

Appendix E.
2017 Main Stem Erosion Repair Project
Feasibility Report, May 2016

Phase II Investigation Report

Bassett Creek Main Stem Erosion Repair Project

*Cedar Lake Road to Dupont Avenue N/2nd Avenue N, plus
Fruen Mill Site, Minneapolis, MN*

April 2016

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Phase II Investigation Report Bassett Creek Main Stem Erosion Repair Project

*Cedar Lake Road to Dupont Avenue N/2nd Avenue N, plus
Fruen Mill Site, Minneapolis, MN*

April 2016

Bassett Creek Watershed Management Commission

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Phase II Investigation Report
Bassett Creek Main Stem Erosion Repair Project

April 2016

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1.0 Introduction

This Phase II Environmental Investigation Report (Report) summarizes the results of a soils investigation in the proposed Bassett Creek Main Stem Erosion Repair Project area, conducted on behalf of the Bassett Creek Watershed Management Commission (BCWMC). The investigation results are incorporated into the Bassett Creek Main Stem Erosion Repair Project Feasibility Study report (Feasibility Study) that evaluates erosion repair and creek bank stabilization options in preparation for construction planned for 2017. The Study Area is located west of Interstate I-94 and north of Interstate I-394 in Minneapolis, Minnesota, as shown on Figure 1. The project would address needed erosion repair and stabilization work along the Main Stem of Bassett Creek from Cedar Lake Road to Irving Avenue North (Reach 1), Irving Avenue North to the tunnel inlet plus the overflow section to Second Avenue North (Reach 2) and the reach adjacent to the Fruen Mill site (Reach 3), as shown on Figure 2.

It is anticipated that the creek stabilization/repair work will be completed within existing or planned easements held by the City of Minneapolis and BCWMC, or under access agreements to be established with some property owners. The project is not expected to result in ownership or land use changes in the project area. The work will involve several parcels owned by various entities (including the City of Minneapolis) as shown on Figure 2.

The Feasibility Study examined methods to stabilize and restore areas of erosion within this corridor. Due to the high potential for contamination along this reach, the Feasibility Study effort included a Phase I Environmental Site Assessment (ESA) to identify potential recognized environmental conditions and a Phase II investigation to assess potential environmental impacts in the soils along the creek that may need to be excavated or managed as part of the erosion repair and stabilization project. The project area was enrolled in the Minnesota Pollution Control Agency (MPCA) voluntary remediation program in December 2015 and assigned site #VP33640. The Phase II investigation was conducted in accordance with the Phase II Investigation Work Plan (Work Plan; Barr, 2015b), which was approved by the MPCA on January 26, 2016 (MPCA, 2016).

1.1 Objectives

The project is being completed pursuant to the BCWMC's watershed management plan and its statutory mandate to protect and improve the water resources in the Bassett Creek watershed. The BCWMC included this project in its Capital Improvements Program (2017CR-M) in order to improve water quality in the creek, stabilize the creek bed and banks, and improve habitat in, and adjacent to, the creek. The project is being developed in collaboration with the City of Minneapolis.

The Phase I ESA conducted for the Study Area identified documented impacts in the soil and groundwater along the Bassett Creek Study Area. Recognized environmental conditions for the Study Area are summarized in the Phase I ESA report (Barr, 2015a) and the known soil contamination is summarized in Section 2.0 of this report.

In general, the intent of the project is to correct/repair existing erosion problems and stabilize the creek banks. However, groundwater investigations or response actions are not planned for the project and the Phase II investigation is not intended to delineate the horizontal or vertical extent of soil or groundwater contamination at properties adjacent to the creek.

The objective of the proposed Phase II investigation is to further characterize the soils along Bassett Creek in the areas targeted for repair or stabilization to evaluate options for managing soils where planting, grading or excavation may be needed as part of the project. Based on the existing conditions of the creek banks, specific areas have been targeted for erosion repair and/or stabilization as shown on Figure 2.

Soils that are removed as part of the project and do not meet Minnesota Pollution Control Agency (MPCA) criteria for unregulated fill (MPCA, 2012) will likely require landfill disposal rather than being re-used as fill material at other sites. If landfill disposal is required, chemical data are needed to assess whether the soil is characteristically hazardous or nonhazardous.

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2.0 Background Information and Previous Investigations

The Bassett Creek Study Area reaches are adjacent to several properties with historical industrial use and documented environmental impacts. Most of the adjacent parcels have been previously investigated to some extent. The available data from previous investigations were reviewed and data from soil sample locations adjacent to the creek were compiled to help identify remaining data gaps for the project. The environmental history, previous investigation results and identified data gaps are summarized in this section.

2.1 Study Area Background and History

Prior to development, a wetland occupied most of the area surrounding Bassett Creek Reaches 1 and 2. During the late 1800s and early 1900s, low-lying areas in the vicinity of Bassett Creek were filled using a variety of materials including imported soil, debris, and industrial dump material, present primarily south of Bassett Creek on the Irving Avenue Dump site (Hennepin County, 2015). The alignment of Bassett Creek along all three Study Area reaches was altered over time as the city developed.

Properties adjacent to the Study Area were historically used for a variety of industrial purposes, many of which have impacted the soil and groundwater. Some of the notable historical uses are listed below:

2.1.1 Reach 1- Cedar Lake Road to Irving Avenue North

- North side of creek
 - The Pioneer Paper Site has been occupied by a junk dealer, recycling and scrap waste materials company. Soil disturbance visible on historical aerial photos from the 1940's and 1950's indicates dumping and filling may have occurred in this area.
- South side of creek
 - The Irving Avenue Dump Site is adjacent to the creek. The western-most parcel is vacant and owned by the Minneapolis Park and Recreation Board and the rest of the site is owned by the City of Minneapolis Public Works department and occupied by the city impound lot. The portion of the site adjacent to Reach 1 has generally been vacant for the past few decades but dumping and filling may have occurred in this area based on historical aerial photos.

2.1.2 Reach 2 - Irving Avenue North to the tunnel inlet/Second Avenue North

- North side of creek
 - Pioneer Paper Site – see above.
 - The Scrap Metal Processors Site was used as a bulk petroleum storage facility and for scrap metal processing.
 - The Chemical Marketing Site was used for solvent recycling and distribution, scrap metal storage.

- The Minneapolis School District Transportation Center Site is currently used by the Minneapolis School District. The site has historically been used as a coal yard, machine shop, repair shop, fueling station and auto parts storage area. Bulk asphalt storage tanks were in the southeast corner and several petroleum storage tanks were historically present at the site.
- South side of creek
 - The Irving Avenue Dump Site adjacent to Reach 2 is currently occupied by the City of Minneapolis Impound Lot. Unpermitted dumping of industrial waste, demolition debris, building remnants from a chemical fire, and other waste of unknown origin, as well as storage of contaminated soil, equipment, auto parts and used batteries previously occurred south of Reach 2. The eastern end of the site was also occupied by an oil/coal company and railroad operations. Fill containing dump debris and waste ranging from 10 to 20 feet deep is present across much of the site.
 - Prior to the 1990s, the creek ran into a tunnel at 2nd Avenue North and was later rerouted to the south as part of the Bassett Creek Flood Control Project implemented by the Army Corp of Engineers. During the project, soils with hazardous concentrations of lead were stabilized and consolidated in the south-central portion of the Irving Avenue Dump site. Lead-stabilization has also been required near this reach of the creek during excavation for the construction of Van White Memorial Boulevard. Lead-impacted soils may remain in this area.

2.1.3 Reach 3 – Fruen Mill Site

- East side of creek
 - The Fruen Mill Site is east-adjacent to Reach 3. The site operated as a grain processing mill since the early 1900s. Fuel oil USTs were removed from the eastern side of the site in 1992; no releases were reported.
- West side of creek
 - Bassett's Creek Park is west-adjacent to Reach 3 and is owned by the Minneapolis Park and Recreation Board. No historical uses have been identified as environmental concerns for this property.

2.2 Previous Investigations

Multiple environmental assessments and investigations have been conducted on properties adjacent to Bassett Creek. Previous reports were reviewed and the relevant information is summarized below, and additional information is provided in Appendix A.

2.2.1 Phase I ESA

The Phase I ESA was conducted for the Feasibility Study, and summarizes the recognized environmental conditions for the Study Area (Barr, 2015a). As part of the Phase I ESA, a site visit was conducted in November 2015 which included walking the Study Area reaches of the creek. Significant findings and a photolog were included with the Phase I ESA report. The following notable observations were made:

- Evidence of debris-containing fill was observed in creek banks along Reach 1 and Reach 2. Along Reach 3, concrete was visually identified along the eastern shoreline of the Glenwood Inglewood facility.
- Iridescent sheens were observed along the creek shores and near some culverts in Reaches 1 and 2. These sheens were identified as non-organic sheens, based on the absence of cracking of the surface sheen into angular shapes when it was disturbed.
- Numerous storm water inlets were observed in Reaches 1 and 2. Additionally, several unidentified pipes, both open and capped, were observed exiting the bank along the north bank of Reaches 1 and 2.
- A machinery storage area was observed on the north bank of Reach 2, at the Minneapolis School District Transportation Center property. Multiple machines were observed with product residue on the surface of the machinery. No evidence of ground contamination was observed.

The Phase I ESA identified the following three findings as Recognized Environmental Conditions for the Study Area:

- Identified releases on the Study Area property and adjoining properties
- Undocumented dumping and filling along most of the Study Area property, most significantly on the south side of Reaches 1 and 2.
- Iridescent sheens observed in water at the creek.

2.2.2 Phase II Investigations

Multiple Phase II environmental investigations have been conducted in the Study Area, documenting soil and groundwater contamination on properties adjacent to the creek. The Phase II environmental investigation results for sites in Reaches 1 and 2 are summarized in detail and the data can be found in the Bassett Creek Areawide Groundwater Study (Hennepin County, 2015). Investigation results for the Fruen Mill Site along Reach 3 are summarized in the Phase I ESA (Barr, 2015a).

2.2.3 Existing Soil Data Review

Soil boring and sample data from locations within 50 feet of the creek were compiled and a summary of documented soil contamination and previous remedial excavation extents are shown in Appendix A, on Figure A-1. Soil sample locations with analytical data are also summarized on Table A-1. Sample locations that were subsequently removed as part of remediation or construction excavations are not included in Appendix A, on Table A-1. Boring logs and analytical data tables for soil sample locations in Reaches 1 and 2 can be accessed online using the Bassett Creek Areawide Groundwater Study Environmental Data Access Tool (Hennepin County, 2015).

A review of existing data indicates that soil near the creek in Reaches 1 and 2 contains debris and concentrations of metals, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs) that were above Minnesota soil criteria at the time the reports were prepared. Notable soil impacts include the following:

- Lead concentrations above limits for hazardous waste have been identified in soils immediately adjacent to the creek east of Irving Avenue North, on the Irving Avenue Dump site and on the Minneapolis School District Transportation Center site. Lead stabilization has been conducted on several occasions to address the hazardous lead concentrations as part of construction work for the new Bassett Creek tunnel and Van White Memorial Boulevard. A restrictive covenant is in place on the NSP/Xcel Energy parcel in Reach 2 to address remaining soil impacts.
- Remedial excavation was conducted at the Chemical Marketing site to address chlorinated solvent impacts in the soil and groundwater. VOC concentrations above industrial soil criteria remain at the base of the excavation.
- Excavations were conducted on the Scrap Metal Processors site both within the creek overflow channel (alignment for the old tunnel) for a stormwater project work, and adjacent to the channel for remediation purposes. Impacted soil remains in place along the overflow channel.
- Asbestos containing material (ACM) was positively identified on the Irving Avenue Dump site. Additional ACM may be present in dump material or debris on the site.
- Debris has been observed in nearly all the soil borings completed along the creek.

While elevated concentrations of several chemicals have been documented along many sections of the creek, little historical soil data is available along the areas of the creek targeted for repair or stabilization. As shown on Figure A-1 and in Table A-1, in nearly all the areas where excavation is anticipated, no soil data are available, or only a limited number of parameters were analyzed. The Phase II investigation work plan (Barr, 2015b) provided a detailed list of data gaps and scope of work to fill in the remaining data gaps in the Study Area. The investigation methods and results are presented in the next sections of this report.

3.0 Investigation Methods

The Phase II investigation was conducted in accordance with the methods outlined in the work plan (Barr, 2015a).

3.1 Soil Sampling Methods and Locations

Due to the challenging access conditions in some areas, soil samples were collected with a combination of hand auger and soil probing methods. Five shallow samples were collected using hand auger methods, to approximately 1 foot below ground surface (bgs). Six soil samples were collected at depths up to 4 feet bgs using direct-push soil probing equipment. Utilities were located prior to sampling and drilling. The soil sampling locations are shown on Figures 2.

3.2 Field Screening and Documentation

Soil borings were continuously logged and samples from the borings inspected for visual evidence of contamination (i.e. incidental odor, discoloration, and sheen) and tested for headspace volatile organic vapor concentrations, in accordance with Barr's standard operating procedures (SOPs). A photoionization detector equipped with a 10.6 eV lamp was used for headspace screening. Soils were classified in general accordance with American Standard Testing Methods (ASTM) D2488 by Barr field staff. Where debris was observed in the soil samples, the type (wood, bricks, concrete, etc) was documented. Soil samples and sample location areas were photographed.

Sample locations were surveyed with a hand held differential GPS unit; ground surface elevations were estimated using LIDAR surface elevations.

3.3 Soil Samples

- Soil samples were analyzed for various parameters, as noted below: Polycyclic Aromatic Hydrocarbons (PAHs)
- Diesel Range Organics (DRO)
- Metals
 - Samples from Reach 3 were analyzed for Resource Conservation and Recovery Act (RCRA) metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver
 - Samples from Reaches 1 and 2, where dumping and filling has occurred and metals impacts have been previously identified were analyzed for RCRA Metals plus the remaining six Priority Pollutant metals: antimony, beryllium, copper, nickel, thallium, and zinc.
- Polychlorinated biphenyls (PCBs): Soil samples from the Irving Avenue Dump site, where PCBs were previously identified, were analyzed for PCBs.

- Volatile Organic Compounds (VOCs): Two soil samples from sites where VOCs were previously identified were analyzed for VOCs. None of the soil samples exhibited an oily sheen, strong odor and/or elevated headspace readings, so no other soil samples were analyzed for VOCs.
- Asbestos Containing Material: Potential ACM was not encountered during this investigation.
- Toxicity characteristic leaching procedure (TCLP): TCLP lead analysis was performed on samples with total lead results indicating potentially hazardous levels.

Soil samples collected for laboratory analysis were a composite of up to 4 feet of soil and were representative of the interval that will potentially be excavated for the project. Soil samples collected for VOC analysis were discrete samples and were not composited.

Samples were submitted for laboratory analysis to Legend Technical Services in St. Paul, Minnesota.

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4.0 Results

The soil investigation was conducted on February 17 and 18, 2016.

4.1 Field Observations

Soil characterization and field screening results are documented on soil boring logs provided in Appendix B. Photographs of investigation activities are provided in Appendix C.

In general, fill consisting of silty sand, gravel, or a combination was encountered near the surface at most locations. Organic soil with sand or gravel was generally encountered near the ground surface at locations at the bottom of the creek banks, and at 2 to 3 feet bgs at locations further up the creek bank. Various types of debris including plastic, glass, concrete, bricks, asphalt and metal pieces, were observed at all sample locations except SB-15-01, SB-15-03, and SB-15-04, in the Fruen Mill area (Reach 3). No observations of discoloration, odor or sheen, or elevated headspace readings were noted.

4.2 Analytical Results

The laboratory analytical data is provided in Appendix D and tabulated on Table 1. Soil sample results were compared to MPCA Residential and Industrial Soil Reference Values (SRVs) and Soil Leaching Values (SLVs) to assess whether the soil meets the requirements for Unregulated Fill (MPCA, 2012):

- free from solid waste, debris, asbestos-containing material, visual staining, and chemical odor;
- organic vapors less than 10 parts per million, as measured by a photoionization detector (PID);
- for petroleum-impacted soil, less than 100 mg/kg diesel range organics (DRO)/gasoline range organics (GRO); and
- for contaminants detected in soil, less than the MPCA's Residential Soil Reference Values (SRVs) and Tier 1 Soil Leaching Values (SLVs)*.

*Naturally-occurring concentrations of some metals, such as arsenic, selenium, or copper, sometimes exceed the SRV or SLV. Such soils are not considered impacted in the absence of a contaminant source or other field or laboratory indications of contamination.

Soil analytical results compared to screening levels are shown on Table 1 and locations where screening levels were exceeded or debris identified are shown on Figure 3. Analytical results from investigation samples varied across the Study Area, but in general, all but two samples exhibited either analytical results above MPCA Residential SRVs or SLVs, or contained debris, indicating the soil does not meet MPCA unregulated fill criteria. The two samples collected in the park across the creek from the Fruen Mill area (Reach 3: SB-15-03 and SB-15-04) met MPCA criteria for unregulated fill.

The results exceeding MPCA criteria for unregulated fill are summarized below:

- Arsenic concentrations ranged from 5.3 to 11 mg/kg and exceeded the MPCA Residential SRV (9 mg/kg) and/or SLV (5.8 mg/kg) at most locations, however, these results are in the range of background soil concentrations commonly identified in fill soil.
- B(a)P equivalent concentrations were above the MPCA Residential SRV (2.0 mg/kg) and SLV (1.4 mg/kg) in the sample collected at SB-15-09, where asphalt pieces were observed.
- Mercury was detected at concentrations above the MPCA Residential SRV (at SB-15-05 and SB-15-09) and the Industrial SRV (at SB-15-07).
- Lead concentrations were above the MPCA Residential SRV (300 mg/kg) at locations on and near the former Irving Avenue Dump (SB-15-05, SB-15-09, and SB-15-10). TCLP lead analysis was run on all samples with a total lead concentration above 100 mg/kg (the minimum value that could theoretically result in a characteristically hazardous leachate concentration with TCLP methods); lead was not detected in the TCLP leachate.
- PCBs were not detected.
- The only VOC result above MPCA screening levels was tetrachloroethylene, in the soil sample from SB-15-08, located on the Chemical Marketing site, where chlorinated solvents impacts have previously been identified.
- Several DRO results were above the MPCA unregulated fill screening criteria of 100 mg/kg; the concentrations near 100 mg/kg may be attributed in part to naturally occurring organic material. All sample locations with DRO concentrations above criteria also had debris or other chemical impacts that indicate the soil does not meet MPCA criteria for unregulated fill, so silica gel cleanup methods were not needed to differentiate between petroleum and naturally occurring organics.

In summary, the field observations and analytical results indicate the soils across the Study Area do not meet MPCA criteria for unregulated fill due to the presence of debris or chemical concentrations above MPCA soil screening levels, except for soils in the park on the southern creek bank in Reach 3. The sample results indicate the soil is not characteristically hazardous (TCLP lead concentrations are less than 5.0 mg/L) nor does it not need to be managed under the Toxic Substances Control Act (i.e. total PCB concentrations are less than 50 mg/kg).

5.0 Conclusions and Projected Schedule

The Phase II field investigation was completed in February 2016 and the results were incorporated into the Feasibility Study report prepared for the City of Minneapolis and BCWMC.

The Phase II investigation results show that most of the soil in the areas along the creek targeted for stabilization does not meet MPCA guidelines for unregulated fill (MPCA, 2012), indicating the soil is not suitable for reuse at another site and requires landfill disposal if excavated as part of the creek stabilization work. Soil samples collected in each reach of the project area either contained debris or chemical concentrations above MPCA guidelines for unregulated fill, except for soil samples collected in the park on the south bank of Reach 3.

Contaminants identified in the soil with concentrations above MPCA criteria for unregulated fill include arsenic, mercury, lead, B(a)P equivalents, tetrachloroethylene and DRO. Lead concentrations above MPCA unregulated fill criteria were identified in soil samples collected at the City of Minneapolis impound lot. Subsequent analysis using the toxicity characteristic leaching procedure indicated the soils are not characteristically hazardous and do not require additional stabilization prior to disposal at a local RCRA D (non-hazardous) landfill. However, due to the heterogeneity of the fill soil, the presence of debris, and historical documentation of hazardous levels of lead in the soils at the impound lot, there remains a potential for hazardous concentrations of lead to be present in the soils along the creek.

Substantial debris was encountered in the fill in most of the area along Reaches 1 and 2. Less debris was encountered along Reach 3, on the north side of the creek.

Based on the Phase II investigation results and anticipated response actions that will be necessary during implementation of the creek stabilization project, the following schedule is anticipated for the project:

- Submit this Phase II Investigation Report, Response Action Plan (RAP), and/or Construction Contingency Plan (CCP) to MPCA for review and approval (Summer 2016).
- BCWMC and the City may seek environmental cleanup grants in support of the project (Fall of 2016)
- Obtain MPCA approval of the RAP/CCP (prior to November 1, 2016)
- Bidding and contractor selection (Winter 2017)
- Implement response actions as part of creek repair and stabilization work (2017)
- Submit Response Action Implementation (RAI) Report to MPCA (2017)
- Obtain MPCA technical review and approval of RAI report (2017)

6.0 References

- Barr Engineering Co., 2015a. Phase I Environmental Site Assessment. Bassett Creek from Cedar Lake Road to Dupont Avenue N/2nd Avenue N, plus Fruen Mill Site, Minneapolis, Minnesota. Prepared for the Bassett Creek Watershed Management Commission. November, 2015.
- Barr Engineering Co., 2015b. Phase II Investigation Work Plan. Bassett Creek from Cedar Lake Road to Dupont Avenue N/2nd Avenue N, plus Fruen Mill Site, Minneapolis, Minnesota. Prepared for the Bassett Creek Watershed Management Commission. December, 2015.
- Hennepin County, 2015. Bassett Creek Areawide Groundwater Study. Draft Environmental Data Access Tool. <https://hennepinedat.barr.com/>
- MPCA, 2012. Best Management Practices for the Off-Site Reuse of Unregulated Fill. c-rem1-01. February 2012.
- MPCA, 2016. Letter from Mark Ostby, MPCA, to Laura Jester, Bassett Creek Watershed Management Commission, approving the Phase II Investigation Work Plan for the Bassett Creek Main Stem Erosion Repair Project. January 26, 2016.

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Tables

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**Table 1
Soil Analytical Data Summary
Bassett Creek Main Stem Erosion Repair Project
Minneapolis, Minnesota**

Parameter	Analysis Location	Minnesota Soil Leaching Values	Minnesota Residential Soil Reference Values	Minnesota Industrial Soil Reference Values	MPCA DRO Standard for Unregulated Fill	Location	SB-15-01	SB-15-02	SB-15-03	SB-15-04	SB-15-05	SB-15-06	SB-15-07	SB-15-08	SB-15-09	SB-15-10	SB-15-11	
						Date	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/17/2016	2/17/2016	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/18/2016	
						Depth	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	
Effective Date		06/01/2013	06/22/2009	06/22/2009	N/A													
Exceedance Key		Bold	<u>Underline</u>	<i>Italic</i>	Shade													
General Parameters																		
Solids, percent	Lab					70 %	86 %	88 %	81 %	80 %	84 %	84 %	84 %	84 %	78 %	74 %	82 %	
Metals																		
Antimony	Lab	5.4 mg/kg	12 mg/kg	100 mg/kg		--	--	--	--	3.0 mg/kg	1.9 mg/kg	4.3 mg/kg	3.1 mg/kg	3.3 mg/kg	1.9 mg/kg	2.7 mg/kg		
Arsenic	Lab	5.8 mg/kg	<u>9 mg/kg</u>	20 mg/kg		10 mg/kg	6.8 mg/kg	6.8 mg/kg	5.3 mg/kg	11 mg/kg	7.7 mg/kg	7.9 mg/kg	6.7 mg/kg	9.8 mg/kg	9.1 mg/kg	7.3 mg/kg		
Barium	Lab	1700 mg/kg	1100 mg/kg	18000 mg/kg		130 * mg/kg	82 mg/kg	40 mg/kg	85 mg/kg	110 mg/kg	90 mg/kg	100 mg/kg	150 mg/kg	130 mg/kg	130 mg/kg	100 mg/kg		
Beryllium	Lab	2.7 mg/kg	55 mg/kg	230 mg/kg		--	--	--	--	0.40 mg/kg	0.41 mg/kg	0.38 mg/kg	0.49 mg/kg	0.46 mg/kg	0.46 mg/kg	0.48 mg/kg		
Cadmium	Lab	8.8 mg/kg	25 mg/kg	200 mg/kg		0.33 mg/kg	0.16 mg/kg	0.12 mg/kg	0.12 mg/kg	1.4 mg/kg	0.39 mg/kg	0.54 mg/kg	0.48 mg/kg	2.0 mg/kg	0.44 mg/kg	0.44 mg/kg		
Chromium	Lab	36 CR6 mg/kg	87 CR6 mg/kg	650 CR6 mg/kg		17 mg/kg	15 mg/kg	8.5 mg/kg	17 mg/kg	15 mg/kg	15 mg/kg	16 mg/kg	17 mg/kg	19 mg/kg	17 mg/kg	20 mg/kg		
Copper	Lab	700 mg/kg	100 mg/kg	9000 mg/kg		--	--	--	--	50 mg/kg	26 mg/kg	33 mg/kg	29 mg/kg	41 mg/kg	29 mg/kg	29 mg/kg		
Lead	Lab	2700 mg/kg	<u>300 mg/kg</u>	700 mg/kg		40 * mg/kg	18 mg/kg	7.4 mg/kg	4.4 mg/kg	170 mg/kg	51 mg/kg	120 mg/kg	58 mg/kg	<u>300 mg/kg</u>	<u>510 mg/kg</u>	58 mg/kg		
Mercury	Lab	3.3 MC mg/kg	<u>0.5 mg/kg</u>	<i>1.5 mg/kg</i>		< 0.71 mg/kg	< 0.58 mg/kg	< 0.57 mg/kg	< 0.62 mg/kg	<u>0.73 mg/kg</u>	< 0.60 mg/kg	<u>2.7 mg/kg</u>	< 0.60 mg/kg	<u>1.1 mg/kg</u>	< 0.68 mg/kg	< 0.61 mg/kg		
Nickel	Lab	180 mg/kg	560 mg/kg	2500 mg/kg		--	--	--	--	14 mg/kg	15 mg/kg	13 mg/kg	18 mg/kg	17 mg/kg	15 mg/kg	18 mg/kg		
Selenium	Lab	2.6 mg/kg	160 mg/kg	1300 mg/kg		< 3.6 mg/kg	< 2.9 mg/kg	< 2.8 mg/kg	< 3.1 mg/kg	< 3.1 mg/kg	< 3.0 mg/kg	< 3.0 mg/kg	< 3.0 mg/kg	< 3.2 mg/kg	< 3.4 mg/kg	< 3.0 mg/kg		
Silver	Lab	7.9 mg/kg	160 mg/kg	1300 mg/kg		< 0.71 mg/kg	< 0.58 mg/kg	< 0.57 mg/kg	< 0.62 mg/kg	< 0.62 mg/kg	< 0.60 mg/kg	< 0.60 mg/kg	1.2 mg/kg	< 0.64 mg/kg	< 0.68 mg/kg	< 0.61 mg/kg		
Thallium	Lab	0.89 mg/kg	3 mg/kg	21 mg/kg		--	--	--	--	< 2.5 mg/kg	< 2.4 mg/kg	< 2.4 mg/kg	< 2.4 mg/kg	< 2.6 mg/kg	< 2.7 mg/kg	< 2.4 mg/kg		
Zinc	Lab	3000 mg/kg	8700 mg/kg	75000 mg/kg		--	--	--	--	660 mg/kg	90 mg/kg	140 mg/kg	130 mg/kg	570 mg/kg	130 mg/kg	100 mg/kg		
TCLP Metals																		
Lead	Lab					--	--	--	--	< 0.075 mg/l	--	< 0.075 mg/l	--	< 0.075 mg/l	< 0.075 mg/l	--		
SVOCs																		
2-Chloronaphthalene	Lab					< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.42 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg	
2-Methylnaphthalene	Lab		100 mg/kg	369 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.42 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg	
Acenaphthene	Lab	81 mg/kg	1200 mg/kg	5260 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.42 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg	
Acenaphthylene	Lab	NA				< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.42 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg	
Anthracene	Lab	1300 mg/kg	7880 mg/kg	45400 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	1.0 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Benzo(g,h,i)perylene	Lab	NA				< 0.47 mg/kg	< 0.38 mg/kg	0.52 mg/kg	< 0.41 mg/kg	0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	0.70 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Fluoranthene	Lab	670 mg/kg	1080 mg/kg	6800 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	1.9 mg/kg	< 0.41 mg/kg	1.7 mg/kg	0.48 mg/kg	0.93 mg/kg	0.97 mg/kg	3.7 mg/kg	1.9 mg/kg	1.6 mg/kg		
Fluorene	Lab	110 mg/kg	850 mg/kg	4120 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	0.46 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Naphthalene	Lab	4.5 mg/kg	10 mg/kg	28 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	0.45 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Phenanthrene	Lab	NA				< 0.47 mg/kg	< 0.38 mg/kg	0.84 mg/kg	< 0.41 mg/kg	1.0 mg/kg	0.40 mg/kg	0.74 mg/kg	0.74 mg/kg	3.8 mg/kg	1.2 mg/kg	1.4 mg/kg		
Pyrene	Lab	440 mg/kg	890 mg/kg	5800 mg/kg		< 0.47 mg/kg	< 0.38 mg/kg	1.8 mg/kg	< 0.41 mg/kg	1.7 mg/kg	0.45 mg/kg	0.88 mg/kg	0.84 mg/kg	3.5 mg/kg	1.7 mg/kg	1.4 mg/kg		
Benz(a)anthracene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	0.92 mg/kg	< 0.41 mg/kg	0.83 mg/kg	< 0.39 mg/kg	0.42 mg/kg	0.41 mg/kg	1.8 mg/kg	0.83 mg/kg	0.68 mg/kg		
Benzo(a)pyrene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	0.81 mg/kg	< 0.41 mg/kg	0.82 mg/kg	< 0.39 mg/kg	0.42 mg/kg	< 0.39 mg/kg	1.6 mg/kg	0.78 mg/kg	0.65 mg/kg		
Benzo(b)fluoranthene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	1.1 mg/kg	< 0.41 mg/kg	1.1 mg/kg	< 0.39 mg/kg	0.61 mg/kg	0.51 mg/kg	2.1 mg/kg	1.2 mg/kg	0.93 mg/kg		
Benzo(k)fluoranthene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	0.77 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Chrysene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	1.0 mg/kg	< 0.41 mg/kg	1.1 mg/kg	< 0.39 mg/kg	0.51 mg/kg	0.51 mg/kg	2.2 mg/kg	1.0 mg/kg	0.83 mg/kg		
Dibenz(a,h)anthracene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	< 0.38 mg/kg	< 0.41 mg/kg	< 0.41 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.42 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
Indeno(1,2,3-cd)pyrene	Lab	T	T	T		< 0.47 mg/kg	< 0.38 mg/kg	0.60 mg/kg	< 0.41 mg/kg	0.47 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	< 0.39 mg/kg	0.82 mg/kg	< 0.45 mg/kg	< 0.40 mg/kg		
B(a)P Equivalent, non-detects at 0, 2002 PEFs	Barr Calculation	1.4 T mg/kg	<u>2 T mg/kg</u>	3 T mg/kg		ND mg/kg	ND mg/kg	1.1 mg/kg	ND mg/kg	1.1 mg/kg	ND mg/kg	0.53 mg/kg	0.097 mg/kg	2.2 mg/kg	0.99 mg/kg	0.82 mg/kg		
B(a)P Equivalent, non-detects at 1/2, 2002 PEFs	Barr Calculation	1.4 T mg/kg	<u>2 T mg/kg</u>	3 T mg/kg		0.46 mg/kg	0.37 mg/kg	1.2 mg/kg	0.4 mg/kg	1.2 mg/kg	0.38 mg/kg	0.68 mg/kg	0.44 mg/kg	2.3 mg/kg	1.2 mg/kg	0.97 mg/kg		
B(a)P Equivalent, non-detects at 1x, 2002 PEFs	Barr Calculation	1.4 T mg/kg	<u>2 T mg/kg</u>	3 T mg/kg		0.93 mg/kg	0.75 mg/kg	1.3 mg/kg	0.81 mg/kg	1.3 mg/kg	0.77 mg/kg	0.82 mg/kg	0.78 mg/kg	2.4 mg/kg	1.3 mg/kg	1.1 mg/kg		
VOCs																		
1,1,1,2-Tetrachloroethane	Lab	0.41 mg/kg	31 mg/kg	51 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1,1-Trichloroethane	Lab	56 mg/kg	140 mg/kg	472 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1,1,2,2-Tetrachloroethane	Lab	0.012 mg/kg	3.5 mg/kg	6.5 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1,2-Trichloroethane	Lab	0.014 mg/kg	9 mg/kg	14 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1-Dichloro-1-propene	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1-Dichloroethane	Lab	0.41 mg/kg	34 mg/kg	55 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	
1,1-Dichloroethylene	Lab	1.4 mg/kg	20 mg/kg	60 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	

Table 1
Soil Analytical Data Summary
Bassett Creek Main Stem Erosion Repair Project
Minneapolis, Minnesota

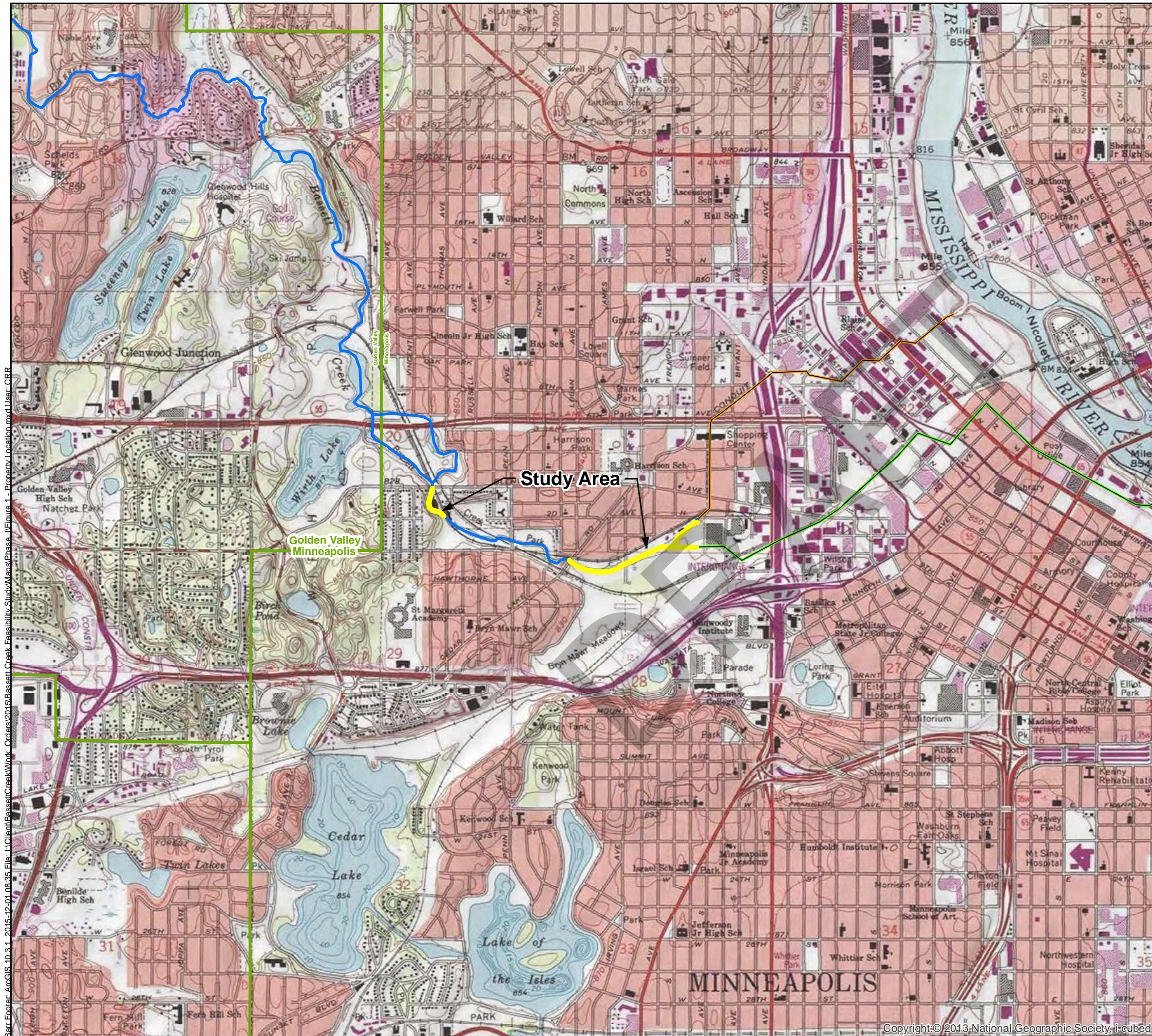
Parameter	Analysis Location	Minnesota Soil Leaching Values	Minnesota Residential Soil Reference Values	Minnesota Industrial Soil Reference Values	MPCA DRO Standard for Unregulated Fill	Location	SB-15-01	SB-15-02	SB-15-03	SB-15-04	SB-15-05	SB-15-06	SB-15-07	SB-15-08	SB-15-09	SB-15-10	SB-15-11	
						Date	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/17/2016	2/17/2016	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/18/2016	
						Depth	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	
Effective Date		06/01/2013	06/22/2009	06/22/2009	N/A													
Exceedance Key		Bold	<u>Underline</u>	<i>Italic</i>	Shade													
1,2,3-Trichlorobenzene	Lab					< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
1,2,3-Trichloropropane	Lab	0.27 mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2,4-Trichlorobenzene	Lab	0.23 mg/kg	200 mg/kg	985 mg/kg		< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
1,2,4-Trimethylbenzene	Lab	2.7 mg/kg	8 mg/kg	25 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dibromo-3-chloropropane	Lab					< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
1,2-Dibromoethane	Lab	0.000015 mg/kg	0.3 mg/kg	0.5 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dichlorobenzene	Lab	11 mg/kg	26 mg/kg	75 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dichloroethane	Lab	0.0038 mg/kg	4 mg/kg	6 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dichloroethylene, cis	Lab	0.21 mg/kg	8 mg/kg	22 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dichloroethylene, trans	Lab	0.42 mg/kg	11 mg/kg	33 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,2-Dichloropropane	Lab	0.024 mg/kg	4 mg/kg	6 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,3,5-Trimethylbenzene	Lab	2.7 mg/kg	3 mg/kg	10 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,3-Dichloro-1-propene, cis	Lab	0.011 DCP mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,3-Dichloro-1-propene, trans	Lab	0.011 DCP mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,3-Dichlorobenzene	Lab	10 mg/kg	26 mg/kg	200 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,3-Dichloropropane	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
1,4-Dichlorobenzene	Lab	0.17 mg/kg	30 mg/kg	50 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
2,2-Dichloropropane	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Acetone	Lab	8.4 mg/kg	340 mg/kg	1000 mg/kg		< 2.2 mg/kg	--	--	--	--	--	--	--	< 1.1 mg/kg	--	--	--	--
Allyl Chloride	Lab	0.15 mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Benzene	Lab	0.017 mg/kg	6 mg/kg	10 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Bromobenzene	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Bromochloromethane	Lab	0.28 mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Bromodichloromethane	Lab	0.021 mg/kg	10 mg/kg	17 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Bromoform	Lab	0.13 mg/kg	370 mg/kg	650 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Bromomethane	Lab	0.036 mg/kg	0.7 mg/kg	2 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Butyl benzene	Lab	NA	30 mg/kg	92 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Butylbenzene, sec	Lab	NA	25 mg/kg	70 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Butylbenzene, tert	Lab	NA	30 mg/kg	90 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Carbon tetrachloride	Lab	0.0077 mg/kg	0.3 mg/kg	0.9 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chlorobenzene	Lab	1.2 mg/kg	11 mg/kg	32 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chlorodibromomethane	Lab	0.034 mg/kg	12 mg/kg	20 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chloroethane	Lab	NA	1000 mg/kg	3000 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chloroform	Lab	0.11 mg/kg	2.5 mg/kg	4 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chloromethane	Lab	0.11 mg/kg	8 mg/kg	23 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chlorotoluene, o	Lab		436 mg/kg	436 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Chlorotoluene, p	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Cumene (isopropyl benzene)	Lab	9.5 mg/kg	30 mg/kg	87 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Cymene p- (Toluene isopropyl p-)	Lab					< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Dibromomethane (methylene bromide)	Lab		260 mg/kg	1860 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Dichlorodifluoromethane (CFC-12)	Lab	37 mg/kg	16 mg/kg	50 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Dichlorofluoromethane (CFC-21)	Lab	NA				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Ethyl benzene	Lab	1.0 mg/kg	200 mg/kg	200 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Ethyl ether	Lab	0.51 mg/kg				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Hexachlorobutadiene	Lab	0.037 mg/kg	6 mg/kg	37 mg/kg		< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
Methyl ethyl ketone (2-butanone)	Lab	8.8 mg/kg	5500 mg/kg	19000 mg/kg		< 2.2 mg/kg	--	--	--	--	--	--	--	< 1.1 mg/kg	--	--	--	--
Methyl isobutyl ketone (MIBK)	Lab	0.76 mg/kg	1700 mg/kg	9000 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Methyl tertiary butyl ether (MTBE)	Lab	NA				< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Methylene chloride	Lab	0.017 mg/kg	97 mg/kg	158 mg/kg		< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
Naphthalene	Lab	4.5 mg/kg	10 mg/kg	28 mg/kg		< 1.1 mg/kg	--	--	--	--	--	--	--	< 0.55 mg/kg	--	--	--	--
Propylbenzene	Lab	NA	30 mg/kg	93 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Styrene	Lab	2.0 mg/kg	210 mg/kg	600 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--

Table 1
Soil Analytical Data Summary
Bassett Creek Main Stem Erosion Repair Project
Minneapolis, Minnesota

Parameter	Analysis Location	Minnesota Soil Leaching Values	Minnesota Residential Soil Reference Values	Minnesota Industrial Soil Reference Values	MPCA DRO Standard for Unregulated Fill	Location	SB-15-01	SB-15-02	SB-15-03	SB-15-04	SB-15-05	SB-15-06	SB-15-07	SB-15-08	SB-15-09	SB-15-10	SB-15-11	
						Date	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/17/2016	2/17/2016	2/17/2016	2/17/2016	2/18/2016	2/18/2016	2/18/2016	
						Depth	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 1 ft	0 - 1 ft	0 - 1 ft	
Effective Date		06/01/2013	06/22/2009	06/22/2009	N/A													
Exceedance Key		Bold	<u>Underline</u>	<i>Italic</i>	Shade													
Tetrachloroethylene	Lab	0.042 mg/kg	72 mg/kg	131 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	2.2 mg/kg	--	--	--	--
Tetrahydrofuran	Lab	0.24 mg/kg				< 2.2 mg/kg	--	--	--	--	--	--	--	< 1.1 mg/kg	--	--	--	--
Toluene	Lab	2.5 mg/kg	107 mg/kg	305 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Trichloroethylene	Lab	0.0023 mg/kg	29 mg/kg	46 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Trichlorofluoromethane	Lab	35 mg/kg	67 mg/kg	195 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Trichlorotrifluoroethane (Freon 113)	Lab	17000 mg/kg	3745 mg/kg	5430 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Vinyl chloride	Lab	0.0014 mg/kg	0.8 mg/kg	2.2 mg/kg		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Xylene, m & p	Lab	M	M	M		< 0.89 mg/kg	--	--	--	--	--	--	--	< 0.44 mg/kg	--	--	--	--
Xylene, o	Lab	M	M	M		< 0.44 mg/kg	--	--	--	--	--	--	--	< 0.22 mg/kg	--	--	--	--
Xylene, total	Barr Calculation	5.4 M mg/kg	45 M mg/kg	130 M mg/kg		ND mg/kg	--	--	--	--	--	--	--	ND mg/kg	--	--	--	--
PCBs																		
Aroclor 1016	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1221	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1232	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1242	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1248	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1254	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Aroclor 1260	Lab					--	--	--	--	--	--	--	--	--	--	< 0.20 mg/kg	< 0.20 mg/kg	
Total PCBs	Barr Calculation	0.13 mg/kg	1.2 mg/kg	8 mg/kg												ND mg/kg	ND mg/kg	
Total Petroleum Hydrocarbons																		
Diesel Range Organics, C10-C28	Lab				100 mg/kg	460 mg/kg	35 mg/kg	41 mg/kg	10 mg/kg	280 mg/kg	83 mg/kg	130 mg/kg	110 mg/kg	140 mg/kg	110 mg/kg	110 mg/kg	79 mg/kg	

DRAFT

DRAFT



- Study Area
- Stream
- Old Tunnel
- New Tunnel

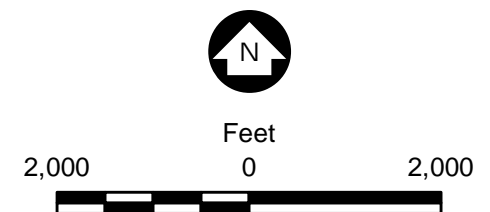
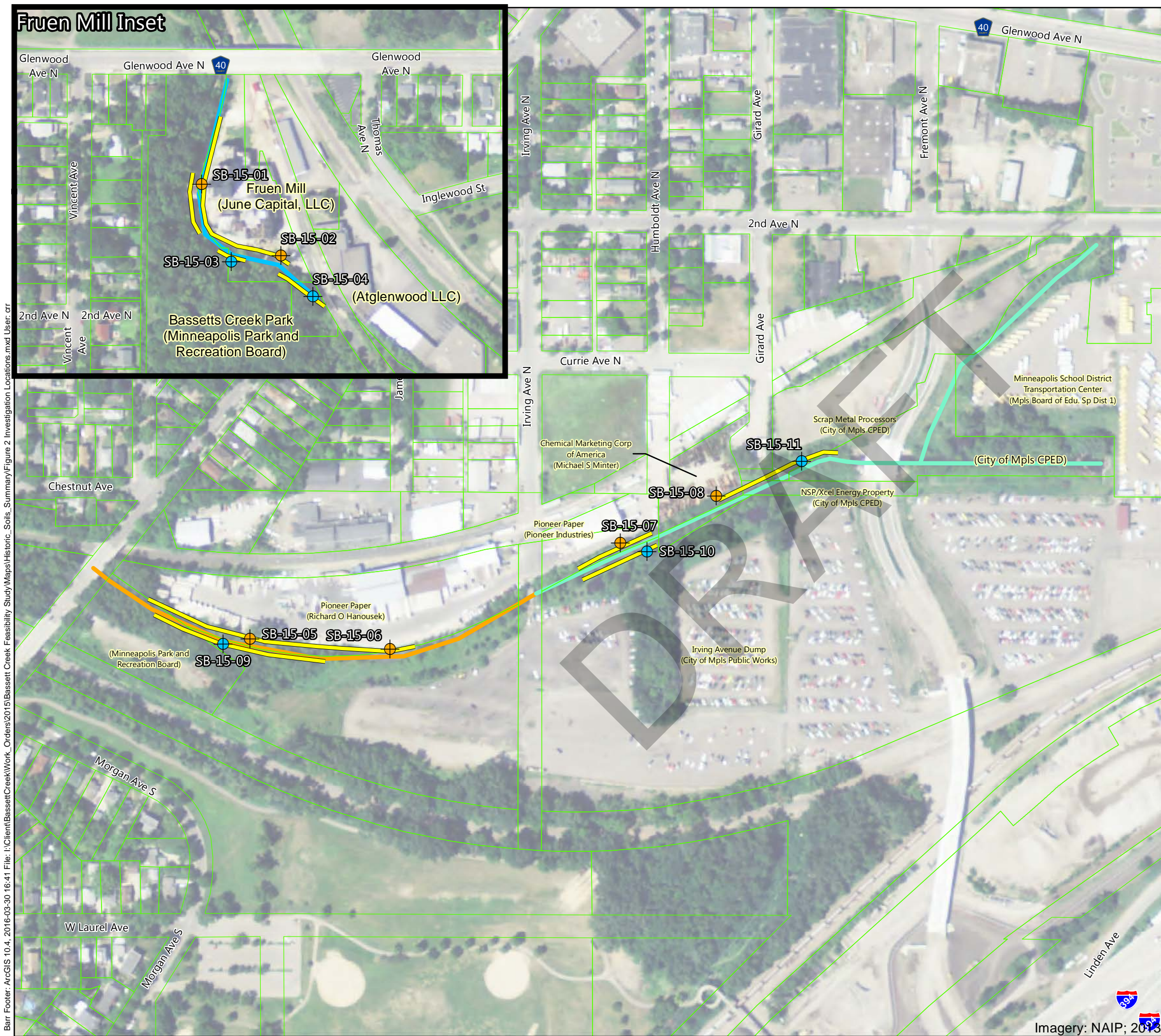


Figure 1

BASSETT CREEK STUDY AREA LOCATION
 Bassett Creek Main Stem Erosion Repair Project
 Bassett Creek Watershed
 Management Commission
 Minneapolis, Minnesota

Bar Footer: ArcGIS 10.3.1 - 2015-12-11 08:35 File: I:\Client\BassettCreek\Work_Orders\2015\BassettCreek_Feasibility_Study\Map\Phase_1\Figure_1_-_Property_Location.mxd User: CRR



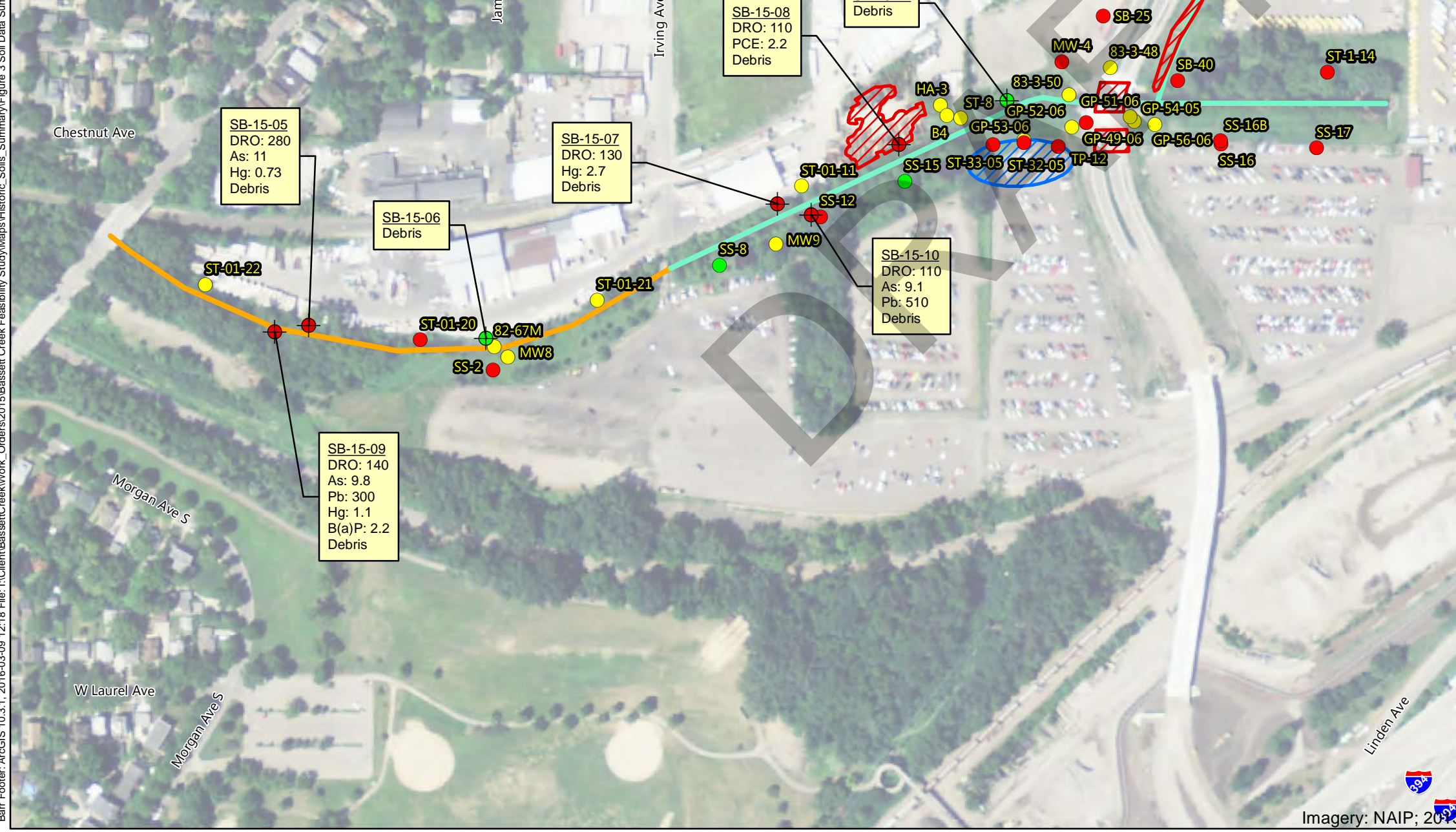
- Cedar Lake Rd to Irving Ave (Reach 1)
- Irving Ave to Dupont/2nd Ave (Reach 2)
- Fruen Mill (Reach 3)
- Creek Bank Repair/Stabilization Target Areas
- Hand Auger Sample Location
- Geoprobe Sample Location

SITE NAME
 (PROPERTY OWNER, HENNEPIN COUNTY PROPERTY INFORMATION SEARCH)

Barr Footer: ArcGIS 10.4, 2016-03-30 16:41 File: I:\Client\BassettCreek\Work_Orders\2015\Bassett Creek Feasibility Study\Maps\Historic_Soils_Summary\Figure 2 Investigation Locations.mxd User: cr

Figure 2
 INVESTIGATION LOCATIONS
 Bassett Creek Main Stem Erosion Repair Project
 Bassett Creek Watershed
 Management Commission
 Minneapolis, Minnesota

Fruen Mill Inset



- Cedar Lake Rd to Irving Ave (Reach 1)
- Irving Ave to Dupont/2nd Ave (Reach 2)
- Fruen Mill (Reach 3)
- Remedial Excavation Extents
- Asbestos Containing Material Identified

Soil Sample Locations

- Analytical Data Above State Criteria¹
- Analytical Data Below State Criteria¹
- No Analytical Data Found

2016 Soil Sample Locations

- Analytical Data Above MPCA Criteria for Unregulated Fill.
- Analytical Data Below MPCA Criteria for Unregulated Fill.

Notes:

1. Minnesota soil criteria as of reported date.
2. Table A-1 shows analytes tested at each historical sample location.
3. Table 1 shows analytical data compared to MPCA criteria.
4. Debris encountered in majority of historical soil borings shown.
5. Soil sample locations within approximately 50 feet of creek are shown.
6. Asbestos containing material may be present throughout dump material. Area shown is where samples were tested.
7. Soil analytical data provided in mg/kg.

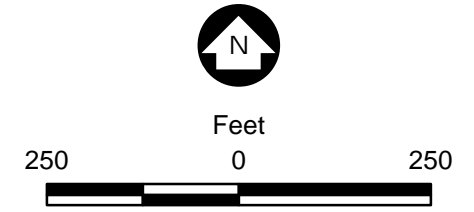


Figure 3

SOIL DATA SUMMARY
 Bassett Creek Main Stem Erosion Repair Project
 Bassett Creek Watershed Management Commission
 Minneapolis, Minnesota

Barr Footer: ArcGIS 10.3.1, 2016-03-09 12:18 File: I:\Client\BassettCreek\Work_Orders\2015\Bassett Creek Feasibility Study\Maps\Historic_Soils_Summary\Figure 3 Soil Data Summary.mxd User: cr

Imagery: NAIP; 2013

Appendix A

Previous Investigations Summary

DRAFT

Table A-1
Existing Soil Data Summary
Bassett Creek Main Stem Erosion Repair Project
Bassett Creek Watershed Management Commission
Minneapolis, Minnesota

SITE NAME	Sample ID (1)	Sample Type		Reference (2)	Soil Sample Depth (feet bgs)	Analytes						Comments on Analytical Data (3)	Data Gaps	Additional Information
		Boring	Excavation Sidewall			VOCs	PAHs	GRO	DRO	Metals	TCLP			
Pioneer Paper	ST-01-11	x		2001 Braun Report	2.5					x		RCRA metals below criteria	No VOC or PAH data	Debris identified in all ST-01 boring logs. Elevated headspace reading at ST-01-20.
	ST-01-20	x		2001 Braun Report	0.5	x		x	x			Elevated DRO (1,300 mg/kg)	No metals or PAH data	
Chemical Marketing	99		x	2005 Delta Report		x							No metals or PAH data	Remedial excavation performed to water table in 2005 and impacted soil remains in place below the water table. Excavation extents appear to stop approximately 15' away from edge of Bassett Creek based on 2005 map. Debris identified in nearly all borings. Groundwater 6 to 8 feet bgs along bank and is impacted with chlorinated VOCs.
	195		x	2005 Delta Report		x						PCE > criteria		
	Several Samples		x	2005 Delta Report		x						Excavation sidewall samples near creek, VOCs below criteria		
	HA-3	x	x	2005 Delta Report	1	x						petroleum VOCs detected, below criteria		
Scrap Metal Processors	MW-4	x		2003 Delta Phase II	1	x		x				1,2,4-TMB, metals > criteria, elevated DRO	PAHs had elevated reporting limits	
	SB-25	x		2003 Delta Phase II	5	x	x	x	x			VOCs, metals, cyanide > criteria, elevated DRO		
	SB-27	x		2003 Delta Phase II	2.5	x	x	x	x			VOCs, SVOCs, metals > criteria		
	SB-31	x		2003 Delta Phase II	1	x	x	x	x			benzo(b)flouranthene, Sb > criteria		
	SMP-SW-3 South		x	2008 Braun Figure	4	x	x	x	x	x	x	metals > criteria, elevated GRO and DRO		
Irving Ave Dump	1 to 41			1980s Investigation						x (EP Tox)	x (outdated)	Pb impacts noted in 1982 EP tox/leach test results	outdated lab methods	Lead impacts noted along creek east of Irving Avenue
	83-3-48	x		1980s Investigation			x					Only sum of cPAHs and noncPAHs shown.	Cannot compare to criteria	
	83-3-50	x		1980s Investigation			x					Only sum of cPAHs and noncPAHs shown.	Cannot compare to criteria	
	83-3-51	x		1980s Investigation			x					Only sum of cPAHs and noncPAHs shown.	Cannot compare to criteria	
	SS-2	x		2012 Braun Report	0 to 2	x	x		x		x	BaP, As, Cr > criteria		
	SS-8	x		2012 Braun Report	0 to 1.5	x	x		x		x	below criteria		
	SS-12	x		2012 Braun Report	0 to 1.5	x	x		x		x	Sb, Cr, Pb > criteria		
	SS-15	x		2012 Braun Report	0 to 1.5	x	x		x		x	below criteria		
	SS-16	x		2012 Braun Report	0 to 2	x	x		x		x	BaP, PCBs, metals > criteria		
	SS-16B	x		2012 Braun Report	0 to 4		x		x (Pb)			BaP, Pb > criteria		
SS-17	x		2012 Braun Report	2 to 4	x	x		x		x	Sb > criteria			
TP-12		x	2012 Braun Report	3 to 4 and 12	x	x		x		x	BaP, metals > criteria			
301 N Thomas Ave (Fruen Mill Reach)	SB-6	x		2011 Phase I ESA	4							Analyzed for only PCBs near the creek	Six borings were installed at the site, but only two samples analyzed for VOC and pesticides, no samples analyzed for PAHs, SVOCs, or metals. Soil samples near former UST were ND for BTEX. No shallow (0-4') soil samples were collected at the site.	

(1) Only soil sample locations within 50 feet of the creek are listed. Sample locations in previously excavated areas are not listed. Boring locations with no analytical data are not listed.

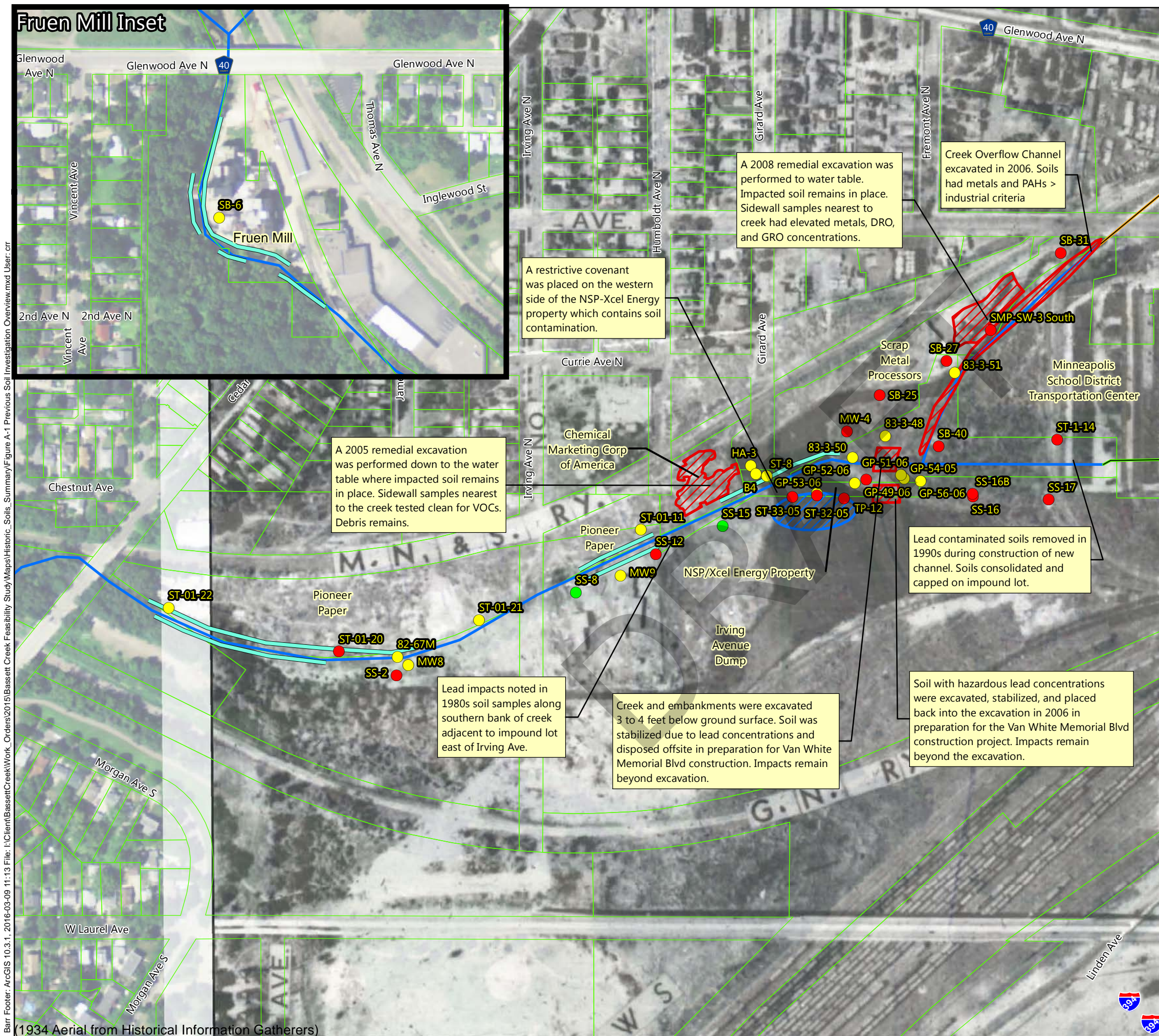
(2) References: All data obtained from the Hennepin County Bassett Creek Areawide Groundwater Study (<https://hennepinedat.barr.com/>), except thos listed below:

2011 Phase I ESA - Phase I Environmental Site Assessment Bassett Creek – Golden Valley Road to Irving Avenue North, Golden Valley and Minneapolis, Minnesota. Prepared by Barr Enginnering Co. for the Bassett Creek Watershed Management Commission. June, 2011

(3) Criteria comparisons based on date reported

x = boring log available

Information highlighted in blue represents soil samples collected near the targeted creek restoration/stabilization areas.



— Bassett Creek
— Old Tunnel
— New Tunnel
— Creek Bank Repair/Stabilization Target Areas
 Parcels
 Remedial Excavation Extents
 Asbestos Containing Material Identified

Soil Sample Locations

- Analytical Data Above State Criteria¹
- Analytical Data Below State Criteria¹
- Limited or No Analytical Data Found

- Notes:
1. Minnesota soil criteria as of reported date.
 2. Table 1 shows analytes tested at each sample location
 3. Sample locations below Van White Memorial Blvd. and within remedial excavation extents are not shown
 4. Debris encountered in majority of soil borings shown.
 5. Soil sample locations within approximately 50 feet of creek are shown.
 6. Asbestos containing material may be present throughout dump material. Area shown is where samples were tested.

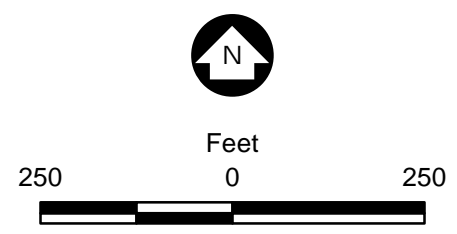


Figure A-1

PREVIOUS SOIL INVESTIGATION OVERVIEW
 Bassett Creek Main Stem Erosion Repair Project
 Bassett Creek Watershed
 Management Commission
 Minneapolis, Minnesota

Barr Footer: ArcGIS 10.3.1, 2016-03-09 11:13 File: I:\Client\BassettCreek\Work_Orders\2015\Bassett Creek Feasibility Study\Maps\Historic_Soils_Summary\Figure A-1 Previous Soil Investigation Overview.mxd User: cr

(1934 Aerial from Historical Information Gatherers)

Appendix B

Boring Logs

DRAFT



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-01

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 168,834.7 ft E 517,748.7 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 818.7 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

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Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCUC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): brown to black; moist; stiff; with red cobbles; non-plastic; cohesive; no particles; (FILL).	818.5
0.5							818.0
1.0			PID: 0.1	SM			817.5
1.5							817.0
2.0			D/O/S: N / N / N			ORGANIC SOIL WITH GRAVEL (OL/OH): dark brown to black; wet; stiff; with silt and clay; low plasticity; cohesive; no particles.	816.5
2.5							816.0
3.0			PID: 0.1	OL/OH			815.5
3.5							815.0
4.0						End of boring 4.0 feet	
4.5							
5.0							

Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 14:30 pm.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-02

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 168,653.4 ft E 517,951.2 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 817.5 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCUC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): brown; moist; stiff; with red cobbles; non-plastic; cohesive; debris includes glass, concrete, trace asphalt; (FILL).	817.5
0.5							817.0
1.0			PID: 0.1		SM		816.5
1.5							816.0
2.0			D/O/S: N / N / N			ORGANIC SOIL WITH GRAVEL (OL/OH): dark brown to black; moist; stiff; with silt and clay; trace medium-grained sand; low plasticity; cohesive; debris includes glass and concrete.	815.5
2.5							815.0
3.0			PID: 0.1		OL/OH		814.5
3.5							814.0
4.0						End of boring 4.0 feet	
4.5							
5.0							

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Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 13:40 pm.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-03

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 168,636.9 ft E 517,824.5 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 816.4 ft
 Drilling Method: Hand auger/pickaxe
 Sampling Method: Hand auger/pickaxe
 Completion Depth: 1.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY GRAVEL WITH SAND (GM): fine to coarse grained; brown; moist; stiff; approximately 30% silt; mostly coarse-grained sand; non-plastic; cohesive; no particles; cobbles and boulders present in area.	816.0
0.5			PID: 2	GM			815.5
1.0						End of boring 1.0 feet	
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							

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Date Boring Started: 2/18/16
 Date Boring Completed: 2/18/16
 Logged By: JWJ
 Drilling Contractor: Barr
 Drill Rig: NA

Remarks: Sampled at 12:20 pm.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



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 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-04

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 168,549.5 ft E 518,032.7 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 811.4 ft
 Drilling Method: Hand auger
 Sampling Method: Hand auger
 Completion Depth: 1.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N				
0.5			PID: 0.4 D/O/S: N / N / N	SM		SITLY SANDS WITH GRAVEL (SM): brown; moist; stiff; non-plastic; cohesive; no particles; 35% silt, 50% sand, 15% gravel.	811.0
1.0				CL		SANDY LEAN CLAY (CL): fine to medium grained; gray-brown; wet; stiff; low plasticity; cohesive; no particles.	810.5
1.0						End of boring 1.0 feet	

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Date Boring Started: 2/18/16
 Date Boring Completed: 2/18/16
 Logged By: JWJ
 Drilling Contractor: Barr
 Drill Rig: NA

Remarks: Sampled at 12:30 pm.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-05

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,453.9 ft E 520,994.0 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 813.5 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

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Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): brown; moist; loose; non-plastic; non-cohesive; some plastic debris; (FILL).	813.0
0.5				SM			
1.0			PID: 0.3				812.5
1.5			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): dark brown; moist; loose; non-plastic; cohesive; debris includes concrete and asphalt; (FILL).	812.0
2.0				SM			811.5
2.5							811.0
3.0			PID: 0.1 D/O/S: Burned / N / N			ORGANIC SOIL (OL/OH): dark brown and black; moist; loose; with silt; non-plastic; cohesive; debris includes glass, bricks, burned material, roots; (FILL).	810.5
3.5				OL/OH			810.0
4.0						End of boring 4.0 feet	809.5

Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 12:00 pm.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



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 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-06

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,428.5 ft E 521,351.9 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 809.1 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SSCS	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): fine to coarse grained; brown; moist; loose; non-plastic; cohesive; debris includes plastic, glass, concrete; (FILL).	809.0
0.5							808.5
1.0			PID: 0.1		SM		808.0
1.5							807.5
2.0							807.0
2.5			D/O/S: N / N / N			LEAN CLAY WITH GRAVEL (CL): dark gray and black; moist; stiff; low plasticity; cohesive; roots; (FILL).	806.5
3.0			PID: 0.1		CL		806.0
3.5							805.5
4.0						End of boring 4.0 feet	
4.5							
5.0							

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Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 11:30 am.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-07

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,699.4 ft E 521,939.3 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 807.5 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

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Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCUC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND (SM): black; moist; soft; non-plastic; cohesive; debris includes concrete, roots, glass; (FILL).	807.0
0.5							
1.0			PID: 1.2		SM		806.5
1.5							806.0
2.0			D/O/S: N / N / N			2.0 - 2.1': concrete. 2.1 - 2.2': class V gravel.	805.5
2.5						ORGANIC SOIL (OL/OH): with silt; non-plastic; cohesive; debris includes ashy/charcoal material and concrete at 4' bgs; (FILL).	805.0
3.0			PID: 1.2		OL/OH		804.5
3.5							804.0
4.0						End of boring 4.0 feet	803.5
4.5							
5.0							

Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 9:30 am.
 BR=0.6

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

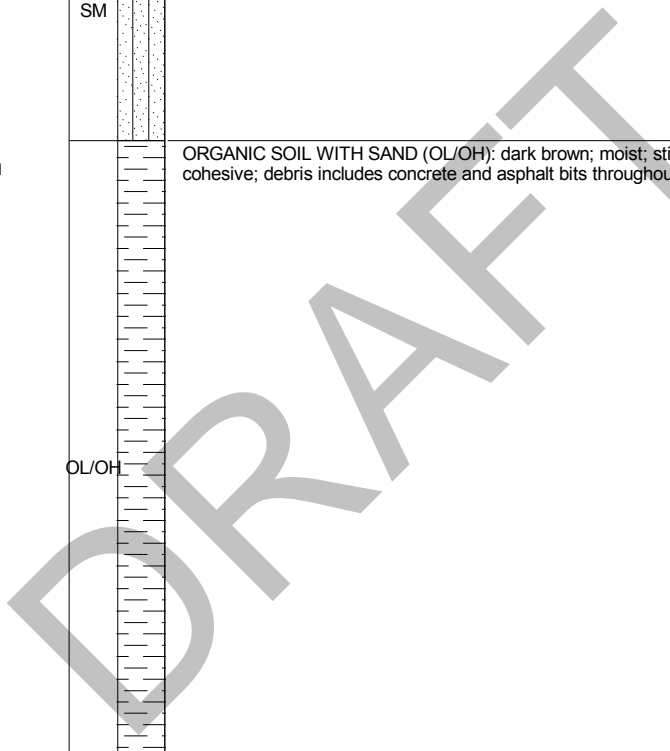
LOG OF BORING SB-15-08

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,818.3 ft E 522,184.3 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 806.9 ft
 Drilling Method: Geoprobe
 Sampling Method: Geoprobe
 Completion Depth: 4.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			SILTY SAND WITH GRAVEL (SM): dark brown; moist; medium stiff; non-plastic; cohesive; concrete debris; (FILL).	806.5
0.5				SM			806.0
1.0			PID: 1.5 D/O/S: N / N / N			ORGANIC SOIL WITH SAND (OL/OH): dark brown; moist; stiff; with silt; with clays mixed in; low plasticity; cohesive; debris includes concrete and asphalt bits throughout; FILL.	805.5
1.5							805.0
2.0							804.5
2.5				OL/OH			804.0
3.0			PID: 1.4				803.5
3.5			D/O/S: N / N / N			ORGANIC SOIL (OL/OH): black; moist; soft; with peat; non-plastic; cohesive; roots.	803.0
4.0				OL/OH			803.0
4.0						End of boring 4.0 feet	



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Date Boring Started: 2/17/16
 Date Boring Completed: 2/17/16
 Logged By: JWJ
 Drilling Contractor: Matrix
 Drill Rig: NA

Remarks: Sampled at 10:45 am.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-09

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,441.2 ft E 520,926.3 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 807.4 ft
 Drilling Method: Hand auger
 Sampling Method: Hand auger
 Completion Depth: 1.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			ORGANIC SOIL WITH SAND (OL/OH): fine to coarse grained; brown; moist; stiff; with gravel and silt; non-plastic; cohesive; 20% sand, 10% gravel; debris includes rusty metal sheets and concrete/asphalt slabs; (FILL).	807.0
0.5				OL/OH			
1.0						End of boring 1.0 feet	806.5
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							

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Date Boring Started: 2/18/16
 Date Boring Completed: 2/18/16
 Logged By: JWJ
 Drilling Contractor: Barr
 Drill Rig: NA

Remarks: Sampled at 10:50 am.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-10

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,677.0 ft E 522,007.9 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 804.0 ft
 Drilling Method: Hand auger
 Sampling Method: Hand auger
 Completion Depth: 1.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			ORGANIC SOIL WITH SAND (OL/OH): fine to coarse grained; brown; moist; stiff; with gravel and silt; non-plastic; cohesive; approximately 20% sand, 20% gravel; cobbles/riprap; debris includes concrete and red brick; (FILL).	803.5
0.5			PID: 0.0	OL/OH			803.0
1.0						End of boring 1.0 feet	
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							

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Date Boring Started: 2/18/16
 Date Boring Completed: 2/18/16
 Logged By: JWJ
 Drilling Contractor: Barr
 Drill Rig: NA

Remarks: Sampled at 11:20 am, next to storm drain.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:



Barr Engineering Company
 4300 MarketPointe Drive Suite 200
 Minneapolis, MN 55435
 Telephone: 952-832-2600

LOG OF BORING SB-15-11

SHEET 1 OF 1

Project: Bassett Creek Main Stem Erosion Repair Project
 Project No.: 23/27-0051
 Location: Bassett Creek
 Coordinates: N 167,907.4 ft E 522,402.0 ft
 Datum: Hennepin County Coordinate System and NAVD88 (LiDAR)

Surface Elevation: 804.3 ft
 Drilling Method: Hand auger
 Sampling Method: Hand auger
 Completion Depth: 1.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	SCSC	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0			D/O/S: N / N / N			ORGANIC SOIL WITH SAND (OL/OH): brown; moist; stiff; with gravel and silt; non-plastic; cohesive; debris includes metal scrap, concrete and wood; (FILL).	804.0
0.5			PID: 0.0	OL/OH			803.5
1.0						End of boring 1.0 feet	
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							

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Date Boring Started: 2/18/16
 Date Boring Completed: 2/18/16
 Logged By: JWJ
 Drilling Contractor: Barr
 Drill Rig: NA

Remarks: Sampled at 9:25 am.
 BR=0.0

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
 Additional data may have been collected in the field which is not included on this log.
 Weather:

Appendix C

Photographic Log

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Photographic Log

Bassett Creek Main Stem Erosion Repair Project Minneapolis, MN Borings and Hand Augers/Pickaxe (February 17-18, 2016)

Photo #	Description
1	Geoprobe Setup at SB-15-01
2	Geoprobe Core at SB-15-01
3	Geoprobe Setup at SB-15-02
4	Geoprobe Core at SB-15-02
5	Hand Auger Area at SB-15-03
6	Hand Auger Area at SB-15-04
7	Geoprobe Setup at SB-15-05
8	Geoprobe Core at SB-15-05
9	Geoprobe Setup at SB-15-06
10	Geoprobe Core at SB-15-06
11	Geoprobe Setup at SB-15-07
12	Geoprobe Core at SB-15-07
13	Geoprobe Setup at SB-15-08
14	Geoprobe Core at SB-15-08
15	Hand Auger Area at SB-15-09
16	Debris Around SP-15-09 (Concrete and Blacktop)
17	Pickaxe Sample Area at SB-15-10
18	Hand Auger Area at SB-15-11
19	Hand Auger Sample Soils at SB-15-11
20	Debris Around SP-15-11 (Scrap Metal)



Photo 1: Geoprobe Setup at SB-15-01



Photo 2: Geoprobe Core at SB-15-01



Photo 3: Geoprobe Setup at SB-15-02



Photo 4: Geoprobe Core at SB-15-02



Photo 5: Hand Auger Area at SB-15-03



Photo 6: Hand Auger Area at SB-15-04



Photo 7: Geoprobe Setup at SB-15-05



Photo 8: Geoprobe Core at SB-15-05



Photo 9: Geoprobe Setup at SB-15-06



Photo 10: Geoprobe Core at SB-15-06



Photo 11: Geoprobe Setup at SB-15-07



Photo 12: Geoprobe Core at SB-15-07



Photo 13: Geoprobe Setup at SB-15-08



Photo 14: Geoprobe Core at SB-15-08



Photo 15: Hand Auger Area at SB-15-09



Photo 16: Debris Around SP-15-09 (Concrete and Blacktop)



Photo 17: Pickaxe Sample Area at SB-15-10



Photo 18: Hand Auger Area at SB-15-11



Photo 19: Hand Auger Sample Soils at SB-15-11



Photo 20: Debris Around SP-15-11 (Scrap Metal)

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Appendix D

Laboratory Report

DRAFT



88 Empire Drive
St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

March 04, 2016

Ms. Terri Olson
Barr Engineering Co.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435

Work Order Number: 1600808
RE: 23270051

Enclosed are the results of analyses for samples received by the laboratory on 02/19/16. If you have any questions concerning this report, please feel free to contact me.

Results are not blank corrected unless noted within the report. Additionally, all QC results meet requirements unless noted.

All samples will be retained by Legend Technical Services, Inc., unless consumed in the analysis, at ambient conditions for 30 days from the date of this report and then discarded unless other arrangements are made. All samples were received in acceptable condition unless otherwise noted.

All test results and QC meet requirements of the 2003 NELAC standard.

MDH (NELAP) Accreditation #027-123-295

Prepared by,
LEGEND TECHNICAL SERVICES, INC

Bach Pham
Client Manager II
bpham@legend-group.com

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-15-01_0-4	1600808-01	Soil	02/17/16 14:30	02/19/16 11:30
SB-15-02_0-4	1600808-02	Soil	02/17/16 13:40	02/19/16 11:30
SB-15-03_0-1	1600808-03	Soil	02/18/16 12:20	02/19/16 11:30
SB-15-04_0-1	1600808-04	Soil	02/18/16 12:30	02/19/16 11:30
SB-15-05_0-4	1600808-05	Soil	02/17/16 12:00	02/19/16 11:30
SB-15-06_0-4	1600808-06	Soil	02/17/16 11:30	02/19/16 11:30
SB-15-07_0-4	1600808-07	Soil	02/17/16 09:30	02/19/16 11:30
SB-15-08_0-4	1600808-08	Soil	02/17/16 10:45	02/19/16 11:30
SB-15-09_0-1	1600808-09	Soil	02/18/16 10:50	02/19/16 11:30
SB-15-10_0-1	1600808-10	Soil	02/18/16 11:20	02/19/16 11:30
SB-15-11_0-1	1600808-11	Soil	02/18/16 09:25	02/19/16 11:30

Shipping Container Information		
Default Cooler	Temperature (°C): 1.9	
Received on ice: Yes	Temperature blank was present	Received on ice pack: No
Received on melt water: No	Ambient: No	Acceptable (IH/ISO only): No
Custody seals: Yes		

Case Narrative:

The MS/MSD recovery for barium, copper, lead, and zinc were outside the method control limits for the 6010C batch B6B2208. The LCS, LCS duplicate, and % RPD were within the control limits. The source sample was SB-15-01_0-4.

The DRO chromatograms are attached for all samples.

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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DRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil Sampled: 02/17/16 14:30 Received: 02/19/16 11:30										
Diesel Range Organics	460	11	2.2	mg/kg dry	1	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	90.8			70-130 %		"	"	"	"	
SB-15-02_0-4 (1600808-02) Soil Sampled: 02/17/16 13:40 Received: 02/19/16 11:30										
Diesel Range Organics	35	7.3	1.5	mg/kg dry	1	B6B2307	02/23/16	02/26/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	100			70-130 %		"	"	"	"	
SB-15-03_0-1 (1600808-03) Soil Sampled: 02/18/16 12:20 Received: 02/19/16 11:30										
Diesel Range Organics	41	10	2.2	mg/kg dry	1	B6B2307	02/23/16	02/26/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	105			70-130 %		"	"	"	"	
SB-15-04_0-1 (1600808-04) Soil Sampled: 02/18/16 12:30 Received: 02/19/16 11:30										
Diesel Range Organics	10	8.9	1.9	mg/kg dry	1	B6B2307	02/23/16	02/26/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	103			70-130 %		"	"	"	"	
SB-15-05_0-4 (1600808-05) Soil Sampled: 02/17/16 12:00 Received: 02/19/16 11:30										
Diesel Range Organics	280	95	20	mg/kg dry	10	B6B2307	02/23/16	02/27/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	119			70-130 %		"	"	"	"	
SB-15-06_0-4 (1600808-06) Soil Sampled: 02/17/16 11:30 Received: 02/19/16 11:30										
Diesel Range Organics	83	15	3.2	mg/kg dry	2	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	106			70-130 %		"	"	"	"	
SB-15-07_0-4 (1600808-07) Soil Sampled: 02/17/16 09:30 Received: 02/19/16 11:30										
Diesel Range Organics	130	53	11	mg/kg dry	5	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	115			70-130 %		"	"	"	"	
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
Diesel Range Organics	110	50	11	mg/kg dry	5	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	109			70-130 %		"	"	"	"	
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
Diesel Range Organics	140	65	14	mg/kg dry	5	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	126			70-130 %		"	"	"	"	
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
Diesel Range Organics	110	30	6.4	mg/kg dry	2	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	118			70-130 %		"	"	"	"	
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
Diesel Range Organics	79	25	5.3	mg/kg dry	2	B6B2307	02/23/16	02/25/16	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	108			70-130 %		"	"	"	"	

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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TOTAL METALS ANALYSIS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil Sampled: 02/17/16 14:30 Received: 02/19/16 11:30										
Arsenic	10	1.4	0.41	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Barium	130	1.4	0.14	mg/kg dry	1	"	"	"	"	M2
Cadmium	0.33	0.071	0.014	mg/kg dry	1	"	"	"	"	
Chromium	17	0.71	0.029	mg/kg dry	1	"	"	"	"	
Lead	40	1.1	0.26	mg/kg dry	1	"	"	"	"	M1
Mercury	<0.71	0.71	0.17	mg/kg dry	1	"	"	"	"	
Selenium	<3.6	3.6	0.94	mg/kg dry	1	"	"	"	"	
Silver	<0.71	0.71	0.21	mg/kg dry	1	"	"	"	"	
SB-15-02_0-4 (1600808-02) Soil Sampled: 02/17/16 13:40 Received: 02/19/16 11:30										
Arsenic	6.8	1.2	0.34	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Barium	82	1.2	0.12	mg/kg dry	1	"	"	"	"	
Cadmium	0.16	0.058	0.012	mg/kg dry	1	"	"	"	"	
Chromium	15	0.58	0.023	mg/kg dry	1	"	"	"	"	
Lead	18	0.87	0.21	mg/kg dry	1	"	"	"	"	
Mercury	<0.58	0.58	0.14	mg/kg dry	1	"	"	"	"	
Selenium	<2.9	2.9	0.77	mg/kg dry	1	"	"	"	"	
Silver	<0.58	0.58	0.17	mg/kg dry	1	"	"	"	"	
SB-15-03_0-1 (1600808-03) Soil Sampled: 02/18/16 12:20 Received: 02/19/16 11:30										
Arsenic	6.8	1.1	0.33	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Barium	40	1.1	0.11	mg/kg dry	1	"	"	"	"	
Cadmium	0.12	0.057	0.011	mg/kg dry	1	"	"	"	"	
Chromium	8.5	0.57	0.023	mg/kg dry	1	"	"	"	"	
Lead	7.4	0.85	0.20	mg/kg dry	1	"	"	"	"	
Mercury	<0.57	0.57	0.14	mg/kg dry	1	"	"	"	"	
Selenium	<2.8	2.8	0.75	mg/kg dry	1	"	"	"	"	
Silver	<0.57	0.57	0.17	mg/kg dry	1	"	"	"	"	
SB-15-04_0-1 (1600808-04) Soil Sampled: 02/18/16 12:30 Received: 02/19/16 11:30										
Arsenic	5.3	1.2	0.36	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Barium	85	1.2	0.12	mg/kg dry	1	"	"	"	"	
Cadmium	0.12	0.062	0.012	mg/kg dry	1	"	"	"	"	
Chromium	17	0.62	0.025	mg/kg dry	1	"	"	"	"	
Lead	4.4	0.93	0.22	mg/kg dry	1	"	"	"	"	
Mercury	<0.62	0.62	0.15	mg/kg dry	1	"	"	"	"	
Selenium	<3.1	3.1	0.81	mg/kg dry	1	"	"	"	"	
Silver	<0.62	0.62	0.19	mg/kg dry	1	"	"	"	"	
SB-15-05_0-4 (1600808-05) Soil Sampled: 02/17/16 12:00 Received: 02/19/16 11:30										
Antimony	3.0	1.2	0.24	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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TOTAL METALS ANALYSIS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SB-15-05_0-4 (1600808-05) Soil **Sampled: 02/17/16 12:00** **Received: 02/19/16 11:30**

Arsenic	11	1.2	0.36	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Barium	110	1.2	0.12	mg/kg dry	1	"	"	"	"	
Beryllium	0.40	0.16	0.0064	mg/kg dry	1	"	"	"	"	
Cadmium	1.4	0.062	0.012	mg/kg dry	1	"	"	"	"	
Chromium	15	0.62	0.025	mg/kg dry	1	"	"	"	"	
Copper	50	0.62	0.081	mg/kg dry	1	"	"	"	"	
Lead	170	0.94	0.22	mg/kg dry	1	"	"	"	"	
Mercury	0.73	0.62	0.15	mg/kg dry	1	"	"	"	"	
Nickel	14	0.31	0.050	mg/kg dry	1	"	"	"	"	
Selenium	<3.1	3.1	0.82	mg/kg dry	1	"	"	"	"	
Silver	<0.62	0.62	0.19	mg/kg dry	1	"	"	"	"	
Thallium	<2.5	2.5	0.51	mg/kg dry	1	"	"	"	"	
Zinc	660	1.2	0.25	mg/kg dry	1	"	"	"	"	

SB-15-06_0-4 (1600808-06) Soil **Sampled: 02/17/16 11:30** **Received: 02/19/16 11:30**

Antimony	1.9	1.2	0.23	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	7.7	1.2	0.35	mg/kg dry	1	"	"	"	"	
Barium	90	1.2	0.12	mg/kg dry	1	"	"	"	"	
Beryllium	0.41	0.15	0.0061	mg/kg dry	1	"	"	"	"	
Cadmium	0.39	0.060	0.012	mg/kg dry	1	"	"	"	"	
Chromium	15	0.60	0.024	mg/kg dry	1	"	"	"	"	
Copper	26	0.60	0.077	mg/kg dry	1	"	"	"	"	
Lead	51	0.89	0.21	mg/kg dry	1	"	"	"	"	
Mercury	<0.60	0.60	0.14	mg/kg dry	1	"	"	"	"	
Nickel	15	0.30	0.048	mg/kg dry	1	"	"	"	"	
Selenium	<3.0	3.0	0.79	mg/kg dry	1	"	"	"	"	
Silver	<0.60	0.60	0.18	mg/kg dry	1	"	"	"	"	
Thallium	<2.4	2.4	0.49	mg/kg dry	1	"	"	"	"	
Zinc	90	1.2	0.24	mg/kg dry	1	"	"	"	"	

SB-15-07_0-4 (1600808-07) Soil **Sampled: 02/17/16 09:30** **Received: 02/19/16 11:30**

Antimony	4.3	1.2	0.23	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	7.9	1.2	0.35	mg/kg dry	1	"	"	"	"	
Barium	100	1.2	0.12	mg/kg dry	1	"	"	"	"	
Beryllium	0.38	0.15	0.0061	mg/kg dry	1	"	"	"	"	
Cadmium	0.54	0.060	0.012	mg/kg dry	1	"	"	"	"	
Chromium	16	0.60	0.024	mg/kg dry	1	"	"	"	"	
Copper	33	0.60	0.077	mg/kg dry	1	"	"	"	"	
Lead	120	0.89	0.21	mg/kg dry	1	"	"	"	"	
Mercury	2.7	0.60	0.14	mg/kg dry	1	"	"	"	"	

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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TOTAL METALS ANALYSIS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-07_0-4 (1600808-07) Soil Sampled: 02/17/16 09:30 Received: 02/19/16 11:30										
Nickel	13	0.30	0.048	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Selenium	<3.0	3.0	0.79	mg/kg dry	1	"	"	"	"	
Silver	<0.60	0.60	0.18	mg/kg dry	1	"	"	"	"	
Thallium	<2.4	2.4	0.49	mg/kg dry	1	"	"	"	"	
Zinc	140	1.2	0.24	mg/kg dry	1	"	"	"	"	
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
Antimony	3.1	1.2	0.23	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	6.7	1.2	0.35	mg/kg dry	1	"	"	"	"	
Barium	150	1.2	0.12	mg/kg dry	1	"	"	"	"	
Beryllium	0.49	0.15	0.0061	mg/kg dry	1	"	"	"	"	
Cadmium	0.48	0.060	0.012	mg/kg dry	1	"	"	"	"	
Chromium	17	0.60	0.024	mg/kg dry	1	"	"	"	"	
Copper	29	0.60	0.077	mg/kg dry	1	"	"	"	"	
Lead	58	0.89	0.21	mg/kg dry	1	"	"	"	"	
Mercury	<0.60	0.60	0.14	mg/kg dry	1	"	"	"	"	
Nickel	18	0.30	0.048	mg/kg dry	1	"	"	"	"	
Selenium	<3.0	3.0	0.79	mg/kg dry	1	"	"	"	"	
Silver	1.2	0.60	0.18	mg/kg dry	1	"	"	"	"	
Thallium	<2.4	2.4	0.49	mg/kg dry	1	"	"	"	"	
Zinc	130	1.2	0.24	mg/kg dry	1	"	"	"	"	
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
Antimony	3.3	1.3	0.24	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	9.8	1.3	0.37	mg/kg dry	1	"	"	"	"	
Barium	130	1.3	0.13	mg/kg dry	1	"	"	"	"	
Beryllium	0.46	0.17	0.0065	mg/kg dry	1	"	"	"	"	
Cadmium	2.0	0.064	0.013	mg/kg dry	1	"	"	"	"	
Chromium	19	0.64	0.026	mg/kg dry	1	"	"	"	"	
Copper	41	0.64	0.083	mg/kg dry	1	"	"	"	"	
Lead	300	0.96	0.23	mg/kg dry	1	"	"	"	"	
Mercury	1.1	0.64	0.15	mg/kg dry	1	"	"	"	"	
Nickel	17	0.32	0.051	mg/kg dry	1	"	"	"	"	
Selenium	<3.2	3.2	0.85	mg/kg dry	1	"	"	"	"	
Silver	<0.64	0.64	0.19	mg/kg dry	1	"	"	"	"	
Thallium	<2.6	2.6	0.53	mg/kg dry	1	"	"	"	"	
Zinc	570	1.3	0.26	mg/kg dry	1	"	"	"	"	
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
Antimony	1.9	1.4	0.26	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	9.1	1.4	0.39	mg/kg dry	1	"	"	"	"	

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TOTAL METALS ANALYSIS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
Barium	130	1.4	0.14	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Beryllium	0.46	0.18	0.0069	mg/kg dry	1	"	"	"	"	
Cadmium	0.44	0.068	0.014	mg/kg dry	1	"	"	"	"	
Chromium	17	0.68	0.027	mg/kg dry	1	"	"	"	"	
Copper	29	0.68	0.088	mg/kg dry	1	"	"	"	"	
Lead	510	1.0	0.24	mg/kg dry	1	"	"	"	"	
Mercury	<0.68	0.68	0.16	mg/kg dry	1	"	"	"	"	
Nickel	15	0.34	0.054	mg/kg dry	1	"	"	"	"	
Selenium	<3.4	3.4	0.89	mg/kg dry	1	"	"	"	"	
Silver	<0.68	0.68	0.20	mg/kg dry	1	"	"	"	"	
Thallium	<2.7	2.7	0.55	mg/kg dry	1	"	"	"	"	
Zinc	130	1.4	0.27	mg/kg dry	1	"	"	"	"	
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
Antimony	2.7	1.2	0.23	mg/kg dry	1	B6B2208	02/22/16	02/22/16	EPA 6010C	
Arsenic	7.3	1.2	0.35	mg/kg dry	1	"	"	"	"	
Barium	100	1.2	0.12	mg/kg dry	1	"	"	"	"	
Beryllium	0.48	0.16	0.0062	mg/kg dry	1	"	"	"	"	
Cadmium	0.44	0.061	0.012	mg/kg dry	1	"	"	"	"	
Chromium	20	0.61	0.024	mg/kg dry	1	"	"	"	"	
Copper	29	0.61	0.079	mg/kg dry	1	"	"	"	"	
Lead	58	0.91	0.22	mg/kg dry	1	"	"	"	"	
Mercury	<0.61	0.61	0.15	mg/kg dry	1	"	"	"	"	
Nickel	18	0.30	0.049	mg/kg dry	1	"	"	"	"	
Selenium	<3.0	3.0	0.80	mg/kg dry	1	"	"	"	"	
Silver	<0.61	0.61	0.18	mg/kg dry	1	"	"	"	"	
Thallium	<2.4	2.4	0.50	mg/kg dry	1	"	"	"	"	
Zinc	100	1.2	0.24	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil Sampled: 02/17/16 14:30 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.47	0.47	0.097	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.47	0.47	0.11	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.47	0.47	0.090	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Anthracene	<0.47	0.47	0.099	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	<0.47	0.47	0.093	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	<0.47	0.47	0.084	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Chrysene	<0.47	0.47	0.091	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.47	0.47	0.12	mg/kg dry	1	"	"	"	"	
Fluoranthene	<0.47	0.47	0.097	mg/kg dry	1	"	"	"	"	
Fluorene	<0.47	0.47	0.093	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.47	0.47	0.10	mg/kg dry	1	"	"	"	"	
Phenanthrene	<0.47	0.47	0.094	mg/kg dry	1	"	"	"	"	
Pyrene	<0.47	0.47	0.084	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	62.7			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	60.0			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	65.2			51.5-94.6 %		"	"	"	"	
SB-15-02_0-4 (1600808-02) Soil Sampled: 02/17/16 13:40 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.38	0.38	0.079	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.38	0.38	0.093	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.38	0.38	0.073	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.38	0.38	0.083	mg/kg dry	1	"	"	"	"	
Anthracene	<0.38	0.38	0.080	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	<0.38	0.38	0.076	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	<0.38	0.38	0.081	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	<0.38	0.38	0.069	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.38	0.38	0.083	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.38	0.38	0.081	mg/kg dry	1	"	"	"	"	
Chrysene	<0.38	0.38	0.074	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.38	0.38	0.095	mg/kg dry	1	"	"	"	"	
Fluoranthene	<0.38	0.38	0.079	mg/kg dry	1	"	"	"	"	
Fluorene	<0.38	0.38	0.076	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.38	0.38	0.084	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.38	0.38	0.083	mg/kg dry	1	"	"	"	"	
Phenanthrene	<0.38	0.38	0.077	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-02_0-4 (1600808-02) Soil Sampled: 02/17/16 13:40 Received: 02/19/16 11:30										
Pyrene	<0.38	0.38	0.069	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
Surrogate: 2-Fluorobiphenyl	65.8			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	59.7			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	62.9			51.5-94.6 %		"	"	"	"	
SB-15-03_0-1 (1600808-03) Soil Sampled: 02/18/16 12:20 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.38	0.38	0.077	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.38	0.38	0.091	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.38	0.38	0.072	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.38	0.38	0.081	mg/kg dry	1	"	"	"	"	
Anthracene	<0.38	0.38	0.078	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.92	0.38	0.074	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	0.81	0.38	0.080	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	1.1	0.38	0.067	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	0.52	0.38	0.081	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.38	0.38	0.080	mg/kg dry	1	"	"	"	"	
Chrysene	1.0	0.38	0.073	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.38	0.38	0.093	mg/kg dry	1	"	"	"	"	
Fluoranthene	1.9	0.38	0.077	mg/kg dry	1	"	"	"	"	
Fluorene	<0.38	0.38	0.074	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.60	0.38	0.082	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.38	0.38	0.081	mg/kg dry	1	"	"	"	"	
Phenanthrene	0.84	0.38	0.075	mg/kg dry	1	"	"	"	"	
Pyrene	1.8	0.38	0.067	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	63.8			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	59.5			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	68.5			51.5-94.6 %		"	"	"	"	
SB-15-04_0-1 (1600808-04) Soil Sampled: 02/18/16 12:30 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.41	0.41	0.084	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.41	0.41	0.099	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.41	0.41	0.078	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.41	0.41	0.088	mg/kg dry	1	"	"	"	"	
Anthracene	<0.41	0.41	0.085	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	<0.41	0.41	0.080	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	<0.41	0.41	0.086	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	<0.41	0.41	0.073	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.41	0.41	0.088	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.41	0.41	0.086	mg/kg dry	1	"	"	"	"	
Chrysene	<0.41	0.41	0.079	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.41	0.41	0.10	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-04_0-1 (1600808-04) Soil Sampled: 02/18/16 12:30 Received: 02/19/16 11:30										
Fluoranthene	<0.41	0.41	0.084	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
Fluorene	<0.41	0.41	0.080	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.41	0.41	0.089	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.41	0.41	0.088	mg/kg dry	1	"	"	"	"	
Phenanthrene	<0.41	0.41	0.081	mg/kg dry	1	"	"	"	"	
Pyrene	<0.41	0.41	0.073	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	59.0		46.3-96.2	%		"	"	"	"	
Surrogate: Nitrobenzene-d5	53.3		49.3-94	%		"	"	"	"	
Surrogate: Terphenyl-d14	61.9		51.5-94.6	%		"	"	"	"	
SB-15-05_0-4 (1600808-05) Soil Sampled: 02/17/16 12:00 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.41	0.41	0.085	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.41	0.41	0.10	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.41	0.41	0.079	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.41	0.41	0.089	mg/kg dry	1	"	"	"	"	
Anthracene	<0.41	0.41	0.086	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.83	0.41	0.081	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	0.82	0.41	0.088	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	1.1	0.41	0.074	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	0.41	0.41	0.089	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.41	0.41	0.088	mg/kg dry	1	"	"	"	"	
Chrysene	1.1	0.41	0.080	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.41	0.41	0.10	mg/kg dry	1	"	"	"	"	
Fluoranthene	1.7	0.41	0.085	mg/kg dry	1	"	"	"	"	
Fluorene	<0.41	0.41	0.081	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.47	0.41	0.090	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.41	0.41	0.089	mg/kg dry	1	"	"	"	"	
Phenanthrene	1.0	0.41	0.082	mg/kg dry	1	"	"	"	"	
Pyrene	1.7	0.41	0.074	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	61.5		46.3-96.2	%		"	"	"	"	
Surrogate: Nitrobenzene-d5	57.6		49.3-94	%		"	"	"	"	
Surrogate: Terphenyl-d14	52.9		51.5-94.6	%		"	"	"	"	
SB-15-06_0-4 (1600808-06) Soil Sampled: 02/17/16 11:30 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.39	0.39	0.081	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.39	0.39	0.095	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.39	0.39	0.075	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Anthracene	<0.39	0.39	0.082	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	<0.39	0.39	0.077	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	<0.39	0.39	0.083	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-06_0-4 (1600808-06) Soil Sampled: 02/17/16 11:30 Received: 02/19/16 11:30										
Benzo(b)fluoranthene	<0.39	0.39	0.070	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
Benzo(g,h,i)perylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.39	0.39	0.083	mg/kg dry	1	"	"	"	"	
Chrysene	<0.39	0.39	0.076	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.39	0.39	0.098	mg/kg dry	1	"	"	"	"	
Fluoranthene	0.48	0.39	0.081	mg/kg dry	1	"	"	"	"	
Fluorene	<0.39	0.39	0.077	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.39	0.39	0.086	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Phenanthrene	0.40	0.39	0.079	mg/kg dry	1	"	"	"	"	
Pyrene	0.45	0.39	0.070	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	60.1			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	56.6			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	58.0			51.5-94.6 %		"	"	"	"	
SB-15-07_0-4 (1600808-07) Soil Sampled: 02/17/16 09:30 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.39	0.39	0.081	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.39	0.39	0.095	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.39	0.39	0.075	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Anthracene	<0.39	0.39	0.082	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.42	0.39	0.077	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	0.42	0.39	0.083	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	0.61	0.39	0.070	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.39	0.39	0.083	mg/kg dry	1	"	"	"	"	
Chrysene	0.51	0.39	0.076	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.39	0.39	0.098	mg/kg dry	1	"	"	"	"	
Fluoranthene	0.93	0.39	0.081	mg/kg dry	1	"	"	"	"	
Fluorene	<0.39	0.39	0.077	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.39	0.39	0.086	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Phenanthrene	0.74	0.39	0.079	mg/kg dry	1	"	"	"	"	
Pyrene	0.88	0.39	0.070	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	63.5			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	56.9			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	57.1			51.5-94.6 %		"	"	"	"	
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.39	0.39	0.081	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.39	0.39	0.095	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
Acenaphthene	<0.39	0.39	0.075	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
Acenaphthylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Anthracene	<0.39	0.39	0.082	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.41	0.39	0.077	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	<0.39	0.39	0.083	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	0.51	0.39	0.070	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.39	0.39	0.083	mg/kg dry	1	"	"	"	"	
Chrysene	0.51	0.39	0.076	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.39	0.39	0.098	mg/kg dry	1	"	"	"	"	
Fluoranthene	0.97	0.39	0.081	mg/kg dry	1	"	"	"	"	
Fluorene	<0.39	0.39	0.077	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.39	0.39	0.086	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.39	0.39	0.085	mg/kg dry	1	"	"	"	"	
Phenanthrene	0.74	0.39	0.079	mg/kg dry	1	"	"	"	"	
Pyrene	0.84	0.39	0.070	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	63.6			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	58.2			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	62.6			51.5-94.6 %		"	"	"	"	
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.42	0.42	0.087	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.42	0.42	0.10	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.42	0.42	0.081	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.42	0.42	0.091	mg/kg dry	1	"	"	"	"	
Anthracene	1.0	0.42	0.088	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	1.8	0.42	0.083	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	1.6	0.42	0.090	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	2.1	0.42	0.076	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	0.70	0.42	0.091	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	0.77	0.42	0.090	mg/kg dry	1	"	"	"	"	
Chrysene	2.2	0.42	0.082	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.42	0.42	0.11	mg/kg dry	1	"	"	"	"	
Fluoranthene	3.7	0.42	0.087	mg/kg dry	1	"	"	"	"	
Fluorene	0.46	0.42	0.083	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.82	0.42	0.092	mg/kg dry	1	"	"	"	"	
Naphthalene	0.45	0.42	0.091	mg/kg dry	1	"	"	"	"	
Phenanthrene	3.8	0.42	0.085	mg/kg dry	1	"	"	"	"	
Pyrene	3.5	0.42	0.076	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	62.8			46.3-96.2 %		"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
Surrogate: Nitrobenzene-d5	59.2			49.3-94 %		B6B2502	02/25/16	02/26/16	EPA 8270D	
Surrogate: Terphenyl-d14	61.2			51.5-94.6 %		"	"	"	"	
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.45	0.45	0.092	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.45	0.45	0.11	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.45	0.45	0.085	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.45	0.45	0.096	mg/kg dry	1	"	"	"	"	
Anthracene	<0.45	0.45	0.093	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.83	0.45	0.088	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	0.78	0.45	0.095	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	1.2	0.45	0.080	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.45	0.45	0.096	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.45	0.45	0.095	mg/kg dry	1	"	"	"	"	
Chrysene	1.0	0.45	0.086	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.45	0.45	0.11	mg/kg dry	1	"	"	"	"	
Fluoranthene	1.9	0.45	0.092	mg/kg dry	1	"	"	"	"	
Fluorene	<0.45	0.45	0.088	mg/kg dry	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	<0.45	0.45	0.097	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.45	0.45	0.096	mg/kg dry	1	"	"	"	"	
Phenanthrene	1.2	0.45	0.089	mg/kg dry	1	"	"	"	"	
Pyrene	1.7	0.45	0.080	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	58.5			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	58.4			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	60.3			51.5-94.6 %		"	"	"	"	
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
2-Chloronaphthalene	<0.40	0.40	0.083	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
2-Methylnaphthalene	<0.40	0.40	0.098	mg/kg dry	1	"	"	"	"	
Acenaphthene	<0.40	0.40	0.077	mg/kg dry	1	"	"	"	"	
Acenaphthylene	<0.40	0.40	0.087	mg/kg dry	1	"	"	"	"	
Anthracene	<0.40	0.40	0.084	mg/kg dry	1	"	"	"	"	
Benzo(a)anthracene	0.68	0.40	0.079	mg/kg dry	1	"	"	"	"	
Benzo(a)pyrene	0.65	0.40	0.085	mg/kg dry	1	"	"	"	"	
Benzo(b)fluoranthene	0.93	0.40	0.072	mg/kg dry	1	"	"	"	"	
Benzo(g,h,i)perylene	<0.40	0.40	0.087	mg/kg dry	1	"	"	"	"	
Benzo(k)fluoranthene	<0.40	0.40	0.085	mg/kg dry	1	"	"	"	"	
Chrysene	0.83	0.40	0.078	mg/kg dry	1	"	"	"	"	
Dibenz(a,h)anthracene	<0.40	0.40	0.10	mg/kg dry	1	"	"	"	"	
Fluoranthene	1.6	0.40	0.083	mg/kg dry	1	"	"	"	"	
Fluorene	<0.40	0.40	0.079	mg/kg dry	1	"	"	"	"	

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PAH 8270D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
Indeno (1,2,3-cd) pyrene	<0.40	0.40	0.088	mg/kg dry	1	B6B2502	02/25/16	02/26/16	EPA 8270D	
Naphthalene	<0.40	0.40	0.087	mg/kg dry	1	"	"	"	"	
Phenanthrene	1.4	0.40	0.080	mg/kg dry	1	"	"	"	"	
Pyrene	1.4	0.40	0.072	mg/kg dry	1	"	"	"	"	
Surrogate: 2-Fluorobiphenyl	61.3			46.3-96.2 %		"	"	"	"	
Surrogate: Nitrobenzene-d5	56.0			49.3-94 %		"	"	"	"	
Surrogate: Terphenyl-d14	56.6			51.5-94.6 %		"	"	"	"	

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PCB 8082A
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
Aroclor 1016	<0.20	0.20	0.0010	mg/kg	1	B6B2603	02/26/16	03/04/16	EPA 8082A	
Aroclor 1221	<0.20	0.20	0.0017	mg/kg	1	"	"	"	"	
Aroclor 1232	<0.20	0.20	0.0013	mg/kg	1	"	"	"	"	
Aroclor 1242	<0.20	0.20	0.0018	mg/kg	1	"	"	"	"	
Aroclor 1248	<0.20	0.20	0.0011	mg/kg	1	"	"	"	"	
Aroclor 1254	<0.20	0.20	0.0012	mg/kg	1	"	"	"	"	
Aroclor 1260	<0.20	0.20	0.00097	mg/kg	1	"	"	"	"	
Surrogate: Decachlorobiphenyl	88.0			65.3-143 %		"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	95.5			60.9-138 %		"	"	"	"	
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
Aroclor 1016	<0.20	0.20	0.0010	mg/kg	1	B6B2603	02/26/16	03/04/16	EPA 8082A	
Aroclor 1221	<0.20	0.20	0.0017	mg/kg	1	"	"	"	"	
Aroclor 1232	<0.20	0.20	0.0013	mg/kg	1	"	"	"	"	
Aroclor 1242	<0.20	0.20	0.0018	mg/kg	1	"	"	"	"	
Aroclor 1248	<0.20	0.20	0.0011	mg/kg	1	"	"	"	"	
Aroclor 1254	<0.20	0.20	0.0012	mg/kg	1	"	"	"	"	
Aroclor 1260	<0.20	0.20	0.00097	mg/kg	1	"	"	"	"	
Surrogate: Decachlorobiphenyl	83.5			65.3-143 %		"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	94.0			60.9-138 %		"	"	"	"	

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PERCENT SOLIDS
 Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil Sampled: 02/17/16 14:30 Received: 02/19/16 11:30										
% Solids	70			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-02_0-4 (1600808-02) Soil Sampled: 02/17/16 13:40 Received: 02/19/16 11:30										
% Solids	86			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-03_0-1 (1600808-03) Soil Sampled: 02/18/16 12:20 Received: 02/19/16 11:30										
% Solids	88			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-04_0-1 (1600808-04) Soil Sampled: 02/18/16 12:30 Received: 02/19/16 11:30										
% Solids	81			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-05_0-4 (1600808-05) Soil Sampled: 02/17/16 12:00 Received: 02/19/16 11:30										
% Solids	80			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-06_0-4 (1600808-06) Soil Sampled: 02/17/16 11:30 Received: 02/19/16 11:30										
% Solids	84			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-07_0-4 (1600808-07) Soil Sampled: 02/17/16 09:30 Received: 02/19/16 11:30										
% Solids	84			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
% Solids	84			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
% Solids	78			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
% Solids	74			%	1	B6B2609	02/26/16	02/26/16	% calculation	
SB-15-11_0-1 (1600808-11) Soil Sampled: 02/18/16 09:25 Received: 02/19/16 11:30										
% Solids	82			%	1	B6B2609	02/26/16	02/26/16	% calculation	

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TCLP METALS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-05_0-4 (1600808-05) Soil Sampled: 02/17/16 12:00 Received: 02/19/16 11:30										
Lead	<0.075	0.075	0.018	mg/L	1	B6C0206	03/02/16	03/02/16	EPA 1311/6010C	
SB-15-07_0-4 (1600808-07) Soil Sampled: 02/17/16 09:30 Received: 02/19/16 11:30										
Lead	<0.075	0.075	0.018	mg/L	1	B6C0206	03/02/16	03/02/16	EPA 1311/6010C	
SB-15-09_0-1 (1600808-09) Soil Sampled: 02/18/16 10:50 Received: 02/19/16 11:30										
Lead	<0.075	0.075	0.018	mg/L	1	B6C0206	03/02/16	03/02/16	EPA 1311/6010C	
SB-15-10_0-1 (1600808-10) Soil Sampled: 02/18/16 11:20 Received: 02/19/16 11:30										
Lead	<0.075	0.075	0.018	mg/L	1	B6C0206	03/02/16	03/02/16	EPA 1311/6010C	

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VOC 8260B
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil										W-03
Sampled: 02/17/16 14:30										
Received: 02/19/16 11:30										
1,1,1,2-Tetrachloroethane	<0.44	0.44	0.044	mg/kg dry	1	B6B2920	02/29/16	02/29/16	EPA 8260B	
1,1,1-Trichloroethane	<0.44	0.44	0.051	mg/kg dry	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	<0.44	0.44	0.035	mg/kg dry	1	"	"	"	"	
1,1,2-Trichloroethane	<0.44	0.44	0.031	mg/kg dry	1	"	"	"	"	
1,1,2-Trichlorotrifluoroethane	<0.44	0.44	0.044	mg/kg dry	1	"	"	"	"	
1,1-Dichloroethane	<0.44	0.44	0.021	mg/kg dry	1	"	"	"	"	
1,1-Dichloroethene	<0.44	0.44	0.029	mg/kg dry	1	"	"	"	"	
1,1-Dichloropropene	<0.44	0.44	0.033	mg/kg dry	1	"	"	"	"	
1,2,3-Trichlorobenzene	<1.1	1.1	0.21	mg/kg dry	1	"	"	"	"	
1,2,3-Trichloropropane	<0.44	0.44	0.066	mg/kg dry	1	"	"	"	"	
1,2,4-Trichlorobenzene	<1.1	1.1	0.16	mg/kg dry	1	"	"	"	"	
1,2,4-Trimethylbenzene	<0.44	0.44	0.040	mg/kg dry	1	"	"	"	"	
1,2-Dibromo-3-chloropropane	<1.1	1.1	0.10	mg/kg dry	1	"	"	"	"	
1,2-Dibromoethane (EDB)	<0.44	0.44	0.053	mg/kg dry	1	"	"	"	"	
1,2-Dichlorobenzene	<0.44	0.44	0.029	mg/kg dry	1	"	"	"	"	
1,2-Dichloroethane	<0.44	0.44	0.049	mg/kg dry	1	"	"	"	"	
1,2-Dichloropropane	<0.44	0.44	0.047	mg/kg dry	1	"	"	"	"	
1,3,5-Trimethylbenzene	<0.44	0.44	0.055	mg/kg dry	1	"	"	"	"	
1,3-Dichlorobenzene	<0.44	0.44	0.020	mg/kg dry	1	"	"	"	"	
1,3-Dichloropropane	<0.44	0.44	0.033	mg/kg dry	1	"	"	"	"	
1,4-Dichlorobenzene	<0.44	0.44	0.035	mg/kg dry	1	"	"	"	"	
2,2-Dichloropropane	<0.44	0.44	0.12	mg/kg dry	1	"	"	"	"	
2-Butanone	<2.2	2.2	0.21	mg/kg dry	1	"	"	"	"	
2-Chlorotoluene	<0.44	0.44	0.044	mg/kg dry	1	"	"	"	"	
4-Chlorotoluene	<0.44	0.44	0.049	mg/kg dry	1	"	"	"	"	
Acetone	<2.2	2.2	0.27	mg/kg dry	1	"	"	"	"	
Allyl chloride	<0.44	0.44	0.055	mg/kg dry	1	"	"	"	"	
Benzene	<0.44	0.44	0.033	mg/kg dry	1	"	"	"	"	
Bromobenzene	<0.44	0.44	0.044	mg/kg dry	1	"	"	"	"	
Bromochloromethane	<0.44	0.44	0.051	mg/kg dry	1	"	"	"	"	
Bromodichloromethane	<0.44	0.44	0.042	mg/kg dry	1	"	"	"	"	
Bromoform	<0.44	0.44	0.080	mg/kg dry	1	"	"	"	"	
Bromomethane	<0.44	0.44	0.066	mg/kg dry	1	"	"	"	"	
Carbon tetrachloride	<0.44	0.44	0.055	mg/kg dry	1	"	"	"	"	
Chlorobenzene	<0.44	0.44	0.031	mg/kg dry	1	"	"	"	"	
Chloroethane	<0.44	0.44	0.066	mg/kg dry	1	"	"	"	"	
Chloroform	<0.44	0.44	0.069	mg/kg dry	1	"	"	"	"	
Chloromethane	<0.44	0.44	0.060	mg/kg dry	1	"	"	"	"	
cis-1,2-Dichloroethene	<0.44	0.44	0.027	mg/kg dry	1	"	"	"	"	

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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VOC 8260B
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-01_0-4 (1600808-01) Soil										W-03
Sampled: 02/17/16 14:30 Received: 02/19/16 11:30										
cis-1,3-Dichloropropene	<0.44	0.44	0.055	mg/kg dry	1	B6B2920	02/29/16	02/29/16	EPA 8260B	
Dibromochloromethane	<0.44	0.44	0.055	mg/kg dry	1	"	"	"	"	
Dibromomethane	<0.44	0.44	0.055	mg/kg dry	1	"	"	"	"	
Dichlorodifluoromethane	<0.44	0.44	0.082	mg/kg dry	1	"	"	"	"	
Dichlorofluoromethane	<0.44	0.44	0.022	mg/kg dry	1	"	"	"	"	
Ethyl ether	<0.44	0.44	0.053	mg/kg dry	1	"	"	"	"	
Ethylbenzene	<0.44	0.44	0.047	mg/kg dry	1	"	"	"	"	
Hexachlorobutadiene	<1.1	1.1	0.17	mg/kg dry	1	"	"	"	"	
Isopropylbenzene	<0.44	0.44	0.066	mg/kg dry	1	"	"	"	"	
m,p-Xylene	<0.89	0.89	0.11	mg/kg dry	1	"	"	"	"	
Methyl isobutyl ketone	<0.44	0.44	0.095	mg/kg dry	1	"	"	"	"	
Methyl tert-butyl ether	<0.44	0.44	0.021	mg/kg dry	1	"	"	"	"	
Methylene chloride	<1.1	1.1	0.13	mg/kg dry	1	"	"	"	"	
Naphthalene	<1.1	1.1	0.11	mg/kg dry	1	"	"	"	"	
n-Butylbenzene	<0.44	0.44	0.035	mg/kg dry	1	"	"	"	"	
n-Propylbenzene	<0.44	0.44	0.022	mg/kg dry	1	"	"	"	"	
o-Xylene	<0.44	0.44	0.038	mg/kg dry	1	"	"	"	"	
p-Isopropyltoluene	<0.44	0.44	0.024	mg/kg dry	1	"	"	"	"	
sec-Butylbenzene	<0.44	0.44	0.049	mg/kg dry	1	"	"	"	"	
Styrene	<0.44	0.44	0.035	mg/kg dry	1	"	"	"	"	
tert-Butylbenzene	<0.44	0.44	0.058	mg/kg dry	1	"	"	"	"	
Tetrachloroethene	<0.44	0.44	0.084	mg/kg dry	1	"	"	"	"	
Tetrahydrofuran	<2.2	2.2	0.24	mg/kg dry	1	"	"	"	"	
Toluene	<0.44	0.44	0.015	mg/kg dry	1	"	"	"	"	
trans-1,2-Dichloroethene	<0.44	0.44	0.040	mg/kg dry	1	"	"	"	"	
trans-1,3-Dichloropropene	<0.44	0.44	0.044	mg/kg dry	1	"	"	"	"	
Trichloroethene	<0.44	0.44	0.040	mg/kg dry	1	"	"	"	"	
Trichlorofluoromethane	<0.44	0.44	0.064	mg/kg dry	1	"	"	"	"	
Vinyl chloride	<0.44	0.44	0.047	mg/kg dry	1	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	99.1			80-124 %		"	"	"	"	
Surrogate: Dibromofluoromethane	105			77.1-123 %		"	"	"	"	
Surrogate: Toluene-d8	100			78.1-125 %		"	"	"	"	

SB-15-08_0-4 (1600808-08) Soil										
Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
1,1,1,2-Tetrachloroethane	<0.22	0.22	0.022	mg/kg dry	1	B6B2920	02/29/16	02/29/16	EPA 8260B	
1,1,1-Trichloroethane	<0.22	0.22	0.025	mg/kg dry	1	"	"	"	"	
1,1,2,2-Tetrachloroethane	<0.22	0.22	0.018	mg/kg dry	1	"	"	"	"	
1,1,2-Trichloroethane	<0.22	0.22	0.015	mg/kg dry	1	"	"	"	"	
1,1,2-Trichlorotrifluoroethane	<0.22	0.22	0.022	mg/kg dry	1	"	"	"	"	
1,1-Dichloroethane	<0.22	0.22	0.011	mg/kg dry	1	"	"	"	"	

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VOC 8260B
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
1,1-Dichloroethene	<0.22	0.22	0.014	mg/kg dry	1	B6B2920	02/29/16	02/29/16	EPA 8260B	
1,1-Dichloropropene	<0.22	0.22	0.017	mg/kg dry	1	"	"	"	"	
1,2,3-Trichlorobenzene	<0.55	0.55	0.11	mg/kg dry	1	"	"	"	"	
1,2,3-Trichloropropane	<0.22	0.22	0.033	mg/kg dry	1	"	"	"	"	
1,2,4-Trichlorobenzene	<0.55	0.55	0.078	mg/kg dry	1	"	"	"	"	
1,2,4-Trimethylbenzene	<0.22	0.22	0.020	mg/kg dry	1	"	"	"	"	
1,2-Dibromo-3-chloropropane	<0.55	0.55	0.051	mg/kg dry	1	"	"	"	"	
1,2-Dibromoethane (EDB)	<0.22	0.22	0.026	mg/kg dry	1	"	"	"	"	
1,2-Dichlorobenzene	<0.22	0.22	0.014	mg/kg dry	1	"	"	"	"	
1,2-Dichloroethane	<0.22	0.22	0.024	mg/kg dry	1	"	"	"	"	
1,2-Dichloropropane	<0.22	0.22	0.023	mg/kg dry	1	"	"	"	"	
1,3,5-Trimethylbenzene	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
1,3-Dichlorobenzene	<0.22	0.22	0.0099	mg/kg dry	1	"	"	"	"	
1,3-Dichloropropane	<0.22	0.22	0.017	mg/kg dry	1	"	"	"	"	
1,4-Dichlorobenzene	<0.22	0.22	0.018	mg/kg dry	1	"	"	"	"	
2,2-Dichloropropane	<0.22	0.22	0.057	mg/kg dry	1	"	"	"	"	
2-Butanone	<1.1	1.1	0.10	mg/kg dry	1	"	"	"	"	
2-Chlorotoluene	<0.22	0.22	0.022	mg/kg dry	1	"	"	"	"	
4-Chlorotoluene	<0.22	0.22	0.024	mg/kg dry	1	"	"	"	"	
Acetone	<1.1	1.1	0.13	mg/kg dry	1	"	"	"	"	
Allyl chloride	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
Benzene	<0.22	0.22	0.017	mg/kg dry	1	"	"	"	"	
Bromobenzene	<0.22	0.22	0.022	mg/kg dry	1	"	"	"	"	
Bromochloromethane	<0.22	0.22	0.025	mg/kg dry	1	"	"	"	"	
Bromodichloromethane	<0.22	0.22	0.021	mg/kg dry	1	"	"	"	"	
Bromoform	<0.22	0.22	0.040	mg/kg dry	1	"	"	"	"	
Bromomethane	<0.22	0.22	0.033	mg/kg dry	1	"	"	"	"	
Carbon tetrachloride	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
Chlorobenzene	<0.22	0.22	0.015	mg/kg dry	1	"	"	"	"	
Chloroethane	<0.22	0.22	0.033	mg/kg dry	1	"	"	"	"	
Chloroform	<0.22	0.22	0.034	mg/kg dry	1	"	"	"	"	
Chloromethane	<0.22	0.22	0.030	mg/kg dry	1	"	"	"	"	
cis-1,2-Dichloroethene	<0.22	0.22	0.013	mg/kg dry	1	"	"	"	"	
cis-1,3-Dichloropropene	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
Dibromochloromethane	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
Dibromomethane	<0.22	0.22	0.028	mg/kg dry	1	"	"	"	"	
Dichlorodifluoromethane	<0.22	0.22	0.041	mg/kg dry	1	"	"	"	"	
Dichlorofluoromethane	<0.22	0.22	0.011	mg/kg dry	1	"	"	"	"	
Ethyl ether	<0.22	0.22	0.026	mg/kg dry	1	"	"	"	"	

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VOC 8260B
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SB-15-08_0-4 (1600808-08) Soil Sampled: 02/17/16 10:45 Received: 02/19/16 11:30										
Ethylbenzene	<0.22	0.22	0.023	mg/kg dry	1	B6B2920	02/29/16	02/29/16	EPA 8260B	
Hexachlorobutadiene	<0.55	0.55	0.087	mg/kg dry	1	"	"	"	"	
Isopropylbenzene	<0.22	0.22	0.033	mg/kg dry	1	"	"	"	"	
m,p-Xylene	<0.44	0.44	0.053	mg/kg dry	1	"	"	"	"	
Methyl isobutyl ketone	<0.22	0.22	0.047	mg/kg dry	1	"	"	"	"	
Methyl tert-butyl ether	<0.22	0.22	0.011	mg/kg dry	1	"	"	"	"	
Methylene chloride	<0.55	0.55	0.066	mg/kg dry	1	"	"	"	"	
Naphthalene	<0.55	0.55	0.053	mg/kg dry	1	"	"	"	"	
n-Butylbenzene	<0.22	0.22	0.018	mg/kg dry	1	"	"	"	"	
n-Propylbenzene	<0.22	0.22	0.011	mg/kg dry	1	"	"	"	"	
o-Xylene	<0.22	0.22	0.019	mg/kg dry	1	"	"	"	"	
p-Isopropyltoluene	<0.22	0.22	0.012	mg/kg dry	1	"	"	"	"	
sec-Butylbenzene	<0.22	0.22	0.024	mg/kg dry	1	"	"	"	"	
Styrene	<0.22	0.22	0.018	mg/kg dry	1	"	"	"	"	
tert-Butylbenzene	<0.22	0.22	0.029	mg/kg dry	1	"	"	"	"	
Tetrachloroethene	2.2	0.22	0.042	mg/kg dry	1	"	"	"	"	
Tetrahydrofuran	<1.1	1.1	0.12	mg/kg dry	1	"	"	"	"	
Toluene	<0.22	0.22	0.0075	mg/kg dry	1	"	"	"	"	
trans-1,2-Dichloroethene	<0.22	0.22	0.020	mg/kg dry	1	"	"	"	"	
trans-1,3-Dichloropropene	<0.22	0.22	0.022	mg/kg dry	1	"	"	"	"	
Trichloroethene	<0.22	0.22	0.020	mg/kg dry	1	"	"	"	"	
Trichlorofluoromethane	<0.22	0.22	0.032	mg/kg dry	1	"	"	"	"	
Vinyl chloride	<0.22	0.22	0.023	mg/kg dry	1	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	99.9			80-124 %		"	"	"	"	
Surrogate: Dibromofluoromethane	104			77.1-123 %		"	"	"	"	
Surrogate: Toluene-d8	101			78.1-125 %		"	"	"	"	

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**DRO/8015D - Quality Control
 Legend Technical Services, Inc.**

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6B2307 - Sonication (Wisc DRO)											
Blank (B6B2307-BLK1)											
						Prepared: 02/23/16 Analyzed: 02/25/16					
Diesel Range Organics	< 8.0	8.0	1.7	mg/kg wet							
Surrogate: <i>Triacontane (C-30)</i>	17.1			mg/kg wet	16.0		107	70-130			
LCS (B6B2307-BS1)											
						Prepared: 02/23/16 Analyzed: 02/25/16					
Diesel Range Organics	65.1	8.0	1.7	mg/kg wet	64.0		102	70-120			
Surrogate: <i>Triacontane (C-30)</i>	16.9			mg/kg wet	16.0		106	70-130			
LCS Dup (B6B2307-BSD1)											
						Prepared: 02/23/16 Analyzed: 02/26/16					
Diesel Range Organics	61.9	8.0	1.7	mg/kg wet	64.0		96.8	70-120	5.04	20	
Surrogate: <i>Triacontane (C-30)</i>	15.2			mg/kg wet	16.0		95.3	70-130			

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TOTAL METALS ANALYSIS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2208 - EPA 3050B

Blank (B6B2208-BLK1)

Prepared & Analyzed: 02/22/16

Antimony	< 1.0	1.0	0.19	mg/kg wet							
Arsenic	< 1.0	1.0	0.29	mg/kg wet							
Barium	< 1.0	1.0	0.10	mg/kg wet							
Beryllium	< 0.13	0.13	0.0051	mg/kg wet							
Cadmium	< 0.050	0.050	0.010	mg/kg wet							
Chromium	< 0.50	0.50	0.020	mg/kg wet							
Copper	< 0.50	0.50	0.065	mg/kg wet							
Lead	< 0.75	0.75	0.18	mg/kg wet							
Mercury	< 0.50	0.50	0.12	mg/kg wet							
Nickel	< 0.25	0.25	0.040	mg/kg wet							
Selenium	< 2.5	2.5	0.66	mg/kg wet							
Silver	< 0.50	0.50	0.15	mg/kg wet							
Thallium	< 2.0	2.0	0.41	mg/kg wet							
Zinc	< 1.0	1.0	0.20	mg/kg wet							

LCS (B6B2208-BS1)

Prepared & Analyzed: 02/22/16

Antimony	42.0	1.0	0.19	mg/kg wet	39.9		105	80-120			
Arsenic	41.2	1.0	0.29	mg/kg wet	39.9		103	80-120			
Barium	41.2	1.0	0.10	mg/kg wet	39.9		103	80-120			
Beryllium	4.08	0.13	0.0051	mg/kg wet	3.99		102	80-120			
Cadmium	40.6	0.050	0.010	mg/kg wet	39.9		102	80-120			
Chromium	41.0	0.50	0.020	mg/kg wet	39.9		103	80-120			
Copper	38.7	0.50	0.065	mg/kg wet	39.9		97.0	80-120			
Lead	42.6	0.75	0.18	mg/kg wet	39.9		107	80-120			
Mercury	12.5	0.50	0.12	mg/kg wet	12.5		100	80-120			
Nickel	41.4	0.25	0.040	mg/kg wet	39.9		104	80-120			
Selenium	40.6	2.5	0.66	mg/kg wet	39.9		102	80-120			
Silver	3.90	0.50	0.15	mg/kg wet	3.99		97.7	80-120			
Thallium	40.1	2.0	0.41	mg/kg wet	39.9		101	80-120			
Zinc	41.0	1.0	0.20	mg/kg wet	39.9		103	80-120			

LCS Dup (B6B2208-BSD1)

Prepared & Analyzed: 02/22/16

Antimony	43.2	1.0	0.19	mg/kg wet	39.9		108	80-120	2.82	20	
Arsenic	42.2	1.0	0.29	mg/kg wet	39.9		106	80-120	2.64	20	
Barium	41.7	1.0	0.10	mg/kg wet	39.9		105	80-120	1.33	20	
Beryllium	4.16	0.13	0.0051	mg/kg wet	3.99		104	80-120	1.94	20	
Cadmium	41.4	0.050	0.010	mg/kg wet	39.9		104	80-120	1.83	20	
Chromium	41.7	0.50	0.020	mg/kg wet	39.9		105	80-120	1.69	20	
Copper	39.3	0.50	0.065	mg/kg wet	39.9		98.5	80-120	1.54	20	
Lead	42.8	0.75	0.18	mg/kg wet	39.9		107	80-120	0.468	20	

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TOTAL METALS ANALYSIS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6B2208 - EPA 3050B											
LCS Dup (B6B2208-BSD1)											
						Prepared & Analyzed: 02/22/16					
Mercury	12.8	0.50	0.12	mg/kg wet	12.5		102	80-120	2.37	20	
Nickel	42.4	0.25	0.040	mg/kg wet	39.9		106	80-120	2.27	20	
Selenium	41.6	2.5	0.66	mg/kg wet	39.9		104	80-120	2.43	20	
Silver	3.96	0.50	0.15	mg/kg wet	3.99		99.4	80-120	1.65	20	
Thallium	42.1	2.0	0.41	mg/kg wet	39.9		106	80-120	4.87	20	
Zinc	41.5	1.0	0.20	mg/kg wet	39.9		104	80-120	1.33	20	
Matrix Spike (B6B2208-MS1)											
						Source: 1600808-01 Prepared & Analyzed: 02/22/16					
Antimony	57.7	1.4	0.27	mg/kg dry	56.0	2.00	99.6	75-125			
Arsenic	66.3	1.4	0.41	mg/kg dry	56.0	10.4	99.8	75-125			
Barium	170	1.4	0.14	mg/kg dry	56.0	129	73.6	75-125			M2
Beryllium	6.22	0.19	0.0073	mg/kg dry	5.60	0.412	104	75-125			
Cadmium	57.2	0.071	0.014	mg/kg dry	56.0	0.328	102	75-125			
Chromium	75.0	0.71	0.029	mg/kg dry	56.0	17.3	103	75-125			
Copper	107	0.71	0.093	mg/kg dry	56.0	21.7	152	75-125			M1
Lead	184	1.1	0.26	mg/kg dry	56.0	40.2	258	75-125			M1
Mercury	16.3	0.71	0.17	mg/kg dry	17.5	<0.71	91.3	75-125			
Nickel	72.9	0.36	0.057	mg/kg dry	56.0	17.3	99.4	75-125			
Selenium	55.3	3.6	0.94	mg/kg dry	56.0	<3.6	98.9	75-125			
Silver	5.93	0.71	0.21	mg/kg dry	5.60	<0.71	106	75-125			
Thallium	50.1	2.9	0.59	mg/kg dry	56.0	<2.9	89.6	75-125			
Zinc	217	1.4	0.29	mg/kg dry	56.0	92.2	224	75-125			M1
Matrix Spike Dup (B6B2208-MSD1)											
						Source: 1600808-01 Prepared & Analyzed: 02/22/16					
Antimony	60.0	1.4	0.27	mg/kg dry	55.5	2.00	105	75-125	3.93	20	
Arsenic	67.5	1.4	0.41	mg/kg dry	55.5	10.4	103	75-125	1.80	20	
Barium	166	1.4	0.14	mg/kg dry	55.5	129	66.7	75-125	2.48	20	M2
Beryllium	6.24	0.19	0.0073	mg/kg dry	5.55	0.412	105	75-125	0.309	20	
Cadmium	57.0	0.071	0.014	mg/kg dry	55.5	0.328	102	75-125	0.200	20	
Chromium	71.7	0.71	0.029	mg/kg dry	55.5	17.3	98.0	75-125	4.62	20	
Copper	104	0.71	0.093	mg/kg dry	55.5	21.7	148	75-125	2.80	20	M1
Lead	175	1.1	0.26	mg/kg dry	55.5	40.2	242	75-125	5.48	20	M1
Mercury	16.4	0.71	0.17	mg/kg dry	17.4	<0.71	92.5	75-125	0.468	20	
Nickel	68.0	0.36	0.057	mg/kg dry	55.5	17.3	91.4	75-125	6.96	20	
Selenium	54.6	3.6	0.94	mg/kg dry	55.5	<3.6	98.4	75-125	1.32	20	
Silver	5.93	0.71	0.21	mg/kg dry	5.55	<0.71	107	75-125	0.105	20	
Thallium	48.6	2.9	0.59	mg/kg dry	55.5	<2.9	87.5	75-125	3.22	20	
Zinc	216	1.4	0.29	mg/kg dry	55.5	92.2	224	75-125	0.490	20	M1

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PAH 8270D - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2502 - EPA 3545 ASE Extraction

Blank (B6B2502-BLK1)

Prepared & Analyzed: 02/25/16

2-Chloronaphthalene	< 0.33	0.33	0.068	mg/kg wet							
2-Methylnaphthalene	< 0.33	0.33	0.080	mg/kg wet							
Acenaphthene	< 0.33	0.33	0.063	mg/kg wet							
Acenaphthylene	< 0.33	0.33	0.071	mg/kg wet							
Anthracene	< 0.33	0.33	0.069	mg/kg wet							
Benzo(a)anthracene	< 0.33	0.33	0.065	mg/kg wet							
Benzo(a)pyrene	< 0.33	0.33	0.070	mg/kg wet							
Benzo(b)fluoranthene	< 0.33	0.33	0.059	mg/kg wet							
Benzo(g,h,i)perylene	< 0.33	0.33	0.071	mg/kg wet							
Benzo(k)fluoranthene	< 0.33	0.33	0.070	mg/kg wet							
Chrysene	< 0.33	0.33	0.064	mg/kg wet							
Dibenz(a,h)anthracene	< 0.33	0.33	0.082	mg/kg wet							
Fluoranthene	< 0.33	0.33	0.068	mg/kg wet							
Fluorene	< 0.33	0.33	0.065	mg/kg wet							
Indeno (1,2,3-cd) pyrene	< 0.33	0.33	0.072	mg/kg wet							
Naphthalene	< 0.33	0.33	0.071	mg/kg wet							
Phenanthrene	< 0.33	0.33	0.066	mg/kg wet							
Pyrene	< 0.33	0.33	0.059	mg/kg wet							
Surrogate: 2-Fluorobiphenyl	4.18			mg/kg wet	6.67		62.7	46.3-96.2			
Surrogate: Nitrobenzene-d5	3.79			mg/kg wet	6.67		56.8	49.3-94			
Surrogate: Terphenyl-d14	3.87			mg/kg wet	6.67		58.0	51.5-94.6			

LCS (B6B2502-BS1)

Prepared & Analyzed: 02/25/16

Acenaphthylene	2.56	0.33	0.071	mg/kg wet	3.33		76.7	55-95			
Anthracene	2.64	0.33	0.069	mg/kg wet	3.33		79.3	60-100			
Benzo(a)anthracene	2.69	0.33	0.065	mg/kg wet	3.33		80.6	55-100			
Benzo(a)pyrene	2.49	0.33	0.070	mg/kg wet	3.33		74.6	55-100			
Benzo(b)fluoranthene	2.43	0.33	0.059	mg/kg wet	3.33		72.9	55-100			
Benzo(g,h,i)perylene	2.53	0.33	0.071	mg/kg wet	3.33		75.8	50-100			
Benzo(k)fluoranthene	2.47	0.33	0.070	mg/kg wet	3.33		74.1	55-100			
Chrysene	2.82	0.33	0.064	mg/kg wet	3.33		84.7	50-100			
Dibenz(a,h)anthracene	2.48	0.33	0.082	mg/kg wet	3.33		74.3	50-100			
Fluoranthene	2.67	0.33	0.068	mg/kg wet	3.33		80.2	55-100			
Fluorene	2.66	0.33	0.065	mg/kg wet	3.33		79.8	55-95			
Indeno (1,2,3-cd) pyrene	2.56	0.33	0.072	mg/kg wet	3.33		76.8	55-110			
Naphthalene	2.45	0.33	0.071	mg/kg wet	3.33		73.4	50-95			
Phenanthrene	2.71	0.33	0.066	mg/kg wet	3.33		81.4	60-100			
Surrogate: 2-Fluorobiphenyl	4.42			mg/kg wet	6.67		66.3	46.3-96.2			
Surrogate: Nitrobenzene-d5	3.98			mg/kg wet	6.67		59.7	49.3-94			
Surrogate: Terphenyl-d14	4.62			mg/kg wet	6.67		69.3	51.5-94.6			

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PAH 8270D - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2502 - EPA 3545 ASE Extraction

Matrix Spike (B6B2502-MS1)

Source: 1600807-01

Prepared & Analyzed: 02/25/16

Acenaphthylene	2.89	0.36	0.077	mg/kg dry	3.62	<0.36	79.8	40-100			
Anthracene	2.99	0.36	0.075	mg/kg dry	3.62	<0.36	82.8	45-100			
Benzo(a)anthracene	2.86	0.36	0.071	mg/kg dry	3.62	<0.36	79.0	45-100			
Benzo(a)pyrene	2.56	0.36	0.076	mg/kg dry	3.62	<0.36	70.9	40-100			
Benzo(b)fluoranthene	2.49	0.36	0.064	mg/kg dry	3.62	<0.36	68.8	40-100			
Benzo(g,h,i)perylene	2.60	0.36	0.077	mg/kg dry	3.62	<0.36	71.8	35-110			
Benzo(k)fluoranthene	2.82	0.36	0.076	mg/kg dry	3.62	<0.36	77.9	40-100			
Chrysene	3.18	0.36	0.070	mg/kg dry	3.62	<0.36	87.8	40-100			
Dibenz(a,h)anthracene	2.66	0.36	0.089	mg/kg dry	3.62	<0.36	73.7	35-110			
Fluoranthene	2.87	0.36	0.074	mg/kg dry	3.62	<0.36	76.8	45-100			
Fluorene	3.00	0.36	0.071	mg/kg dry	3.62	<0.36	83.0	45-100			
Indeno (1,2,3-cd) pyrene	2.54	0.36	0.078	mg/kg dry	3.62	<0.36	70.2	35-110			
Naphthalene	2.76	0.36	0.077	mg/kg dry	3.62	<0.36	76.3	35-100			
Phenanthrene	3.04	0.36	0.072	mg/kg dry	3.62	<0.36	82.1	45-100			
Surrogate: 2-Fluorobiphenyl	5.14			mg/kg dry	7.23		71.0	46.3-96.2			
Surrogate: Nitrobenzene-d5	4.60			mg/kg dry	7.23		63.6	49.3-94			
Surrogate: Terphenyl-d14	5.16			mg/kg dry	7.23		71.4	51.5-94.6			

Matrix Spike Dup (B6B2502-MSD1)

Source: 1600807-01

Prepared & Analyzed: 02/25/16

Acenaphthylene	2.85	0.36	0.077	mg/kg dry	3.62	<0.36	78.8	40-100	1.32	20	
Anthracene	3.03	0.36	0.075	mg/kg dry	3.62	<0.36	83.8	45-100	1.21	20	
Benzo(a)anthracene	2.83	0.36	0.071	mg/kg dry	3.62	<0.36	78.2	45-100	0.964	20	
Benzo(a)pyrene	2.55	0.36	0.076	mg/kg dry	3.62	<0.36	70.4	40-100	0.660	20	
Benzo(b)fluoranthene	2.49	0.36	0.064	mg/kg dry	3.62	<0.36	68.9	40-100	0.152	20	
Benzo(g,h,i)perylene	2.50	0.36	0.077	mg/kg dry	3.62	<0.36	69.3	35-110	3.63	20	
Benzo(k)fluoranthene	2.79	0.36	0.076	mg/kg dry	3.62	<0.36	77.2	40-100	0.901	20	
Chrysene	3.19	0.36	0.070	mg/kg dry	3.62	<0.36	88.3	40-100	0.556	20	
Dibenz(a,h)anthracene	2.62	0.36	0.089	mg/kg dry	3.62	<0.36	72.5	35-110	1.66	20	
Fluoranthene	2.93	0.36	0.074	mg/kg dry	3.62	<0.36	78.5	45-100	2.13	20	
Fluorene	2.94	0.36	0.071	mg/kg dry	3.62	<0.36	81.3	45-100	2.07	20	
Indeno (1,2,3-cd) pyrene	2.50	0.36	0.078	mg/kg dry	3.62	<0.36	69.2	35-110	1.42	20	
Naphthalene	2.71	0.36	0.077	mg/kg dry	3.62	<0.36	75.0	35-100	1.71	20	
Phenanthrene	3.11	0.36	0.072	mg/kg dry	3.62	<0.36	84.1	45-100	2.25	20	
Surrogate: 2-Fluorobiphenyl	5.00			mg/kg dry	7.23		69.1	46.3-96.2			
Surrogate: Nitrobenzene-d5	4.46			mg/kg dry	7.23		61.6	49.3-94			
Surrogate: Terphenyl-d14	4.95			mg/kg dry	7.23		68.5	51.5-94.6			

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PCB 8082A - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6B2603 - EPA 3550B											
Blank (B6B2603-BLK1)											
					Prepared: 02/26/16 Analyzed: 03/02/16						
Aroclor 1016	< 0.20	0.20	0.0010	mg/kg							
Aroclor 1221	< 0.20	0.20	0.0017	mg/kg							
Aroclor 1232	< 0.20	0.20	0.0013	mg/kg							
Aroclor 1242	< 0.20	0.20	0.0018	mg/kg							
Aroclor 1248	< 0.20	0.20	0.0011	mg/kg							
Aroclor 1254	< 0.20	0.20	0.0012	mg/kg							
Aroclor 1260	< 0.20	0.20	0.00097	mg/kg							
Surrogate: Decachlorobiphenyl	0.0547			mg/kg	0.0667		82.0	65.3-143			
Surrogate: Tetrachloro-meta-xylene	0.0513			mg/kg	0.0667		77.0	60.9-138			
LCS (B6B2603-BS1)											
					Prepared: 02/26/16 Analyzed: 03/02/16						
Aroclor 1260	0.306	0.20	0.00097	mg/kg	0.333		91.9	70-130			
Surrogate: Decachlorobiphenyl	0.0580			mg/kg	0.0667		87.0	65.3-143			
Surrogate: Tetrachloro-meta-xylene	0.0590			mg/kg	0.0667		88.5	60.9-138			
Matrix Spike (B6B2603-MS1)											
					Source: 1600808-11 Prepared: 02/26/16 Analyzed: 03/04/16						
Aroclor 1260	0.330	0.20	0.00097	mg/kg	0.332	<0.20	99.4	70-130			
Surrogate: Decachlorobiphenyl	0.0529			mg/kg	0.0665		79.5	65.3-143			
Surrogate: Tetrachloro-meta-xylene	0.0602			mg/kg	0.0665		90.5	60.9-138			
Matrix Spike Dup (B6B2603-MSD1)											
					Source: 1600808-11 Prepared: 02/26/16 Analyzed: 03/04/16						
Aroclor 1260	0.350	0.20	0.00097	mg/kg	0.332	<0.20	105	70-130	5.86	17.2	
Surrogate: Decachlorobiphenyl	0.0549			mg/kg	0.0665		82.5	65.3-143			
Surrogate: Tetrachloro-meta-xylene	0.0632			mg/kg	0.0665		95.0	60.9-138			

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PERCENT SOLIDS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6B2609 - General Preparation											
Duplicate (B6B2609-DUP1)											
	Source: 1600814-03		Prepared & Analyzed: 02/26/16								
% Solids	90.0			%		89.0			1.12	20	
Duplicate (B6B2609-DUP2)											
	Source: 1600886-01		Prepared & Analyzed: 02/26/16								
% Solids	46.0			%		45.0			2.20	20	

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TCLP METALS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6C0206 - EPA 200.7/3005A Digestion											
Blank (B6C0206-BLK1) Prepared & Analyzed: 03/02/16											
Lead	< 0.075	0.075	0.018	mg/L							
Blank (B6C0206-BLK2) Prepared & Analyzed: 03/02/16											
Lead	< 0.075	0.075	0.018	mg/L							
LCS (B6C0206-BS1) Prepared & Analyzed: 03/02/16											
Lead	4.34	0.075	0.018	mg/L	3.99		109	80-120			
LCS Dup (B6C0206-BSD1) Prepared & Analyzed: 03/02/16											
Lead	4.32	0.075	0.018	mg/L	3.99		108	80-120	0.462	20	
Matrix Spike (B6C0206-MS1) Source: 1600905-01 Prepared & Analyzed: 03/02/16											
Lead	8.55	0.075	0.018	mg/L	3.99	4.10	112	75-125			
Matrix Spike Dup (B6C0206-MSD1) Source: 1600905-01 Prepared & Analyzed: 03/02/16											
Lead	8.55	0.075	0.018	mg/L	3.99	4.10	112	75-125	0.00	20	

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VOC 8260B - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2920 - EPA 5035 Soil (Purge and Trap)

Blank (B6B2920-BLK1)

Prepared & Analyzed: 02/29/16

1,1,1,2-Tetrachloroethane	< 0.20	0.20	0.020	mg/kg wet							
1,1,1-Trichloroethane	< 0.20	0.20	0.023	mg/kg wet							
1,1,2,2-Tetrachloroethane	< 0.20	0.20	0.016	mg/kg wet							
1,1,2-Trichloroethane	< 0.20	0.20	0.014	mg/kg wet							
1,1,2-Trichlorotrifluoroethane	< 0.20	0.20	0.020	mg/kg wet							
1,1-Dichloroethane	< 0.20	0.20	0.0097	mg/kg wet							
1,1-Dichloroethene	< 0.20	0.20	0.013	mg/kg wet							
1,1-Dichloropropene	< 0.20	0.20	0.015	mg/kg wet							
1,2,3-Trichlorobenzene	< 0.50	0.50	0.097	mg/kg wet							
1,2,3-Trichloropropane	< 0.20	0.20	0.030	mg/kg wet							
1,2,4-Trichlorobenzene	< 0.50	0.50	0.071	mg/kg wet							
1,2,4-Trimethylbenzene	< 0.20	0.20	0.018	mg/kg wet							
1,2-Dibromo-3-chloropropane	< 0.50	0.50	0.046	mg/kg wet							
1,2-Dibromoethane (EDB)	< 0.20	0.20	0.024	mg/kg wet							
1,2-Dichlorobenzene	< 0.20	0.20	0.013	mg/kg wet							
1,2-Dichloroethane	< 0.20	0.20	0.022	mg/kg wet							
1,2-Dichloropropane	< 0.20	0.20	0.021	mg/kg wet							
1,3,5-Trimethylbenzene	< 0.20	0.20	0.025	mg/kg wet							
1,3-Dichlorobenzene	< 0.20	0.20	0.0090	mg/kg wet							
1,3-Dichloropropane	< 0.20	0.20	0.015	mg/kg wet							
1,4-Dichlorobenzene	< 0.20	0.20	0.016	mg/kg wet							
2,2-Dichloropropane	< 0.20	0.20	0.052	mg/kg wet							
2-Butanone	< 1.0	1.0	0.094	mg/kg wet							
2-Chlorotoluene	< 0.20	0.20	0.020	mg/kg wet							
4-Chlorotoluene	< 0.20	0.20	0.022	mg/kg wet							
Acetone	< 1.0	1.0	0.12	mg/kg wet							
Allyl chloride	< 0.20	0.20	0.025	mg/kg wet							
Benzene	< 0.20	0.20	0.015	mg/kg wet							
Bromobenzene	< 0.20	0.20	0.020	mg/kg wet							
Bromochloromethane	< 0.20	0.20	0.023	mg/kg wet							
Bromodichloromethane	< 0.20	0.20	0.019	mg/kg wet							
Bromoform	< 0.20	0.20	0.036	mg/kg wet							
Bromomethane	< 0.20	0.20	0.030	mg/kg wet							
Carbon tetrachloride	< 0.20	0.20	0.025	mg/kg wet							
Chlorobenzene	< 0.20	0.20	0.014	mg/kg wet							
Chloroethane	< 0.20	0.20	0.030	mg/kg wet							
Chloroform	< 0.20	0.20	0.031	mg/kg wet							
Chloromethane	< 0.20	0.20	0.027	mg/kg wet							
cis-1,2-Dichloroethene	< 0.20	0.20	0.012	mg/kg wet							

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VOC 8260B - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2920 - EPA 5035 Soil (Purge and Trap)

Blank (B6B2920-BLK1)

Prepared & Analyzed: 02/29/16

cis-1,3-Dichloropropene	< 0.20	0.20	0.025	mg/kg wet							
Dibromochloromethane	< 0.20	0.20	0.025	mg/kg wet							
Dibromomethane	< 0.20	0.20	0.025	mg/kg wet							
Dichlorodifluoromethane	< 0.20	0.20	0.037	mg/kg wet							
Dichlorofluoromethane	< 0.20	0.20	0.010	mg/kg wet							
Ethyl ether	< 0.20	0.20	0.024	mg/kg wet							
Ethylbenzene	< 0.20	0.20	0.021	mg/kg wet							
Hexachlorobutadiene	< 0.50	0.50	0.079	mg/kg wet							
Isopropylbenzene	< 0.20	0.20	0.030	mg/kg wet							
m,p-Xylene	< 0.40	0.40	0.048	mg/kg wet							
Methyl isobutyl ketone	< 0.20	0.20	0.043	mg/kg wet							
Methyl tert-butyl ether	< 0.20	0.20	0.0097	mg/kg wet							
Methylene chloride	< 0.50	0.50	0.060	mg/kg wet							
Naphthalene	< 0.50	0.50	0.048	mg/kg wet							
n-Butylbenzene	< 0.20	0.20	0.016	mg/kg wet							
n-Propylbenzene	< 0.20	0.20	0.010	mg/kg wet							
o-Xylene	< 0.20	0.20	0.017	mg/kg wet							
p-Isopropyltoluene	< 0.20	0.20	0.011	mg/kg wet							
sec-Butylbenzene	< 0.20	0.20	0.022	mg/kg wet							
Styrene	< 0.20	0.20	0.016	mg/kg wet							
tert-Butylbenzene	< 0.20	0.20	0.026	mg/kg wet							
Tetrachloroethene	< 0.20	0.20	0.038	mg/kg wet							
Tetrahydrofuran	< 1.0	1.0	0.11	mg/kg wet							
Toluene	< 0.20	0.20	0.0068	mg/kg wet							
trans-1,2-Dichloroethene	< 0.20	0.20	0.018	mg/kg wet							
trans-1,3-Dichloropropene	< 0.20	0.20	0.020	mg/kg wet							
Trichloroethene	< 0.20	0.20	0.018	mg/kg wet							
Trichlorofluoromethane	< 0.20	0.20	0.029	mg/kg wet							
Vinyl chloride	< 0.20	0.20	0.021	mg/kg wet							
Surrogate: 4-Bromofluorobenzene	53.7			ug/L	56.0		96.0	80-124			
Surrogate: Dibromofluoromethane	57.6			ug/L	56.0		103	77.1-123			
Surrogate: Toluene-d8	56.1			ug/L	56.0		100	78.1-125			

LCS (B6B2920-BS1)

Prepared & Analyzed: 02/29/16

1,1,2,2-Tetrachloroethane	52.3			ug/L	50.0		105	75-120			
1,1-Dichloroethane	52.5			ug/L	50.0		105	79.6-120			
1,1-Dichloroethene	52.4			ug/L	50.0		105	78.3-120			
1,3,5-Trimethylbenzene	55.3			ug/L	50.0		111	77-120			
1,4-Dichlorobenzene	52.2			ug/L	50.0		104	75-125			
2-Chlorotoluene	53.5			ug/L	50.0		107	75.9-120			

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VOC 8260B - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
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Batch B6B2920 - EPA 5035 Soil (Purge and Trap)

LCS (B6B2920-BS1)

Prepared & Analyzed: 02/29/16

Benzene	51.5			ug/L	50.0		103	80-120			
Bromoform	54.8			ug/L	50.0		110	80-120			
Chlorobenzene	53.8			ug/L	50.0		108	80-120			
Chloroform	52.7			ug/L	50.0		105	80-120			
Ethylbenzene	54.4			ug/L	50.0		109	80-120			
n-Butylbenzene	56.7			ug/L	50.0		113	75-125			
n-Propylbenzene	54.1			ug/L	50.0		108	75-120			
Toluene	51.9			ug/L	50.0		104	80-120			
Trichloroethene	52.4			ug/L	50.0		105	80-120			
Vinyl chloride	50.4			ug/L	50.0		101	75-130			
Surrogate: 4-Bromofluorobenzene	57.2			ug/L	56.0		102	80-124			
Surrogate: Dibromofluoromethane	58.0			ug/L	56.0		104	77.1-123			
Surrogate: Toluene-d8	56.7			ug/L	56.0		101	78.1-125			

Matrix Spike (B6B2920-MS1)

Source: 1600885-01

Prepared & Analyzed: 02/29/16

1,1,2,2-Tetrachloroethane	52.8			ug/L	50.0	<	106	75-125			
1,1-Dichloroethane	51.4			ug/L	50.0	<	103	78.7-123			
1,1-Dichloroethene	51.0			ug/L	50.0	<	102	75.8-121			
1,3,5-Trimethylbenzene	55.3			ug/L	50.0	<	111	75-120			
1,4-Dichlorobenzene	52.7			ug/L	50.0	<	105	75-125			
2-Chlorotoluene	53.0			ug/L	50.0	<	106	75-120			
Benzene	52.9			ug/L	50.0	<	106	80-120			
Bromoform	55.4			ug/L	50.0	<	111	80-120			
Chlorobenzene	53.9			ug/L	50.0	<	108	80-120			
Chloroform	53.4			ug/L	50.0	<	107	80-120			
Ethylbenzene	54.9			ug/L	50.0	<	110	80-120			
n-Butylbenzene	56.2			ug/L	50.0	<	112	73.8-125			
n-Propylbenzene	54.0			ug/L	50.0	<	108	75-120			
Toluene	53.6			ug/L	50.0	<	107	80-120			
Trichloroethene	53.5			ug/L	50.0	<	107	80-120			
Vinyl chloride	49.3			ug/L	50.0	<	98.5	74.8-130			
Surrogate: 4-Bromofluorobenzene	56.9			ug/L	56.0		102	80-124			
Surrogate: Dibromofluoromethane	58.5			ug/L	56.0		105	77.1-123			
Surrogate: Toluene-d8	57.6			ug/L	56.0		103	78.1-125			

Matrix Spike Dup (B6B2920-MSD1)

Source: 1600885-01

Prepared & Analyzed: 02/29/16

1,1,2,2-Tetrachloroethane	53.9			ug/L	50.0	<	108	75-125	2.11	20	
1,1-Dichloroethane	51.3			ug/L	50.0	<	103	78.7-123	0.235	20	
1,1-Dichloroethene	50.7			ug/L	50.0	<	101	75.8-121	0.573	20	
1,3,5-Trimethylbenzene	56.3			ug/L	50.0	<	113	75-120	1.78	20	

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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VOC 8260B - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B6B2920 - EPA 5035 Soil (Purge and Trap)											
Matrix Spike Dup (B6B2920-MSD1)		Source: 1600885-01			Prepared & Analyzed: 02/29/16						
1,4-Dichlorobenzene	52.4			ug/L	50.0	<	105	75-125	0.510	20	
2-Chlorotoluene	53.4			ug/L	50.0	<	107	75-120	0.704	20	
Benzene	53.8			ug/L	50.0	<	108	80-120	1.75	20	
Bromoform	56.5			ug/L	50.0	<	113	80-120	1.84	20	
Chlorobenzene	54.1			ug/L	50.0	<	108	80-120	0.350	20	
Chloroform	53.4			ug/L	50.0	<	107	80-120	0.00412	20	
Ethylbenzene	55.3			ug/L	50.0	<	111	80-120	0.742	20	
n-Butylbenzene	57.5			ug/L	50.0	<	115	73.8-125	2.24	20	
n-Propylbenzene	54.6			ug/L	50.0	<	109	75-120	1.10	20	
Toluene	54.6			ug/L	50.0	<	109	80-120	1.86	20	
Trichloroethene	53.8			ug/L	50.0	<	108	80-120	0.641	20	
Vinyl chloride	48.4			ug/L	50.0	<	96.9	74.8-130	1.69	20	
Surrogate: 4-Bromofluorobenzene	57.7			ug/L	56.0		103	80-124			
Surrogate: Dibromofluoromethane	58.4			ug/L	56.0		104	77.1-123			
Surrogate: Toluene-d8	58.2			ug/L	56.0		104	78.1-125			

DRAFT

Barr Engineering Co. 4300 MarketPointe Drive, Suite 200 Minneapolis, MN 55435	Project: 23270051 Project Number: 23270051.36-MAIN-530 Project Manager: Ms. Terri Olson	Work Order #: 1600808 Date Reported: 03/04/16
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Notes and Definitions

- W-03 The initial sample weight was less than 8.0 grams.
- M2 Matrix spike recovery was low, the associated blank spike recovery was acceptable.
- M1 Matrix spike recovery was high, the associated blank spike recovery was acceptable.
- L1 Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
- < Less than value listed
- dry Sample results reported on a dry weight basis
- NA Not applicable. The %RPD is not calculated from values less than the reporting limit.
- MDL Method Detection Limit; Equivalent to the method LOD (Limit of Detection)
- RL Reporting Limit
- RPD Relative Percent Difference
- LCS Laboratory Control Spike = Blank Spike (BS) = Laboratory Fortified Blank (LFB)
- MS Matrix Spike = Laboratory Fortified Matrix (LFM)

DRAFT

1000808

Barr Engineering Co. Chain of Custody

Sample Origination State:
 KS MO WI
 MI ND Other:
 MN SD

Ann Arbor Duluth Jefferson City
 Bismarck Hibbing Minneapolis

REPORT TO		INVOICE TO	
Company: <u>Barr Engineering</u>	Company: <u>Barr Engineering</u>		
Address: <u>MPLS</u>	Address:		
Name:	Name:		
email:	email:		
Copy to: <u>datamgt@barr.com</u>	PO:		
Project Name: <u>Passet Creek</u>	Barr Project No: <u>23270051, 36-MAIN-53</u>		

Analysis Requested		COC Number: No 49894 COC <u>1</u> of <u>2</u>
Water	Soil	
Matrix Code: <u>AA</u> Preservative Code: <u>A</u> GW = Groundwater A = None SW = Surface Water B = HCl WW = Waste Water C = HNO ₃ DW = Drinking Water D = Ag, SO ₄ S = Soil/Solid E = NaOH SD = Sediment F = MeOH O = Other G = NaHSO ₄ H = Na ₂ S ₂ O ₈ I = Ascorbic Acid J = NH ₄ Cl K = Zn Acetate Q = Other		

Location	Sample Depth		Collection Date (mm/dd/yyyy)	Collection Time (hr:mm)	Matrix Code	Perform. MS/MSD Y/N	Total Number of Containers	Analysis Requested	Preservative Code	Field Filtered Y/N	Notes
	Start	Stop									
¹ SB-15-01	0	4	ft	12-17-2016	14:30	S	5				VOC, PCB, DRO, PAHs, PLRA metals, moisture (HOLD TELP metals, VOC)
² SB-15-02	0	4	ft	12/17/2016	13:40	S	4				DRO, PAHs, PLRA metals, moisture (HOLD TELP metals)
³ SB-15-03	0	1	ft	12/18/2016	12:20	S	4				"
⁴ SB-15-04	0	1	ft	12/18/2016	12:30	S	4				"
⁵ SB-15-05	0	4	ft	12/17/2016	12:00	S	4				DRO, PAHs, PP metals + Barium, moisture (HOLD TELP metals)
⁶ SB-15-06	0	4	ft	12/17/2016	11:30	S	4				"
⁷ SB-15-07	0	4	ft	12/17/2016	09:30	S	4				"
⁸ SB-15-08	0	4	ft	12/17/2016	10:45	S	5				VOC, DRO, PAHs, PP metals + Barium, moisture HOLD TELP metals
⁹ SB-15-09	0	1	ft	12/18/2016	10:50	S	4				DRO, PAHs, PP metals + Barium, moisture (HOLD TELP metals)
¹⁰ SB-15-10	0	1	ft	12/18/2016	11:20	S	4				DRO, PAHs, PP metals + Barium, moisture PCBs (HOLD TELP metals)

BARR USE ONLY		Relinquished by: <u>Johanna Smith</u>	On Ice? <input checked="" type="checkbox"/> N <input type="checkbox"/> Y	Date: <u>12/18/2016</u>	Time: <u>11:00</u>	Received by:	Date:	Time:
Sampled by: <u>JWJ/PJM</u>	Relinquished by:	On Ice? <input checked="" type="checkbox"/> N <input type="checkbox"/> Y	Date:	Time:	Received by: <u>KR</u>	Date: <u>12/18/2016</u>	Time: <u>11:00</u>	
Barr Proj. Manager: <u>Jenni Brekken</u>	Samples Shipped Via: <input checked="" type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler	Air Bill Number:		Requested Due Date:		<input checked="" type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush (mm/dd/yyyy)		
Barr DQ Manager: <u>Terri Olson</u>	Lab Name: <u>Legend</u>	Lab WO:	Temperature on Receipt (°C):	Custody Seal Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> None				
Lab Location: <u>St. Paul MN</u>								

Distribution - White-Original: Accompanies Shipment to Laboratory, Yellow Copy: Include in Field Documents, Pink Copy: Send to Data Management Administrators.

1060808

Barr Engineering Co. Chain of Custody

Sample Origination State:
 KS MO WI
 MI ND Other:
 MN SD

Ann Arbor Duluth Jefferson City
 Bismarck Hibbing Minneapolis

REPORT TO		INVOICE TO	
Company: <u>Barr Engineering</u>	Company: <u>Barr Engineering</u>	Company: <u>Barr Engineering</u>	Company: <u>Barr Engineering</u>
Address:	Address:	Address:	Address:
Name:	Name:	Name:	Name:
email:	email:	email:	email:
Copy to: <u>datamgt@barr.com</u>	Copy to: <u>datamgt@barr.com</u>	Copy to: <u>datamgt@barr.com</u>	Copy to: <u>datamgt@barr.com</u>
Project Name: <u>Bosssett Creek</u>	Project No: <u>2327005/36-MAN-530</u>	Project No: <u>2327005/36-MAN-530</u>	Project No: <u>2327005/36-MAN-530</u>

Analysis Requested		CDC Number: No 49896
Water	Soil	CDC <u>2</u> of <u>2</u>
		Matrix Code: <u>AAA</u>
		Preservative Code: <u>AAA</u>
		Field Filtered Y/N

Location	Sample Depth		Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Total Number Of Containers	Perform MS/MSD Y/N	Analysis Requested	Preservative Code
	Start	Stop							
1 <u>SB-15-11</u>	<u>0</u>	<u>1</u>	<u>ft</u>	<u>02/19/2016</u>	<u>09:25</u>	<u>5</u>	<u>4</u>	<u>40ml VOA w/MeOH</u> <u>402 Tared</u> <u>402 w/filtered water</u>	<u>AAA</u>
2									
3									
4									
5									
6									
7									
8									
9									
10									

BARR USE ONLY		Relinquished by: <u>[Signature]</u>	On Ice? <input checked="" type="checkbox"/> N <input type="checkbox"/> Y	Date: <u>02/19/2016</u>	Time: <u>10:00</u>	Received by: <u>[Signature]</u>	Date: <u>02/19/2016</u>	Time: <u>11:30</u>
Sampled by: <u>JWS/PSM2</u>	Barr Proj. Manager: <u>Jenni Brekken</u>	Relinquished by: <u>[Signature]</u>	On Ice? <input checked="" type="checkbox"/> N <input type="checkbox"/> Y	Date: <u>02/19/2016</u>	Time: <u>10:00</u>	Received by: <u>[Signature]</u>	Date: <u>02/19/2016</u>	Time: <u>11:30</u>
Barr DQ Manager: <u>Terri Olson</u>	Lab Name: <u>Legend</u>	Samples Shipped VIA: <input checked="" type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other: _____	Air Bill Number: _____		Requested Due Date: <input checked="" type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush _____ (mm/dd/yyyy)			
Lab Location: <u>St. Paul</u>	Lab WO: _____	Temperature on Receipt (°C): _____	Custody Seal Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> None					

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.

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Page 2

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Sample Info: 1600808-01

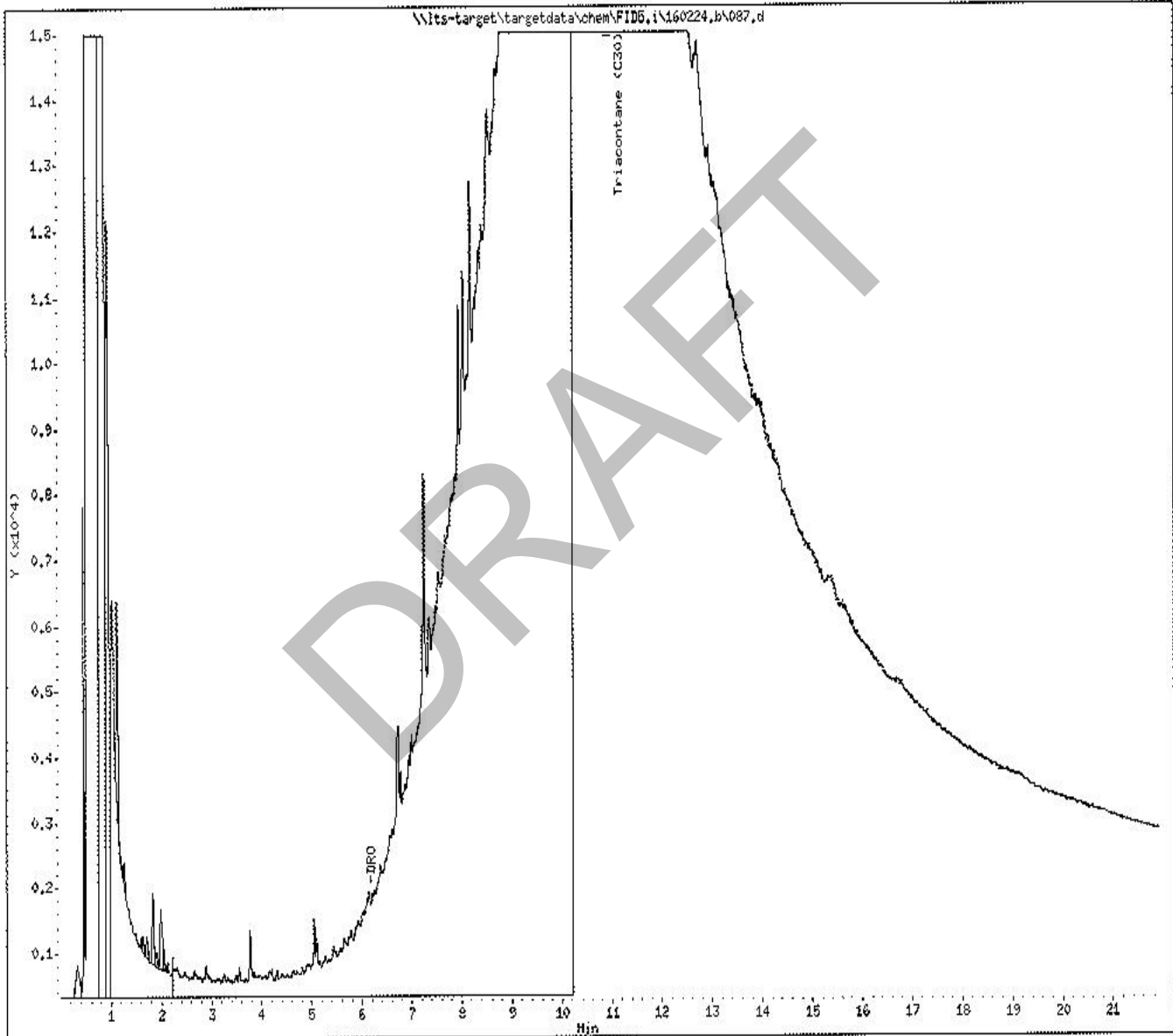
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Instrument: FID5,1

Operator: yg

Column diameter: 0.53

Column phase:



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Page 2

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Sample Info: 1600808-02

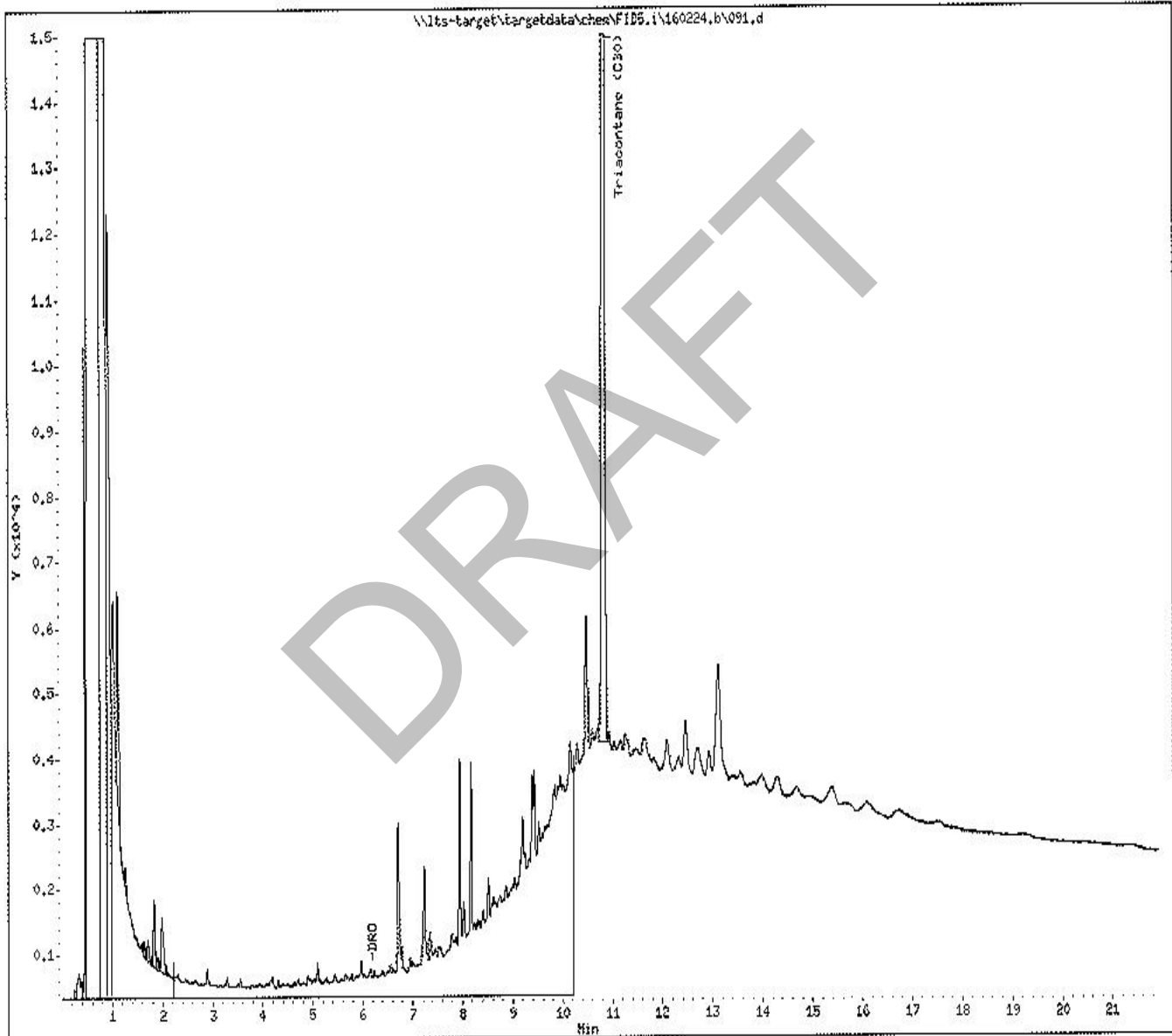
SB-15-02-0-4 3/1/16 BP

Instrument: FID5.i

Operator: yp

Column diameter: 0.53

Column phase:



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Page 2

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Sample Info: 1600808-03

SB-15-03-0-1

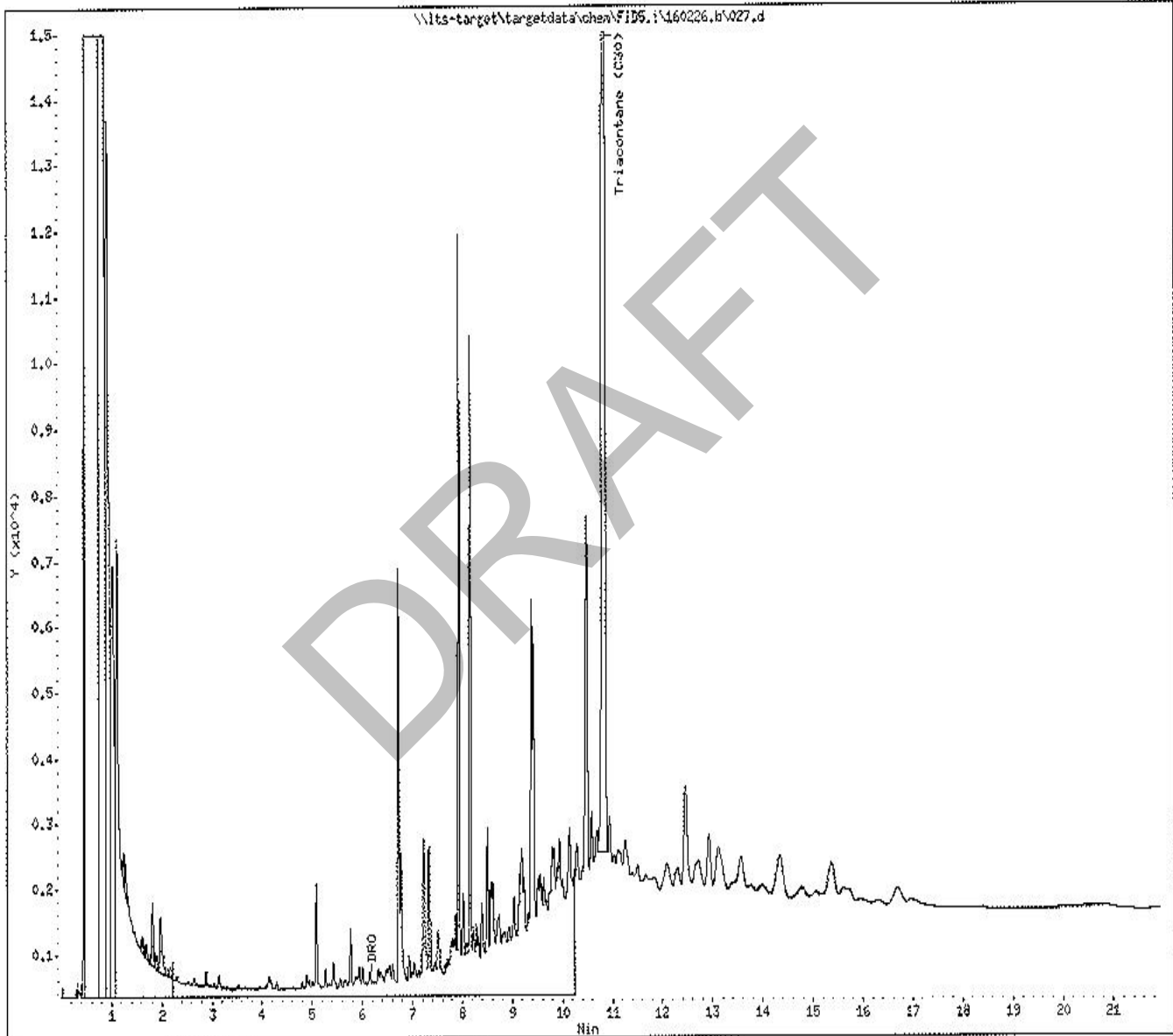
3/1/16 BY

Instrument: FID5.i

Operator: yp

Column diameter: 0.53

Column phase:



Data File: \\its-target\targetdata\chem\FID5,i\160226,b\025,d

Page 2

Date : 26-FEB-2016 19:30

Client ID:

Sample Info: 1600808-04

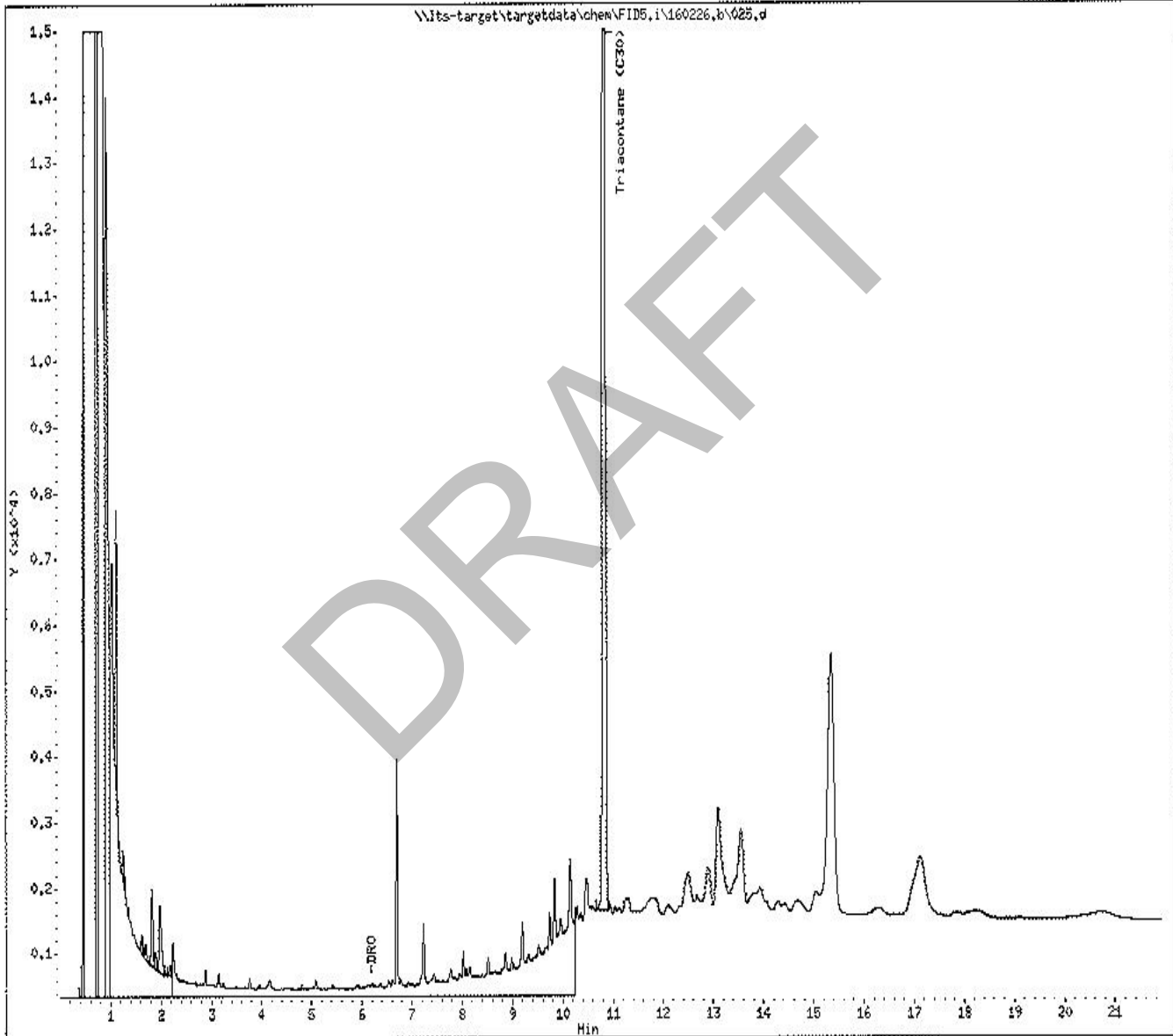
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Instrument: FID5,i

Operator: yp

Column diameter: 0.53

Column phase:



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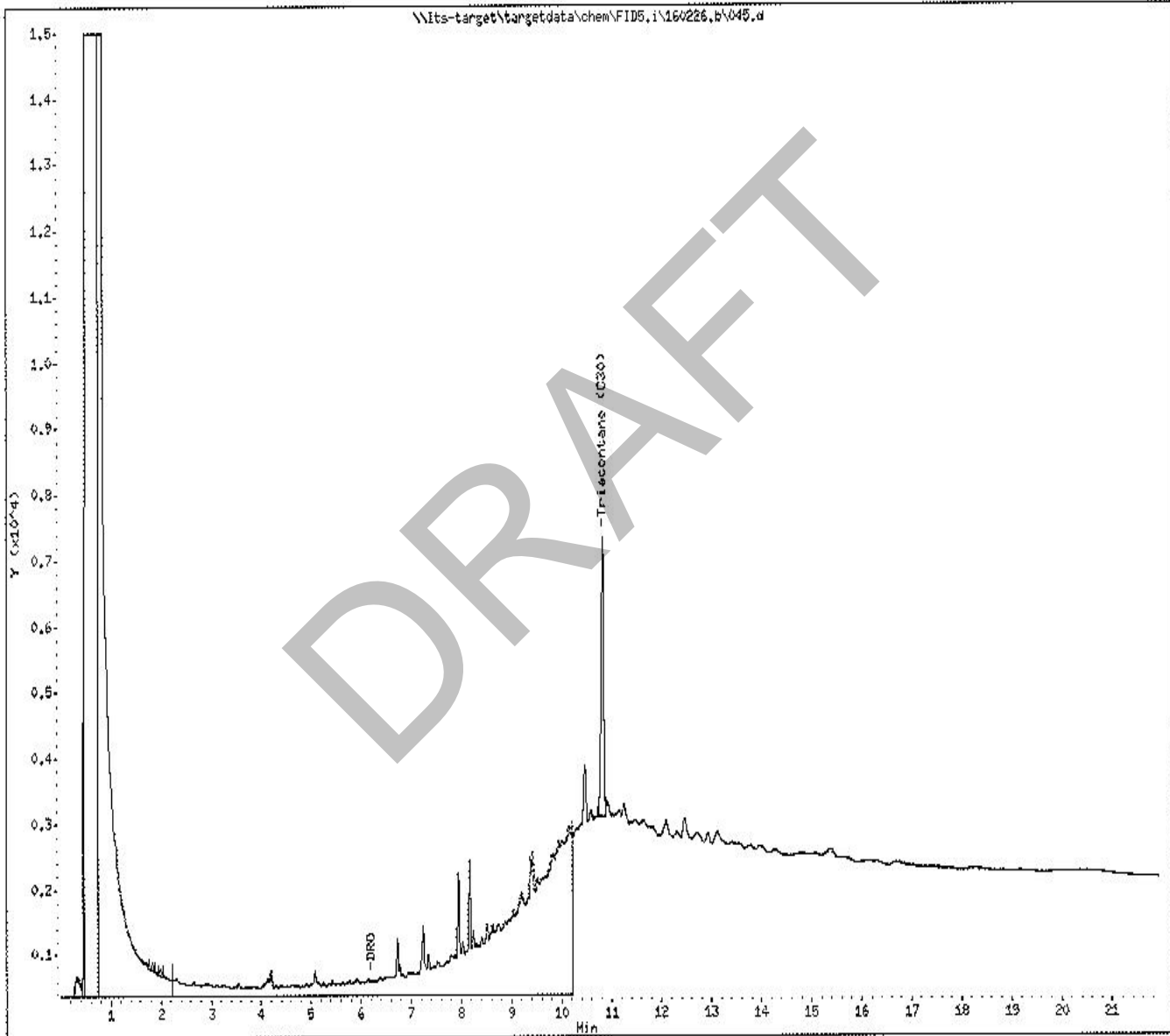
3/1/16 RP

SB-15-05_0-4

Instrument: FID5.i
Operator: yp
Column diameter: 0.53

Page 2

Column phase:



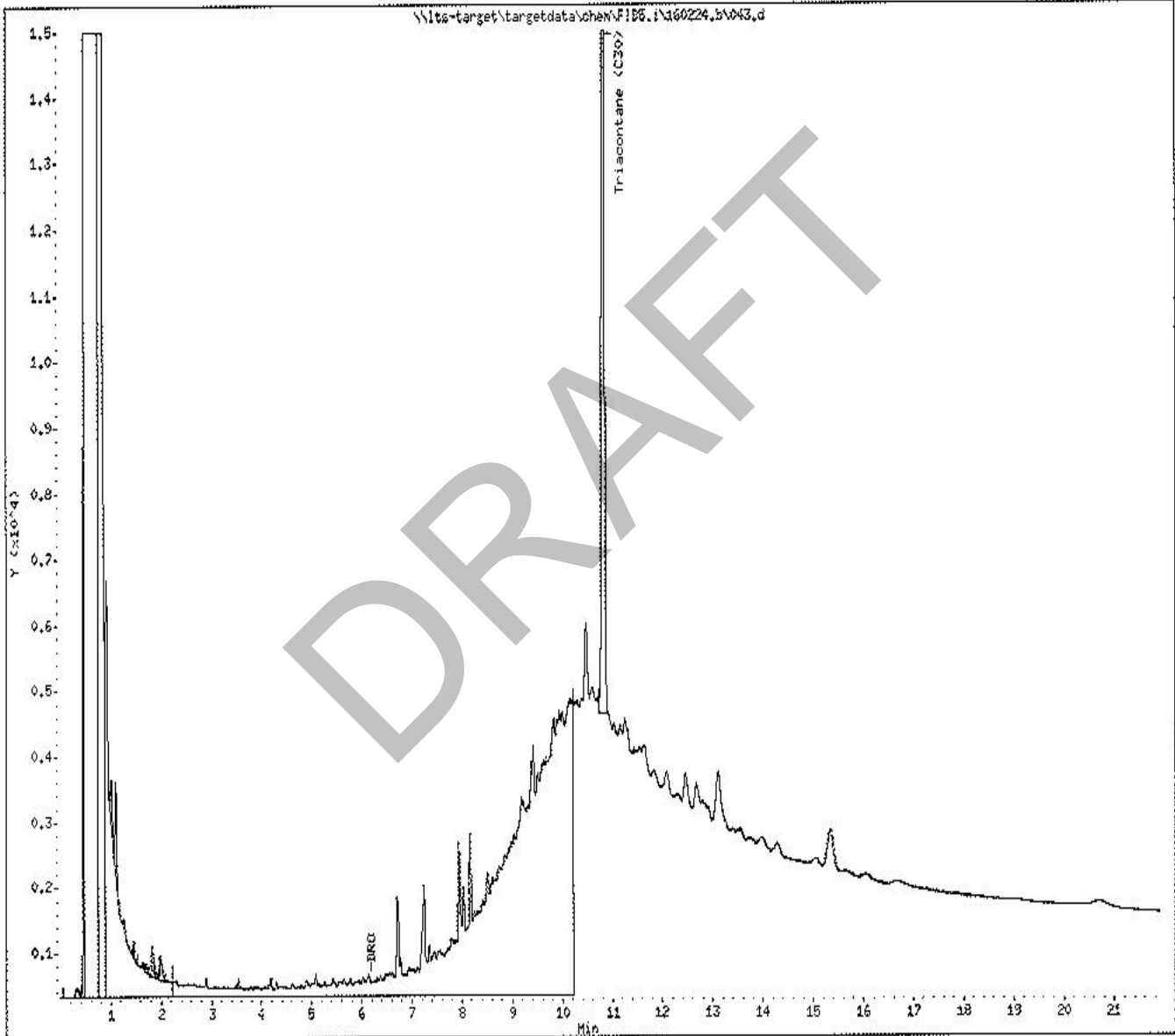
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SB-15-06-D-4 3/1/16 RP

Page 2

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Operator: yg
Column diameter: 0.53

Column phase:



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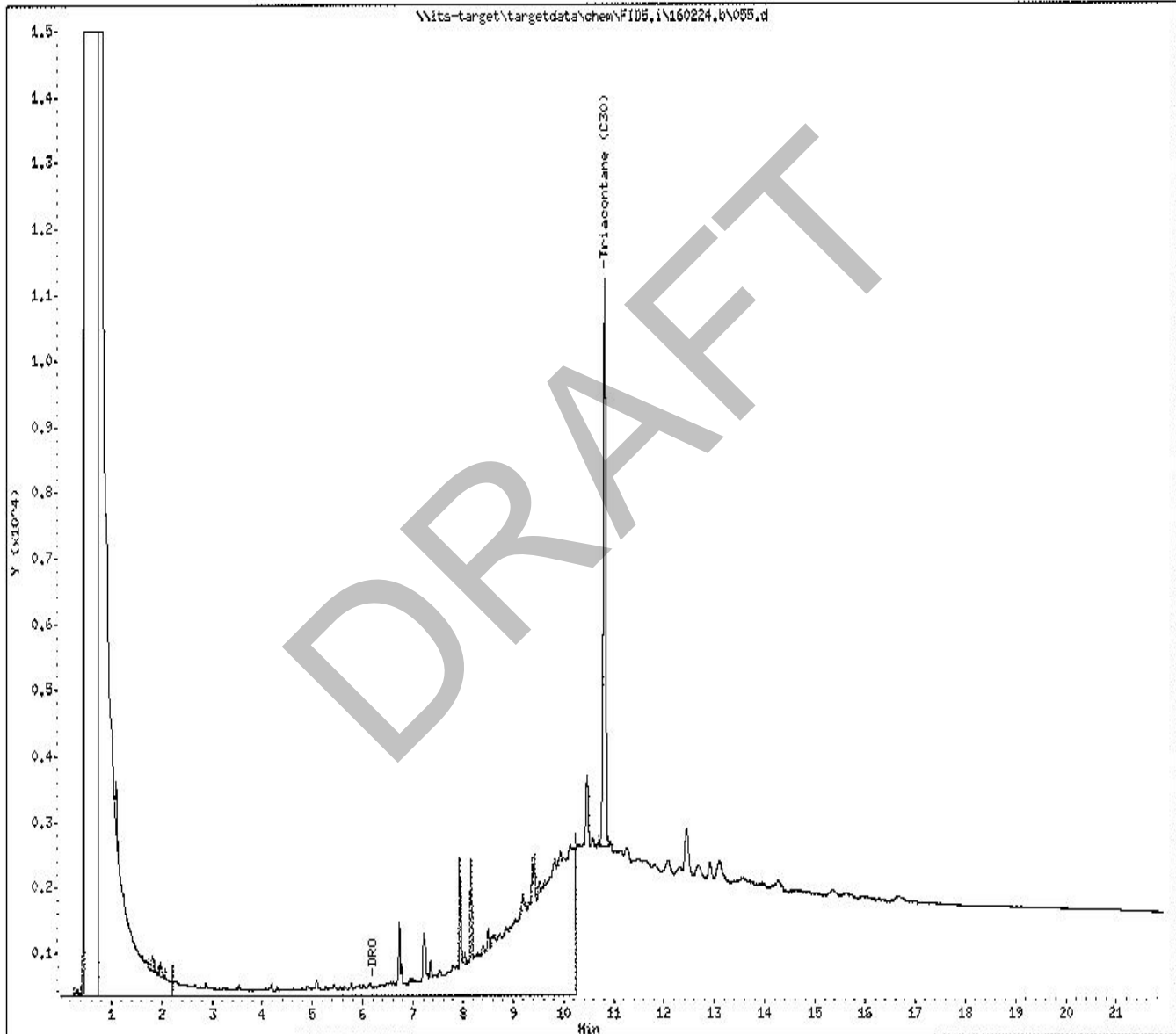
SB-15-07_0-4

3/1/16 DP

Page 2

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Operator: yp
Column diameter: 0.53

Column phase:



Data File: \\its-target\targetdata\chem\FID5,i\160224,8\053.d

3/1/16 BP

Page 2

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Sample Info: 1600808-08 x5

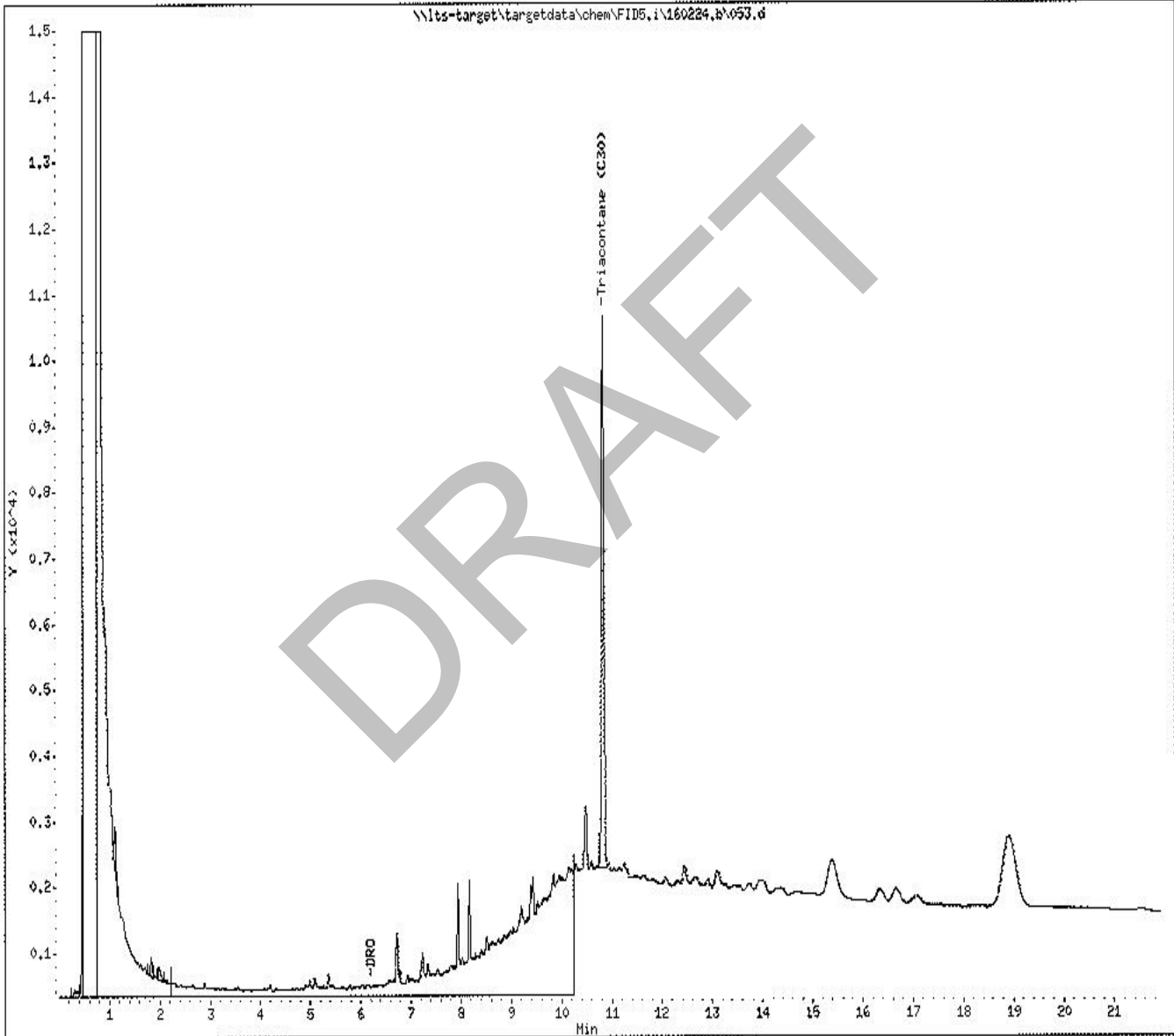
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Instrument: FID5.i

Operator: yp

Column diameter: 0.53

Column phase:



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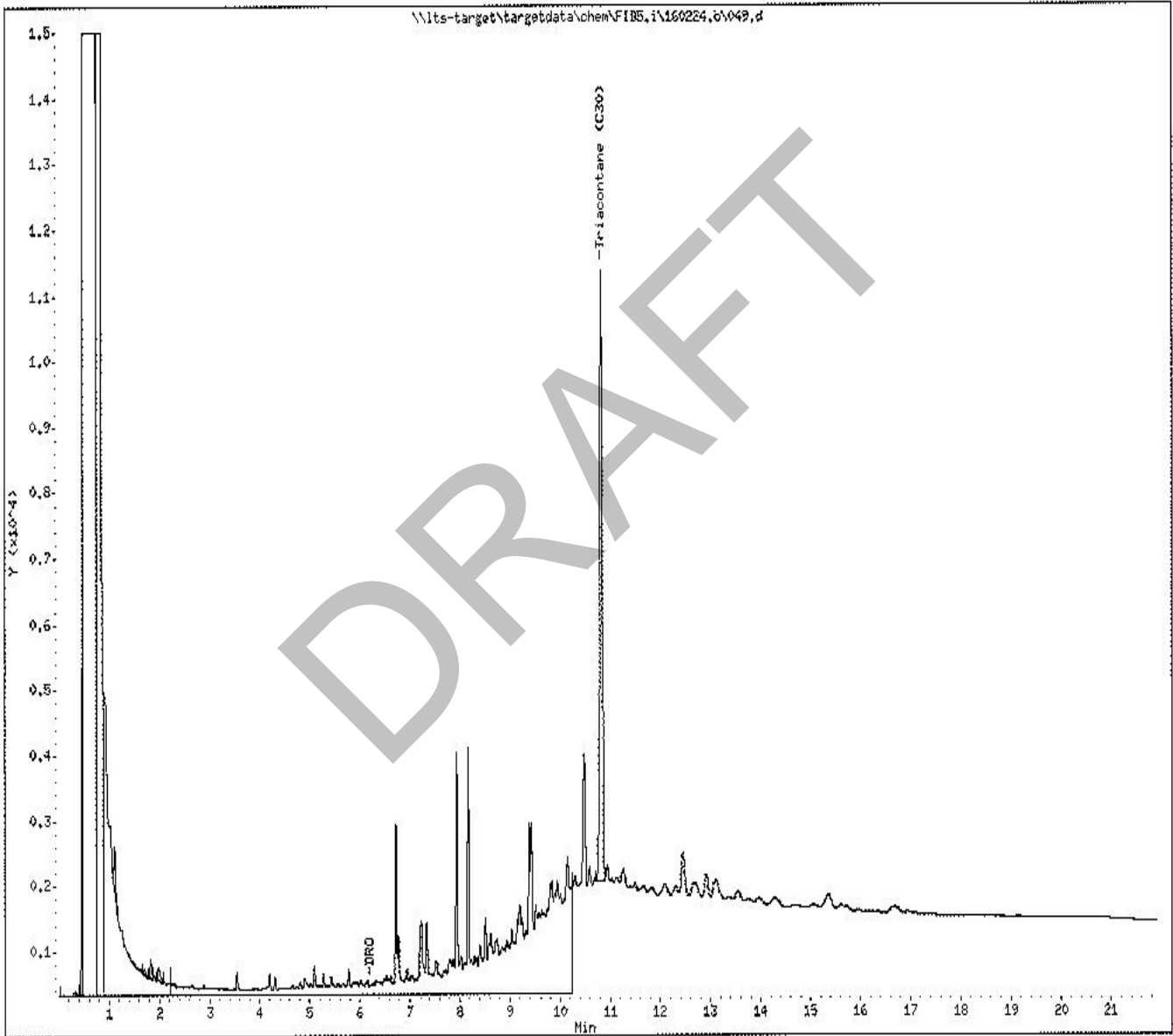
3/1/16 *BJ*

Page 2

Instrument: FIB5.i
Operator: sp
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Column phase:

SB-15-09_0-1



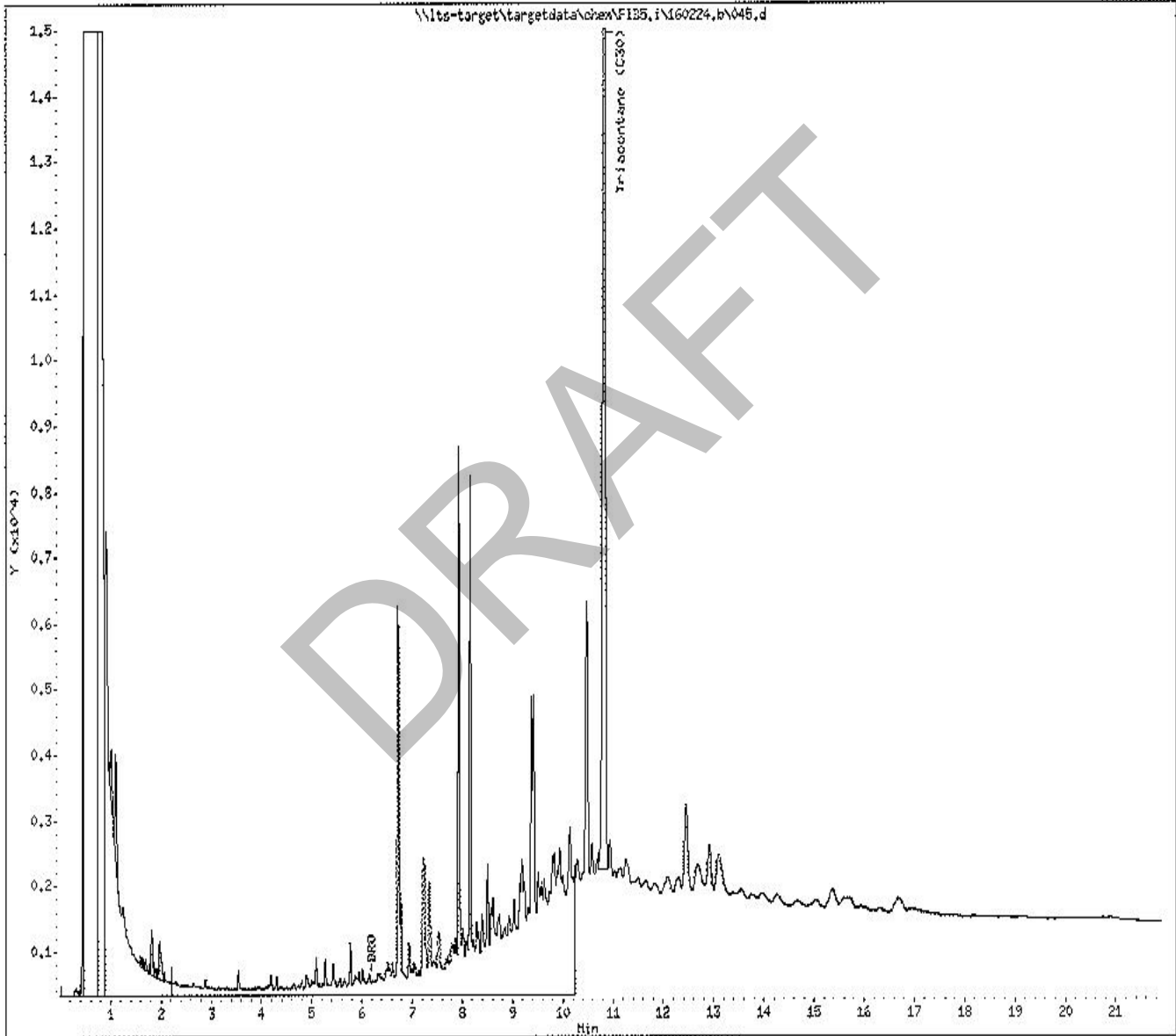
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Sample Info: 1600808-10 x2

3/1/16 JP

Page 2

Column phase:

Instrument: FIB5.i
Operator: gp
Column diameter: 0.53



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Date : 25-FEB-2016 05:29
Client ID:
Sample Info: 1600808-11 x2

SB-15-11-0-1 3/1/16 AP

Page 2

Instrument: F135.1
Operator: gp
Column diameter: 0.53

Column phase:

