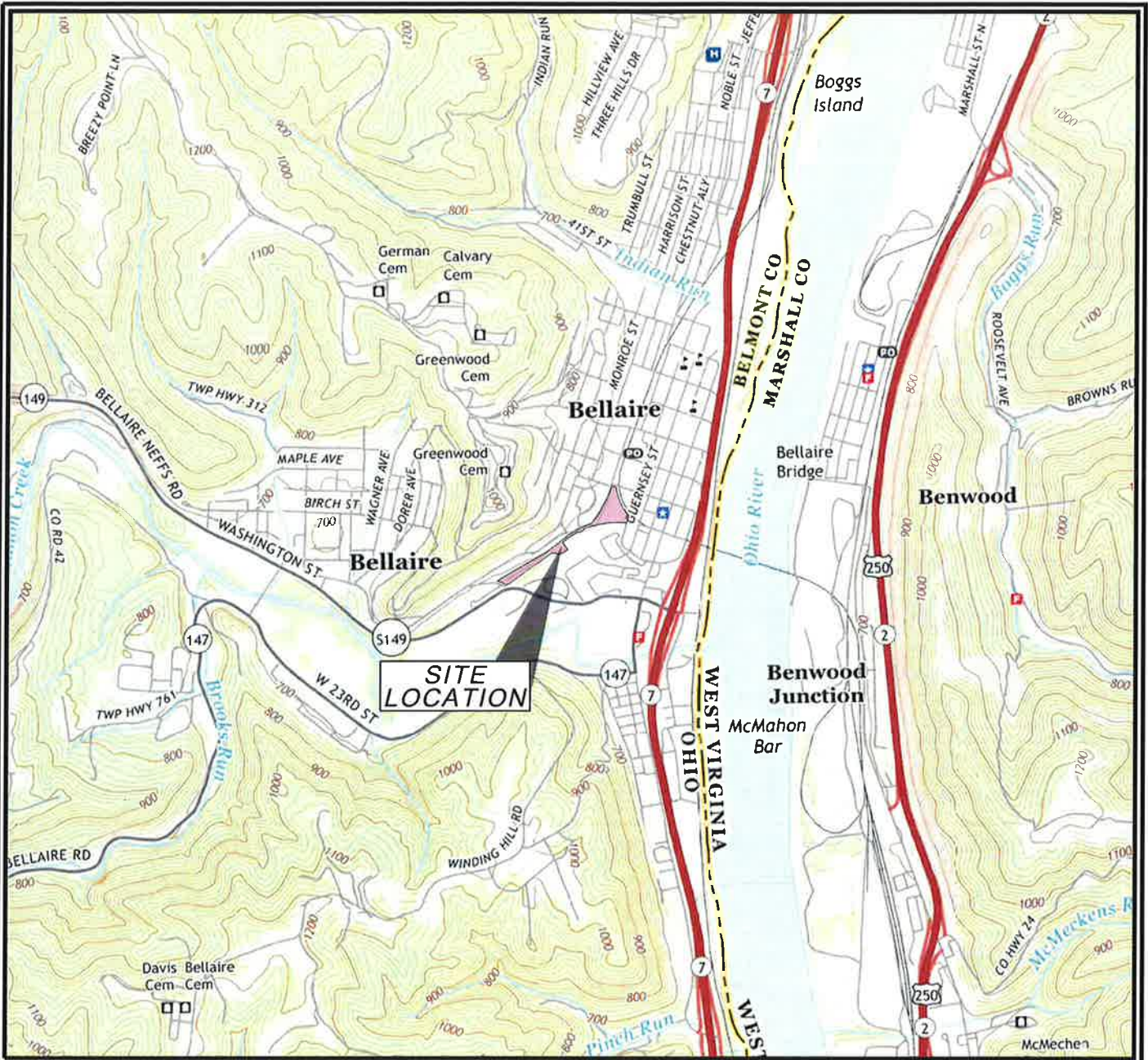
Great Stone Viaduct Historical Education Society Project Manager Ed Mowrer P.O. Box 145 Bellaire, Ohio 43906 (740) 827-0652 edmowrer@gmail.com	ms consultants, inc. Project Manager Jonathan Hren P.E. ms consultants, inc. Office: 216-658-2512 Cell: 216-403-0886 jhren@msconsultants.com
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APPENDICES

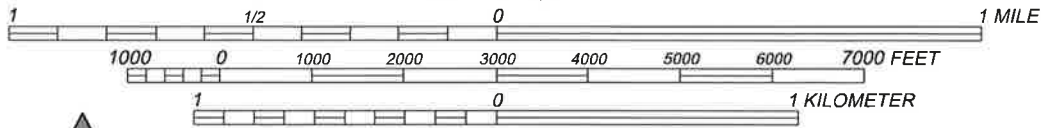
Appendix A

Brownfield Restoration Group, LLC

Soil Sampling Results – GSV Segment 1



SCALE 1:24,000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1988



USGS 7.5 MINUTE SERIES (U.S. TOPO)
QUADRANGLES:

LANSING, OHIO 2016 WHEELING, WV-OH 2016
BUSINESSBURG, OH-WV 2016 MOUNDSVILLE, WV-OH 2016



1000 S. Cleveland-Massillon Rd.
Suite 106
Akron, OH 44333
Phone: (330) 668-4600
Fax (330) 668-8464

Figure 1 - Site Location on U.S.G.S. Topographic Map

Great Stone Viaduct
Bellaire, Ohio

Prepared by: U.S.G.S. Date: April 2019 Project No. 19006

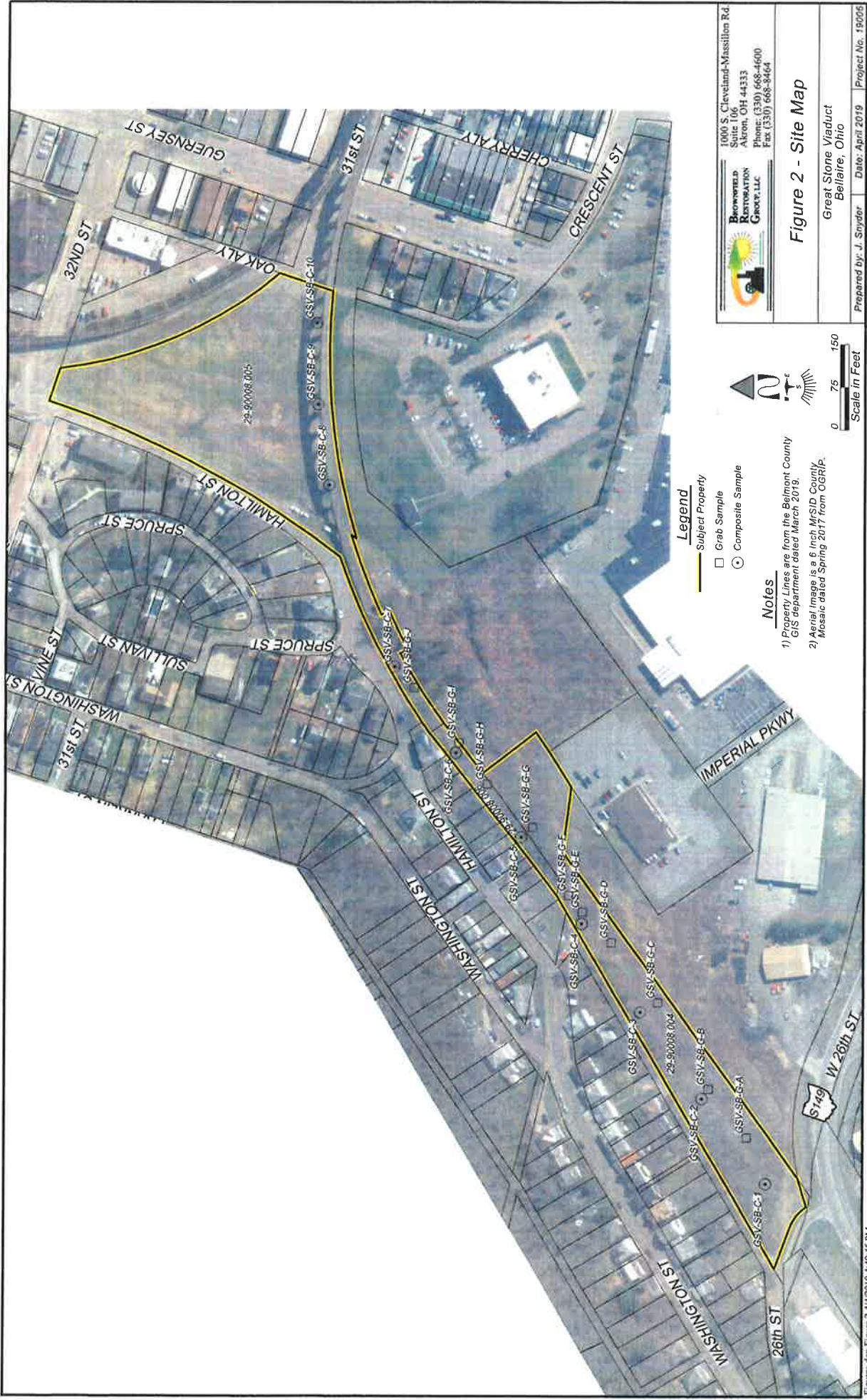


Figure.dgn Figure 2 4/4/2019 4:09:45 PM

Brownsfield Restoration Group - Soil Test Results - 10 combined samples - GSV Segment 1

Test Code	Test Name	Analysis	Units	18M11-01 (ppm) C-01	18M11-02 (ppm) C-02	18M11-03 (ppm) C-03	18M11-04 (ppm) C-04	18M11-05 (ppm) C-05	18M11-06 (ppm) C-06	18M11-07 (ppm) C-07	18M11-08 (ppm) C-08	18M11-09 (ppm) C-09	18M11-10 (ppm) C-10
8270_MET_S	Meas by ICP	Arsenic	mg/kg-dry	32	73	31	12	35	86	49	150	25	19
8270_MET_S	Meas by ICP	Lead	mg/kg-dry	100	180	120	420	140	190	63	260	180	270
8270_MET_W	Meas by ICP	Lead	µg/L										
8270_PNH_S	PNH Compounds	1-Methylnaphthalene	mg/kg-dry	3.7	2.3	3.1	2.0	1.9	3.0	7.9	3.2	1.8	2.7
8270_PNH_S	PNH Compounds	2-Methylnaphthalene	mg/kg-dry	4.5	2.8	3.8	2.5	2.4	3.8	9.9	3.7	1.9	3.2
8270_PNH_S	PNH Compounds	Acenaphthene	mg/kg-dry	< 0.26	< 0.30	< 0.32	< 0.32	< 0.30	< 0.30	0.31	< 0.26	< 0.24	< 0.25
8270_PNH_S	PNH Compounds	Acenaphthylene	mg/kg-dry	0.41	0.59	0.59	0.40	0.32	0.88	1.1	0.48	< 0.24	0.25
8270_PNH_S	PNH Compounds	Anthracene	mg/kg-dry	0.64	0.86	0.86	0.80	0.69	1.1	1.5	0.47	0.28	0.40
8270_PNH_S	PNH Compounds	Benzo(a)anthracene	mg/kg-dry	0.95	1.7	1.5	1.7	1.1	1.9	2.6	1.2	0.82	1.1
8270_PNH_S	PNH Compounds	Benzo(a)pyrene	mg/kg-dry	1.1	2.1	1.7	1.8	1.7	2.7	2.9	1.2	0.86	0.93
8270_PNH_S	PNH Compounds	Benzo(b)fluoranthene	mg/kg-dry	2.4	4.1	3.4	3.1	3.1	5.0	6.6	2.1	1.5	1.5
8270_PNH_S	PNH Compounds	Benzo(k)fluoranthene	mg/kg-dry	1.1	1.8	1.3	1.4	1.5	2.2	2.3	0.81	0.54	0.80
8270_PNH_S	PNH Compounds	Benzo(g)h)perylene	mg/kg-dry	0.64	1.4	1.0	0.91	0.89	1.4	1.8	0.59	0.48	0.48
8270_PNH_S	PNH Compounds	Benzo(i)fluoranthene	mg/kg-dry	0.38	0.35	0.40	< 0.32	< 0.30	0.47	0.66	0.27	< 0.24	< 0.25
8270_PNH_S	PNH Compounds	Carbazole	mg/kg-dry	1.4	2.6	2.1	2.0	1.8	2.5	3.3	1.5	1.1	1.2
8270_PNH_S	PNH Compounds	Chrysene	mg/kg-dry	0.28	0.53	0.37	0.37	0.37	0.59	0.83	0.23	0.15	0.16
8270_PNH_S	PNH Compounds	Dibenzofuran	mg/kg-dry	1.2	0.83	1.0	0.89	0.85	1.2	2.4	0.94	0.44	0.76
8270_PNH_S	PNH Compounds	Fluoranthene	mg/kg-dry	1.6	2.2	2.0	2.6	1.8	2.7	3.9	1.5	1.2	1.8
8270_PNH_S	PNH Compounds	Fluorene	mg/kg-dry	< 0.26	< 0.30	< 0.32	< 0.32	< 0.30	< 0.30	0.31	< 0.26	< 0.24	< 0.25
8270_PNH_S	PNH Compounds	Indeno(1,2,3-cd)pyrene	mg/kg-dry	1.0	1.9	1.5	1.5	1.6	2.4	2.6	0.86	0.81	0.83
8270_PNH_S	PNH Compounds	Naphthalene	mg/kg-dry	3.3	2.1	2.8	2.0	1.9	2.8	5.6	2.8	1.3	2.4
8270_PNH_S	PNH Compounds	Phenanthrene	mg/kg-dry	2.1	1.8	1.8	1.4	1.6	2.3	3.9	1.8	1.1	1.8
8270_PNH_S	PNH Compounds	Pyrene	mg/kg-dry	1.5	2.4	2.0	2.4	1.5	2.6	3.7	1.6	1.2	1.4
MOISTURE	Moisture	Moisture	% of sample	23	33	37	37	33	33	30	24	16	18

Appendix B
Annual Inspection Form

GSV Annual Cap/Engineering Controls Inspection Form
GSV Property
[Property Street Address]
Bellaire, Ohio

Date of Inspection: _____

Inspector Name/Title:

Relationship to Owner/Affiliation:

Time: _____ Scheduled/Unscheduled: _____

Area(s) of Property Inspected: [List the areas of the GSV property subject to the Annual Inspection, that were inspected]

Weather Conditions:

[Insert a brief description of each engineering control that is being inspected, followed by a description of what has been observed with each, any problems identified, breaches observed, etc. as follows:]

- 1.) Engineering control #1, ex. Clay Capped Areas:
- 2.) Engineering control #2, ex. Asphalt Trail Areas:
- 3.) Engineering control #3, ex. Plaza Area under Arches
- 4.) Engineering control #4, ex. Uncapped Areas immediately adjacent to the trail, etc.

Observations: (ex. No problems identified, or if there are issues, detail what has been observed)

[Repeat this portion as necessary for each engineering control being inspected on the property. i.e. Including, but not limited to: pavement, fencing, landscape/vegetative areas, clay capped areas, uncapped areas, etc.]

[If there is, landscape, or pavement engineering control on the Property, insert the following:]

5.) During the past year, were any projects conducted on the Property that involved excavation?

Yes No

If yes, did the excavation project penetrate any area subject to a pavement, building, and landscape engineering control?

Yes No

If the answer to either of the above questions is yes, please describe in detail, the excavation activity and location of the excavation and remedy.

Signature & Date

Printed Name & Title

Telephone Number: _____

E-mail Address: _____