Engineering Report
For

Riverside Extension Phase 2

Crossing the Hamilton Street Bridge Site (WDOE #3509)
City of Spokane, Spokane County, Washington

COS Project No.: 2005264
Date: April 20, 2015

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1. INTRODUCTION

1.1. Project Overview and Study Purpose

The City of Spokane is proposing to construct the Riverside Extension Phase 2 project between Sherman Street to the intersection of Trent Avenue. Although the original project was titled Riverside Extension, the roadway has since been named Martin Luther King Jr. Way. For the purposes of this report, the roadway itself will hereafter be referred to as MLK Way.

The MLK Way project proposes construction of a new roadway section with supporting stormwater treatment and infiltration facilities, wet and dry new utility installation, and construction of a pedestrian pathway to provide pedestrian connectivity in the area.

A section of the proposed MLK Way road construction crosses the Department of Ecology (WDOE) Hamilton Street Bridge Site (Clean-up Site ID 3509), which is addressed as 111 N. Erie Street in Spokane, Washington. Cleanup activities for this site were conducted under the State of Washington, Spokane County Superior Court Consent Decree 02205445-0. Exhibit A from the Consent Decree provides the Hamilton Street Bridge Site limits. A copy of Exhibit A is provided in Appendix C.

Restrictive Covenants placed on the Hamilton Street Bridge (HSB) Site require that activity on the property that may release or expose contaminated soil or groundwater requires prior written approval by the WDOE. The purpose of this report is to provide project-specific stormwater design facility recommendations for the MLK Way that are in conformance with the WDOE institutional controls and that meet jurisdictional stormwater flow mitigation and pollutant treatment requirements.

1.2. Site Description

The Riverside Extension Phase 2 project is located within the Southeast Corner of Section 17 of Township 25 N., Range 43 E.,W.M. within the City of Spokane, Washington. The project starts at the MLK Way/Sherman Street intersection and continues east and north to the Trent Avenue//Perry Street intersection. A section of the MLK Way project crosses the HSB Site and shall henceforth be referred to as the HSB – MLK Way project. That segment of the project is the subject of this report.

The western half of the HSB – MLK Way project is zoned general commercial (GC-150) and the western half is zoned as Heavy Industrial (HI). Exhibit A, which identifies the project location, is provided in Appendix A.

The project terrain is mostly flat with some rolling terrain that varies between 0.3 percent to over 7.0 percent and generally drains towards the north. Prior use of the property by the railroad and as a manufactured gas, coal tar processing facility has been well documented within WDOE reports.

1.3. Environmental Compliance

The environmental analysis prepared for MLK Way was in compliance with WAC 197-11-960 and with Spokane Environmental Ordinance Section SMC 17E.050.310 (formerly Section 11.10.230(1)). A State Environmental Policy Act (SEPA) chapter 43.21C RCW Environmental Impact Statement (EIS) was prepared for the project and a classification Determination of Non-significance was recommended and accepted on November 8, 2007.

2. METHODOLOGY

2.1. Compliance

Environmental: The environmental analysis prepared for Riverside Extension Phase 2 in compliance with WAC 197-11-960 and with Spokane Environmental Ordinance Section SMC 17E.050.310.

Restrictive Covenants placed on the HSB Site state that any activity on the property that may result in the release or exposure to the environment of the contaminated soil or groundwater that was contained as part of the site Cleanup Action is prohibited without prior written approval by the WDOE. Proposed project actions will result in disturbance of contaminated soils that currently reside beneath a soil cap, or may encounter contaminated soils previously not identified.

Construction activities that may disturb the existing soil cap are grading and trenching for utility installation. It is anticipated that the disturbances will be localized in nature and the cap will be re-established once utility construction is completed. As such, the WDOE will be requested to review and approve proposed actions in conformance with the WDOE institutional controls and that meet jurisdictional stormwater flow mitigation and pollutant treatment requirements.

All contaminated soils and/or groundwater generated as a result of project activities must be handled, treated or disposed of in accordance with the restrictive covenants and with local, state, and federal regulations.

Site workers conducting approved activities that disturb contaminated soil beneath the soil cap must use appropriate personnel protective equipment as required by the Occupational Safety and Health Act (OSHA) [specifically CFR 1910.120] and the Washington Industrial Safety and Health Act (WISHA).

Drainage: The drainage design methodologies used in the preparation of this study are in compliance with the *Spokane Regional Stormwater Manual* (Reference 9, hereafter referred to as the Regional Stormwater Manual) and with the *Stormwater Management Manual for Eastern Washington* (Reference 10, hereafter referred to as the EW Stormwater Manual).

Drywell siting and design methodologies used are in accordance with the Washington State Department of Ecology *Guidance for UIC Wells that Manage Stormwater Manual* (reference 7, hereafter referred to as the UIC Stormwater Manual) and with the City of Spokane *Design Standards Manual* (Reference 8).

2.2. Hydrologic Modeling

Modeling: The Rational Method was used to calculate the peak flows and flow volume for the subsurface infiltration facilities. Flow volumes for the 100 minute design storm were calculated using the Modified Rational Method and were based upon the 10-year design storm peak flow rate derived from the Rational Method where:

Q_p = CIA (eqn. 5-10; Regional Stormwater Manual)

Where:

Q_p = peak flow rate (cfs)

C = runoff coefficient

I = rainfall intensity (in/hr)

A = drainage area (acres)

Basin cutoff points were established at high points within the terrain or at locations where the existing storm drain system grates would intercept the water quality treatment and 10-year design storm flows.

Soils Information: In situ soils information (including soil characteristics and infiltration rates) used in the stormwater design were obtained by field investigation and testing analysis that was conducted by Budinger and Associates (Appendix C). Soils within bio-infiltration treatment areas will be imported. Treatment soil characteristics were based upon product specifications.

During exploration and analysis for drywell design, several samples of the soils encountered were submitted for chemical analysis of HSB Site COC's. Shallow soils at the location of Elevated concentrations of Cyanide and cPAH's were encountered in shallow soils at the location of Swale and Drywell DW-M1. These soils will be removed and replaced with clean material during construction. Observations and test results indicate that deeper soils are not affected. Soil conditions will be further evaluated during drywell installation.

Runoff Coefficient: Runoff coefficients for the site were developed based on land use and were obtained from Table 5-5 of the Spokane Regional Stormwater Manual. All of the hydraulically connected impervious areas contributing to the stormwater treatment system were comprised of paved areas or of planting areas that lacked infiltration losses. A runoff coefficient for pavement for rolling terrain (2% - 10% slope) with a $C_{10\text{-year}}$ value of 0.90 was selected to represent the contributing basin areas.

The existing ground had been graded and compacted by heavy equipment to encapsulate the HSB Site. Since this restricts the soils infiltration capabilities, the existing runoff conditions onsite are assumed to match the developed condition.

Travel Time: Travel time is defined as the time required for stormwater to move through a flow segment. Time of concentration is defined as the time measured from the center of mass of effective rainfall to the time to peak of the outflow hydrograph. Due to the short basin lengths, a minimum value of 5 minutes was assigned to each of the subbasins.

2.3. Hydraulic Modeling

Drywells: Proposed drywell design and siting is in accordance with the Washington State Department of Ecology *Guidance for UIC Wells that Manage Stormwater* dated December 2006 and with the City of Spokane Design Manual dated January 2009.

3. EXISTING CONDITION

3.1. Definition of Existing Condition

HSB – MLK Way is located between approximately 110 to 300 feet south of the Spokane River. The existing terrain is flat with rolling sections and slopes range between 1 and 30 percent to the north. Adjacent land is zoned both as commercial and heavy industrial.

3.2. Existing Drainage Condition Discussion

During the existing condition storm runoff generated within the HSB – MLK Way and offsite drainage tributary surface flows north towards the Spokane River. While the existing property is undeveloped, it has been graded and covered with a compacted layer (i.e., soil cap) that encapsulates contaminated layers. Some infiltration may occur on the Front Avenue right-of-way and in the highly permeable soils along the Spokane River.

Undeveloped land to the south of the project is owned by BNSF railroad and no future development is planned on this property. Property to the north of the proposed roadway is currently owned by Spokane River Properties. While this area may be developed as for either commercial or industrial uses, the remaining property is downgradient of HSB – MLK Way and not hydraulically connected to the project. In accordance with the Eastern Washington Stormwater Manual and the Regional Stormwater Manual, the hydraulically unconnected pollutant generating areas were removed from the contributing basin delineation. A summary of the existing drainage conditions is provided below:

Stormwater: Surface stormwater generated by onsite basins surface flow to the north. A portion of the stormwater infiltrates into the permeable in situ soils and the remaining flows drain towards the Spokane River.

Surface Water: The Spokane River is located approximately 110 to 300 feet north of the proposed MLK Way. No other bodies of water reside near the proposed project.

Groundwater: The HSB-MLK Way project is located within the Spokane County Critical Aquifer Recharge Area (CARA) and is subject to Spokane Environmental Ordinance Section SMC 17E.050.310. The project is not located within a wellhead protection area.

Since stormwater will be routed off site or infiltrated to permeable soils, there should be no significant hydrologic change between the existing and proposed condition or impact to downgradient properties. Consequently, hydrologic calculations are provided in the Proposed Condition section of this report.

3.3. Existing Environmental Condition Discussion

The MLK Way Phase 2 SEPA checklist was forwarded for public notification and processing on November 8, 2007. The 30-day period has since passed without comment. The document contained an evaluation of the project impacts to such items as air quality, surface and groundwater, plant and animal species, environmental health, and historic and cultural preservation. A copy of the SEPA checklist is available at the City of Spokane Engineering Services office.

A summary of the pertinent existing environmental conditions is provided below:

Contaminated Soils: Contaminated soil areas on the project are encapsulated by the soil cover. The areas of PAH-affected soils are located as shown on Figure 7 of the Hamilton Street Bridge Site Enforcement Order DE-1533. During project activities, additional spurious contaminated soil may be encountered or exposed. When possible, the extent of these soils will be identified so that site records may be updated.

Approximately 18,000 cubic yards of excess fill material from Phase 1 of the MLK Way project has been placed on the east side of the HSB site for use on the Phase 2 project. Analytical results from the sampling and analysis of nine samples collected from finer fractions of this fill material indicate that while the stockpiled material does contain some PAH's, it is below the HSB site cleanup level of 1. Fill material from the project site and imported clean fill material will be used to further encapsulate the contaminated soils located on the HSB site. Fill materials and soils on the project will be placed in accordance with the Consent Decree for the property. A copy of the WDOE email dated 2/17/15 is provided in the appendix for reference.

During some project activities (such as swale or drywell construction and installation), additional (not currently identified) contaminated soils may be encountered. If this occurs, or if contaminated soils beneath the soil cap are encountered, project personnel must adhere to the site health and safety plan which may require compliance with HAZWOPER (CFR 1910.120) requirements depending on the specific work performed. Additionally, the extent of any contaminated soil should be identified to update site records. As indicated above, all contaminated soils and/or groundwater generated during project activities must be treated and disposed of in accordance with local, state, and federal regulations.

Groundwater underlying some portions of the HSB-MLK Way project is contaminated with PAHs and metals exceeding site cleanup levels. However, project activities are not anticipated to result in any releases to groundwater, nor conducted to depths where groundwater will be encountered.

4. PROPOSED CONDITION DESIGN

4.1. Definition of Proposed Condition

The proposed condition assumes that MLK Way Phase 2 is fully constructed as an arterial street in accordance with the attached plan sheets. The roadway has been constructed and the area upstream (BNSF) remains undeveloped.

4.2. Proposed Condition

Under the proposed condition, MLK Way Phase 2 has been constructed. BNSF property to the south is fenced, but remains undeveloped. Spokane River Properties to the south may or may not be developed.

Proposed Condition Hydrologic Parameters:
Stormwater from the HSB-MLK Way roadway surface flows into curb cuts or is captured by storm drains. The flows are then conveyed into lined stormwater treatment areas.

Most of the stormwater from the newly constructed roadway will be collected using bio-infiltration (208 swales) and then conveyed to drywells. A 10-year design storm (the flow control facility storm) peak flow and volumes were calculated and assessed for each infiltration system proposed.

Due to the potential for contaminated soils at the MLK Way/Erie Street intersection, a suitable stormwater infiltration site was not located within City right-of-way. Stormwater from this area will be fully treated and conveyed to an existing 69 inch sanitary sewer main, located in Erie Street.

Basin cutoff points were established at high points within the terrain or at locations where the proposed storm drain system grates would intercept flows from the water quality treatment and 10-year design storms. The storm flows for each basin and treatment area were evaluated by subbasin areas.

4.3. Proposed Condition Flow Summary

A summary of the proposed condition 10-year design storm flows rates are presented below in Table 3. A copy of the 10-year design flow calculations are provided in Appendix B. All stormwater will be treated using bio-infiltration, in accordance with the SRSM, prior to UIC disposal.

	Table 3: 10-Year Proposed Condition Flow Summary			
Subbasin*	Area (acres)	Reqd. Vol_{10} (cf)	Drywell Facility Name	Drywell Outflow Rate Q_{10} (cfs)
Area 1	0.73	509	WSU-DW 1 & 2	0.6
Area 2	0.15	0	DW D1-M1	1.0
Area 3	0.14	0	DW D2-M2	1.0

* Refer to Exhibits E1 and E2 for subbasin characteristics.

4.4. Proposed Condition Environmental Discussion

A summary of the construction phase and proposed environmental conditions are listed below:

Placement of Fill and Soil Encapsulation: Fill material will be transferred to the HSB site for general grading and encapsulation purposes. Fill materials and soils on the project will be placed in accordance with the Consent Decree for the property.

Encountering Contaminated Soil during trenching for utility installation: It is possible that contaminated soil will be encountered during trenching for utility installation. The potential exists that contaminated soil may be encountered within the HSB site. If this occurs within an undocumented area, the extent of this contamination should be documented for inclusion in site records. If the location of these drainage improvements can be modified (with the consent of engineering/design staff) to be outside any area of observed soil contamination, then the potential of future impacts from these improvements can be minimized.

If the construction of the utilities cannot be moved outside of contaminated soil and/or if any removal of contaminated soil is necessary, or if excavation below the soil cover is necessary, invasive work must be completed by HAZWOPER-trained personnel. Furthermore, any contaminated soil generated as a result of construction activities that cannot be replaced beneath the cap must be treated/disposed of in accordance with local, state, and federal regulations.

If excavations are anticipated to occur at depths that encounter contaminated soil beneath the soil cap or are greater than 2 feet below existing grade where the soil cap is present, the soil cap material must be removed, set aside, and then re-placed once excavation is completed to maintain the integrity of the soil cap.

During construction, implementation of routine mitigation practices to reduce/eliminate stormwater impacts to the project site will be required and must be monitored throughout construction in accordance with applicable local, state, and federal requirements.

Design and construction of the project is intended to prevent stormwater infiltration in areas of the HSB site that could result in a future release of contaminants to soil and/or site groundwater. As such, drywell locations and swales have been designed to route stormwater away from in-place contaminated soils and infiltrate where future impacts will be minimized to the site.

5. CONCLUSIONS & RECOMMENDATIONS

1. The project site is not located within a FEMA designated SFHA.
2. A State Environmental Policy Act (SEPA) chapter 43.21C RCW Environmental Impact Statement (EIS) was submitted on November 8, 2007. A classification Determination of Non-significance was recommended and accepted and the 30-day public notification period has since passed.
3. Stormwater from the newly constructed roadway will be treated using bio-infiltration in accordance with the Spokane Regional Stormwater Manual.
4. Treated stormwater will be conveyed to UIC facilities for infiltration. The drywells will be registered with the WDOE. The UIC facilities have been sited hydraulically downstream of the PAH-contaminated soil areas as delineated within WDOE Enforcement Decree DE-1533.
5. Stormwater from the MLK Way/Erie Street intersection cannot be infiltrated due to extensive contamination in the area. Stormwater in this area will be treated and conveyed to an existing 69-inch sanitary sewer main, located in Erie Street.
6. Proposed project activities will result in stormwater for infiltration/treatment being routed from areas of known contamination beneath a soil cap and will reduce the overall potential for leaching of contaminants to subsurface soils and groundwater.
7. Utility trenching and installation is proposed with this project. Contaminated soils excavated from the trenches will be replaced beneath the cap. In addition, these soils will be capped by the new roadway, greatly reducing future, potential infiltration of contaminants. Materials that are not replaced beneath the cap will be disposed of at a permitted facility.
8. Proposed project activities are not anticipated to result in any permanent degradation of Restrictive Covenants for the HSB site. Once completed, the project should enhance future development opportunities of this vicinity in accordance with stakeholder desires..

6. REFERENCES

1. *State of Washington Spokane County Superior Court Decree No. 02205445-0. Filed September 12, 2002*.

2. Periodic Review Report for the Hamilton Street Bridge Site. Washington State Dept. of Ecology, August 2010.

3. .MLK Phase 2 Geotechnical and Hydrogeological Exploration and Analysis Memorandum. Budinger and Associates, March 23, 2015.

4. Analytical Report MLK CIPP Pipe location. Test America, June 2, 2014.

5. MLK Phase 2 Hamilton Street Bridge Site (Construction Recommendations) Memorandum. Budinger and Associates, September 9, 2013.

6. *Guidance for UIC Wells that Manage Stormwater*. Washington State Dept. of Ecology, December 2006.

7. *City of Spokane Design Standards Manual*. City of Spokane, February 2007.

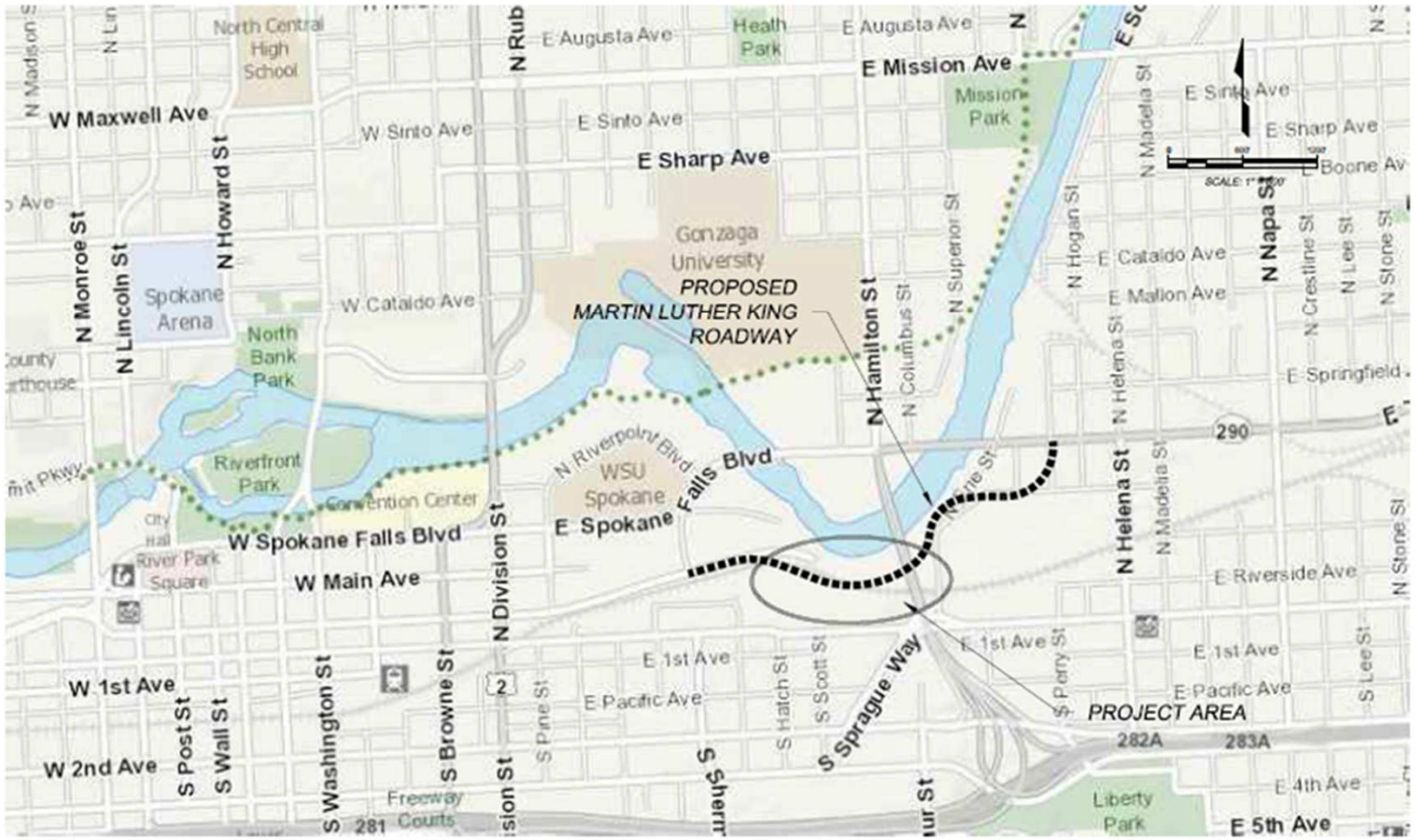
8. *Spokane Regional Stormwater Manual*, prepared by Spokane County, The City of Spokane, and The City of Spokane Valley, dated April 2008.

9. *Stormwater Management Manual for Eastern Washington*. Washington State Dept. of Ecology, September 2004.

Appendix A

- Exhibit A – Project Vicinity Map
- Exhibit B – Hamilton Street Bridge Limits
- Exhibit C – FEMA Flood Zone Map Panel 53063C0524D

EXHIBIT A



MARTIN LUTHER KING JR. WAY: VICINITY MAP

EXHIBIT B – HSB LIMITS

HSB limit line

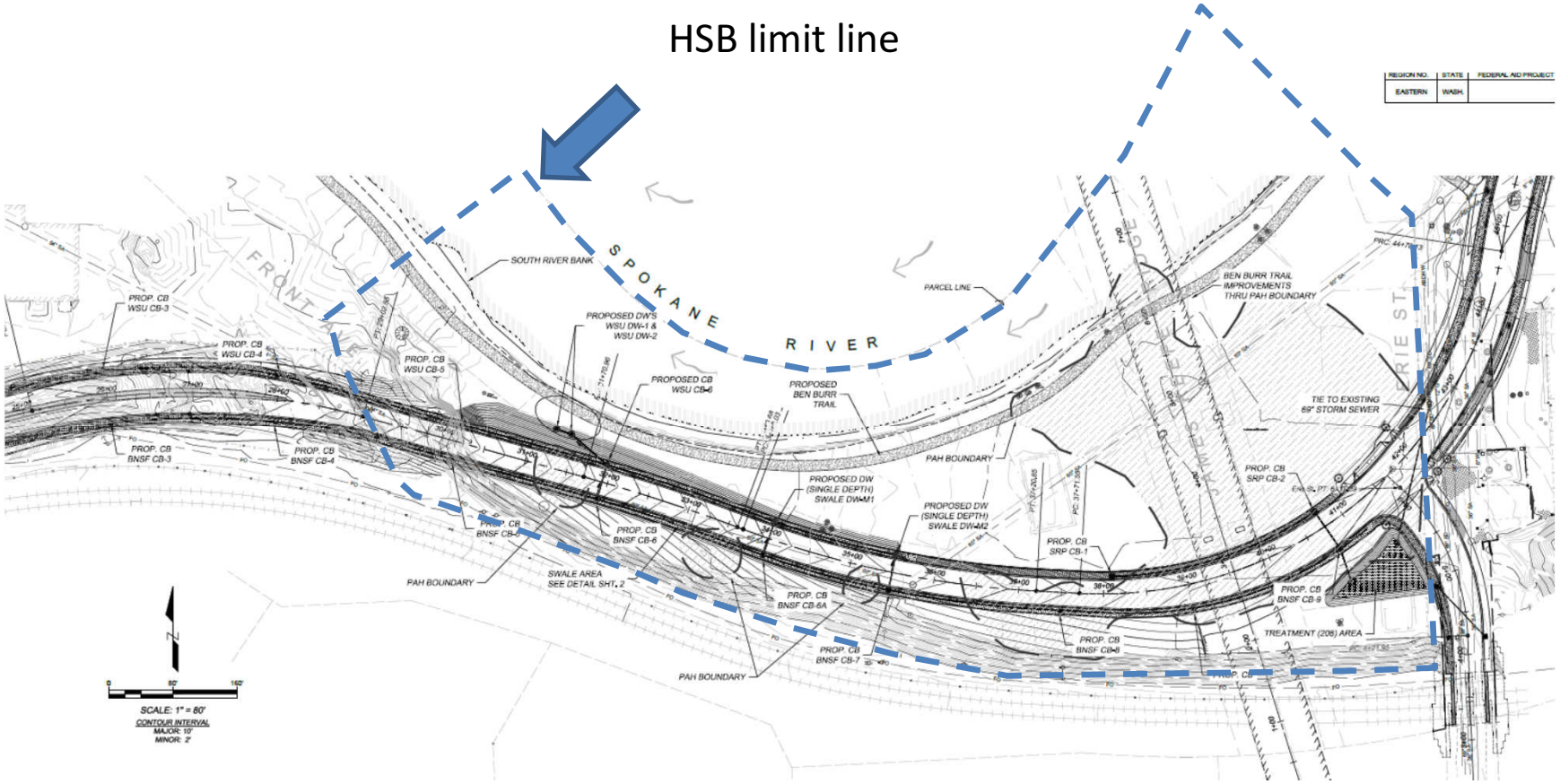
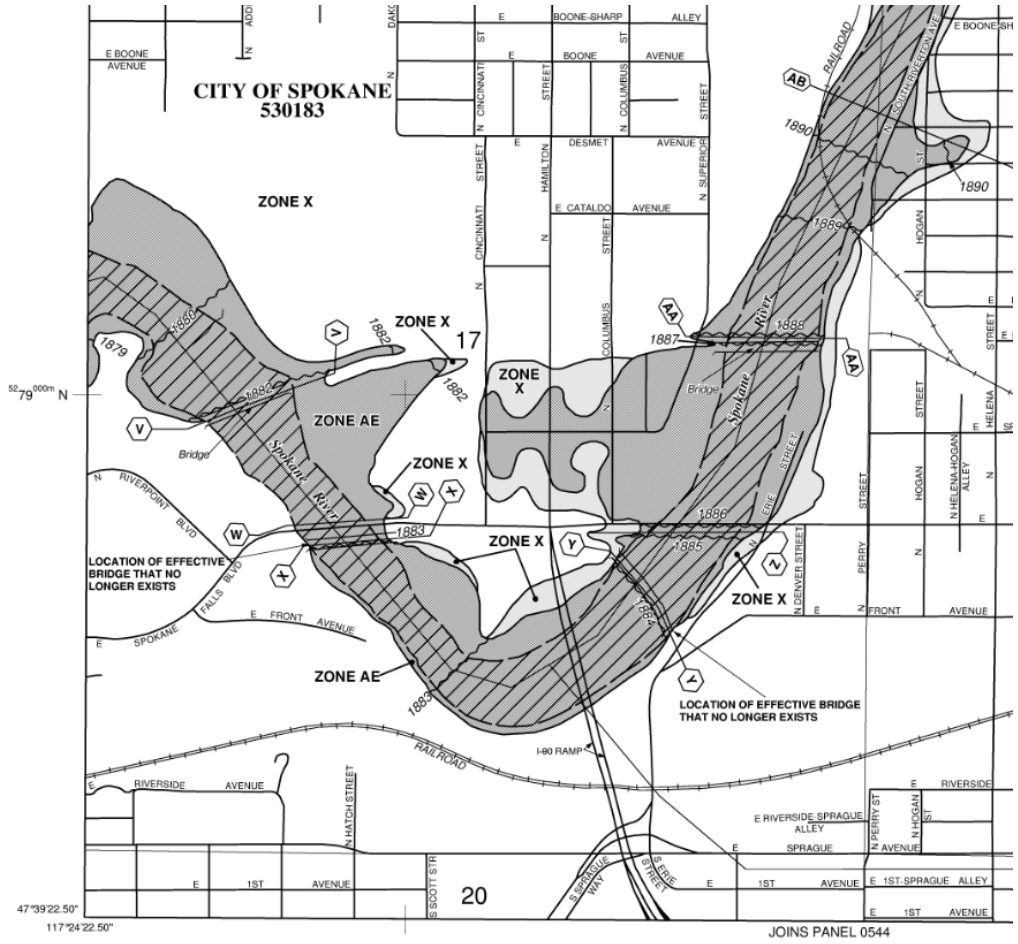


EXHIBIT C – FEMA FLOOD ZONE MAP



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0542D

FIRM

FLOOD INSURANCE RATE MAP

SPOKANE COUNTY, WASHINGTON

AND INCORPORATED AREAS

PANEL 542 OF 1150

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

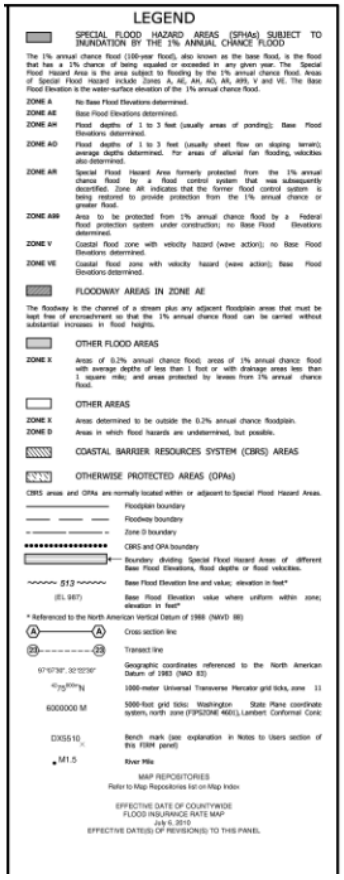
COMMUNITY	NUMBER	PANEL	SUFFIX
SPOKANE, CITY OF	530183	0542	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
53063C0542D

EFFECTIVE DATE
JULY 6, 2010

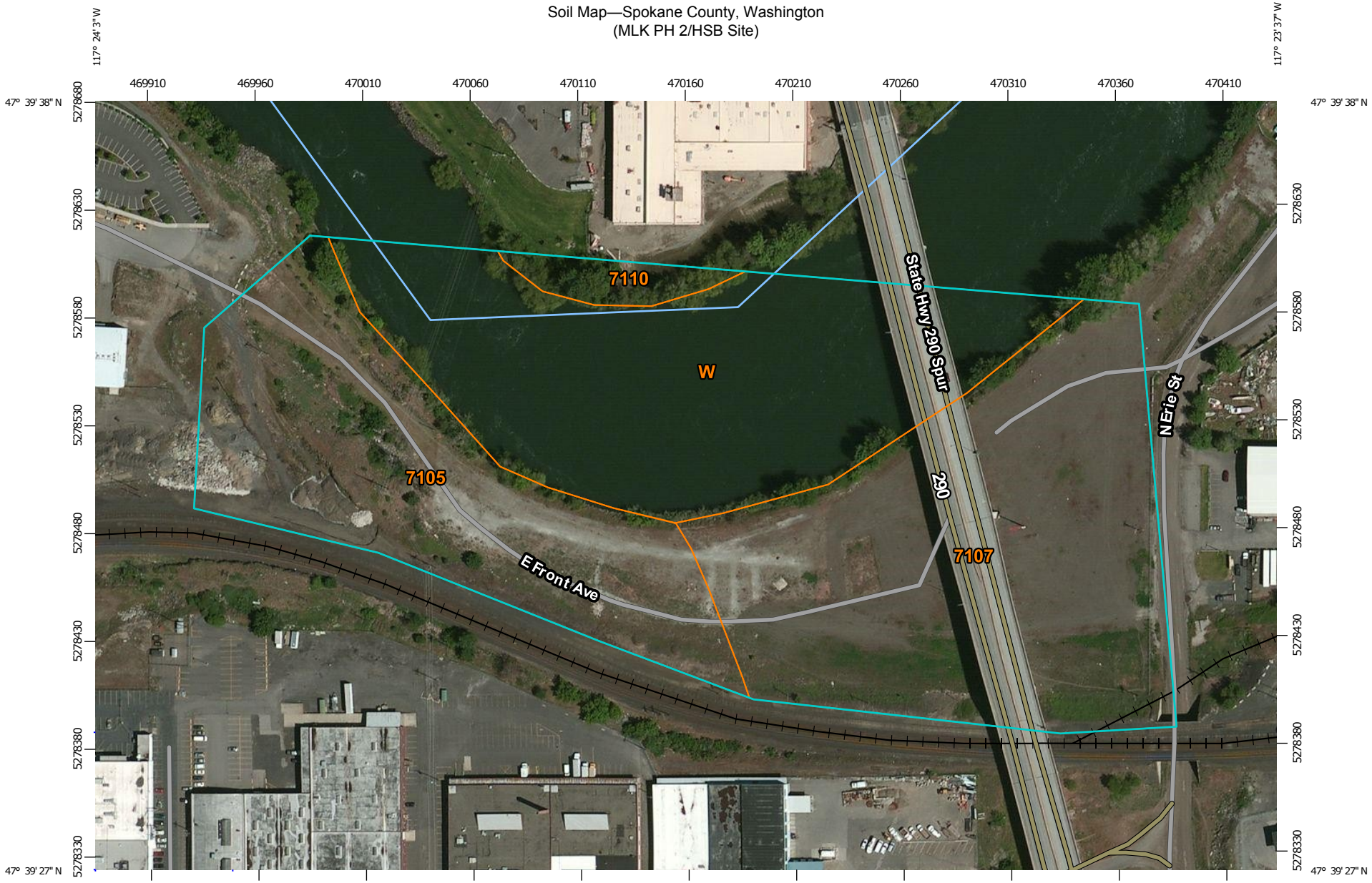
Federal Emergency Management Agency



Appendix B

Hydrologic Calculations

Soil Map—Spokane County, Washington
(MLK PH 2/HSB Site)



Map Scale: 1:2,510 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Spokane County, Washington
Survey Area Data: Version 5, Sep 4, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Spokane County, Washington (WA063)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
7105	Urban land, gravelly substratum, 0 to 15 percent slopes	5.2	26.8%
7107	Urban land, basalt bedrock substratum, 0 to 15 percent slopes	7.4	38.2%
7110	Urban land-Opportunity, disturbed complex, 0 to 3 percent slopes	0.4	2.2%
W	Water	6.3	32.9%
Totals for Area of Interest		**19.3**	**100.0%**

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Spokane County, Washington			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**

Hydrologic Soil Group and Surface Runoff–Spokane County, Washington			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
7105—Urban land, gravelly substratum, 0 to 15 percent slopes			
Urban land, gravelly substratum	95	—	—
Opportunity, disturbed	3	—	C
Marble, disturbed	2	—	B
7107—Urban land, basalt bedrock substratum, 0 to 15 percent slopes			
Urban land, basalt bedrock substratum	95	—	—
Northstar, disturbed	3	—	C
Rock outcrop	2	—	—
7110—Urban land-Opportunity, disturbed complex, 0 to 3 percent slopes			
Urban land	60	—	—
Opportunity, disturbed	35	—	C
Bong, moist, disturbed	1	—	B
Garrison, disturbed	1	—	C
Hardesty, disturbed	1	—	C/D
Marblespring, disturbed	1	—	B
Springdale, disturbed	1	—	B
W—Water			
Water	100	—	—

Data Source Information

Soil Survey Area: Spokane County, Washington
Survey Area Data: Version 5, Sep 4, 2014

Basin Name	Subbasin Name	Area (s.f)	Treatment Vol. Reqd. (c.f.) where V=1133A	Treatment Volume Provided. (c.f.)	10-Year Storm Volume (c.f.)	Drywell Facility Names	Drywell Type	Flow Rate/Drywell (cfs)
AREA 1	1-A	10275						
	1-B	8240						
	1-C	6800						
	1-D	6340						
TOTAL		**31655**	**824**	**2000**	**2750**	**WSU-DW1 WSU-DW2**	**Two (2) - Type2 (Mod)**	**0.6**
AREA 2	2-A	3350						
	2-B	3360						
TOTAL		**6710**	**175**	**1200**	**583**	**DW D1-M1**	**Type 2**	**1**
AREA 3	3-A	3180						
	3-B	2720						
TOTAL		**5900**	**153**	**490**	**512**	**DW D2-M2**	**Type 2**	**1**

BOWSTRING METHOD
DETENTION BASIN DESIGN

PROJECT: MLK Phase 1
BASIN: Basin 1 - MLK Phase 2 to WSU DW 1 & DW 2
PREPARER: CK
DATE: 16-Dec-14

m,n DATA	2	10	50	100
m=	3.47	6.98	10.68	12.33
n=	0.556	0.609	0.635	0.643

D. STORM = 10
m= 6.98
n= 0.609

NUMBER OF DRYWELLS PROPOSED

0 Single (type A) 2 Double (type B)

Total Area (calc.) (see H1)		0.73	
Time of Conc. (calc.) (see H1)		5.00	
Composite "C" (calc.) (see H1)		0.90	
Time of Conc. (min)			5.00
Area (Acres)			0.73
C' Factor			0.90
PGIS Area (sq. ft.)			31665
Volume Provided (cf)		208:	2000
Outflow (cfs)			0.6
Area * C" Factor			0.65

#1 Time Inc. (min.)	#2 Time Inc. (sec.) (#1*60)	#3 Intensity (in./hr.)	#4 Q dev. (cfs) (A*C*#3)	#5 V in (cu. ft.)	#6 V out (cu. ft.) (Outf.*#2)	#7 Storage (cu. ft.) (#5-#6)
5.00	300	2.62	1.71	689	180.0	509
5	300	2.62	1.71	689	180	509
10	600	1.72	1.12	789	360	429
15	900	1.34	0.88	879	540	339
20	1200	1.13	0.74	959	720	239
25	1500	0.98	0.64	1030	900	130
30	1800	0.88	0.58	1095	1080	15
35	2100	0.80	0.52	1154	1260	-106
40	2400	0.74	0.48	1208	1440	-232
45	2700	0.69	0.45	1260	1620	-360
50	3000	0.64	0.42	1308	1800	-492
55	3300	0.61	0.40	1353	1980	-627
60	3600	0.58	0.38	1397	2160	-763
65	3900	0.55	0.36	1438	2340	-902
70	4200	0.53	0.34	1478	2520	-1042
75	4500	0.50	0.33	1516	2700	-1184
80	4800	0.48	0.32	1552	2880	-1328
85	5100	0.47	0.31	1588	3060	-1472
90	5400	0.45	0.29	1622	3240	-1618
95	5700	0.44	0.29	1655	3420	-1765
360	21600	0.19	0.13	2750	12960	-10210

DRAINAGE POND CALCULATIONS

Passing No. 200 Sieve		6	%
Reqd. treatment storage volume (V)		824	cu. ft.
	provided:	2000	cu. ft.

DRYWELL REQUIREMENTS - 10 YEAR DESIGN STORM

Maximum storage required by Bowstring =		509	cu. ft.
	provided:	2000	cu. ft.

Number and type of Drywells Required = 0 Single 2 Double

BASIN :
TIME OF CONCENTRATION (minutes)

Tc (overland)		Tc (gutter)		Area (s.f.)	Area (Ac)	"C"	A*C
Ct =	0.15	L2 =	800	31665	0.73	0.90	0.654
		Z1 =	7.4	0	0.00	0.00	0.000
L1(A) =	16	Z2 =	1	0	0.00	0.00	0.000
N(A) =	0.4	B =	0	0	0.00	0.00	0.000
S(A) =	0.03	n =	0.016	0	0.00	0.00	0.000
		s =	0.8	0	0.00	0.00	0.000
Tc (A) =	1.31	d =	0.125	0	0.00	0.00	0.000
					Total A	Comp "C"	
L1(B) =	0	Tc (gu) =	1.06		0.73	0.90	
N(B) =	0	Tc(A+B) =	1.31				
S(B) =	0				Q=C*I*A=	1.71	
		Tc(tot.) =	5.00		Q(est.) =	0.83	
Tc (B) =	0.0	Intensity =	2.62				
					A =	0.065625	
					WP =	1.1102	
					R =	0.0591	
					V =	12.59	
					Tc(gu) =	1.06	
					Q(est) =	0.83	
					Holding =	28.50	

Tc (total) = Tc (overland) + Tc (gutter)
Tc (overland) = Ct*(L1*N/S^0.5)^0.6)
Ct = 0.15
L1 = Length of Overland Flow
N = friction factor of overland flow (.4 for average grass cover)
S = average slope of overland flow
Tc (gutter) = Length (ft.)/Velocity (ft./sec.)/60
B = Bottom width of gutter or ditch
Z1 = inverse of cross slope one of ditch
Z2 = inverse of cross slope two of ditch
d = depth of flow in gutter (estimate, check estimate with Flow)
Area = d*B+d^2/2*(Z1+Z2)
Wetted perimeter = B*d+(1/sin(atn(1/Z1))+1/sin(atn(1/Z2)))
Hydraulic Radius = R = Area/Wetted Perimeter
Velocity = 1.486/n*R^.667*s^.5
Flow = Velocity*Area
n = 0.016 for asphalt
s = longitudinal slope of gutter

Infiltration Factor 1133

OK!

OK!

BOWSTRING METHOD
DETENTION BASIN DESIGN

PROJECT: MLK Phase 1
BASIN: Basin 2 - MLK Phase 2 to DW-M1
PREPARER: CK
DATE: 16-Dec-14

m,n DATA	2	10	50	100
m=	3.47	6.98	10.68	12.33
n=	0.556	0.609	0.635	0.643

D. STORM = 10
m= 6.98
n= 0.609

NUMBER OF DRYWELLS PROPOSED

0 Single (type A) 1 Double (type B)

Total Area (calc.) (see H1)		0.15	
Time of Conc. (calc.) (see H1)		5.00	
Composite "C" (calc.) (see H1)		0.90	
Time of Conc. (min)			5.00
Area (Acres)			0.15
C' Factor			0.90
PGIS Area (sq. ft.)			6710
Volume Provided (cf)		208:	560
Outflow (cfs)			1
Area * C" Factor			0.14

storm: 560

#1 Time Inc. (min.)	#2 Time Inc. (sec.) (#1*60)	#3 Intensity (in./hr.)	#4 Q dev. (cfs) (A*C*#3)	#5 V in (cu. ft.)	#6 V out (cu. ft.) (Outf.*#2)	#7 Storage (cu. ft.) (#5-#6)
5.00	300	2.62	0.36	146	300.0	-154
5	300	2.62	0.36	146	300	-154
10	600	1.72	0.24	167	600	-433
15	900	1.34	0.19	186	900	-714
20	1200	1.13	0.16	203	1200	-997
25	1500	0.98	0.14	218	1500	-1282
30	1800	0.88	0.12	232	1800	-1568
35	2100	0.80	0.11	244	2100	-1856
40	2400	0.74	0.10	256	2400	-2144
45	2700	0.69	0.10	267	2700	-2433
50	3000	0.64	0.09	277	3000	-2723
55	3300	0.61	0.08	287	3300	-3013
60	3600	0.58	0.08	296	3600	-3304
65	3900	0.55	0.08	305	3900	-3595
70	4200	0.53	0.07	313	4200	-3887
75	4500	0.50	0.07	321	4500	-4179
80	4800	0.48	0.07	329	4800	-4471
85	5100	0.47	0.06	336	5100	-4764
90	5400	0.45	0.06	344	5400	-5056
95	5700	0.44	0.06	351	5700	-5349
360	21600	0.19	0.03	583	21600	-21017

BASIN :
TIME OF CONCENTRATION (minutes)

Tc (overland)		Tc (gutter)		Area (s.f.)	Area (Ac)	"C"	A*C
Ct =	0.15	L2 =	400	6710	0.15	0.90	0.139
		Z1 =	15.8	0	0.00	0.00	0.000
L1(A) =	16	Z2 =	1	0	0.00	0.00	0.000
N(A) =	0.4	B =	0	0	0.00	0.00	0.000
S(A) =	0.03	n =	0.016	0	0.00	0.00	0.000
		s =	3.7	0	0.00	0.00	0.000
Tc (A) =	1.31	d =	0.125	0	0.00	0.00	0.000
					Total A	Comp "C"	
L1(B) =	0	Tc (gu) =	0.24		0.15	0.90	
N(B) =	0	Tc(A+B) =	1.31				
S(B) =	0				Q=C*I*A=	0.36	
		Tc(tot.) =	5.00		Q(est.) =	3.63	
Tc (B) =	0.0	Intensity =	2.62				
					A =	0.13125	
					WP =	2.1557	
					R =	0.0609	
					V =	27.62	
					Tc(gu) =	0.24	
					Q(est) =	3.63	
					Holding =	14.25	

Tc (total) = Tc (overland) + Tc (gutter)
Tc (overland) = Ct*(L1*N/S^0.5)^0.6)
Ct = 0.15
L1 = Length of Overland Flow
N = friction factor of overland flow (.4 for average grass cover)
S = average slope of overland flow
Tc (gutter) = Length (ft.)/Velocity (ft./sec.)/60
B = Bottom width of gutter or ditch
Z1 = inverse of cross slope one of ditch
Z2 = inverse of cross slope two of ditch
d = depth of flow in gutter (estimate, check estimate with Flow)
Area = d*B+d^2/2*(Z1+Z2)
Wetted perimeter = B*d+(1/sin(atn(1/Z1))+1/sin(atn(1/Z2)))
Hydraulic Radius = R = Area/Wetted Perimeter
Velocity = 1.486/n*R^.667*s^.5
Flow = Velocity*Area
n = 0.016 for asphalt
s = longitudinal slope of gutter

DRAINAGE POND CALCULATIONS

Passing No. 200 Sieve		6	%	Infiltration Factor 1133
Reqd. treatment storage volume (V)		175	cu. ft.	
	provided:	560	cu. ft.	OK!

DRYWELL REQUIREMENTS - 10 YEAR DESIGN STORM

Maximum storage required by Bowstring =		0	cu. ft.	
	provided:	560	cu. ft.	OK!
Number and type of Drywells Required =		0	Single	1 Double

BOWSTRING METHOD
DETENTION BASIN DESIGN

PROJECT: MLK Phase 1
BASIN: Basin 3 - MLK Phase 2 to DW-M2
PREPARER: CK
DATE: 16-Dec-14

m,n DATA	2	10	50	100
m=	3.47	6.98	10.68	12.33
n=	0.556	0.609	0.635	0.643

D. STORM = 10
m= 6.98
n= 0.609

BASIN :
TIME OF CONCENTRATION (minutes)

NUMBER OF DRYWELLS PROPOSED
0 Single (type A) 1 Double (type B)

Total Area (calc.) (see H1)		0.14	
Time of Conc. (calc.) (see H1)		5.00	
Composite "C" (calc.) (see H1)		0.90	
Time of Conc. (min)			5.00
Area (Acres)			0.14
C' Factor			0.90
PGIS Area (sq. ft.)			5900
Volume Provided (cf)		208:	490
Outflow (cfs)			1
Area * C" Factor			0.12

storm: 490

#1 Time Inc. (min.)	#2 Time Inc. (sec.) (#1*60)	#3 Intensity (in./hr.)	#4 Q dev. (cfs) (A*C*#3)	#5 V in (cu. ft.)	#6 V out (cu. ft.) (Outf.*#2)	#7 Storage (cu. ft.) (#5-#6)
5.00	300	2.62	0.32	128	300.0	-172
5	300	2.62	0.32	128	300	-172
10	600	1.72	0.21	147	600	-453
15	900	1.34	0.16	164	900	-736
20	1200	1.13	0.14	179	1200	-1021
25	1500	0.98	0.12	192	1500	-1308
30	1800	0.88	0.11	204	1800	-1596
35	2100	0.80	0.10	215	2100	-1885
40	2400	0.74	0.09	225	2400	-2175
45	2700	0.69	0.08	235	2700	-2465
50	3000	0.64	0.08	244	3000	-2756
55	3300	0.61	0.07	252	3300	-3048
60	3600	0.58	0.07	260	3600	-3340
65	3900	0.55	0.07	268	3900	-3632
70	4200	0.53	0.06	275	4200	-3925
75	4500	0.50	0.06	282	4500	-4218
80	4800	0.48	0.06	289	4800	-4511
85	5100	0.47	0.06	296	5100	-4804
90	5400	0.45	0.05	302	5400	-5098
95	5700	0.44	0.05	308	5700	-5392
360	21600	0.19	0.02	512	21600	-21088

Tc (overland)		Tc (gutter)		Area (s.f.)	Area (Ac)	"C"	A*C
Ct =	0.15	L2 =	200	5900	0.14	0.90	0.122
		Z1 =	3.8	0	0.00	0.00	0.000
L1(A) =	16	Z2 =	1	0	0.00	0.00	0.000
N(A) =	0.4	B =	0	0	0.00	0.00	0.000
S(A) =	0.03	n =	0.016	0	0.00	0.00	0.000
		s =	1.1	0	0.00	0.00	0.000
Tc (A) =	1.31	d =	0.125	0	0.00	0.00	0.000
					Total A	Comp "C"	
L1(B) =	0	Tc (gu) =	0.23		0.14	0.90	
N(B) =	0	Tc(A+B) =	1.31				
S(B) =	0				Q=C*I*A=	0.32	
		Tc(tot.) =	5.00		Q(est.) =	0.54	
Tc (B) =	0.0	Intensity =	2.62				
					A =	0.0375	
					WP =	0.6679	
					R =	0.0561	
					V =	14.27	
					Tc(gu) =	0.23	
					Q(est) =	0.54	
					Holding =	7.13	

Tc (total) = Tc (overland) + Tc (gutter)
Tc (overland) = Ct*(L1*N/S^0.5)^0.6)
Ct = 0.15
L1 = Length of Overland Flow
N = friction factor of overland flow (.4 for average grass cover)
S = average slope of overland flow
Tc (gutter) = Length (ft.)/Velocity (ft./sec.)/60
B = Bottom width of gutter or ditch
Z1 = inverse of cross slope one of ditch
Z2 = inverse of cross slope two of ditch
d = depth of flow in gutter (estimate, check estimate with Flow)
Area = d*B+d^2/2*(Z1+Z2)
Wetted perimeter = B*d+(1/sin(atn(1/Z1))+1/sin(atn(1/Z2)))
Hydraulic Radius = R = Area/Wetted Perimeter
Velocity = 1.486/n*R^.667*s^.5
Flow = Velocity*Area
n = 0.016 for asphalt
s = longitudinal slope of gutter

DRAINAGE POND CALCULATIONS

Passing No. 200 Sieve		6	%	Infiltration Factor 1133
Reqd. treatment storage volume (V)		153	cu. ft.	
	provided:	490	cu. ft.	OK!

DRYWELL REQUIREMENTS - 10 YEAR DESIGN STORM

Maximum storage required by Bowstring =		0	cu. ft.
	provided:	490	cu. ft. OK!
Number and type of Drywells Required =		0	Single 1 Double

BOWSTRING METHOD
DETENTION BASIN DESIGN

PROJECT: MLK Phase 1
BASIN: Treatment Pond - MLK Phase 2 to 69" SA in Erie
PREPARER: CK
DATE: 16-Dec-14

m,n DATA	2	10	50	100
m=	3.47	6.98	10.68	12.33
n=	0.556	0.609	0.635	0.643

D. STORM = 10
m= 6.98
n= 0.609

NUMBER OF DRYWELLS PROPOSED

0	Single (type A)	0	Double (type B)	
Total Area (calc.) (see H1)			0.78	
Time of Conc. (calc.) (see H1)			5.00	
Composite "C" (calc.) (see H1)			0.90	
Time of Conc. (min)				5.00
Area (Acres)				0.78
C' Factor				0.90
PGIS Area (sq. ft.)				33910
Volume Provided (cf)			208:	2300
Outflow (cfs)				1
Area * C" Factor				0.70

#1 Time Inc. (min.)	#2 Time Inc. (sec.) (#1*60)	#3 Intensity (in./hr.)	#4 Q dev. (cfs) (A*C*#3)	#5 V in (cu. ft.)	#6 V out (cu. ft.) (Outf.*#2)	#7 Storage (cu. ft.) (#5-#6)
5.00	300	2.62	1.84	738	300.0	438
5	300	2.62	1.84	738	300	438
10	600	1.72	1.20	845	600	245
15	900	1.34	0.94	942	900	42
20	1200	1.13	0.79	1027	1200	-173
25	1500	0.98	0.69	1103	1500	-397
30	1800	0.88	0.62	1172	1800	-628
35	2100	0.80	0.56	1235	2100	-865
40	2400	0.74	0.52	1294	2400	-1106
45	2700	0.69	0.48	1349	2700	-1351
50	3000	0.64	0.45	1401	3000	-1599
55	3300	0.61	0.43	1449	3300	-1851
60	3600	0.58	0.40	1496	3600	-2104
65	3900	0.55	0.38	1540	3900	-2360
70	4200	0.53	0.37	1582	4200	-2618
75	4500	0.50	0.35	1623	4500	-2877
80	4800	0.48	0.34	1662	4800	-3138
85	5100	0.47	0.33	1700	5100	-3400
90	5400	0.45	0.32	1737	5400	-3663
95	5700	0.44	0.31	1772	5700	-3928
360	21600	0.19	0.14	2945	21600	-18655

DRAINAGE POND CALCULATIONS

Passing No. 200 Sieve		12	%
Reqd. treatment storage volume (V)		1413	cu. ft.
	provided:	2300	cu. ft.

DRYWELL REQUIREMENTS - 10 YEAR DESIGN STORM

Maximum storage required by Bowstring =		438	cu. ft.
	provided:	2300	cu. ft.
Number and type of Drywells Required =		0	Single

BASIN :
TIME OF CONCENTRATION (minutes)

Tc (overland)		Tc (gutter)		Area (s.f.)	Area (Ac)	"C"	A*C
Ct =	0.15	L2 =	550	33910	0.78	0.90	0.701
		Z1 =	4.9	0	0.00	0.00	0.000
L1(A) =	16	Z2 =	1	0	0.00	0.00	0.000
N(A) =	0.4	B =	0	0	0.00	0.00	0.000
S(A) =	0.03	n =	0.016	0	0.00	0.00	0.000
		s =	0.7	0	0.00	0.00	0.000
Tc (A) =	1.31	d =	0.125	0	0.00	0.00	0.000
					Total A	Comp "C"	
L1(B) =	0	Tc (gu) =	0.79		0.78	0.90	
N(B) =	0	Tc(A+B) =	1.31				
S(B) =	0				Q=C*I*A=	1.84	
		Tc(tot.) =	5.00		Q(est.) =	0.53	
Tc (B) =	0.0	Intensity =	2.62				
					A =	0.0460938	
					WP =	0.8019	
					R =	0.0575	
					V =	11.56	
					Tc(gu) =	0.79	
					Q(est) =	0.53	
					Holding =	19.60	

Tc (total) = Tc (overland) + Tc (gutter)
Tc (overland) = Ct*(L1*N/S^0.5)^0.6)
Ct = 0.15
L1 = Length of Overland Flow
N = friction factor of overland flow (.4 for average grass cover)
S = average slope of overland flow
Tc (gutter) = Length (ft.)/Velocity (ft./sec.)/60
B = Bottom width of gutter or ditch
Z1 = inverse of cross slope one of ditch
Z2 = inverse of cross slope two of ditch
d = depth of flow in gutter (estimate, check estimate with Flow)
Area = d*B+d^2/2*(Z1+Z2)
Wetted perimeter = B*d+(1/sin(atn(1/Z1))+1/sin(atn(1/Z2)))
Hydraulic Radius = R = Area/Wetted Perimeter
Velocity = 1.486/n*R^.667*s^.5
Flow = Velocity*Area
n = 0.016 for asphalt
s = longitudinal slope of gutter

Infiltration Factor 1815

OK!

OK!

0 Double

BOWSTRING INPUT TABLES FROM SRSM

TABLE 5-5
RUNOFF COEFFICIENTS FOR THE RATIONAL METHOD
(10-YEAR RETURN FREQUENCY)

	Runoff Coefficient (C)		
Type of Cover	**Flat (<2%)**	**Rolling (2% - 10%)**	**Hilly (>10%)**
Pavement and Roofs	0.90	0.90	0.90
Earth Shoulders	0.50	0.50	0.50
Drives and Walks	0.90	0.90	0.90
Gravel Pavement	0.50	0.55	0.60
Lawns, Sandy Soil	0.10	0.15	0.20
Lawns, Heavy Soil	0.17	0.22	0.35
Grass Shoulders	0.25	0.25	0.25
Side Slopes, Earth	0.60	0.60	0.60
Side Slopes, Turf	0.30	0.30	0.30
Median Areas, Turf	0.25	0.30	0.30
Cultivated Land, Clay and Loam	0.50	0.55	0.60
Cultivated Land, Sand and Gravel	0.25	0.30	0.35
Woodland and Forest	0.10	0.15	0.20
Meadow and Pasture Land	0.25	0.30	0.35

Source: WSDOT Hydraulics Manual, March 2004

Increase coeffecients by:
10% = 25 Year Frequency
20% = 50 Year Frequency
25% = 100 Year Frequency

TABLE 5-6
GROUND COVER COEFFICIENTS

Type of Cover	**K (feet/minute)**
Forest with heavy ground cover	150
Minimum tillage cultivation	280
Short pasture grass or lawn	420
Nearly bare ground	600
Small roadside ditch w/grass	900
Paved area	1,200
Gutter flow:	
4 inches deep	1,500
6 inches deep	2,400
8 inches deep	3,100
Storm Sewers:	
12 inch diameter	3,000
18 inch diameter	3,900
24 inch diameter	4,700
Open Channel Flow (n = .040):	
12 inches deep	1,100
Narrow Channel (w/d =1):	
2 feet deep	1,800
4 feet deep	2,800
Open Channel Flow (n = .040):	
1 foot deep	2,000
Wide Channel (w/d =9):	
2 feet deep	3,100
4 feet deep	5,000

Source: WSDOT Hydraulics Manual, March 2004

TABLE 5-7
INDEX TO RAINFALL COEFFICIENTS

2-year Event		10-year Event		25-year Event		50-year Event		100-year Event	
m	**n**	**m**	**n**	**m**	**n**	**m**	**n**	**m**	**n**
3.47	0.556	6.98	0.609	9.09	0.626	10.68	0.635	12.33	0.643

Source: WSDOT Hydraulics Manual, March 2004

The rainfall intensity (I) coefficients (m and n) have been determined for Spokane for the 2-, 10-, 25-, 50-, and 100-year storm events. These coefficients were developed from NOAA Atlas 2 and are shown in Table 5-7.

Appendix C

Reference Material (excerpts from):

- State of Washington Spokane Co. Superior Court Decree No. 02205445-0
- WDOE Enforcement Order DE-1533 for the Hamilton St. Bridge Site
- August 2010 Periodic Review Report for Hamilton Street Bridge Site
- Budinger and Associates Swale Recommendations
- Budinger and Associates Geotechnical and Hydrogeological Exploration and analysis for stormwater
- Laboratory Summary and Analytical Reports from Drywell Locations
- Test America Analytical Report for COS Sewer Test Pit
- SEPA Application DNS Sheet

This site is listed in ISIS as: "Hamilton Street Bridge" 111 N. Erie St. Spokane, WA ID# 8446527 -K. Scanlan

COPY
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SEP 12 2002
SUPERIOR COURT
SPOKANE, COUNTY, WN

STATE OF WASHINGTON
SPOKANE COUNTY SUPERIOR COURT

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

AVISTA CORPORATION, and
THE BURLINGTON NORTHERN
AND SANTA FE RAILWAY
COMPANY,

Defendants.

NO. 02205445-0

CONSENT DECREE

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I. INTRODUCTION

A. In entering into this Consent Decree (Decree), the mutual objective of the Washington State Department of Ecology (Ecology) and the Defendants is to provide for remedial action at a facility where there has been a release or threatened release of hazardous substances. The facility is known as the Hamilton Street Bridge Site and is shown in the Site Map in Exhibit A. This Decree requires the Defendants to undertake the remedial actions specified in Section 8 of the Final Cleanup Action Plan (CAP) attached to this Decree as Exhibit B. Ecology has determined that these actions are necessary to protect public health and the environment.

B. The Complaint in this action is being filed simultaneously with this Decree. An answer has not been filed, and there has not been a trial on any issue of fact or law in this case. The parties wish to resolve the issues raised by Ecology's complaint. In addition, the parties agree that settlement of these matters without litigation is reasonable and in the public interest and that entry of this Decree is the most appropriate means of resolving these matters.

C. In signing this Decree, the Defendants agree to its entry and agree to be bound by its terms.

D. By entering into this Decree, the parties do not intend to discharge nonsettling parties from any liability they may have with respect to matters alleged in the complaint. The parties retain the right to seek reimbursement, in whole or in part, from any liable persons for sums expended at the Site, including but not limited to sums expended under this Decree.

E. This Decree shall not be construed as proof of liability or responsibility for any releases of hazardous substances or cost for remedial action nor an admission of any facts; provided, however, that the Defendants shall not challenge the jurisdiction of Ecology in any proceeding to enforce this Decree.

F. The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown: IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

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II. JURISDICTION

A. This Court has jurisdiction over the subject matter and over the parties pursuant to Chapter 70.105D RCW, the Model Toxics Control Act (MTCA).

B. Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person if, after public notice and any required hearing, Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances. RCW 70.105D.040(4)(b) requires that such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

C. Ecology has determined that a release or threatened release of hazardous substances has occurred at the Site which is the subject of this Decree.

D. Ecology has given notice to Defendants, as set forth in RCW 70.105D.020(16), of Ecology's determination that Defendants are potentially liable persons for the Site and that there has been a release or threatened release of hazardous substances at the Site.

E. The actions to be taken pursuant to this Decree are necessary to protect public health, welfare, and the environment.

F. Defendants have agreed to undertake the actions specified in this Decree and consent to the entry of this Decree under the MTCA.

III. PARTIES BOUND

This Decree shall apply to and be binding upon the signatories to this Decree (the Parties), their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree. Defendants agree to undertake all actions required by the terms and conditions of this Decree and not to contest state jurisdiction regarding this Decree. No change in ownership or corporate status shall alter the responsibility of the defendants under this Decree. Defendants shall provide a copy of this Decree to all agents, contractors and subcontractors retained to perform work required by this Decree and shall

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ensure that all work undertaken by such contractors and subcontractors will be in compliance with this Decree

IV. DEFINITIONS

Except for as specified herein, all definitions in WAC 173-340-200 apply to the terms in this Decree.

A. Site: The Site, referred to as the Hamilton Street Bridge Site, is located at 111 North Erie Street, Spokane, Washington. The Site is made up of three adjacent properties: one owned by The Burlington Northern and Santa Fe Railway Company (BNSF) and two others owned by Spokane River Properties, LP (SRP). It also includes easements and limited parcels formerly owned by SGP that were deeded to the Washington State Department of Transportation (WSDOT) for the placement of the footings for the Hamilton Street Bridge. It is currently where Brown Building Materials is located and is situated beneath the Hamilton Street James E. Keefe Bridge along the Spokane River. The Site is more particularly described in the detailed site diagram that is included as Exhibit A to this Decree.

B. Parties: Refers to the Washington State Department of Ecology (Ecology) and the Defendants, collectively.

C. Defendants: Refers collectively to Avista Corporation, and The Burlington Northern and Santa Fe Railway Company.

D. Consent Decree or Decree: Refers to this Consent Decree and each of the exhibits to the Decree. All exhibits are integral and enforceable parts of this Consent Decree. The terms "Consent Decree" or "Decree" shall include all Exhibits to the Consent Decree.

E. Section: Refers to a portion of this Consent Decree identified by a roman numeral.

V. STATEMENT OF FACTS

Ecology makes the following finding of facts without any express or implied admissions by Defendants.

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A The Site, as shown in Exhibit A, is located at 111 North Erie Street in Spokane, Washington and is made up of three adjacent properties: (1) The Burlington Northern and Santa Fe Railway Company (BNSF) property formerly leased by the American Tar Company (ATC); (2) the former Spokane Manufactured Gas Plant (SGP) property previously owned by Avista Corporation (formerly The Washington Water Power Company); and (3) the existing riverfront property previously owned by Chicago Milwaukee & Saint Paul Railroad Company. The property under (2) and (3) above are now owned by Spokane River Properties, LP. The site also includes easements and limited parcels formerly owned by SGP that were deeded to the WSDOT for the placement of footings for the Hamilton Street Bridge.

B The SGP began operations at the Site sometime between 1905 and 1909, and was owned by the Union Gas Company. The property was sold to Spokane Gas & Fuel Company in 1909. In 1913, a northern portion of the land was sold to the former Chicago Milwaukee & Saint Paul Railroad (CM&SPR) to facilitate the construction of a track along the riverbank. The riverbank was extended into the river up to a length of 230 ft. to achieve this construction.

C. SGP manufactured coal gas and carbureted water gas at the Site until 1948. From 1948 to approximately 1956, a propane-air system was operated from the facility for gas mixing, storage, and distribution. The propane-air system was utilized until natural gas was available. Reflecting a change from coal gas manufacturing to natural gas distribution, SGP changed its name to the Spokane Natural Gas Company in 1956. In 1958, the Spokane Natural Gas Company merged with The Washington Water Power Company (WWP). WWP stored and dispersed natural gas at the Site until 1962 or 1963.

D Richard Brown leased the SGP property from 1963 to 1978 where he operated Brown Building Materials. He purchased the SGP property in 1978. Mr. Brown also purchased portions of the Site in 1981 that were formerly owned by the CM&SPR. In 1982, the property was deeded to Spokane River Properties, LP, a Washington limited partnership, with Mr. Brown as the general partner.

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E. A coal tar processing operation previously operated on the BNSF property formerly leased by ATC. The operation is believed to have started concurrently with the Spokane Gas Plant in approximately 1905, and continued to formulate or distribute products until 1967. The C.G. Betts Company operated the facility until the early 1930's when the operations were taken over by ATC. The operation produced a variety of hydrocarbon-based products and intermediates including roofing tar, boat pitch, post paint, and naphthalene, among others. The ATC leased the property from BNSF until 1967. Mr. Brown began leasing the property from the BNSF in 1968 and continues to lease the property today.

F. In 1987, the United States Environmental Protection Agency (EPA) completed a preliminary assessment of both the SGP property and the BNSF property and recommended additional investigations for the BNSF property. EPA conducted a Comprehensive Environmental Response, Compensation and Liability ACT (CERCLA) screening site investigation of the BNSF property in 1988 and of the SGP property in 1995 and referred both sites to Ecology for consideration.

G. An environmental investigation of the Site was conducted by WSDOT in the fall of 1997. The results of this work are presented in the report: *Focused Remedial Investigation and Feasibility Study Report – SR290 Southriver Drive Alignment Report*. The report was prepared by EMCON for WSDOT, August 28, 1998. The study showed the presence of coal tar waste covering an area of two to three acres and extending to a depth in excess of forty feet. The study documented contamination of soil by various hydrocarbons, particularly polycyclic aromatic hydrocarbons (PAHs).

H. Ecology provided a letter to WSDOT, dated December 18, 1998, under the Voluntary Cleanup Program. The letter summarizes previous investigations, hazardous substance releases, and recommendations for additional investigation. Based on this letter and other Site information, the volume of contaminated soils on the Site was estimated to be over 50,000 cubic yards.

I. Avista has performed both historical studies at the Site and field investigative studies of the former Spokane Gas Plant property. The results further defined the lateral boundaries of the soil contamination and showed that the soil contamination does not adversely affect groundwater outside the limits of soil contamination. The results also showed that the Site does not adversely impact the Spokane River sediments and surface water. These studies are presented in the following documents:

> *Supplemental Investigation – Former Spokane Manufactured Gas Plant report*. Prepared by Landau Associates, Inc for the Washington Water Power Company, January 7, 1999.
>
> *Historical Information Study – Vicinity of Former Spokane Manufactured Gas Plant Property Report*. Prepared by Landau Associates Inc. for Washington Water Power Company, October 23, 1998.
>
> *Preliminary Site Investigation – Former Spokane Manufactured Gas Plant*. Prepared by Landau Associates, Inc. for the Washington Water Power Company, February 9, 1998.

J. In 1998, BNSF performed a field investigation at the property leased by ATC from BNSF. Contaminants related to the coal tar were found in soil samples but were not detected in groundwater samples from monitoring wells installed on the property leased by ATC from BNSF. The results of the study are presented in the following document:

> *Focused Site Assessment. Former American Tar Company Site, Spokane, Washington*. Prepared by GeoEngineers for BNSF, April 30, 1999.

K. Avista conducted a second supplemental investigative effort at the Site to obtain additional information about groundwater and soil contamination in 1999. Results showed contaminants associated with manufactured gas plant processes and/or coal tar processing were found in soil samples as deep as eighty feet below ground surface. These contaminants include volatile organic hydrocarbons (VOCs) and semivolatile organic hydrocarbons (sVOCs), polycyclic aromatic hydrocarbons (PAHs), and metals. Relatively few of these hazardous substances were detected in groundwater samples analyzed from areas surrounding the soil contaminated area. The investigations show that any hazardous substances partitioning into the groundwater are undergoing degradation through physical, chemical, and biological

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processes. The investigations indicate that the Spokane River is not being adversely impacted by the Site.

L. In certified correspondence dated January 15, 1999, Ecology notified Avista and BNSF of the preliminary finding of potential liability and requested comment on those findings. On June 11, 1999, Ecology notified Avista and BNSF of their status as "potentially liable persons" under RCW 70.105D.040.

M. In certified correspondence dated June 11, 1999, Ecology notified Brown Building Materials (Spokane River Properties, LP) of the preliminary finding of potential liability and requested comment on these findings. On September 10, 1999, Ecology notified Brown Building Materials (Spokane River Properties, LP) of its status as a "potentially liable person" under RCW 70.105D.040.

N. Avista and BNSF entered into an Agreed Order with Ecology on March 13, 2000, and completed a Remedial Investigation (RI) and a focused Feasibility Study (FS). The completed RI report is entitled:

> *Second Supplemental and Remedial Investigation, Hamilton Street Bridge Site, Spokane, Washington*. Prepared by Landau Associates, Inc. for Avista Corporation and BNSF, February 2001.

The FS examined cleanup alternatives that protect human health and the environment. Remedial alternatives for both groundwater and soils were analyzed to determine which combination of cleanup alternatives would be most appropriate for the Site. Five alternatives were evaluated based on MTCA criteria after an initial screening of processes and alternatives. The FS is presented in the following document:

> *Feasibility Study Report, Hamilton Street Bridge Site, Spokane, Washington*. Prepared by GEI Consultants, Inc. for Avista and BNSF, November 30, 2000.

O. Based upon the results of the RI and the FS, Ecology prepared a Draft Cleanup Action Plan (DCAP). As required under MTCA, this DCAP was made available for public review and comment from July 2 to August 1, 2001. A Final Cleanup Action Plan (CAP), Exhibit B, was issued on August 10, 2001.

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VI. WORK TO BE PERFORMED

This Decree contains a program designed to protect public health, welfare and the environment from the known release, or threatened release, of hazardous substances at, on, or from the Site.

A. Defendants shall implement the cleanup action selected in the Final CAP (Exhibit B) as set forth in the Scope of Work and Schedule (Exhibit C), which establishes the required remedial action at the Site. The recording of institutional controls on property within the site shall be as provided for in Section VI.E.

B. The cleanup action is described in Section 8 of the final CAP attached to this Decree as Exhibit B. This cleanup action consists of: covering contaminated soils with clean soil or gravel, stormwater management, construction of a streambank bioengineering along the impacted shoreline of the Spokane River, groundwater monitoring, institutional controls that include a Restrictive Covenant, and five-year reviews.

C. Defendants shall perform compliance monitoring, as required in the Final CAP and in accordance with WAC 173-340-410, to ensure that the cleanup standards are met.

D. Within 120 days of entry of this Decree, the Defendants shall submit to Ecology for approval the Engineering Design Report, Compliance Monitoring Plan, and an Institutional Controls Plan. Within 120 days of entry of this Decree, the Defendants shall submit to Ecology for review a Health and Safety Plan.

E. A Restrictive Covenant, attached to the CAP as Appendix A, shall be recorded on property owned or controlled by defendants within the Site no later than 120 days after approval of the Institutional Controls Plan. Access and institutional controls on property not owned or controlled by defendants within the Site shall be obtained as provided in Section IX.B and C.

F. The Construction Plans and Specifications, and the Operation and Maintenance Plan, shall be submitted in accordance with the approved schedule in the Engineering Design Report. Completion of construction shall be in accordance with the approved schedule.

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G. Ecology will review the Engineering Design Report, Compliance Monitoring Report, Institutional Controls Plan and Specifications, Construction Plans and Specifications, and the Operations and Maintenance Plan (hereinafter plans) These plans shall not be implemented, nor shall any other remedial activity take place at the Site, without Ecology's approval. Once these plans, and any required revisions, are approved by Ecology, the plans and the schedule shall become integral and enforceable elements of this Decree.

H. A cleanup action report, summarizing all construction activities and changes or modifications, shall be submitted to Ecology not later than ninety (90) days after completion of the construction.

I. Defendants agree not to perform any remedial actions outside the scope of this Decree unless the Parties agree to amend the scope of work to address those actions. All work conducted under this Decree shall be done in accordance with Ch. 173-340 WAC unless otherwise provided herein.

VII. DESIGNATED PROJECT COORDINATORS

The project coordinator for Ecology is:

Teresita Bala, Site Manager
Toxics Cleanup Program
Washington State Department of Ecology
Eastern Regional Office
4601 N. Monroe
Spokane, WA 99205-1295
E-Mail: TBAL461@ECY.WA.GOV
Voice: (509) 456-6337
Fax: (509) 456-6175

The project coordinators for Defendants for purposes of this Decree are:

Steve Schultz
Avista Corporation
1411 E. Mission
Spokane, WA 99202
Voice: (509) 495-4008
Fax: (509) 495-4796
E-mail: steve.schultz@avistacorp.com

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Bruce Sheppard
Burlington Northern and Santa Fe Railway Company
2454 Occidental Avenue, Suite 1A
Seattle, WA 99134-1451
Voice: (206) 625-5035
Fax: (206) 625-6007
E-mail: bruce.sheppard@bnsf.com

Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the Site. To the maximum extent possible, communications between Ecology and the Defendants and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree, shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the remedial work required by this Decree. The project coordinators may agree to minor modifications to the work to be performed without formal amendments to this Decree. Minor modifications will be documented in writing by Ecology.

Any party may change its respective project coordinator. Written notification shall be given to the other parties at least ten (10) calendar days prior to the change.

VIII. PERFORMANCE

All work performed pursuant to this Decree shall be under the direction and supervision, as necessary, of a professional engineer or hydrogeologist, or equivalent, with experience and expertise in hazardous waste site investigation and cleanup. Any construction work must be under the supervision of a professional engineer. Defendants' project coordinators shall notify Ecology in writing as to the identity of such engineer(s) or hydrogeologist(s), or others and of any contractors and subcontractors to be used in carrying out the terms of this Decree, in advance of their involvement at the Site.

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IX. ACCESS AND INSTITUTIONAL CONTROLS

A. If the Site, or any other property where access and/or institutional controls are needed to implement this Consent Decree, is owned or controlled by any of the Defendants, such Defendants shall:

(1) Commencing on the effective date of this Consent Decree, provide Ecology or any Ecology authorized representatives with the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Decree; reviewing Defendants' progress in carrying out the terms of this Decree; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by the Defendant. All parties with access to the Site pursuant to this paragraph shall comply with approved health and safety plans; and

(2) Commencing on the effective date of this Consent Decree, refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial measures to be implemented pursuant to this Consent Decree.

B. If the Site, or any other property where access and/or institutional controls are needed to implement this Consent Decree, is owned or controlled by persons other than any of the Defendants, Defendants shall undertake all reasonable efforts to secure from such persons;

(1) An agreement to provide access to the property for Defendants, and Ecology and their representatives (including contractors), for the purpose of conducting any activity related to this Consent decree including, but not limited to, those activities described in Paragraph A.1 of this Section.

(2) An agreement, enforceable by the Defendants and Ecology to abide by the obligations and restrictions established by Paragraph A.2 of this Section, or that are otherwise necessary to implement, ensure non-interference with, or ensure the protectiveness of the

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remedial measures to be performed pursuant to this Consent Decree including an agreement to provide institutional controls on the property as required by Section VI of the decree

C. If any access or institutional control agreements contemplated by this Consent Decree on property described in Paragraph B. of this section are not obtained within 120 days of the date of entry of this Consent Decree, Defendants shall promptly notify Ecology in writing, and shall include in that notification a summary of the steps that Defendants have taken to attempt to comply with this Section. Ecology may, as it deems appropriate, take any reasonable efforts necessary to obtain access to, or institutional controls on, this property. Defendants shall reimburse Ecology for all costs incurred, direct or indirect, in obtaining such access and/or institutional controls.

D. If Ecology takes any action to compel a person who is not a party to this consent decree to record a deed restriction on property previously owned by Avista within the site, and that person seeks an award of compensation against the State of Washington, Ecology and/or any agent or employee thereof, Avista shall move to intervene or to otherwise be named as a party in such action, defend against any such claim for compensation, and pay any monetary judgment ordered by the court to be paid to such person including any award of attorneys fees and costs. If Avista's motion to intervene or otherwise be named as a party to such action is not granted by the court, then Avista agrees to assist the State of Washington, Ecology, and/or any agents or employees thereof, in defending against such claim for compensation by retaining and paying the costs for any expert witness(es) necessary to defend against the claim for compensation and paying any monetary judgment ordered by the court including the award of any attorneys fees and costs. Ecology agrees that it shall not enter into any settlement providing for the payment of any compensation or attorneys fees in such a case where Avista is not a party or intervenors without the consent of the Avista, which consent shall not be unreasonably withheld.

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X. SAMPLING, DATA REPORTING, AND AVAILABILITY

With respect to the implementation of this Decree, Defendants shall make the results of all sampling, laboratory reports, and/or test results generated by it, or on its behalf available to Ecology and shall submit these results in accordance with Section XI of this Decree.

Groundwater sampling data shall be submitted in accordance with WAC 173-340-840(5). These submittals shall be provided to Ecology in accordance with Section XI of this Decree.

If requested by Ecology, Defendants shall allow split or duplicate samples to be taken by Ecology and/or its authorized representatives of any samples collected by Defendants pursuant to the implementation of this Decree. Defendants' project coordinator shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Site. Ecology shall, upon request, allow split or duplicate samples to be taken by Defendants or its authorized representatives of any samples collected by Ecology pursuant to the implementation of this Decree provided it does not interfere with the Ecology's sampling. Duplicate samples shall be provided only if sample quantity is available to split for a valid sample. Ecology, without limitation on its' rights under Section IX, shall endeavor to notify the Defendants' project coordinator prior to any sample collection activity. Ecology's sampling shall be conducted in compliance with WAC 173-340-820 and –830.

XI. PROGRESS REPORTS

Defendants' project coordinators shall submit to Ecology written monthly progress reports which describe the actions taken during the previous month to implement the requirements of this Decree. The progress report shall include the following:

A. A list of on Site activities that have taken place during the month;

B. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;

C Description of all deviations from the schedule (Exhibit C) during the current month and any planned deviations in the upcoming month;

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D. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule;

E. All raw data (including laboratory analysis) received by the Defendants during the past month and an identification of the source of the sample;

F. A list of deliverables for the upcoming month if different from the schedule; and

All progress reports shall be submitted by the tenth day of the month in which they are due after the effective date of this Decree. Beginning three (3) months after the cleanup action report is approved by Ecology, progress reports shall be submitted semi-annually. Unless otherwise specified, progress reports and any other documents submitted pursuant to this Decree shall be sent by electronic mail and regular mail to Ecology's project coordinator.

XII. RETENTION OF RECORDS

Defendants shall preserve, during the pendency of this Decree and for ten (10) years from the date this Decree is no longer in effect as provided in Section XXV, all records, reports, documents, and underlying data in its possession relevant to the implementation of this Decree and shall insert in contracts with project contractors and subcontractors a similar record retention requirement. Upon request of Ecology, Defendants shall make all non-archived records available to Ecology and allow access for review. All archived records shall be made available to Ecology within a reasonable period of time

XIII. TRANSFER OF INTEREST IN PROPERTY

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by a Defendant unless that Defendant provides for continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implemented pursuant to this Decree.

Prior to transfer of any legal or equitable interest in all or any portion of the Site by a Defendant, and during the effective period of this Decree, that Defendant shall serve a copy of this Decree upon any prospective purchaser, lessee, transferee, assignee, or other successor in

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interest of the property; and, at least thirty (30) days prior to any transfer, that Defendant shall notify Ecology of said contemplated transfer

XIV. RESOLUTION OF DISPUTES

A. In the event a dispute arises as to an approval, disapproval, proposed modification or other decision or action by Ecology's project coordinator, the parties shall utilize the dispute resolution procedure set forth below

(1) Upon receipt of Ecology's project coordinator's decision, the Defendants' project coordinators have fourteen (14) days within which to notify Ecology's project coordinator of its objection to the decision.

(2) The parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) days, Ecology's project coordinator shall issue a written decision within forty-five (45) days after receiving notice of the dispute.

(3) Any Defendant, through the Defendants' project coordinator identified in Section VII, may then request Ecology management review of the decision. This request shall be submitted in writing to the Toxics Cleanup Program Manager within fourteen (14) days of receipt of Ecology's project coordinator's decision.

(4) Ecology's Program Manager shall conduct a review of the dispute and shall issue a written decision regarding the dispute within thirty (30) days of the Defendants' project coordinator's request for review. The Program Manager's decision shall be Ecology's final decision on the disputed matter.

B. If Ecology's final written decision is unacceptable to any Defendant, that Defendant has the right to submit the dispute to the Court for resolution. The Parties agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event any Defendant presents an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such

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action or decision was arbitrary and capricious and render a decision based on such standard of review

C. The Parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used. Where a party utilizes the dispute resolution process in bad faith or for purposes of delay, the other parties may seek sanctions

Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Decree, unless Ecology agrees in writing to a schedule extension or the Court so orders.

XV. AMENDMENT OF CONSENT DECREE

This Decree may only be amended by a written stipulation among the parties to this Decree that is entered by the Court or by order of the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Decree.

Defendants', through their designated project coordinators, shall submit any request for an amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in a timely manner after the request for amendment is received. If the amendment to the Decree is substantial, Ecology will provide public notice and opportunity for comment. Reasons for the disapproval shall be stated in writing. If Ecology does not agree to any proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section XIV of this Decree.

XVI. EXTENSION OF SCHEDULE

A. An extension of schedule shall be considered only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the deadline for which the extension is requested, and shall be granted only if good cause exists for granting the extension. All extensions shall be requested in writing by Defendants' project coordinator. The request shall specify the reason(s) the extension is needed.

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An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology or the Court. Ecology shall act upon any written request for extension in a timely fashion. It shall not be necessary to formally amend this Decree pursuant to Section XV when a schedule extension is granted.

B. The burden shall be on the Defendants' project coordinators to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause includes, but is not limited to, the following.

(1) Circumstances beyond the reasonable control and despite the due diligence of the Defendants' designated project coordinators including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by a Defendant; or

(2) Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or

(3) Endangerment as described in Section XVII.

However, neither increased costs of performance of the terms of the Decree nor changed economic circumstances shall be considered circumstances beyond the reasonable control of Defendants.

C. Ecology may extend the schedule for a period not to exceed ninety (90) days, except where an extension is needed as a result of:

(1) Delays in the issuance of a necessary permit which was applied for in a timely manner; or

(2) Other circumstances deemed exceptional or extraordinary by Ecology; or

(3) Endangerment as described in Section XVI.

Ecology shall give Defendants' designated project coordinators written notification in a timely fashion of any extensions granted pursuant to this Decree.

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XVII. ENDANGERMENT

In the event Ecology determines that activities implementing or in noncompliance with this Decree, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Defendants to stop further implementation of this Decree for such period of time as needed to abate the danger or may petition the Court for an order as appropriate. During any stoppage of work under this section, the obligations of Defendants with respect to the work under this Decree which is ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which is stopped, shall be extended, pursuant to Section XVI of this Decree, for such period of time as Ecology determines is reasonable under the circumstances.

In the event any Defendant determines that activities undertaken by that Defendant in furtherance of this Decree or any other circumstances or activities are creating an endangerment to the people on the Site or in the surrounding area or to the environment, that Defendant may stop implementation of this Decree for such period of time necessary for Ecology to evaluate the situation and determine whether the Defendant should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. Defendant's project coordinators shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after such stoppage of work, and thereafter provide Ecology with documentation of the basis for the work stoppage. If Ecology disagrees with a Defendant's determination, it may order the Defendants to resume implementation of this Decree. If Ecology concurs with the work stoppage, the Defendants' obligations shall be suspended and the time period for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XVI of this Decree, for such period of time as Ecology

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determines is reasonable under the circumstances Any disagreements pursuant to the clause shall be resolved through the dispute resolution procedures in Section XIV

XVIII. OTHER ACTIONS

Ecology reserves its rights to institute remedial action(s) at the Site and subsequently pursue cost recovery, and Ecology reserves its rights to issue orders and/or penalties or take any other enforcement action pursuant to available statutory authority under the following circumstances:

(A) Where Defendants fail, after notice, to comply with any requirement of this Decree;

(B) In the event or upon the discovery of a release or threatened release not addressed by this Decree;

(C) Upon Ecology's determination that action beyond the terms of this Decree is necessary to abate an emergency situation which threatens public health or welfare or the environment; or

(D) Upon the occurrence or discovery of a situation beyond the scope of this Decree as to which Ecology would be empowered to perform any remedial action or to issue an order and/or penalty, or to take any other enforcement action. This Decree is limited in scope to the geographic Site described in Exhibit A and to those contaminants which Ecology knows to be at the Site when this Decree is entered at levels which present a known threat to human health and the environment.

Ecology reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of hazardous substances from the Hamilton Street Bridge Site.

Ecology reserves the right to take any enforcement action whatsoever, including a cost recovery action, against potentially liable persons not party to this Decree

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XIX. INDEMNIFICATION

Each Defendant agrees to defend and indemnify the State of Washington, its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of that Defendant, its officers, employees, agents, or contractors in entering into and implementing this Decree. However, the Defendants shall not defend and indemnify the State of Washington, its employees, and agents harmless from any claims or causes of action arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Decree.

XX. COMPLIANCE WITH APPLICABLE LAWS

A. All actions carried out by Defendants pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in paragraph B. of this section.

B. Pursuant to RCW 70.105D.090(1), the substantive requirements of Chapters 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 RCW and of any laws requiring or authorizing local government permits or approvals for the remedial action under this Decree that are known to be applicable at the time of entry of the Decree have been included in Exhibit B, the Cleanup Action Plan, and are binding and enforceable requirements of the Decree.

Defendants have a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree. In the event either Defendants or Ecology determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree, it shall promptly notify the other party of this determination. Ecology shall determine whether Ecology or Defendants shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, then Defendants shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are

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applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by Defendants and on how Defendants must meet those requirements. Ecology shall inform Defendants' project coordinators in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Decree. Defendants shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this section.

C Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(1) would result in the loss of approval from a federal agency which is necessary for the State to administer any federal law, the exemption shall not apply and the Defendants shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70.105D.090(1), including any requirements to obtain permits.

XXI. REMEDIAL AND INVESTIGATIVE COSTS

The Defendants agree to pay costs incurred by Ecology pursuant to this Decree. These costs shall include work performed by Ecology or its contractors for, or on, the Site under Ch. 70.105D RCW both prior to and subsequent to the issuance of this Decree for investigations, remedial actions, and Decree preparation, negotiations, oversight and administration. Ecology costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). The Defendants agree to pay the required amount within ninety (90) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general statement of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Failure to pay Ecology's costs within ninety (90) days of receipt of the itemized statement will result in interest charges.

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XXII. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that Defendants have failed without good cause to implement the remedial action required under this Decree, then Ecology may, after notice to Defendants' project coordinators, perform any or all portions of the remedial action that remain incomplete If Ecology performs all or portions of the remedial action because of the Defendants failure to comply with its obligations under this Decree, then Defendants shall reimburse Ecology for the costs of doing such work in accordance with Section XXI. No Defendant is obligated under this section to reimburse Ecology for costs incurred for work inconsistent with or beyond the scope of this Decree

XXIII. FIVE YEAR REVIEW

As remedial action, including groundwater monitoring, continues at the Site, the Parties agree to review the progress of remedial action at the Site, and to review the data accumulated as a result of Site monitoring as often as is necessary and appropriate under the circumstances. At least every five (5) years the Parties shall meet to discuss the status of the Site and the need, if any, of further remedial action at the Site. Ecology reserves the right to require further remedial action at the Site pursuant to MTCA, RCW 70.105D or the MTCA Cleanup Regulations, WAC 173-340. This provision shall remain in effect for the duration of the Decree.

XXIV. PUBLIC PARTICIPATION

Ecology shall maintain the responsibility for public participation at the Site. However, Defendants shall cooperate with Ecology and, if agreed to by Ecology, shall:

A. Prepare drafts of public notices and fact sheets at important stages of the remedial action, such as the submission of work plans, Remedial Investigation/Feasibility Study reports and engineering design reports. Ecology will finalize (including editing if necessary) and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

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B. Notify Ecology's project coordinator prior to the preparation of all press releases and fact sheets, and before major meetings with the interested public and local governments. Likewise, Ecology shall notify Defendants' project coordinators prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments;

C. Participate in public presentations on the progress of the remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions, or as a presenter;

D. In cooperation with Ecology, arrange and/or continue information repositories to be located at the Spokane Public Library, 906 West Main Avenue, Spokane, WA 99201 and Ecology's Eastern Regional Office at 4601 North Monroe, Spokane WA 99205. At a minimum, copies of all public notices, fact sheets, and press releases; all quality assured groundwater, surface water, soil sediment, and air monitoring data; remedial actions plans, supplemental remedial planning documents, and all other similar documents relating to performance of the remedial action required by this Decree shall be promptly placed in these repositories.

XXV. DURATION OF DECREE

This Decree shall remain in effect and the remedial program described in the Decree shall be maintained and continued until the Defendants have received written notification from Ecology that the requirements of this Decree have been satisfactorily completed.

XXVI. CLAIMS AGAINST THE STATE

Each Defendant hereby agrees that it will not seek to recover any costs accrued in implementing the remedial action required by this Decree from the State of Washington or any of its agencies, unless recovery is allowed against the State of Washington or any of its agencies as a "potentially liable person" (PLP) under MTCA; and further, that no Defendant will make any claim against the State Toxics Control Account or any Local Toxics Control Account for any costs incurred in implementing this Decree. Except as provided above

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however, each Defendant expressly reserves its right to seek to recover any costs incurred in implementing this Decree from any other potentially liable person.

XXVII. COVENANT NOT TO SUE, REOPENERS

A. Covenant Not To Sue: In consideration of the Defendants' compliance with the terms and conditions of this Decree, Ecology agrees that compliance with this Decree shall stand in lieu of any and all administrative, legal, and equitable remedies and enforcement actions available to the State against Defendants regarding all matters within the scope of this Decree.

B. Reopeners: In the following circumstances, Ecology may exercise its full legal authority to address releases of hazardous substances at the Site, notwithstanding the Covenant Not To Sue set forth above:

(1) In the event Defendants fails to comply with the terms and conditions of this Decree, including all Exhibits, and after written notice of non-compliance, such failure is not cured by Defendants within thirty (30) days of receipt of notice of non-compliance.

(2) In the event factors not known at the time of entry of this Decree are discovered and such factors present a previously unknown threat to human health or the environment and are not addressed by the Cleanup Action Plan, attached hereto as Exhibit B.

(3) Upon Ecology's determination that actions beyond the terms of this Decree are necessary to abate an emergency or endangerment situation which threatens public health, welfare, or the environment.

(4) Upon Ecology's determination that additional remedial actions are necessary to achieve cleanup standards within the time frame set forth in the CAP.

C. Applicability: The Covenant Not To Sue set forth above does not pertain to any matters other than those expressly specified in this Section. The State of Washington reserves, and this Consent Decree is without prejudice to, all rights against Defendants with respect to all other matters including but not limited to, the following:

(1) Criminal Liability;

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(2) Actions against any person or entity not a party to this Decree;

(3) Liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

D. Ecology retains all of its legal and equitable rights against all persons except as otherwise provided in this Decree.

XXVIII. CONTRIBUTION PROTECTION

By signing this Decree, the parties intend that Defendants will obtain the protection against claims for contribution for matters addressed in this Decree, as is provided by MTCA, RCW 70 105D 040(4)(d)

XXIX. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXX. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT

This Decree has been the subject of public notice and comment under RCW 70.105D.040(4)(a). As a result of this process, Ecology has found that this settlement agreement, entered into as a Consent Decree under RCW 70.105D.040(4)(a), will lead to a more expeditious cleanup of hazardous substances at the Site.

If the Court withholds or withdraws its consent to this Decree, it shall be null and void at the option of any party and the accompanying Complaint shall be dismissed without costs and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

DATED this 11th day of Sept., 2002.

JUDGE
Spokane County Superior Court

DAVID THORN
COURT COMMISSIONER

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

JIM PENDOWSKI
Program Manager
Department of Ecology
Toxics Cleanup Program

Date: 8/1/02

CHRISTINE O GREGOIRE
ATTORNEY GENERAL

COLLEEN G. WARREN, WSBA #16506
Assistant Attorney General
Attorney for Plaintiff
Department of Ecology

Date: 8/7/02

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AVISTA CORPORATION

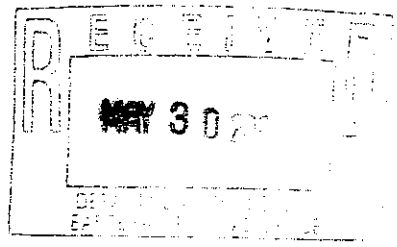
By: _____

Title: President - Avista Utilities

Date: 5-23-02

JERRY K. BOYD, WSBA #2099
Attorney for Defendant
Avista Corporation

Date: 05/28/02



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THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY

By: _____
Title: VP Safety & Environ

Date: 6/10/02

CRAIG S. TRUEBLOOD, WSBA #18357
Attorney for Defendant
The Burlington Northern and
Santa Fe Railway Company

Date: _____

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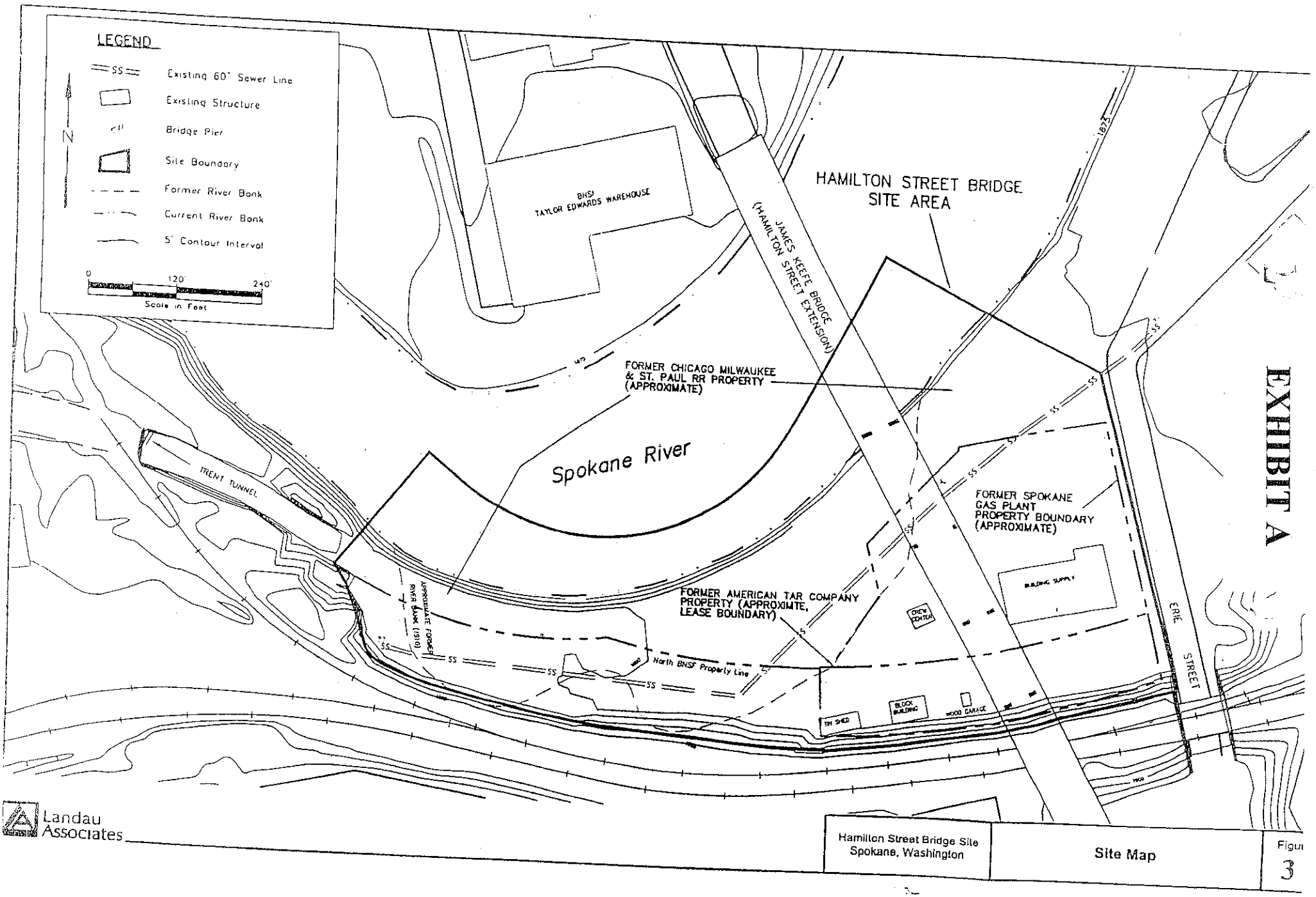
EXHIBIT A

SITE MAP



Landau Associates

Hamilton Street Bridge Site
Spokane, Washington

Site Map

Figure
3

PERIODIC REVIEW

Hamilton Street Bridge Site
Facility/Site ID #: 84461527
Cleanup Site ID # 3509

111 North Erie Street
Spokane, Washington 99212

Eastern Regional Office

TOXICS CLEANUP PROGRAM

August 2010

1.0 INTRODUCTION

This document is the Department of Ecology's review of post-cleanup site conditions and monitoring data to ensure that human health and the environment are being protected at the Hamilton Street Bridge site (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA), Chapter 173-340 of the Washington Administrative Code (WAC).

Cleanup activities at this Site were conducted under Consent Decree No. 02205445-0 entered into with Ecology on September 12, 2002. The cleanup actions resulted in residual concentrations of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), carbazole, cyanide, arsenic, barium, lead and selenium which exceed MTCA Method A or Method B cleanup levels. The MTCA cleanup levels for soil are established under WAC 173-340-740. The MTCA cleanup levels for groundwater are established under WAC 173-340-720. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- Whenever the department conducts a cleanup action; or
- Whenever the department approves a cleanup action under an order, agreed order, or consent decree;
- Or, as resources permit, whenever the department issues a no further action opinion;
- And one of the following conditions exists:

    (a) Institutional controls or financial assurance are required as part of the cleanup.
    (b) Where the cleanup level is based on a practical quantitation limit.
    (c) Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to ensure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

(a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site..
(b) New scientific information for individual hazardous substances of mixtures present at the Site.
(c) New applicable state and federal laws for hazardous substances present at the Site.
(d) Current and projected Site use.
(e) Availability and practicability of more permanent remedies.
(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the Site register and provide an opportunity for public comment.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site Information

The Hamilton Street Bridge Site is located on the southern bank of the Spokane River at 111 North Erie Street in Spokane, Washington. A vicinity map is available as Appendix 6.1 and a Site plan is available as Appendix 6.2. Following remedial activities, a Restrictive Covenant was recorded for the property. The Site is currently undergoing performance monitoring.

The Site includes:

- The Burlington Northern and Santa Fe (BNSF) property (including a portion of which was formerly leased by the American Tar Company (ATC).
- The former Spokane Manufactured Gas Plant (SGP) and The Chicago Milwaukee & Saint Paul Railroad (SM&SPR) properties which were owned by Spokane River Properties, Limited (SRP); then owned by Brown Properties LLC; now solely owned by Eric Brown.

The Site is transected, roughly north-south, by the James Keefe (Hamilton Street) Bridge which is elevated high above ground surface on pilings with spread footings. A 60-inch diameter sanitary sewer line crosses beneath the Site in a southwest-northeast alignment.

2.2 Site History

Between approximately 1905 and 1948, manufactured coal gas and carbureted water gas was produced on the former SGP property. In June 1958, Avista Corp. (formerly the Washington Water Power Co.) merged with the Spokane Natural Gas Company and dispensed natural gas from the Site until 1963. Mr. Richard Brown established Brown Building Materials on the Site, leasing the former SGP property from Avista Corp. from 1963 until March 1978, when he purchased the property. Mr. Richard Brown conveyed the property to SRP, of which he is the general partner, in January 1982. In 2006, SRP conveyed the property to Brown Properties. Mr. Eric Brown, who was the Manager of Brown Properties, is now the sole owner of the property.

During the operation of the manufactured gas plant, coal tar, a by-product of coal gas production, reportedly was conveyed to a coal tar processing plant and distribution facility located on a parcel leased from the Northern Pacific Railroad (now BNSF) adjacent to the south side of the former SGP property. The C.G. Betts Company operated the facility until the early 1930s when the operations were taken over by the ATC. The ATC used the facility until 1967, reportedly shipping tar to the Site from Seattle after the former SGP was shut down. Mr. Richard Brown leased the ATC property from the BNSF between 1968 and 2001.

The existing riverfront property at the Site was formerly owned by the CM&SPR. The CM&SPR constructed a rail line circa 1911, which extended along the southern riverbank to a railroad tunnel which is located within the basalt embankment on the west side of the Site. Historical records indicate that, during the construction of the CM&SPR, fill materials were

deposited into the river; and the Spokane River shoreline was modified to its present configuration.

In 1999, the responsible parties, including Avista Corp., the Burlington Northern and Santa Fe Railway Co. and Ecology jointly agreed to negotiate an Agreed Order, which was filed on March 13, 2000, to conduct a Remedial Investigation (RI) and Feasibility Study (FS), which were completed by early 2001. Ecology issued the final Cleanup Action Plan (CAP) on August 10, 2001, and Consent Decree No. 02205445-0 was recorded on September 12, 2002, which stipulated the terms of the cleanup action.

Ecology combined the Spokane Manufactured Gas Plant and the American Tar Company sites into one referred to as the Hamilton Street Bridge Site with a hazard ranking of three (with one being the highest and five being the lowest risk) under MTCA.

2.3 Site Investigations

In 1981, the Washington State Department of Transportation (DOT) conducted drilling on and around the former SPG and ATC properties to provide design information for the James Keefe Bridge. Contamination was observed at depth in several of the borings and was observed during the bridge construction in 1982.

In 1987, the U.S. Environmental Protection Agency (EPA) completed a Preliminary Assessment of both the SGP and the ATC properties and recommended additional investigations for the ATC Property. In 1988 EPA conducted a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) screening site investigation of the ATC property.

In 1995, EPA conducted a screening site investigation of the SGP that included sampling and chemical testing of surface water and sediment from the Spokane River. EPA concluded that the samples did not reflect a release of contamination from the Site to the Spokane River. Consequently, EPA did not anticipate further investigation under CERCLA and referred the Site to the State for further consideration. DOT conducted further exploratory activities on the Site in 1997 as part of a proposed highway realignment of Trent Avenue. Their study showed the presence of coal-tar waste covering an area of two to three acres and extending below ground surface to a depth in excess of 40 feet.

The most heavily impacted soil was reportedly observed in the central portion of the SGP operation areas and near the refining process areas of the ATC property. No coal tar constituents were detected in the nearest city water supply well, the Nevada Street well, located approximately 8,500 feet north-northeast from the Site.

The Spokane County Health District (SCHD) completed a MTCA Site Hazard Assessment of the former SGP property in 1998 and assigned the property a hazard ranking of 3.

Avista Corp. conducted further investigations in 1997 and 1998 to evaluate the effect of the soil contamination on groundwater and to determine whether Site contaminants had migrated to the

Spokane River. The results of these studies further defined the lateral boundaries of the soil contamination identified in the DOT study. These studies also showed that soil contamination does not adversely affect groundwater outside the limits of soil contamination. Data from this investigation indicated that during the period of observation, groundwater flow appeared to be from the Spokane River toward the Site.

A supplemental Site Investigation was conducted by Avista Corp. in 1998 to evaluate the vertical extent of contamination, groundwater quality and hydraulic gradients in the vicinity of the Site, and to characterize the non-aqueous phase liquid (NAPL) found in the soil-contaminated area. The results further defined the lateral and vertical boundaries of the soil contamination at the Site. NAPL was encountered in soil during drilling up to 80 feet below ground surface (bgs). The groundwater outside of the area of soil contamination showed sporadic detectable levels of chemicals associated with the gas plant operations or coal tar processing

A focused Site Investigation was conducted by BNSF on the ATC property in 1999 to collect soil and groundwater data. Soil samples showed contamination in the ATC area. Groundwater samples collected from monitoring wells in the property did not detect the presence of constituents above cleanup levels.

Avista Corp. and BNSF conducted a second supplemental investigation. This supplemental study evaluated the vertical extent of contamination, groundwater quality, and hydraulic gradient. Findings of the study, in conjunction with the other previous site investigations, were used to determine the nature and extent of contamination. The Feasibility Study evaluated remedial technologies applicable to the Site.

2.3.1 Summary of Contamination

The conclusions from the Site Investigations are summarized as follows:

- Soils within the Site boundaries are impacted with SVOCs, PAHs, VOCs, and inorganic compounds.
- Based on visual observations, surface soil contamination was only present on the western portion of the ATC property and consisted of tar and cinder. The remaining soil contamination was covered by at least 2 feet of imported soil and gravel. The extent of contamination in some areas extended up to 80 feet bgs, and the majority of soil contamination is located below the groundwater table. The estimated volume of soil exceeding the total carcinogenic PAHs (cPAHs) soil cleanup level for the entire Site may be as much as 92,000 cubic yards.
- Constituents associated with the former manufactured gas processes and/or coal tar processing were not detected in the soil beyond the Site boundaries.
- Indicator hazardous substances (IHSs) developed by Ecology for soil consists of six PAHs, total cPAHs, TPH, carbazole, cyanide, arsenic, barium, lead, mercury, and selenium.

- Groundwater monitoring was focused on evaluating groundwater quality outside of the affected soil area. Groundwater within the non-aqueous phase liquid (NAPL)-affected area was assumed to be contaminated for the purposes of the Remedial investigation (RI).
- Relatively few VOCs, SVOCs, PAHs, and inorganic constituents were detected in the groundwater samples analyzed, and those that were detected have not been detected with any consistency.
- Because groundwater inside the soil-impacted area is considered to be contaminated by the soil, IHSs developed by Ecology for groundwater are identical to the IHSs for soil.
- Natural attenuation parameters in groundwater indicated a rapid decrease in carbon dioxide, sulfate, and methane concentrations, and an increase in nitrogen concentrations with distance from the source. These trends support the conclusion that natural attenuation processes such as aerobic biodegradation and oxidation are occurring at the Site, which results in rapid destruction or transformation of IHSs present in Site groundwater.
- The limited extent of groundwater contamination detected outside of the impacted soil areas indicate that the source material has a low solubility, and any constituents that may be partitioning into groundwater are rapidly attenuating through natural physical, chemical, and biological processes (i.e., natural attenuation).
- No indicator constituents above cleanup levels were identified in sediment. Sediment is not an affected media for the Site.
- No indicator constituents above cleanup levels were identified in surface water. Surface water is not an affected media for the Site.
- Two wells were installed in the area of NAPL-affected soil to evaluate the physical and chemical characteristics of the NAPL; however, samples of NAPL could not be collected due to insufficient NAPL volume in the wells. The limited occurrence of NAPL in the product wells supports the conclusion that NAPL migration is very limited or not occurring.
- All detected parameters in the Spokane River sediments were well below the preliminary Washington State draft freshwater sediment quality values.
- The low frequency of criteria exceedance for groundwater, in conjunction with the lack of associated sediment impact, indicates that groundwater is not adversely impacting the Spokane River or any associated ecological receptors.

2.4 Cleanup Levels

2.4.1 Groundwater

Ecology determined that the highest beneficial use of groundwater at this Site is drinking water. Exposure to hazardous substances via ingestion of drinking water and other domestic uses represents the reasonable maximum exposure, and standards developed to protect these uses will be protective of all other uses. Method B is the appropriate method for developing cleanup levels for groundwater. The Site is also located along the shores of the Spokane River. The Spokane River surface water level is generally higher in elevation than groundwater; this indicates that the Spokane River locally recharges to groundwater. During periods of peak

runoff in the late spring to early summer, the groundwater gradient has been observed to be toward the Spokane River. Therefore, groundwater must not violate surface water cleanup levels at the point of compliance.

The Practical Quantitation Limits (PQL) for a substance may be greater than the health-based number. In such cases, the cleanup level becomes the PQL. If the PQL is lowered during cleanup of the Site or during periodic review, the regulatory limit will be adjusted downward.

Complete site soils and groundwater cleanup levels are available as Appendix 6.3.

Compliance groundwater monitoring is currently taking place at the Site. Samples collected on a semi-annual basis and analyzed for mercury, arsenic, weak acid dissociable (WAD) cyanide, and PAHs. These are the indicators that have exceeded cleanup levels at the conditional point of compliance. Cleanup levels for these contaminants are available in the table below.

Contaminant	Cleanup level (mg/L)
Arsenic	0.006
Mercury	0.0002
PAHs	0.01*
WAD Cyanide	0.1

*Toxicity Equivalent Concentration

2.4.2 Soils

The Site is currently zoned light industrial. However, because of surrounding urban revitalization in the area and preliminary plans for development expressed by SRP, Method B cleanup levels were selected for soil.

The soil concentration that is considered to be protective of groundwater is 100 times the Method B groundwater cleanup level. The most stringent of these criteria or the background concentration, whichever is higher, is the preliminary Method B cleanup level for soil.

A complete list of Site soil cleanup levels is available as Appendix 6.3.

2.5 Points of Compliance

2.5.1 Soil

The point of compliance for soils is in soils throughout the Site.

2.5.2 Groundwater

A conditional point of compliance is established for groundwater that is as close as practical to the source of hazardous substances, not to exceed the property boundary. The locations of these conditional points of compliance are at MW 2-20, MW 2-40, MW 4-20, MW 7-90, and ATC07-20 (see Appendix 6.2).

2.6 Remedial Actions

The cleanup action consisted of the following:

2.6.1 Limited Soil Cap

A soil cap was placed over the exposed contaminated soils on the ATC property to prevent direct contact with the contaminated soil. The two existing structures on the ATC property (tin shed and block building) were removed down to surface level. The concrete pad of the block building was left in place. The capped area consists of approximately 8,500 square feet located on the western portion of the ATC property. This area was covered with a minimum of 2 feet of soil and then covered with select fill to bring the area to appropriate grades for storm water drainage.

2.6.2 Storm Water Management

Storm water management directed surface water away from known areas of contamination and abandonment of dry wells. Construction did not disturb the existing soil cover, and the design did not include any cuts into areas where contamination was identified.

2.6.2.1 Spokane River Properties (SRP)

Storm water management on property owned by the SRP consisted of two components. The first component was the abandonment of the six existing dry wells located adjacent to the concrete pad of the former Brown Building Materials office (the burned structure), and the second component consisted of directing surface runoff away from the contaminated soil areas to a swale located outside of the areas of contamination by adding fill material to provide for a proper grade.

2.6.2.2 American Tar Co. Property (ATC)

The contaminated materials on the ATC property are located in a topographically depressed area. Additional material was imported to bring the area up to grade after the soil cap was placed over the contaminated surface soil. The final grade was sloped to the eastern side of the ATC property to direct runoff away from the impacted area. An infiltration swale was constructed on the eastern side of the property to ensure onsite containment of storm water.

2.6.3 Streambank Bioengineering

The river embankment was stabilized with rock so that erosion or flooding does not cut back into the contaminated soil. Additional vegetation was planted along the shoreline to provide riparian corridor enhancement and some level of filtration between surface water and groundwater.

2.6.4 Monitoring Well Modifications

Monitoring wells (including two product monitoring wells) that are not included in the groundwater monitoring program were abandoned. Monitoring wells that are included in the groundwater monitoring program required wellhead modifications and protective bollards to coordinate with topographic changes proposed for the Site.

2.6.5 Remedial Action Summary

The remedial action at the Site was designed to contain contaminated soils and prevent their exposure to the environment. This method is effective in protecting human health and the environment when used in conjunction with institutional controls in the form of a Restrictive Covenant. Restrictive Covenants restrict activities that may re-expose contaminated soils at the site, and it ensures notification of future land owners that contaminated soils remain beneath the surface at the Site. Details of the Restrictive Covenants recorded for the Site are available in Section 2.8.

2.7 Groundwater Monitoring

Semi-annual compliance groundwater monitoring is conducted at the Site in accordance with the Site compliance monitoring plan. Samples are collected from monitoring wells MW2-20, MW2-40, MW4-20, MW7-90, and ATC7-20. All samples are analyzed for PAHs by EPA Method 8270 SIM, arsenic by EPA Method 200.8, mercury by EPA Method 245.1, and WAD cyanide by EPA Method SM4500-CN.

Compliance groundwater monitoring was initiated in 2006 when remedial activities were completed at the Site. A total of nine sampling events have been conducted in the five compliance monitoring wells, with 45 total samples collected, not including duplicates.

Since compliance monitoring was initiated, there have been periodic exceedances of total mercury, total arsenic, WAD cyanide, and PAHs. Of the 45 samples collected:

- One sample (from MW02-20) exceeded Site cleanup levels for total mercury with a maximum concentration of 0.000201 mg/L.
- Eleven samples from four different wells exceeded Site cleanup levels for total arsenic with a maximum concentration of 0.0258 mg/L.
- One sample (from MW04-20) exceeded Site cleanup levels for WAD cyanide with a maximum concentration of 0.0408 mg/L.
- Five samples (four from MW02-20 and one from MW07-90) exceeded the Site cleanup level for PAH Toxicity Equivalent Concentration with a maximum concentration of .00244 mg/L.

The most recent sampling event was conducted in March 2010. The analytical results from this sampling event are summarized as follows:

- Concentrations of carcinogenic and non-carcinogenic PAH compounds were reported below the laboratory reporting limit (RL) and Site cleanup level in all of the samples collected.
- Mercury and WAD cyanide were reported at concentrations below the RL and Site cleanup level in all of the samples collected.
- Total arsenic was reported above the RL in samples from MW02-40, MW04-20, ATC07-20, and MW07-90 at concentrations ranging from 0.00113 milligrams per liter (mg/L) in sample MW02-40 to 0.00443 mg/L in sample MW07-90. Each of the reported concentrations of arsenic is below the Site cleanup level of 0.006 mg/L.

All compliance groundwater monitoring data is available as Appendix 6.4.

2.8 Restrictive Covenants

Two Restrictive Covenants were recorded for the following: BNSF property (recorded in 2003) and the SRP property (recorded in 2004). The Restrictive Covenants impose the following limitations:

1) No groundwater may be taken for domestic, commercial, industrial, or any other purposes from the Property unless the groundwater removal is part of monitoring activities associated with an Ecology-approved compliance monitoring plan. No production well will be installed within the Property.

2) For the BNSF Property, the Site shall not be used for residential purposes.

3) Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil or groundwater that was contained as part of the Cleanup Action, or create a new exposure pathway, is prohibited without prior written approval by the Department of Ecology.

   For the BNSF Property, excavation of contaminated soil is prohibited, unless approved by Ecology, for the following exceptions: Excavation performed to repair, maintain, service or remove underground utility components, conduits, installations or channels; drilling, driving, or boring to install pilings for allowable and approved construction.

   For the SRP Property, excavation of soils to depths greater than two (2) feet on the Property is prohibited, unless approved in writing by Ecology. Excavations up to 2 feet are allowed without approval by Ecology.

   All contaminated soils and/or groundwater to be generated must be treated or disposed of according to state, federal, and local regulations. Workers conducting the approved excavations must use appropriate personal protective equipment as required by the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA).

4) Any activity on the Property that may interfere with the integrity of the Cleanup Action and continued protection of human health and the environment is prohibited, unless approved by Ecology. Examples of activities that are prohibited include:

    a) Activities that would disturb the cap or cover of the contaminated soils. Examples of such activities include but are not limited to the following: drilling; driving or boring to install pilings; placement of objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability; piercing the surface with a rod, spike, or similar item; and bulldozing or earthwork.
    b) Activities that would disturb or overload the storm water system.
    c) Excessive application of water for purposes such as irrigation, washing or rinse down pad, etc. Lawn irrigation at agronomic rates is not considered excessive application of water and is allowed.
    d) Use or storage of chemicals (e.g., solvents, detergents or other surfactants, etc.) that would result in the mobilization of contaminants in soils or groundwater contained on Site. Maintenance or construction activities at the Property that are required in the Cleanup Action are allowed.

5) No activity is allowed that may change the hydrogeologic conditions and that would cause the movement of contaminated groundwater to areas outside the impacted soil area.

6) Any construction of buildings or other improvements must address and mitigate, as necessary, potential vapor build-up due to the contamination left on Site. OSHA and WISHA requirements on potential vapor build-up must be adhered to.

7) The Owner of the Property must provide access and allow authorized persons to conduct groundwater monitoring and cover monitoring as required in the Cleanup Action.

8) The Owner of the Property must give thirty (30) days advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner unless the third party buyer agrees to the terms of the Restrictive Covenants.

9) The Owner must restrict leases to uses and activities consistent with the Restrictive Covenants and notify all ground lessees of the restrictions herein on the use of the Property.

10) The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of these Restrictive Covenants. If Ecology, after public notice and comment approves the proposed change, the Restrictive Covenants shall be amended to reflect the change.

11) The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Cleanup Action; to take samples, to inspect Cleanup Actions conducted at the Property, and to inspect records that are related to the Cleanup Action.

12) Per WAC 173-340-440(12), if the condition(s) requiring an institutional control no longer exist on the Property, the Owner may submit a request to Ecology that the Restrictive Covenants or other restrictions be eliminated. The Restrictive Covenants or other restrictions shall be removed, if Ecology, after public notice and opportunity for comment, concurs.

Copies of the Restrictive Covenants for the Site are available as Appendices 6.5 and 6.6.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Based on a Site visit conducted by Ecology on May 13, 2010, the Site remains vacant, and access is limited by security fencing, the Spokane River, and the steep embankment below the railroad tracks. There is evidence of public use of the property, as indicated by bike and foot paths bypassing the chain link security fence. Additionally, there was visible evidence of a camp occupied by several people beneath trees adjacent to the Spokane River at the northeast corner of the Site.

A compacted gravel surface serves as a cap for the Site and eliminates the human exposure pathways (ingestion, contact) to contaminated soils. The surface appears in acceptable condition, with no signs of excavation or other disturbance of the capped areas. No repair, maintenance, or contingency actions have been required. A photo log is available as Appendix 6.7.

The Restrictive Covenants for the Site were recorded and remain active. These Restrictive Covenants prohibit activities that will result in the release of contaminants, currently contained as part of the cleanup, without Ecology's approval, and prohibit any use of the property that is inconsistent with the Covenants. These Restrictive Covenants serve to ensure the long term integrity of the surface cover.

The most recent groundwater sampling event results did not detect any of the contaminants of concern at concentrations exceeding MTCA Method B cleanup levels. Since compliance groundwater monitoring was initiated in 2006, there have been sporadic exceedances of arsenic, a single exceedance of both mercury and WAD cyanide, and repeated exceedances in a single well for PAHs. While the most recent sampling event indicates that the remedy for the Site will be protective of human health and the environment, these contaminants in groundwater should continue to be monitored.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

There is no new pertinent scientific information for the contaminants related to the Site.

3.3 New applicable state and federal laws for hazardous substances present at the Site

MTCA cleanup levels have not changed since remedial actions were completed at the Site in 2006. Contamination remains at the Site above MTCA Method A and Method B cleanup levels, and the Cleanup Action is still protective of human health and the environment.

3.4 Current and projected Site use

The Site is currently vacant and for sale. There are no projected uses of the Site in the immediate future. Should the Site be purchased and developed, the limitations in the Restrictive Covenants will prevent a use of the property that may expose hazardous materials contained at the Site as part of the remedial action.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous materials, and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the remedial action were capable of detection below MTCA Method B cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The Cleanup Actions completed at the Site are protective of human health and the environment.

- Soil cleanup levels have not been met at the Site; however, the Cleanup Action does comply with cleanup standards at the time of the action, since the long-term integrity of the containment system is ensured, and the requirements for containment technologies have been met.

- Site groundwater cleanup levels were met during the most recent sampling event conducted in March 2010. Other recent sampling events have shown concentrations of arsenic, mercury, WAD cyanide and PAHs that exceed Site groundwater cleanup levels. Fluctuations above cleanup levels, particularly in wells adjacent to the Spokane River, should be evaluated to determine if they are impacting the river.

- The Restrictive Covenants for the properties are active and remain effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the Cleanup Action.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Restrictive Covenants are being met. Groundwater monitoring should continue as indicated by the compliance monitoring plan, but no additional remedial actions are required at this time. Ecology recommends conducting analysis for total and dissolved arsenic. It is the property owner's responsibility to continue to inspect the Site to ensure that the integrity of the surface cover is maintained.

4.1 Next Review

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Landau Associates. *Preliminary Site Investigation.* February 9, 1998.

GEI Consultants, Inc. *Feasibility Study Report.* October 12, 2001.

Ecology. *Final Cleanup Action Plan.* August 10, 2001.

Ecology. *Consent Decree No. 02205445-0.* September 12, 2002.

Landau Associates. *Institutional Control Plan.* May 29, 2003.

Landau Associates. *Operation and Maintenance Plan.* January 8, 2004.

Ecology. *Enforcement Order No. DE-1533.* July 13, 2004.

Ecology. *Restrictive Covenant.* January 29, 2003.

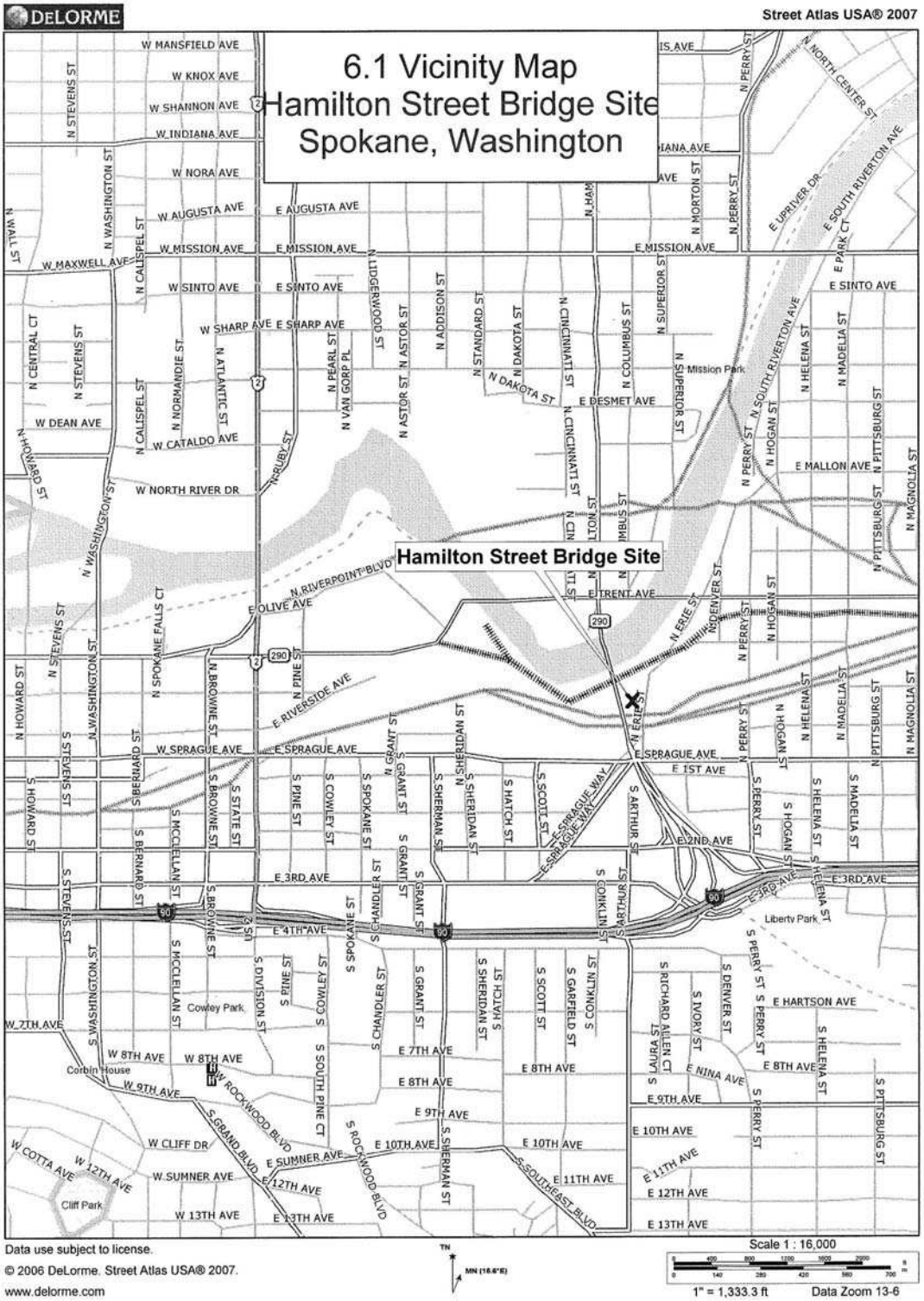
Ecology. *Restrictive Covenant.* September 9, 2004.

Landau Associates. *Cleanup Action Completion Report.* February 2, 2006.

Landau Associates. *Hamilton Street Bridge Site Semiannual Monitoring Report.* May 25, 2010.

6.0 APPENDICES

6.1 Vicinity Map



6.2 Site Plan

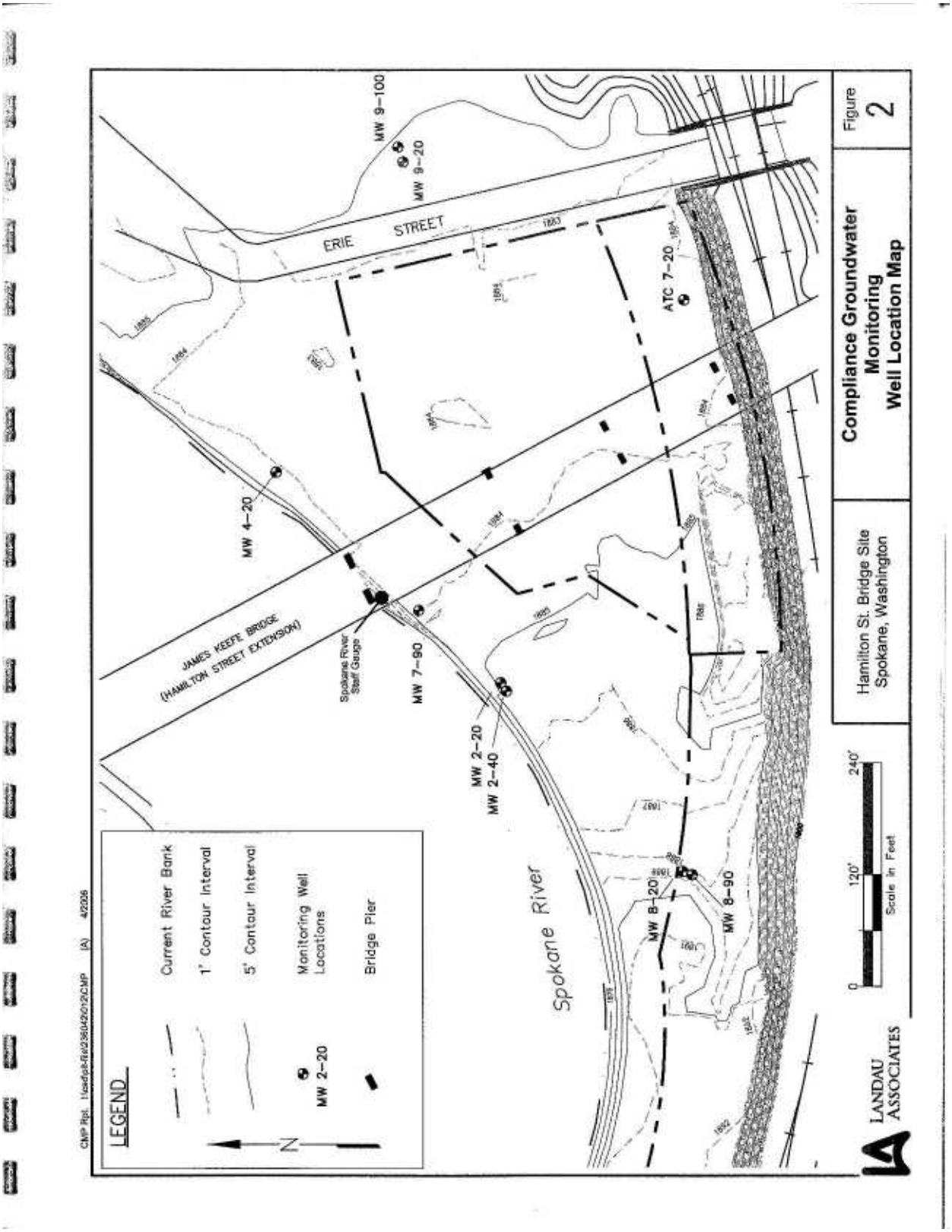


Figure 2
Compliance Groundwater Monitoring Well Location Map
Hamilton St. Bridge Site
Spokane, Washington
LANDAU ASSOCIATES
Scale in Feet
0
120'
240'
LEGEND
Current River Bank
1' Contour Interval
5' Contour Interval
Monitoring Well Locations
MW 2-20
Bridge Pier
N
MW 9-100
MW 9-20
ERIE STREET
ATC 7-20
MW 4-20
JAMES KEEFE BRIDGE
(HAMILTON STREET EXTENSION)
Spokane River Staff Gauge
MW 7-90
MW 2-20
MW 2-40
Spokane River
MW 8-20
MW 8-90

6.3 Cleanup Levels

TABLE 7. FINAL SITE CLEANUP LEVELS

INDICATOR	GROUND WATER (ug/L)			SOILS (mg/Kg)		
	PRELIMINARY METHOD B CLEANUP LEVEL	PQL	FINAL METHOD B CLEANUP LEVEL	PRELIMINARY METHOD B CLEANUP LEVEL	PQL	FINAL METHOD B CLEANUP LEVEL
TPH						
TPH-Diesel				200	6	200
TPH-Oil				200		200
TPH-Other				200	12	200
TPH-total	1000		1000			
Non-cPAHs						
Acenaphthene	643	0.1	643	64.3	0.072	64.3
Anthracene	4800	0.1	4800	480	0.073	480
Fluoranthene	90.2	0.3	90.2	9	0.073	9
Fluorene	640	0.1	640	64	0.059	64
Naphthalene	320	0.3	320	32	0.01	32
Pyrene	480	0.3	480	48	0.073	48
cPAHs						
benzo(a)anthracene	0.0028	0.1		0.00028	0.073	
benzo(a)pyrene	0.0028	0.1		0.00028	0.073	
benzo(b)fluoranthene	0.0028	0.1		0.00028	0.073	
benzo(k)fluoranthene	0.0028	0.1		0.00028	0.073	
chrysene	0.0028	0.1		0.00028	0.073	
dibenzo(ah)anthracene	0.0028	0.1		0.00028	0.073	
indeno(123-cd)pyrene	0.0028	0.1		0.00028	0.073	
Total cPAHs		0.1	0.1(A)		0.073	1(A)
SVOCs						
Carbazole	4.37	10	10	0.437	0.1	0.437
CYANIDE	5.2	10	10	0.52	0.24	0.52
METALS						
Arsenic	6	1	6	7	2.07	7
Barium	1120	2	1120	112	0.313	112
Lead	2.5	1	2.5	17	0.2	17
Mercury	0.012	0.2	0.2	0.07	0.058	0.07
Selenium	5	1	5	0.5	0.92	0.92

Final Cleanup Action Plan
Hamilton St. Bridge Site
Table 7 - Page 1

6.4 Ground Water Monitoring Data

TABLE 3
SUMMARY OF GROUNDWATER CHEMISTRY DATA
ARSENIC, CYANIDE AND MERCURY
Hamilton Street Bridge Site
Spokane, Washington

Page 1 of 1

Well	Date Sampled	Total Mercury (mg/L)	Total Arsenic (mg/L)	WAD Cyanide(a) (mg/L)
MW02-20	2/1/2006	0.0001 U	0.00100 U	0.00500 U
	8/9/2006*	0.0001 U	0.00100 U	0.0100 U
	2/13/2007*	0.0001 U	0.00108	0.0100 U
	9/6/2007*	0.000149 J	0.00105	0.0100 U
	2/13/2008*	0.0001 U	0.00140	0.0100 U
	9/10/2008	0.000152	**0.00957**	0.00500 U
	2/6/2009	0.0002 U	0.00100 U	0.00500 U
	8/20/2009	**0.000201**	0.00251	0.00500 U
	3/26/2010	0.0002 U	0.0001 U	0.00500 U
MW02-40	2/1/2006	0.0001 U	0.00158	0.00500 U
	8/9/2006*	0.0001 U	0.00100 U	0.0100 U
	2/13/2007	0.0001 U	0.00155	0.0100 U
	9/6/2007	0.000171 J	0.00115	0.0100 U
	2/13/2008	0.0001 U	0.00187	0.0100 U
	9/10/2008	0.0001 U	0.00145	0.00500 U
	2/6/2009	0.0002 U	0.00125	0.00500 U
	8/20/2009	0.0002 U	0.00121	0.00500 U
	3/26/2010	0.0002 U	0.00113	0.00500 U
MW04-20	2/1/2006	0.0001 U	0.00354	**0.0439**
	8/10/2006*	0.0001 U	0.00372	0.0100 U
	2/13/2007*	0.0001 U	0.00300	0.0100 U
	9/6/2007*	0.000145 J	0.00393	0.0100 U
	2/13/2008	0.000152	**0.00726**	0.0100 U
	9/10/2008	0.000114	**0.0235**	0.00500 U
	2/6/2009	0.000118	0.00588	0.00650
	8/20/2009	0.0002 U	**0.0258**	0.00500 U
	3/26/2010	0.0002 U	0.00211	0.00500 U
ATC7-20	2/1/2006	0.0001 U	**0.00740**	0.00500 U
Duplicate	2/1/2006	0.0001 U	**0.00746**	0.00500 U
	8/10/2006*	0.0001 U	0.00481	0.0100 U
	2/13/2007	0.0001 U	**0.00716**	0.0100 U
	9/6/2007*	0.000147 J	0.00427	0.0100 U
	2/13/2008	0.0001 U	0.00549	0.0100 U
	9/10/2008	0.0001 U	0.00564	0.00500 U
	2/6/2009	0.000079	0.00459	0.00500 U
	8/20/2009	0.0002 U	**0.00559**	0.00500 U
	3/26/2010	0.0002 U	0.00423	0.00500 U
MW07-90	2/1/2006	0.0001 U	**0.00703**	0.00500 U
	8/9/2006	0.0001 U	0.00571	0.0100 U
Duplicate	8/9/2006	0.0001 U	**0.00609**	0.0100 U
	2/13/2007	0.0001 U	0.00547	0.0100 U
Duplicate	2/13/2007	0.0001 U	0.00517	0.0100 U
	9/6/2007	0.000152 J	**0.00796**	0.0100 U
Duplicate	9/6/2007	0.000173 J	**0.00815**	0.0100 U
	2/13/2008	0.0001 U	**0.00725**	0.0100 U
Duplicate	2/13/2008	0.0001 U	**0.00907**	0.0100 U
	9/10/2008	0.0001 U	0.00508	0.0051
Duplicate	9/10/2008	0.0001 U	0.00550	0.0058
	2/6/2009	0.0002 U	0.00477	0.00500 U
Duplicate	2/6/2009	0.0002 U	0.00484	0.00500 U
	8/20/2009	0.0002 U	0.00459	0.00500 U
Duplicate	8/20/2009	0.0002 U	0.00466	0.00670
	3/26/2010	0.0002 U	0.00443	0.00500 U
Duplicate	3/26/2010	0.0002 U	0.00443	0.00500 U
Site Cleanup Level (b)		0.0002	0.005	0.01

Notes:
Duplicate sample ID = MW20-60
Concentrations in bold are at or above site cleanup levels.
* Sample field filtered
NA = not analyzed.
NS = not specified.
U = Indicates the compound was analyzed for, but was not detected at the given detection limit.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
(a) Weak Acid Dissociable (WAD) Cyanide analyzed by SM4500-CN-I.
(b) Final Cleanup Action Plan (Ecology 2001).

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TABLE 4
SUMMARY OF GROUNDWATER CHEMISTRY DATA
POLYCYCLIC AROMATIC HYDROCARBONS
Hamilton Street Bridge Site
Spokane, Washington

Well	Date Sampled	Polycyclic Aromatic Hydrocarbons (µg/L)(a)																			Toxicity Equivalent Concentration(c)
		Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Benzo (g,h,i) perylene	Pyrene	Benzo (a) anthracene(b)	Chrysene(b)	Benzo (b) fluoranthene(b)	Benzo (k) fluoranthene(b)	Benzo (a) pyrene(b)	Indeno (1,2,3-cd) pyrene(b)	Dibenzo (a,h) anthracene(b)	
MW02-20	2/1/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/9/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	ND
	2/13/2007	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	9/6/2007	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.107 J	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.126 J	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.13
	2/13/2008	0.146	0.100 U	0.100 U	0.117	0.100 U	0.243	0.126	1.05	1.04	1.50	0.932	1.05	0.748	1.16	0.803	0.816	0.272	1.39		
	8/10/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.0943	0.100 U	0.100 U	0.09		
	2/6/2009	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.095	0.100 U	0.438	0.229 U	0.410	0.390	0.410	0.724	0.287 U	0.543 U	0.219 U	0.114 U	0.46		
	8/20/2009	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	1.32	1.36	1.24	1.30	1.57	2.92	0.500 U	1.89	1.16	0.500 U	2.44		
	3/26/2010	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND		
MW02-40	2/1/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/9/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 UJ	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	ND
	2/13/2007	0.100 U	0.100 U	0.115	0.375	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.125	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	9/6/2007	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	ND
	2/13/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/10/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	2/6/2009	0.100 U	8.38	26.9 J	5.82	0.859	0.179	0.123	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.0643 U	0.100 U	ND
	8/20/2009	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	3/26/2010	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
MW04-20	2/1/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/10/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	ND
	2/13/2007	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	9/6/2007	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	ND
	2/13/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/10/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	2/6/2009	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/20/2009	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	3/26/2010	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
ATCT-20	2/1/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
Duplicate	2/1/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/10/2006	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 UJ	0.100 U	0.100 U	0.100 U	ND
	2/13/2007	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	9/6/2007	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	0.100 UJ	ND
	2/13/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/10/2008	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	2/6/2009	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	8/20/2009	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND
	3/26/2010	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	ND

Landau Associates

6.5 Spokane River Properties Environmental Covenant

WHEN RECORDED, RETURN TO:

WITHERSPOON, KELLEY, DAVENPORT & TOOLE P.S.
Attn: Stanley R. Schultz
422 West Riverside, Suite 1100
Spokane, Washington 99201

COPY
ORIGINAL FILED OR RECORDED

SEP - 9 2004

COUNTY AUDITOR
SPOKANE COUNTY WA

SEP - 9 2004

Document Title:	Restrictive Covenant
Grantor:	Washington State Department of Ecology
Grantee:	Spokane River Properties, Limited
Legal Description:	Ptn of SE 1/4 Sec 17, Tshp 25N, Range 43 EWM; and Ptn of Tracts A and B, Block 19 DENNIS AND BRADLEY'S ADDITION.
Assessor's Property Tax Parcel/Account No.:	17534.0575; 17534. 0554(formerly 0541, 0542) 17534.0006; 17534.0506; 71534.0516

RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant is the subject of a remedial action under Chapter 70.105D.RCW. The work that will be done to clean up the property and conduct long-term operation and maintenance, hereafter the "Cleanup Action", is described in Consent Decree No. 02205445-0 and in attachments to the Consent Decree and in documents referenced in the Consent Decree. This Restrictive Covenant is required by the Washington State Department of Ecology (Ecology) under Ecology's rule WAC 173-340-440 because the Cleanup Action on the Site will result in residual soil and ground water concentrations of Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAHs), Carbazole, Cyanide, Arsenic, Barium, Lead, and Selenium which exceed Method A or Method B residential cleanup levels.

The undersigned, Spokane River Properties, Limited, is the fee owner of real property, hereafter "the Property", in Spokane County, State of Washington, that is subject to this Restrictive Covenant. The Property is legally described in Attachment A of this Restrictive Covenant and incorporated herein by reference.

Spokane River Properties, Limited, makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property, hereafter "Owner".

Section 1. No groundwater may be taken for domestic, commercial, industrial, or any other purposes from the Property unless the groundwater removal is part of monitoring activities associated with an Ecology approved compliance monitoring plan. No production well will be installed within the Property.

Section 2. Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil or ground water that was contained as part of the Cleanup Action, or create a new exposure pathway, is prohibited without prior

written approval by the Department of Ecology. In the case of an emergency, Ecology shall be contacted within 48 hours of the incident.

Specifically, excavation of soils to depths greater than two (2) feet on the Property is prohibited, unless approved in writing by Ecology. All contaminated soils and/or ground water to be generated must be treated or disposed of according to state, federal, and local regulations. Workers conducting the approved excavations must use appropriate personal protective equipment as required by the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA). Excavations up to 2 feet are allowed without approval by Ecology

Section 3. Any activity on the Property that may interfere with the integrity of the Cleanup Action and continued protection of human health and the environment is prohibited, *unless approved by Ecology*. Examples of activities that are prohibited include:

a. Activities that would disturb the cap or cover of the contaminated soils.Examples of such activities include but are not limited to the following: drilling; driving or boring to install pilings; placement of objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability; piercing the surface with a rod, spike, or similar item; and bulldozing or earthwork.

b. Activities that would disturb or overload the stormwater system.

c. Excessive application of water for purposes such as irrigation, washing/rinse down pad, etc. Lawn irrigation at agronomic rates is not considered excessive application of water and is allowed.

d. Use or storage of chemicals (e.g., solvents, detergents or other surfactants, etc.) that would result in the mobilization of contaminants in soils or ground water contained on Site.

Maintenance or construction activities at the Property that are required in the Cleanup Action are allowed.

Section 4. No activity is allowed that may change the hydrogeologic conditions and that would cause the movement of contaminated ground water to areas outside the impacted soil area.

Section 5. Any construction of buildings or other improvements must address and mitigate, as necessary, potential vapor build-up due to the contamination left on Site. OSHA and WISHA requirements on potential vapor build up must be adhered to.

Section 6. The Owner of the Property must provide access and allow authorized persons to conduct ground water monitoring and cover monitoring as required in the Cleanup Action.

Section 7. The Owner of the Property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner unless the third party buyer agrees to the terms of the Restrictive Covenant.

Section 8. The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all *ground* lessees of the restrictions herein on the use of the Property.

Section 9. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. If Ecology, after public notice and comment approves the proposed change, the restrictive covenant shall be amended to reflect the change.

Section 10. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Cleanup Action; to take samples, to inspect Cleanup Actions conducted at the Property, and to inspect records that are related to the Cleanup Action.

Section 11. Per WAC 173-340-440(12), if the condition(s) requiring an institutional control no longer exist on the Property, the Owner may submit a request to Ecology that the Restrictive Covenant or other restrictions be eliminated. The Restrictive Covenant or other restrictions shall be removed, if Ecology, after public notice and opportunity for comment, concurs.

SPOKANE RIVER PROPERTIES, LIMITED

By: Richard E Braun

Its: Partner

9-7-2004

[DATE SIGNED]

STATE OF WASHINGTON)
) ss.
COUNTY OF Spokane)

On this day, Richard E. Brown, personally appeared before me, known to me to be the person who appeared before me, and said person acknowledged that he/she signed this instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in this instrument.

GIVEN UNDER MY HAND and official seal this 7th day of August, 2001.

STACY BJORDAHL NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES MAY 10, 2007

Notary Public
My commission Expires: 5-10-2007

-4-

Title Order No. 94930

EXHIBIT A

That portion of the Southeast Quarter of Section 17, Township 25 North, Range 43 East of the Willamette Meridian, and that portion of Tracts A, B, and Block 19 of DENNIS AND BRADLEY'S ADDITION, as per plat recorded in Volume "A" of Plats, pages 160 and 161, records of Spokane County, and including portion of the river bed of the Spokane River, all described as follows;

BEGINNING at the Southeast corner of Lot 19, of said Block 19;
Thence Southerly along the East line of said Tract B, to the Northerly right of way line of the Northern Pacific Railroad;
Thence Westerly along said right of way line to an intersection with the Southerly right of way line of the Chicago, Milwaukee, and Puget Sound Railway Company, as conveyed by Deed recorded September 21, 1911 in Volume 283 of Deeds, page 366, records of Spokane County;
Thence along said right of way line to a point radial to and Southwesterly of the Southeast corner of that certain property described in Deed recorded November 23, 1909 under Spokane County Auditor's File No. 260636;
Thence Northeasterly to the said Southeasterly corner;
Thence Northwesterly along the East line of said Deed, 42.00 feet to the Southerly right of way line of Superior Street;
Thence Northeasterly along said right of way to the Easterly line of Tract A as deeded and recorded in Document Number 8112280121, records of Spokane County;
Thence Southeasterly, Easterly and Northeasterly along said line to an intersection with the Southwesterly line of that certain property as shown on Record of Survey recorded in Spokane County Auditor's File No. 8108240202, extended Northwesterly;
Thence Southeasterly from said intersection and said extended line and along said Southwesterly line to the Southerly most corner of Lot 9, said Block 19;
Thence Southerly and Southwesterly along the East line of said Block 19 to the Point of Beginning;

EXCEPT that portion deed to the State of Washington for piers and footings of the James Keefe Bridge, recorded in Spokane County Auditor's File No. 8206090066, records of Spokane County;

Situate in the City of Spokane, County of Spokane, State of Washington.

6.6 BNSF Environmental Covenant

COPY
ORIGINAL FILED OR RECORDED

JAN 29 2003

COUNTY AUDITOR
SPOKANE COUNTY WA

COPY

WHEN RECORDER RETURN TO:
Craig S. Trueblood
Preston|Gates|Ellis, LLP
925 Fourth Ave., Suite 2900
Seattle, WA 98104-1158

RESTRICTIVE COVENANT

Reference No. of Related Documents:

Grantor: The Burlington Northern and Santa Fe Railway Company
P.O. Box 961039
2500 Lou Menke Drive, 3rd Floor
Fort Worth, TX 96131-2828

Grantee: Washington Department of Ecology
4601 North Monroe, Suite 202
Spokane, WA 99205-1295

Abbreviated Legal Description: A portion of the SW¼ SE¼ SE¼ and the SE¼ SW ¼ SE¼, all in Section 17, Township 25 North, Range 43 East, W.M, County of Spokane, State of Washington, described more fully in Attachment A

Assessor's Property Tax Parcel Account Number(s): 35173.1510

RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant has been the subject of remedial action under Chapter 70.105D RCW. The work will be done to clean up the property and conduct long-term operation and maintenance (hereafter the "Cleanup Action") is described in the Consent Decree ("Decree") entered in State of Washington, Department of Ecology v. Avista Corporation and The Burlington Northern and Santa Fe Railway Company, Spokane County Superior Court Cause No. 02205445-0, and in attachments to the Decree and in documents referenced in the Decree. This Restrictive Covenant is required by the Department of Ecology under WAC 173-340-440 because the Cleanup Action on the Site will result in residual soil and ground water concentrations of Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH), Carbazole, Cyanide, Arsenic, Barium, Lead, and Selenium which exceed Method A or Method B residential cleanup levels.

The undersigned, The Burlington Northern Railroad and Santa Fe Railway Company ("BNSF"), is the fee owner of real property (hereafter "the Property") in the County of Spokane, State of Washington, that is subject to this Restrictive Covenant. The Property is legally described in Attachment A of this Restrictive Covenant and incorporated herein by reference.

BNSF makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1 No groundwater may be taken for domestic, commercial, industrial, or any other purposes from the Property unless the ground water removal is part of monitoring activities associated with an Ecology-approved compliance monitoring plan. No production well will be installed within the Property.

Section 2 The Site shall not be used for residential purposes.

Section 3 Any activity on the Property that results in the release or exposure to the environment of the contaminated soil or groundwater that was contained as part of the Cleanup Action, or that creates a new exposure pathway, is prohibited without prior written approval by the Department of Ecology.

a. Excavation of contaminated soil is prohibited, unless approved by Ecology, for the following exceptions:

i. Excavation performed to repair, maintain, service or remove underground utility components, conduits, installations or channels.

ii. Drilling, driving, or boring to install pilings for allowable and approved construction.

b. All contaminated soil and/or ground water to be generated from approved excavation activities must be treated or disposed of according to all state, federal and local regulations.

c. Workers conducting approved excavations must use appropriate personal protective equipment as required by the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA).

Section 4 The Owner of the Property shall adhere to the requirements of the Decree and the Cleanup Action Plan (CAP) issued by the Department of Ecology for the Property. Any activity on the Property that may interfere with the integrity of the Cleanup Action and continued protection of human health and the environmental is prohibited. Examples of activities that are prohibited include:

a. Activities that would disturb the cap or cover of the contaminated soils, such as drilling, digging, placing any objects or using any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, or bulldozing or earthwork.

b. Activities that would disturb or overload the stormwater system.

c. Excessive applications of water for purposes such as irrigation, washing/rinse down pad, etc.

d. Use or storage of chemicals (e.g., solvents, detergents or other surfactants, etc.) that result in the mobilization of contaminants in soils or ground water contained on Site.

This restriction recognizes that maintenance or construction activities at the Property conducted in accordance with the CAP requirements shall not constitute activities that interfere with the Cleanup Action.

Section 5 No activity is allowed that may change the hydrogeologic conditions and cause the movement of contaminated ground water to areas outside the impacted soil area.

Section 6 Any construction over the Site (i.e., buildings and concrete surfaces, pavement, etc.) must address and mitigate, as necessary, potential vapor build-up due to contamination left on Site.

Section 7 The Owner of the Property must give thirty (30) day advance written notice to the Department of Ecology of any conveyance of any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Cleanup Action on the Property.

Section 8 The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions herein on the use of the Property.

Section 9 The Owner must notify and obtain approval from the Department of Ecology prior to any use of the Property that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology may approve an inconsistent use only after public notice and comment.

Section 10 The Owner shall allow authorized representatives of the Department of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Cleanup Action; to take samples, to inspect Cleanup Actions conducted at the Property, and to inspect records that are related to the Cleanup Action.

Section 11 The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Restrictive Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if the Department of Ecology, after public notice and comment, consents in writing.

THE BURLINGTON NORTHERN
AND SANTA FE RAILWAY COMPANY

David P. Schneider Dated: 1-21-03
David P. Schneider

STATE OF Texas)
) ss.
COUNTY OF Tarrant)

I certify that I know or have satisfactory evidence that David P. Schneider is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Gen. Director Real Estate of The Burlington Northern and Santa Fe Railway Company, a Delaware corporation, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 1-21-03

Tammy K. Herndon
Notary Public
Print Name Tammy K. Herndon
My commission expires 10-25-03

TAMMY K. HERNDON
Notary Public
STATE OF TEXAS
My Comm. Exp. 10/25/2003

(Use this space for notarial stamp/seal)

RESTRICTIVE COVENANT
K:\16065\00054\CST\CST_0101B

4

ATTACHMENT A

That portion of the SW¼ SE¼ SE¼ and the SE¼ SW ¼ SE¼, all in Section 17, Township 25 North, Range 43 East, W.M, County of Spokane, State of Washington, described as follows: Beginning at a point in the south production of the west line of Erie Street distant 60 feet northerly, measured at right angles, from the center line of the most northerly track as constructed on July 15, 1968; thence westerly in a straight line 230 feet to a point distant 40 feet northerly, measured at right angles from said center line; thence westerly parallel with said center line to a point distant 500 feet west, measured at right angles, from said produced street line; thence north parallel with said produced street line to a point distant 200 feet northerly, measured at right angles, from the center line of the main track of The Burlington Northern and Santa Fe's Railway Company's main line as originally constructed; thence easterly parallel with said original center line to said produced street line; thence south along said produced street line to the point of beginning.

6.7 Photo log

Photo 1: Reinforced River Frontage – from the southwest

Photo 2: Hamilton Street Bridge Site – from the east

Photo 3: Site Ground Water Monitoring Wells - from the southeast

Photo 4: Site Perimeter Fencing - from the south

Budinger & Associates
Proudly serving the Inland Northwest for over 30 years

Geotechnical Engineering
Environmental Engineering
Construction Materials Testing
Subsurface Exploration
Special Inspection

Cindy Kinzer, PE
City of Spokane Engineering
808 W. Spokane Falls Blvd
Spokane, WA 99201

March 10, 2015

Project Number H14575

Project: MLK-Erie Lined Stormwater Treatment Pond
Subject: Recommended Erie Street Pond/Swale Liner and Materials

Dear Ms. Kinzer,

Budinger & Associates, Inc. is pleased to provide recommendations for Stormwater Detention/Infiltration earthwork and Liner materials for the MLKJ swales and Erie Street Pond, in Spokane, Washington.

Project Considerations and Scope

Extension of MLK Way is planned approximately 4,000 feet long extending from Sherman Street to Trent and Perry Street. Budinger completed geotechnical exploration analysis in this area and provided a report to the City on December 6, 2013 and noted shallow groundwater table at this location. Environmental conditions at the MLKJ Way project have been explored and tested, prompting a limitation on stormwater disposal for specific areas on the site. Stormwater will be piped to the treatment pond and disposed in a proposed Stormtech drainage system.

We are providing design information for the construction of the lined treatment area based on the results of test explorations in that vicinity.

Previous explorations conducted in the area of the proposed pond include the following:

Budinger & Associates, 2013, MLKJ Way Geotechnical Conditions Report, 2005264 Task 17
Budinger & Associates, 2015, MLK Extension, Phase II, City Project No. 2005264 Task 16
Budinger & Associates, 2015, Erie Street, City Project No. 2014115

Encountered Conditions

Subsurface conditions in the project area are described in previous reports. Specifically, test boring 5 (TB-5, 2013) was drilled at the pond location. Fill, including glass, was encountered beginning at the ground surface extending to a depth of 5 feet below ground surface (BGS). Black sand and black silt with clay beginning at 5 feet extended to 10 feet BGS. Groundwater was encountered at 15 feet BGS. B-5 and four nearby boring logs are appended to this report. Soils are predominantly coarse gravel with sand.

Conclusions and Recommendations

Earthwork

Due to the debris content in the fill, including glass, swales and pond should be shaped to 5 inches below liner grade. The subgrade of areas to receive subgrade fill shall be prepared to ensure a solid base for placement and compaction of subsequent layers. Backfill to liner grade with well-graded sand with gravel with a maximum particle size of 1/2 inch. Compact to 92 percent of ASTM D-1557 maximum dry unit weight. The final surface of the subgrade fill over which the HDPE liner is to be placed shall not have

sharp objects or edges, or protrusions or voids of sufficient size to be detrimental to the performance of the liner. Lined slopes should be at 2Horizontal:1Vertical. Pond anchor trenches shall be excavated sufficiently in advance of geomembrane deployment to avoid damage to any deployed materials. The edge where the geomembrane enters the anchor trench shall be rounded to avoid sharp bends or creases. While open, the anchor trench shall be adequately sloped and drained to prevent ponding of water or softening of the adjacent soils. Exposed liner shall be protected until trimmed to the final elevation. Anchor trenches shall be backfilled as soon as practically possible following installation of all the geosynthetic components of the liner system.

Liner Materials

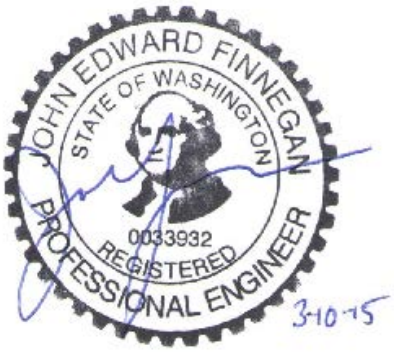
Based upon the results of previous impermeable and analyses we recommend that swales and pond within restricted areas be constructed with geomembrane. With our experience, conversations with suppliers, and review of technical specifications of various liner products, our opinion is that a 30-mil smooth High Density Polyethylene (HDPE) liner for swales and pond will provide suitable environmental protection, longevity, and low maintenance for the planned applications.

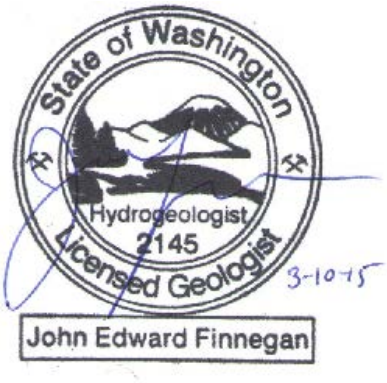
Polyvinyl chloride (PVC), while more flexible and can be manufactured in panels that are pre-welded for ease of roll-out, costs approximately 40 percent more than HDPE. PVC also has inherently short ultraviolet exposure limits. We can assume that the application adjacent to roadways increases the likelihood that inadvertent UV exposure may compromise the liner. Textured HDPE contains inherent reduced elongation and strength values. The attached comparison chart and manufacturing specifications also indicate that the UV exposure, elongation, tensile strength, and puncture resistance of smooth HDPE is higher.

We also recommend that the appended example specifications for subgrade preparations and liner installation be reviewed for applicability.

We appreciate the opportunity to provide this service to you on this project.

Prepared by:
BUDINGER & ASSOCIATES, INC.



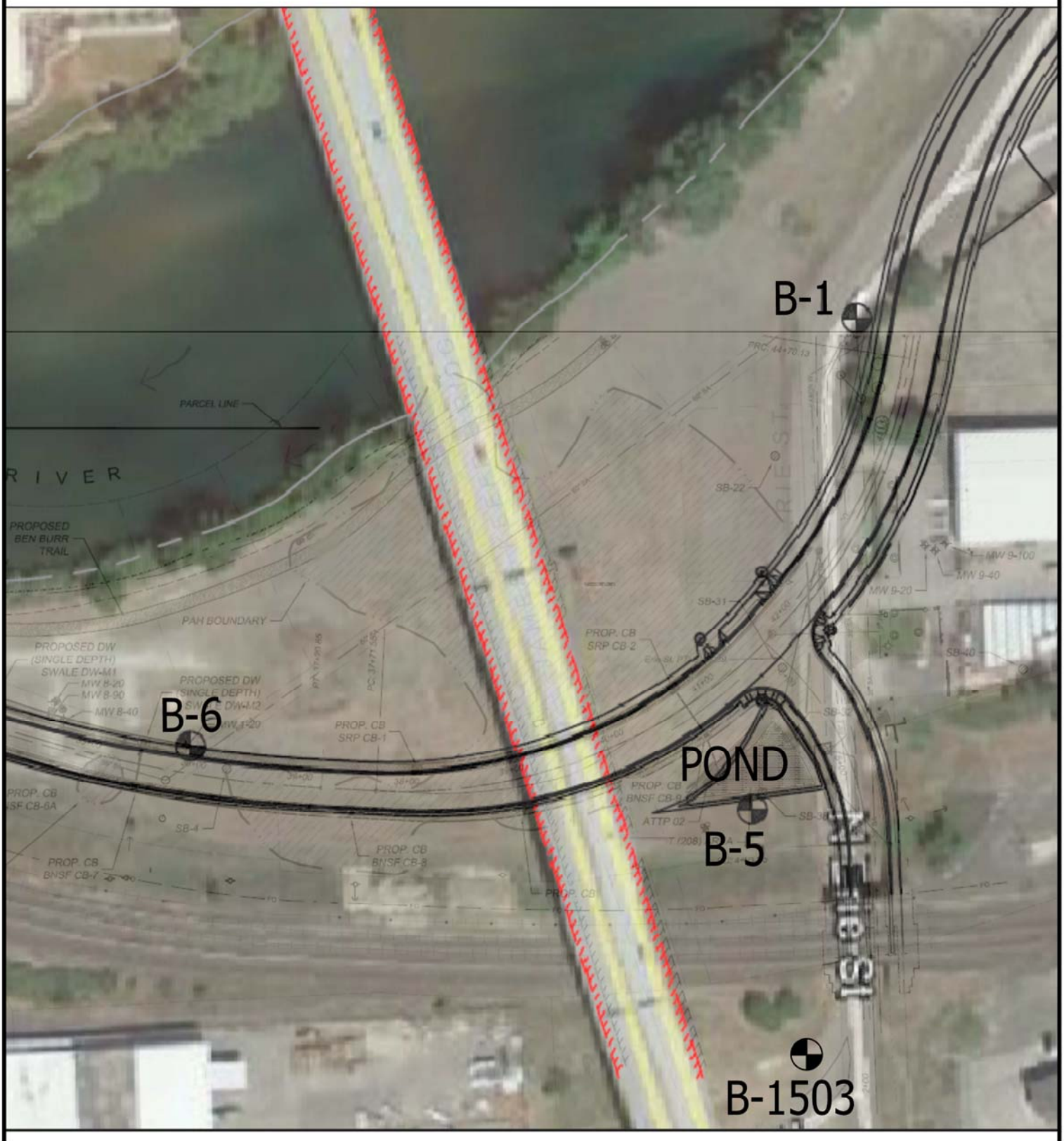


David Lehn, LG
Senior Geologist

John Finnegan, PE, LHG
Geotechnical Engineer, Principal

JEF/dcl
Addressee – (1) ckinzer@spokanecity.org

Attachments:
Figure 1: Site Plan
Boring Logs
Material Comparison Chart
HDPE Material Specifications
PVC Material Specifications



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SCALE: 1"=200'

0 100 200

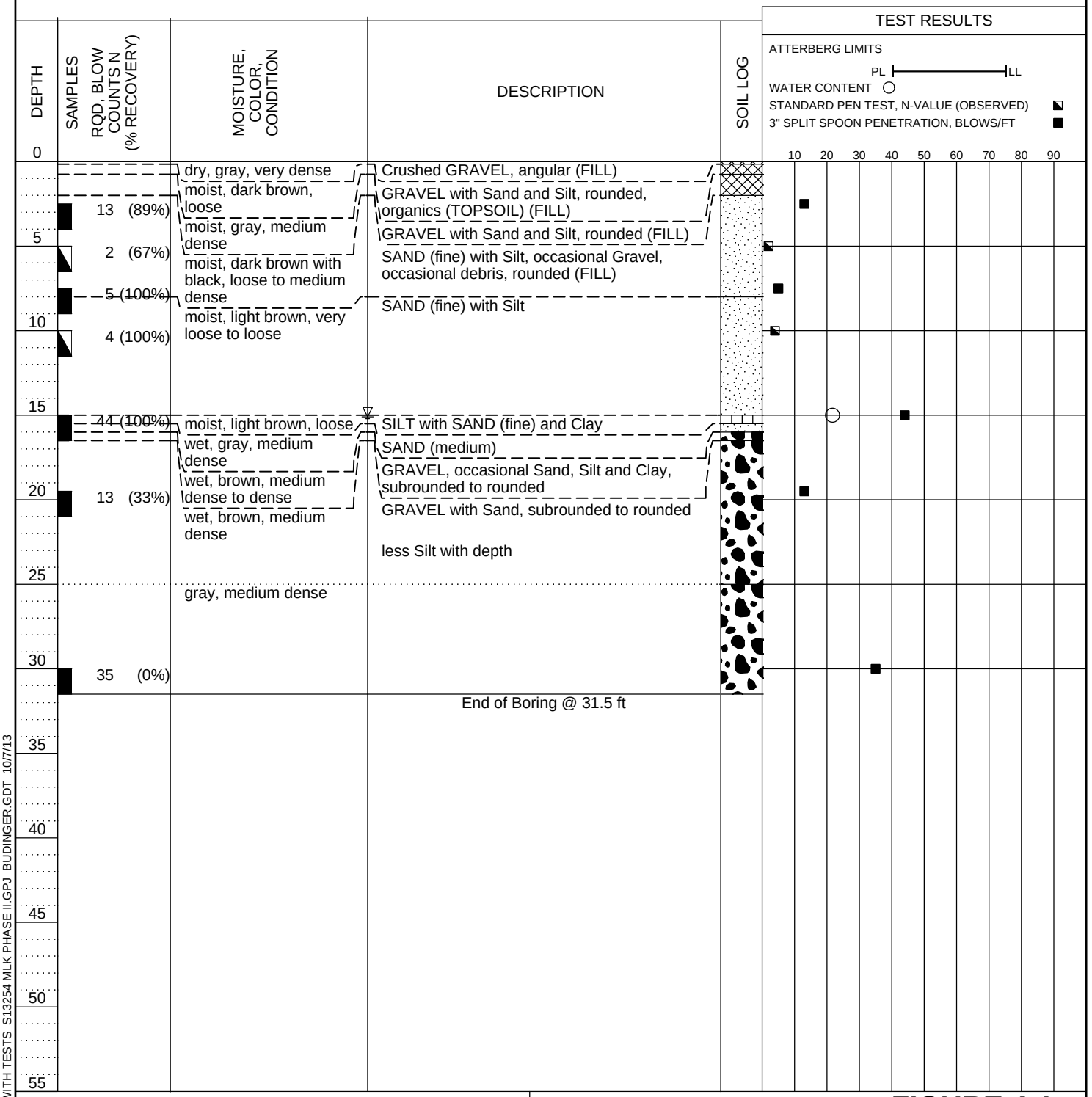
Budinger & Associates

SITE PLAN	FIGURE 1
MLK/ERIE LINED STORMWATER TREATMENT POND SPOKANE, WASHINGTON	PROJECT NUMBER S14575
	DATE: 3/2015

TEST BORING 1

Date of Boring: 9-6-13
Driller: Budinger & Assoc., Inc.
Type of Drill: TEI HEMH-5012
Location: South of the intersection of Erie Street and Front Avenue (G)
Surface: gravel

Elevation: 1887 ft
Logged by: T. Black
Size of hole: air rotary overburden system, 4.5 in O.D. casing



LOGS WITHOUT WELL WITH TESTS S13254 MLK PHASE II.GPJ BUDINGER.GDT 10/7/13

Budinger & Associates
1101 North Fancher Road
Spokane Valley, WA 99212

BORING LOGS **FIGURE 4-1**

Project: MLK Phase II
Location: Spokane, WA
Number: S13254

TEST BORING 5

Date of Boring: 9-10-13
Driller: Budinger & Assoc., Inc.
Type of Drill: TEI HEMH-5012
Location: Northwest of the railroad bridge over Erie Street (F)
Surface: grass and weeds

Elevation: 1887 ft
Logged by: D.Lehn
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		dry, gray, medium dense	GRAVEL with Sand, angular (FILL)	
		moist, red, medium dense	Bricks, some glass (FILL)	
5	20 (73%)	moist, black, medium dense	SAND (fine) with Silt and Clay	
		moist, black, loose	SILT with Clay	
10	8 (95%)	moist, brown, loose	Silty fine SAND, micaceous, medium to low plasticity	
		moist to wet, brown, medium dense to dense	GRAVEL with Sand, trace Silt, rounded	
15	21 (60%)			
20	32 (27%)			
25	13 (33%)			
			End of Boring @ 26 ft	
30				
35				
40				
45				
50				
55				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

LOGS WITHOUT WELL WITH TESTS S13254 MLK PHASE II.GPJ BUDINGER.GDT 10/7/13

Budinger & Associates
1101 North Fancher Road
Spokane Valley, WA 99212

BORING LOGS

FIGURE 4-5

Project: MLK Phase II
Location: Spokane, WA
Number: S13254

TEST BORING 6

Date of Boring: 9-11-13
Driller: Budinger & Assoc., Inc.
Type of Drill: TEI HEMH-5012
Location: West of Hamilton bridge, southeast corner parcel 35174.0606 (E)
Surface: grass and weeds

Elevation: 1890 ft
Logged by: D.Lehn
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION
0	R (60%)	moist, dark brown, very dense	GRAVEL (coarse to fine), with Sand (coarse to fine) some Silt, angular to rounded (FILL)
		moist, black, loose	SAND and Silt (FILL)
5	3 (27%)	moist, dark brown, very loose to loose	GRAVEL (fine). with Sand (coarse to fine), some Silt, angular, (FILL). many voids from 5 to 10 feet
10	6 (20%)	moist to wet, brown, loose	GRAVEL (fine). with Sand (coarse to fine), some Silt, angular (FILL).
15	7 (0%)		
20	4 (0%)		
		dry, gray, very dense	BOULDER (FILL)
25	1 (15%)	wet, brown, very loose	GRAVEL with Silt and Sand, rounded
		wet, brown, very loose	SAND (medium to fine) with Silt and fine Gravel, micaceous, rounded
		wet, brown, dense	
30	34 (60%)		GRAVEL with Sand (coarse to fine) trace Silt, rounded
			End of Boring @ 31 ft
35			
40			
45			
50			
55			

SOIL LOG

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90 100

LOGS WITHOUT WELL WITH TESTS S13254 MLK PHASE II.GPJ BUDINGER.GDT 10/7/13

Budinger & Associates
1101 North Fancher Road
Spokane Valley, WA 99212

BORING LOGS **FIGURE 4-6**

Project: MLK Phase II
Location: Spokane, WA
Number: S13254

TEST BORING 1513

Date of Boring: 1-6-14
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: NW corner of Erie ST and Sprague Way
Surface: gravel

Elevation: 1885 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION
0	78 (80%)	moist, dark gray/ brown, dense to very dense	GRAVEL with Sand, Silt, and Cobbles, subrounded to angular, (fill)
5	19 (80%)	moist, brown/dark brown, medium dense	GRAVEL with Sand, Silt, and Cobbles, subrounded, (possible fill)
	11 (80%)	moist, brown, medium dense	GRAVEL with Sand, Silt and Cobbles, poorly graded (coarse), subrounded
10	18 (80%)	moist, gray with brown, medium dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded
15	16 (70%)	wet	
			End of Boring @ 16 ft
20			

SOIL LOG

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

H

LOGS WITHOUT WELL WITH TESTS H14572 BORING LOGS.GPJ BUDINGER.GDT 2/25/15

Budinger & Associates
1101 North Fancher Road
Spokane Valley, WA 99212

BORING LOGS

FIGURE 4-13

Project: Erie St
Location: Spokane, WA
Number: H14572

H14575 Erie Street Pond

Liner Materials General Comparison

		PVC (USF)	PVC (COLO)	HDPE-S (USF)	HDPE-T (USF)
Thickness		30	30 +/- 1.5 mil	30	30
Strength at Break	lbs/in	73	73	114	45
Elongation	%	380	380	700	700
Modulus at 100%	lbs/in	30	32	63	63
Tear Strength	lbs	8	8	21	21
Density	g/cc	1.2	1.2	0.94	0.94
				Smooth	Textured

1101 North Fancher Rd.
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Tel: 509.535.8841
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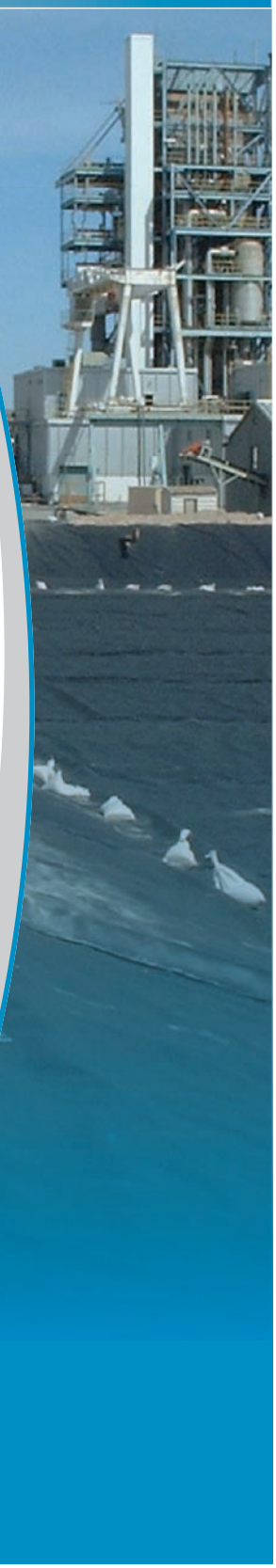
COLORADO LINING INTERNATIONAL

CO: 800.524.8672
TX: 888.546.4641
www.coloradolining.com

HDPE - HIGH DENSITY POLYETHYLENE

Polyethylene is the most commonly used liner in the industry due to its high strength, good chemical resistance, and proven track record. Polyethylene must be installed by certified technicians, but still manages to be a cost effective alternative.

Colorado Lining International is a certified installer of Polyethylene products. We maintain year roundfield crews capable of installing your next job. We want to work with you to make your job a success.



Product Features:

- Chemical Resistance
- Durable
- Cost Effective
- UV Stable
- Wide Product Range:
  - SMOOTH
  - TEXTURED
  - CONDUCTIVE
  - COLORS AVAILABLE
- Available In 20, 30, 40, 60, 80, & 100 Mils

Uses & Applications:

- Landfills
- Wastewater Treatment Plants
- Animal Waste Lagoons
- Golf Course Ponds
- Gas Collection Covers
- Pond & Lake Liners
- Irrigation Reservoirs

- ***Project Photo: Nevada Power in Las Vegas, NV***
- ***Overflow Pond Lining***
- ***43,875 SF 40 Mil HDPE***

COLORADO LINING INTERNATIONAL

HDPE

Smooth
Product Data Sheet

Properties	Test Method	Test Value							Testing Frequency (minimum)
		30 mils	40 mils	50 mils	60 mils	80 mils	100 mils	120 mils	
Thickness (min. ave.)	D5199	nom.	Nom.	Nom.	Nom.	Nom.	Nom.	Nom.	Per roll
• lowest individual of 10 values		-10%	-10%	-10%	-10%	-10%	-10%	-10%	
Density mg/l (min.)	D 1505/D 792	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	200,000 lb
Tensile Properties (1) (min. ave.) • yield strength • break strength • yield elongation • break elongation	D 6693 Type IV	 63 lb/in. 114 lb/in. 12% 700%	 84 lb/in. 152 lb/in. 12% 700%	 105 lb/in. 190 lb/in. 12% 700%	 126 lb/in. 228 lb/in. 12% 700%	 168 lb/in. 304 lb/in. 12% 700%	 210 lb/in. 380 lb/in. 12% 700%	 252 lb/in. 456 lb/in. 12% 700%	20,000 lb
Tear Resistance (min. ave.)	D 1004	21 lb	28 lb	35 lb	42 lb	56 lb	70 lb	84 lb	45,000 lb
Puncture Resistance (min. ave.)	D 4833	54 lb	72 lb	90 lb	108 lb	144 lb	180 lb	216 lb	45,000 lb
Stress Crack Resistance (2)	D5397 (App.)	300 hr.	300 hr.	300 hr.	300 hr.	300 hr.	300 hr.	300 hr.	per GRI-GM10
Carbon Black Content (range)	D 1603 (3)	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	2.0-3.0%	20,000 lb
Carbon Black Dispersion	D 5596	note (4)	note (4)	note (4)	note (4)	note (4)	note (4)	note (4)	45,000 lb
Oxidative Induction Time (OIT) (min. ave.) (5) (a) Standard OIT — or — (b) High Pressure OIT	 D 3895 D 5885	 100 min. 400 min.	 100 min. 400 min.	 100 min. 400 min.	 100 min. 400 min.	 100 min. 400 min.	 100 min. 400 min.	 100 min. 400 min.	200,000 lb
Oven Aging at 85°C (5), (6) (a) Standard OIT (min. ave.) - % retained after 90 days — or — (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D 5885	 55% 80%	 55% 80%	 55% 80%	 55% 80%	 55% 80%	 55% 80%	 55% 80%	per each formulation
UV Resistance (7) (a) Standard OIT (min. ave.) — or — (b) High Pressure OIT (min. ave.) - % retained after 1600 hrs (9)	GM 11 D 3895 D 5885	 N.R. (8) 50%	 N.R. (8) 50%	 N.R. (8) 50%	 N.R. (8) 50%	 N.R. (8) 50%	 N.R. (8) 50%	 N.R. (8) 50%	per each formulation

(1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches
Break elongation is calculated using a gage length of 2.0 in.

(2) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

(3) Other methods such as D 4218 (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D 1603 (tube furnace) can be established.

(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

(5) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

(6) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.

(7) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.

(8) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.

(9) UV resistance is based on percent retained value regardless of the original HP-OIT value.

(HDPE) High Density Polyethylene - Smooth Geomembrane Liners

Polyethylene liners typically offer superior tensile strength and stiffness and are resistant to chemicals and puncture. These geomembranes are safe for potable water containment and can be fabricated into panels of up to one acre in size. Based on GM 13 "Standard Specification for Test Methods, Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes"
11/14/14

PROPERTY	TEST METHOD	TEST VALUE							
Thickness	ASTM D-5199	20 MIL	30 MIL	40 MIL	50 MIL	60 MIL	80 MIL	100 MIL	120 MIL
Density	ASTM D-1505/D-792	N/A	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc	0.940 g/cc
Tensile Properties	ASTM D-6693 Type IV	-	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
Yield Strength		-	63 lb/in	84 lb/in	105 lb/in	126 lb/in	168 lb/in	210 lb/in	252 lb/in
Break Strength		-	114 lb/in	152 lb/in	190 lb/in	228 lb/in	304 lb/in	380 lb/in	456 lb/in
Yield Elongation		-	12 %	12 %	12 %	12 %	12 %	12 %	12 %
Break Elongation		-	700 %	700 %	700 %	700 %	700 %	700 %	700 %
Tear Resistance (min. avg)	ASTM D-1004	-	21 lb	28 lb	35 lb	42 lb	56 lb	70 lb	84 lb
Puncture Resistance (min. avg)	ASTM D-4833	-	54 lb	72 lb	90 lb	108 lb	144 lb	180 lb	216 lb
Stress Crack Resistance	ASTM D-5397 (App.)	-	500 hr (2)	500 hr (2)	500 hr (2)	500 hr (2)	500 hr (2)	500 hr (2)	500 hr (2)
Carbon Black Content (range)	ASTM D-1603	-	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)	2.0 - 3.0 % (3)
Carbon Black Dispersion	ASTM D-5596	-	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4
Oxidative Induction Time (OIT) (min. avg)		-	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5
Standard OIT	ASTM D-3895	-	100 min	100 min	100 min	100 min	100 min	100 min	100 min
High Pressure OIT	ASTM D-5885	-	400 min	400 min	400 min	400 min	400 min	400 min	400 min
Oven aging at 85 degrees C	ASTM D-5721	-	Note 5,6	Note 5,6	Note 5,6	Note 5,6	Note 5,6	Note 5,6	Note 5,6
Standard OIT (min. avg) - % retained after 90 days	ASTM D-3895	-	55 %	55 %	55 %	55 %	55 %	55 %	55 %
High Pressure OIT (min. avg) - % retained after 90 days	ASTM D-5885	-	80 %	80 %	80 %	80 %	80 %	80 %	80 %
UV Resistance	GM 11	-	Note 7	Note 7	Note 7	Note 7	Note 7	Note 7	Note 7
Standard OIT (min. avg)	ASTM D-3895	-	N.R. 8	N.R. 8	N.R. 8	N.R. 8	N.R. 8	N.R. 8	N.R. 8
High Pressure OIT (min. avg) - % retained after 1600 hours	ASTM D-5885	-	50 % (9)	50 % (9)	50 % (9)	50 % (9)	50 % (9)	50 % (9)	50 % (9)

(1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches.
Break elongation is calculated using a gage length of 2.0 inches.
(2) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.
(3) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.
(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3
(5) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.
(6) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.
(7) The condition of the test should be 20 hr. UV cycle at 75 Degree C followed by 4 hr. condensation at 60 Degree C.
(8) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
(9) UV resistance is based on percent retained value regardless of the original HP-OIT value.

(HDPE) High Density Polyethylene - Textured Geomembrane Liners

Polyethylene liners typically offer superior tensile strength and stiffness and are resistant to chemicals and puncture. These geomembranes are safe for potable water containment and can be fabricated into panels of up to one acre in size. Based on GM 13 "Standard Specification for Test Methods, Test Properties and Testing Frequency for
High Density Polyethylene (HDPE) Smooth and Textured Geomembranes"
11/14/14

PROPERTY	TEST METHOD	TEST VALUE							
Thickness	ASTM D-5199	20 MIL	30 MIL	40 MIL	50 MIL	60 MIL	80 MIL	100 MIL	120 MIL
Asperity Height mils (min. avg)	GM 12	N/A	16 mil (1)	16 mil (1)	16 mil (1)	16 mil (1)	16 mil (1)	16 mil (1)	16 mil (1)
Density		-	0.940 g/ml	0.940 g/ml	0.940 g/ml	0.940 g/ml	0.940 g/ml	0.940 g/ml	0.940 g/ml
Tensile Properties		-	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3
- Yield Strength	ASTM D-6693 Type IV	-	63 lb/in	84 lb/in	105 lb/in	126 lb/in	168 lb/in	210 lb/in	252 lb/in
- Break Strength	ASTM D-6693 Type IV	-	45 lb/in	60 lb/in	75 lb/in	90 lb/in	120 lb/in	150 lb/in	180 lb/in
- Yield Elongation	ASTM D-6693 Type IV	-	12 %	12 %	12 %	12 %	12 %	12 %	12 %
- Break Elongation - %	ASTM D-6693 Type IV	-	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Tear Resistance (min. avg)	ASTM D-1004	-	21 lb	28 lb	35 lb	42 lb	56 lb	70 lb	84 lb
Puncture Resistance (min. avg)	ASTM D-4833*	-	45 lb	60 lb	75 lb	90 lb	120 lb	150 lb	180 lb
Stress Crack Resistance	ASTM D-5397 (App.)	-	300 hr (4)	300 hr (4)	300 hr (4)	300 hr (4)	300 hr (4)	300 hr (4)	300 hr (4)
Carbon Black Content (range)	ASTM D-1603	-	2.0-3.0 % (5)	2.0-3.0 % (5)	2.0-3.0 % (5)	2.0-3.0 % (5)	2.0-3.0 % (5)	2.0-3.0 % (5)	2.0-3.0 % (5)
Carbon Black Dispersion	ASTM D-5596	-	Note 6	Note 6	Note 6	Note 6	Note 6	Note 6	Note 6
Oxidative Induction Time (OIT) (min. avg)		-	Note 7	Note 7	Note 7	Note 7	Note 7	Note 7	Note 7
- Standard OIT	ASTM D-3895	-	100 min	100 min	100 min	100 min	100 min	100 min	100 min
- High Pressure OIT	ASTM D-5885	-	400 min	400 min	400 min	400 min	400 min	400 min	400 min
Oven aging at 85 degrees C	ASTM D-5721	-	Note 7,8	Note 7,8	Note 7,8	Note 7,8	Note 7,8	Note 7,8	Note 7,8
- Standard OIT (min. avg) - % retained after 90 days	ASTM D-3895	-	55 %	55 %	55 %	55 %	55 %	55 %	55 %
- High Pressure OIT (min. avg) - % retained after 90 days	ASTM D-5885	-	80 %	80 %	80 %	80 %	80 %	80 %	80 %
UV Resistance	GM 11	-	Note 9	Note 9	Note 9	Note 9	Note 9	Note 9	Note 9
- Standard OIT (min. avg)	ASTM D-3895	-	N.R. (10)	N.R. (10)	N.R. (10)	N.R. (10)	N.R. (10)	N.R. (10)	N.R. (10)
- High Pressure OIT (min. avg) - % retained after 1600 hours	ASTM D-5885	-	50 %	50 %	50 %	50 %	50 %	50 %	50 %

(1) Of 10 readings; 8 out of 10 must be >/= 14 mils and lowest individual reading must be >/= 12 mils; also see note 6.
(2) Alternate the measurement side for double sided textured sheet.
(3) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches.
Break elongation is calculated using a gage length of 2.0 inches.
(4) P-NCTL test is not appropriate for geomembranes with textured or irregular surfaces. Test smooth edges of textured rolls or smooth sheets made from the same formulation as textured sheet materials.The yield used tocalculate the applied load for SP-NCTL test should be themanufacturer's mean value via MQC testing.
(5) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.
(6) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3
(7) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

US Fabrics, Inc. | 3904 Virginia Avenue | Cincinnati, OH 45227 (USA) | Phone: 800-518-2290 | Fax: (513) 271-4420

COLORADO LINING INTERNATIONAL

CO: 800.524.8672
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www.coloradolining.com

PVC - POLY VINYL CHLORIDE

PVC is a widely used and proven solution to many containment needs.
PVC requires 12 inches of clean cover for extended life.

Colorado Lining can fabricate PVC into custom sized panels. and facilitate a full installation with one of our certified installation crews.
We want to work with you to make your job a success.

Product Features:

- 20 Year Warranty
- Industrial or Fish Grade
- Flexible
- Available In Custom Sized Panels
- Cost Effective
- Quick Installation
- Easily Repaired By Owner
- Available In 20, 30, 40, 50, & 60 Mils
- Maximum 3:1 Slope for Cover Soil

Uses & Applications:

- Golf Course Ponds
- Decorative Ponds
- Wastewater Treatment Ponds
- Landfill Caps and Cells
- Irrigation Reservoirs & Canals
- Entry Ponds
- Detention Ponds
- Stock Tanks
- Athletic Field Construction

- ***Project Photo: Grasmere Lake/Washington Park Denver, CO***
- ***Lake Lining***
- ***777,000 SF PVC - 30 Mil***

COLORADO LINING INTERNATIONAL

PVC

Product Data Sheet

Certified Properties	ASTM	PVC 10	PVC 20	PVC 30	PVC 40	PVC 50	PVC 60
Thickness	D-5199	10 +/- 0.5 mil 0.25 +/- .013mm	20 +/- 1 mil 0.51 +/- .03 mm	30 +/- 1.5 mil 0.76 +/- .04 mm	40 +/- 2 mil 1.02 +/- .05 mm	50 +/- 2.5 mil 1.27 +/- .06 mm	60 +/- 3 mil 1.52 +/- .08 mm
Tensile Properties[3]							
Strength at Break	D-882[4] Min	24 lbs/in 4.2 kN/m	48 lbs/in 8.4 kN/m	73 lbs/in 12.8 kN/m	97 lbs/in 17.0 kN/m	116 lbs/in 20.3 kN/m	137 lbs/in 24.0 kN/m
Elongation		250%	360%	380%	430%	430%	450%
Modulus at 100%		10 lbs/in 1.8 kN/m	21 lbs/in 3.7 kN/m	32 lbs/in 5.6 kN/m	40 lbs/in 7.0 kN/m	50 lbs/in 8.8 kN/m	60 lbs/in 10.5 kN/m
Tear Strength	D-1004[4] Min	2.5 lbs 11 N	6 lbs 27 N	8 lbs 35 N	10 lbs 44 N	13 lbs 58 N	15 lbs 67 N
Dimensional Stability	D-1204[4] Max Chg	4%	4%	3%	3%	3%	3%
Low Temperature Impact	D-1790[4] Pass	-10° F -23° C	-15° F -26° C	-20° F -29° C	-20° F -29° C	-20° F -29° C	-20° F -29° C

Index Properties	ASTM	PVC 10	PVC 20	PVC 30	PVC 40	PVC 50	PVC 60
Specific Gravity	D-792 Typical	1.2 g/cc	1.2 g/cc	1.2 g/cc	1.2 g/cc	1.2 g/cc	1.2 g/cc
Water Extraction Percent Loss (max)	D-1239[4] Max Loss	0.15%	0.15%	0.15%	0.20%	0.20%	0.20%
Average Plasticizer Molecular Weight	D-2124[4,5]	400	400	400	400	400	400
Volatile Loss Percent Loss (max)	D-1203[4] Max Loss	1.5%	0.9%	0.7%	0.5%	0.5%	0.5%
Soil Burial							
Break Strength	G160[4] Max Chg	5%	5%	5%	5%	5%	5%
Elongation		20%	20%	20%	20%	20%	20%
Modulus at 100%		20%	20%	20%	20%	20%	20%
Hydrostatic Resistance	D-751[4] Min	42 psi 290 kPa	68 psi 470 kPa	100 psi 690 kPa	120 psi 830 kPa	150 psi 1030 kPa	180 psi 1240 kPa

Seam Strengths	ASTM	PVC 10	PVC 20	PVC 30	PVC 40	PVC 50	PVC 60
Shear Strength[3]	D-882[4] Min	20 lbs/in 3.47 kN/m	38.4 lbs/in 6.7 kN/m	58.4 lbs/in 10 kN/m	77.6 lbs/in 14 kN/m	96 lbs/in 17 kN/m	116 lbs/in 20kN/m
Peel Strength[3]	D-882[4] Min	10 lbs/in 1.8 kN/m	12.5 lbs/in 2.2 kN/m	15 lbs/in 2.6 kN/m	15 lbs/in 2.6 kN/m	15 lbs/in 2.6 kN/m	15 lbs/in 2.6 kN/m

Notes:

1. PGI 1104 replaces PGI 1103 Specification effective 1/1/04.
2. Certified properties are tested by lot as specified in PGI 1104 Appendix A.
3. Metric values are converted from US values and are rounded to the available significant digits.
4. Modifications or further details of test are described in PGI 1104 Appendix B.
5. Index properties are tested once per formulation as specified in PGI 1104 Appendix A.

Budinger & Associates
Proudly serving the Inland Northwest for over 30 years

Geotechnical Engineering
Environmental Engineering
Construction Materials Testing
Subsurface Exploration
Special Inspection

Cindy Kinzer, PE
City of Spokane Engineering
808 W. Spokane Falls Blvd
Spokane, WA 99201

March 23, 2015

Project Number H14568

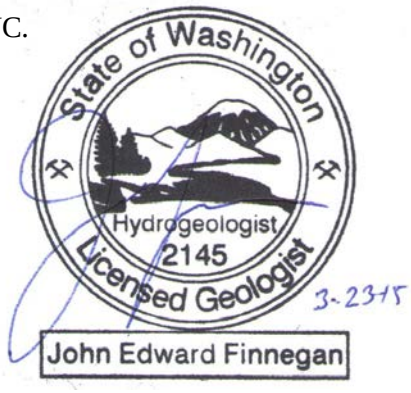
Project: MLK Phase 2 UIC Project (revised)
Subject: Results of Geotechnical and Hydrogeological Exploration and Analysis

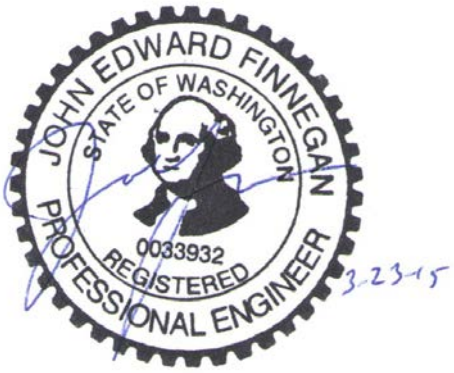
Ms. Kinzer,

Budinger & Associates, Inc. is pleased to provide results of geotechnical and hydrogeological exploration and analysis for the revised MLK Phase 2 UIC project, in Spokane, Washington.

We appreciate the opportunity to provide our services.

Prepared by:
BUDINGER & ASSOCIATES, INC.





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EMBEDDED TABLES

ATTACHED FIGURES

CONTEXT

This report presents results of geotechnical and hydrogeologic exploration and analysis for proposed revised stormwater facilities along MLK Way in Spokane, Washington. Our work was contracted with the City of Spokane Engineering Services Department, represented by Cindy Kinzer, PE.

Project Considerations

New dry wells are planned near the proposed Martin Luther King roadway from STA 22+00 to the proposed roundabout at Trent and Perry Street (approx. STA 59+50). The alignment crosses the Washington Department of Ecology Hamilton Street Bridge Site. The portions of the roadway within the Hamilton Street Bridge Site will utilize catch basins and piping to collect and convey stormwater to a pond on Erie Street for treatment prior to disposal in those areas suitable for UIC structures.

Previous explorations conducted in the area include the following:

Budinger & Associates, 2013, MLKJ Way Geotechnical Conditions Report, 2005264 Task 17
Budinger & Associates, 2015, MLK Extension, Phase II, City Project No. 2005264 Task 16
Budinger & Associates, 2015, Erie Street, City Project No. 2014115

The primary relevant design document is the *Spokane Regional Stormwater Manual* (*SRSM*). The SRSM includes *Geotechnical Site Characterization* (*GSC*) requirements for characterizing the suitability of soil units for receiving stormwater by infiltration structures. A suitable target soil layer requires adequate thickness, extent, and permeability. This area is not located over a potential wellhead protection area based upon locations illustrated in *Figure 6-2* of the *SRSM*. However, the study area is within the aquifer sensitive area (*Figure 6-1*) and critical aquifer recharge area (CARA) shown in *SRSM Figure 6-2* (*SRSM, 2008*).

Stormwater facilities proposed for the subject area are drywells regulated by the *Guidance for UIC Wells that Manage Stormwater* (*WAUIC*) program by the Washington State Department of Ecology.

Location

The subject area is located in Section 17, Township 25 North, Range 43 East (T25N, R43E) in the East Central neighborhood. The selected roadways are illustrated in the *Site Plan*.

Scope

Services were conducted in accordance with generally accepted geotechnical engineering practices as outlined in proposal H-14568, dated December 23, 2014. As proposed, the following scope was completed:

- Researched soil maps, geology, and hydrogeology of the area.
- Drilled 11 test boring that extended from 11 to 20 feet.
- Logged the subsurface conditions. Obtained samples from the borings.
- Injected water into boreholes to verify receiving potential.
- Characterized subsurface conditions in accordance with GSC criteria.
- Calculated drywell exfiltration rates.
- Prepared conclusions and recommendations.

ENCOUNTERED CONDITIONS

Geologic and Hydrogeologic Setting

The project area includes Pleistocene age glacial flood channel deposits (*Qfcg)* nonconformably deposited over extrusive Miocene age *Grande Ronde Basalt (Mgr)* (WDNR, 2004). The flood deposits are "*poorly to moderately sorted, mostly clast supported, thick bedded to massive mixture of boulders, cobbles, pebbles and sand; locally containing beds and lenses of sand and silt* (*WDNR 1999*)." Basalt rock occurs along the west margin of the site, forming a ledge that extends across the downtown corridor. The left (south) bank of the Spokane River contains up to 50 feet of boulder and gravel fill.

The site is on a terrace of flood deposited gravel and sand. The deposits are permeable coarse-grained gravels extending approximately 20 to 100 feet below the ground surface. The site lies at approximately 1886 to 1894 feet elevation (NAD 83)).

Surface Conditions

The ground surface along the MLK alignment was gravel east of the basalt bluff, transitioning to areas of existing pavement east of the highway corridor. Stormwater currently infiltrates directly into the soil.

Subsurface Conditions

The subsurface conditions were explored with 11 test borings at the location shown in the *Site Plan*. The *Guide to Soil & Rock Descriptions* provides a key to soil descriptions in the *Boring Logs.*

Fill was encountered in most of the explorations (excluding Test Boring (TB) 1501). In TB 1502 through TB 1506 the existing fill thickness was 3 to 4 feet. In TB 1507 through TB 1515, existing fill was encountered to the bottom of exploration, which was 14 to 20 feet, except in TB 1514 where rock began at 7 ½ feet. It consisted of gravel with sand, silt, cobbles and boulders. Moisture contents ranged from 4 to 13 percent for samples tested and fines content (percent passing the #200 sieve) ranged from 2 to 19 percent. As described previously (Budinger, 2013) the deep fill in the area of B-1507 to B-1514 was associated with railroad embankment construction along the southern meander of the river. The characteristics of the fill included varying inhomogeneous zones of poorly-graded coarse beds, voids, and boulders.

Gravels, sand, and cobbles with surficial silt and clay were encountered in B-1501 to B-1506. Moisture contents ranged from 4 to 7 percent for samples tested and fines content (percent passing the #200 sieve) ranged from 2 to 13 percent. Silt and clay seams occur in site soil extending to depths of 10 feet below ground surface (BGS). Extents of soil contamination and historic river channel meander are illustrated in WDOE *Site Plans* and City *Street Plans* as referenced.

Surface Water and Groundwater

The Spokane River flows west as close as approximately 100 feet north of the site. The river is hydraulically connected to the unconfined Spokane aquifer beneath the site. The project is adjacent to a reported losing reach of the river; the aquifer gains water from the river (USGS, 2009). Normal pool elevation of the Spokane River above the Upper Falls dam is 1867 feet (NGVD 29). Groundwater was encountered from 14 to 18 feet (BGS).

RESULTS & CONCLUSIONS

Excluding areas identified by WDOE containing restrictive covenants, we conclude that a suitable target layer of gravel and coarse fill over 25 feet thick exists beneath the site to provide stormwater infiltration capacity. Tests indicated fines content in shallower soils from the surface to a depth of 9 feet were variably high (up to 19 percent) while fines content was low below 9 feet. Infiltration capability appears to be suitable for Type I and II drywells, although type II will extend below zones of surficial silty and clayey soils.

Exfiltration rates for drywells were estimated from percentages of fines in accordance with the *SRSM, Appendix 4A – Spokane 200 Method* (SRSM, 2008), as summarized below.

Table 1. Drywell Design Outflow Rate Analysis

Boring ID	Sample Depth (ft)	Fines (%)	Hydraulic Conductivity (in/hr)[1]	Normalized Outflow Rate (cfs/ft)[2]	Safety Factor[3]	Factored Outflow Rate (cfs)[4]		Infiltration Feasibility
						Type I, H=6	Type II, H=10	
1501	9-10.5	3.5	86	0.140	1.3	0.65	1.08	yes
1502	4.5-6	13	7.3	0.017	NA	NA[5]	NA	limited[6]
1503	11.5-13	1.9	272	0.376	1.3	1.73	2.89	yes
1504	14-15	2.7	140	0.213	1.3	0.98	1.64	yes
1505	4.5-6	3.3	96	0.154	1.3	0.71	1.18	yes
1507	7-9	19	4	0.009	NA	NA	NA	limited[6]
1508	12-14	4.6	52	0.090	1.3	0.42	0.69	yes
1509	5-7	1.8	301	0.410	1.3	1.89	3.15	yes

1. in/hr- inches per hour ($in^3/in^2/hr$)
2. cfs/ft-cubic feet per second per foot
3. Minimum safety factor in accordance with *SRSM* Table 4A-1.
4. cfs -cubic feet per second
5. NA - fines content excessive
6. Limited feasibility due to varying fines content

RECOMMENDATIONS

The recommended design outflow rates for soils are 0.3 and 1 cubic feet per second for drywell types I and II, respectively. Infiltration zones can "silt-up" over time. Operation and maintenance guidelines in Section 3.3 (*WAUIC)* should be followed.

Additional Services

Effective geotechnical services involve coordination with the owner, designer, and constructor as follows:

1. Preliminary study to assist in planning and to economically adapt the project to its geologic environment.
2. Soil exploration and analysis to characterize subsurface conditions and recommend design

criteria.
3. Consultation with the designer to adapt the specific design to the site in accordance with the recommendations.
4. Construction observation to verify the conditions encountered and to make recommendations for modifications as necessary.
5. Construction material testing, quality control, and special inspection.

This report satisfies Item 2. We are eager to provide assistance with design and construction as appropriate to assist in completing a safe and economical project.

FIELD EXPLORATION

The fieldwork was conducted by licensed driller, Ethan Hageman on January 5 and February 6, 2015. The field activities were as itemized in *Scope*.

Test Borings

Air rotary drilling. Borings were drilled with a truck-mounted Mobile B-57 using an air rotary overburden system, including 4½-inch outside diameter casing. The air rotary method involves circulating air through a specially designed pilot bit that engages with a casing bit during drilling, but disengages upon reversal of rotation to allow retrieval of the drill stem at desired sampling depths.

Soil Samples

Standard penetration tests - ASTM D 1586. To obtain samples of soil, Standard Penetration Tests (SPT) were conducted by driving a 2-inch outside diameter split-spoon sampler with a 140-pound hammer actuated by a Mobile automatic hammer (during air rotary drilling) or by cathead/ rope system (during auger drilling) to provide a test of penetration resistance. The resulting blow count for each foot of sampler advancement, representing uncorrected N-values, is presented on the *Boring Logs*. The energy ratio (ER) is much higher with the automatic hammer compared to the reference cathead/rope system. Consequently, to correct N-values use an ER of 1.2 to reflect the greater energy imparted by the automatic hammer. The opening size limits the size of particles recovered, which tends to under-represent actual field conditions.

3-inch split spoon samples (3”SS) - ASTM D 3550. Most of the split spoon samples were obtained with a 3.0-inch outside by 2.4-inch inside-diameter split spoon barrel sampler. The hammer system was a 140-pound trip hammer dropping 30 inches. Blow counts with the 3”SS do not represent N-values since the end area of the 3-inch sampler is approximately twice that of the standard sampler. Uncorrected N-values can be approximated by multiplying the observed blow counts (in blows per foot) by 0.5 for the 3-inch split-spoon. As with SPT sampling, N-values for the 3-inch split spoon require correction to reflect the energy of the automatic hammer. The opening size limits the size of particles recovered, which tends to under-represent actual field conditions.

Soil Classification

Unified soil classification system - ASTM D 2487. Encountered soils were classified visually/manually from split-spoon samples, cuttings, and drill rig response. The soil descriptions presented on the *Boring Logs* are intended to comply with the *Unified Soil Classification System* (USCS), described in the *Guide to Soil and Rock Descriptions*, attached, which is recognized

internationally in the fields of engineering and construction.

Seepage Infiltration Tests

Seepage tests were conducted in each of the borings as described in *WSDOT GDM Section 5.5.3*. 250 gallons of water were injected into the borings at about 40 to 50 gallons per minute. In most cases the drill casing emptied within 30 seconds. Details of the tests are presented in the *Boring Logs*. Limitations of the test methods are described in *FHWA NHI-01-031*.

Location

Horizontal & vertical control. The horizontal location of the test boring was measured with a cloth tape from the existing site features. Vertical elevations were obtained from a City Survey. Horizontal and vertical locations can be considered accurate to plus or minus 5 feet and 1-foot, respectively.

LABORATORY ANALYSIS

Laboratory testing was performed on representative samples of the soils encountered to provide data used in our assessment of soil characteristics. Tests were conducted, where practical, in accordance with nationally recognized standards such as *ASTM* and *AASHTO*. The results are presented in *Tables* and *Figures* as listed in the *Table of Contents*.

Index Properties

Moisture content – ASTM D 2216. Moisture contents were determined by direct weight proportion (weight of water/weight of dry soil) determined by drying soil samples in an oven until reaching constant weight.

Gradation – ASTM D 421. Gradation analysis was performed by the mechanical sieve method. The mechanical sieve method is utilized to determine particle size distribution based upon the dry weight of sample passing through sieves of varying mesh sizes. The results of gradation are provided in the attached *Grain Size Distribution Results*. Split spoon sampling limits the largest grain size sampled.

Atterberg limits – ASTM D4318. Atterberg limits describe the properties of a soil's fine-grained constituents by relating the water content to the soil's limits of engineering behavior. As the water content increases the state of the soil changes from a brittle solid to a plastic solid and then to a viscous liquid.

The liquid limit (LL) is the water content above which the soil tends to behave as a viscous liquid. Similarly, the plastic limit (PL) is defined as the water content below which the soil tends to behave as a brittle solid. The plasticity index (PI) describes the range of water content over which a soil is plastic and is derived by subtracting the PL from the LL. The soil is classified as "non-plastic" if rolling a $^{1}/_{8}$-inch bead is not possible at any water content.

LIMITATIONS

The conclusions and recommendations presented herein are based upon the results of field explorations. They are predicated upon our understanding of the project, its design, and its location as defined by the client.

We endeavored to conduct this study in accordance with generally accepted geotechnical engineering and hydrogeologic practices in this area. This report presents our professional interpretations of subsurface data developed, which we believe meet the standards of the geotechnical profession in this area; we make no other warranties, express or implied. Attached is a document titled "*Important Information About Your Geotechnical Engineering Report,*" which we recommend you review to better understand the context within which these services were completed.

Unless test locations are specified by others or limited by accessibility, the scope of analysis is intended to develop data from a representative portion of the site. However, the areas tested are discreet. Interpolation between these discreet locations is made for illustrative purposes only, but should be expected to vary. If a greater level of detail is desired, the client should request an increased scope of exploration.

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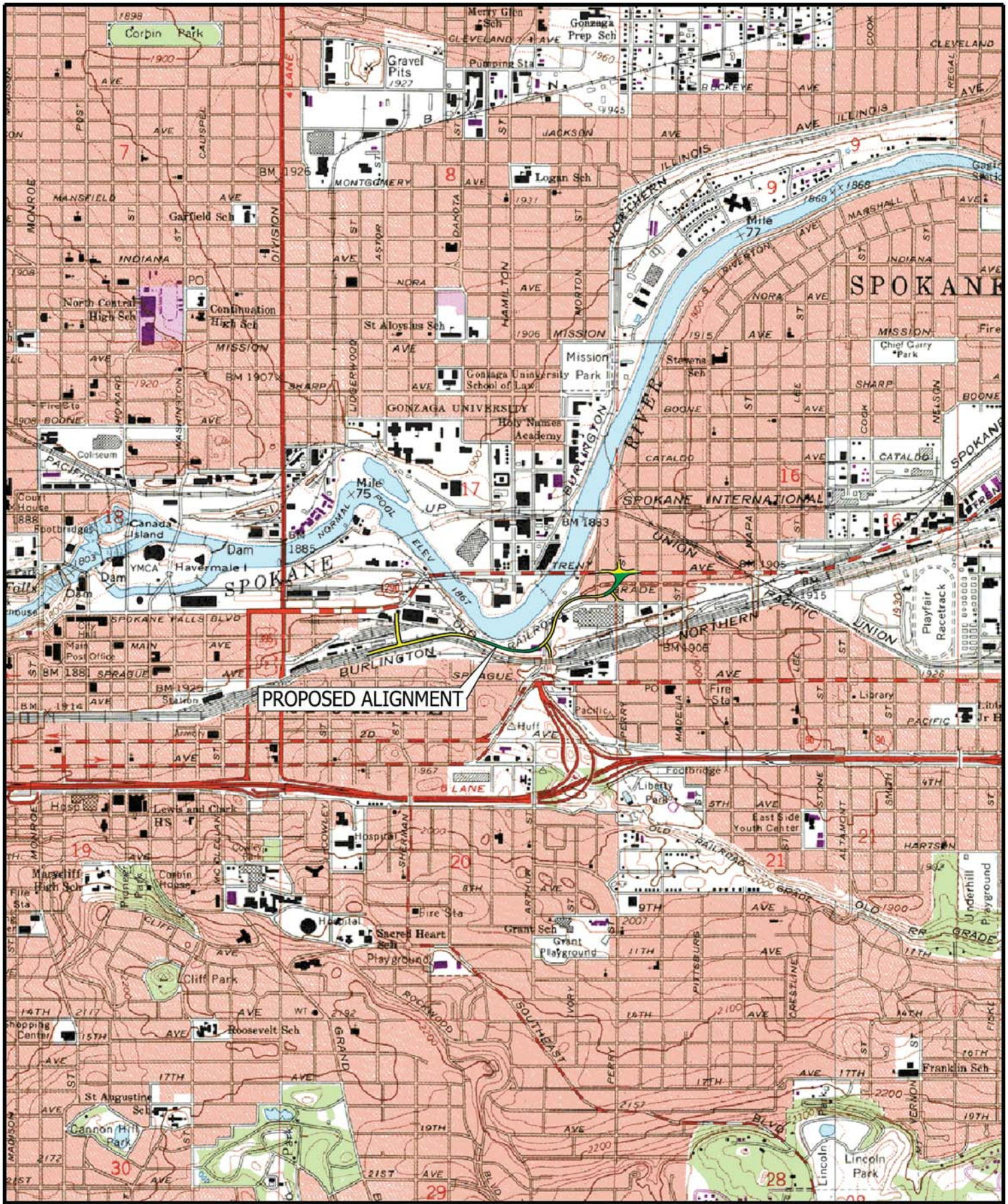
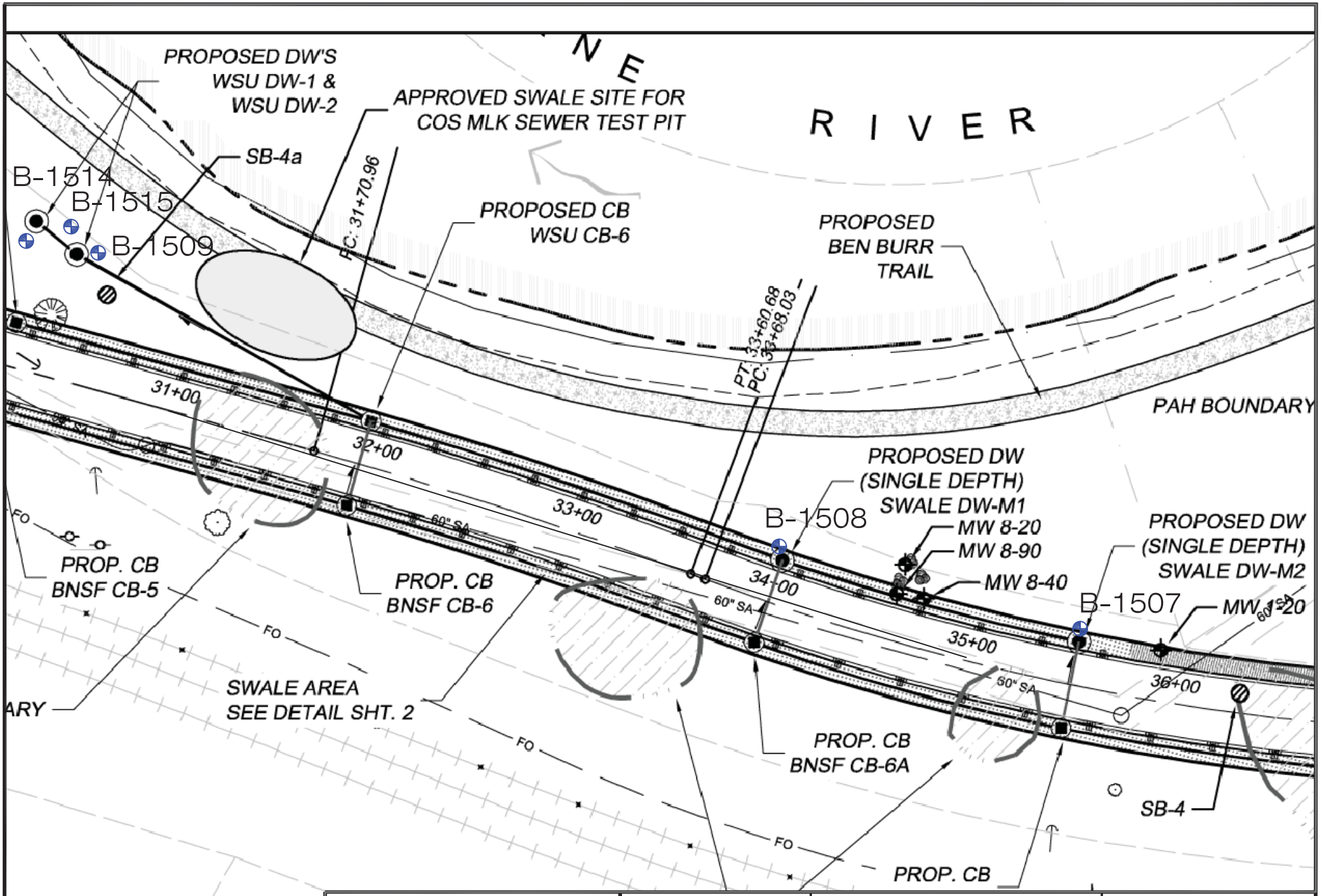

PROPOSED ALIGNMENT
SPOKANE
SPOKANE INTERNATIONAL
GONZAGA UNIVERSITY
Corbin Park
Gravel Pits
Logan Sch
Gonzaga Prep Sch
Merry Glen Sch
Gaffield Sch
North Central High Sch
Continuation High Sch
St Aloysius Sch
Mission Park
Stevens Sch
Holy Names Academy
Gonzaga University School of Law
Coliseum
Canada Island
Havermale Dam
YMCA
Main Post Office
City Hall
Fire Sta
Library
Playfair Racetrack
Liberty Park
East Side Youth Center
Lewis and Clark HS
Marshall High Sch
Corbin House
Cliff Park
Hospital
Sacred Heart Sch Playground
Grant Sch
Grant Playground
Roosevelt Sch
St Augustine Sch
Cannon Hill Park
Franklin Sch
Lincoln Park
Underhill Playground
Mile +77
Mile +75
POOL UP ELEV
NORMAL
BURLINGTON NORTHERN
OLD RAILROAD GRADE
Footbridge
6 LANE
4 LANE
BM 1925
BM 1907
BM 1883
BM 1905
BM 1915
BM 1916
BM 1885
BM 1888
1898
1900
1905
1906
1907
1908
1915
1920
1926
1927
1930
1931
1960
1967
1868
1867
1803
2000
2100
2200
2117
2172
2157
2152
2192
2007
902
996
98
2D
MONROE
POST
CAUSPEL
DIVISION
MONTGOMERY
JACKSON
ILLINOIS
MARSHALL
MANSFIELD
INDIANA
NORA
MISSION
SHARP
BOONE
CATALDO
TRENT
UNION
SPRAGUE
SPOKANE FALLS BLVD
MAIN
PACIFIC
HARTSON
9TH
11TH
14TH
15TH
16TH
17TH
19TH
21ST
HAMILTON
DAKOTA
ASTOR
LIDGERWOOD
WASHINGTON
HOWARD
COOK
NELSON
LEE
STONE
ALTAMONT
PERRY
MADELIA
ARTHUR
CRESTLINE
PITTSBURG
IVORY
ROCKWOOD
SOUTHEAST
GRAND
MADISON
VERNON
FISKE
SMITH
REGAL
BUCKEYE
CLEVELAND
1 N
7
8
9
16
17
18
19
20
21
28
29
30
SCALE: 1"=2000'
0
1000
2000
N
Budinger & Associates
VICINITY MAP
RIVERSIDE/MLK PHASE 2 UIC (revised)
SPOKANE, WASHINGTON
FIGURE 1
PROJECT NUMBER H14568
DATE: 3/2015



N

SCALE: 1"=60'

0 30 60

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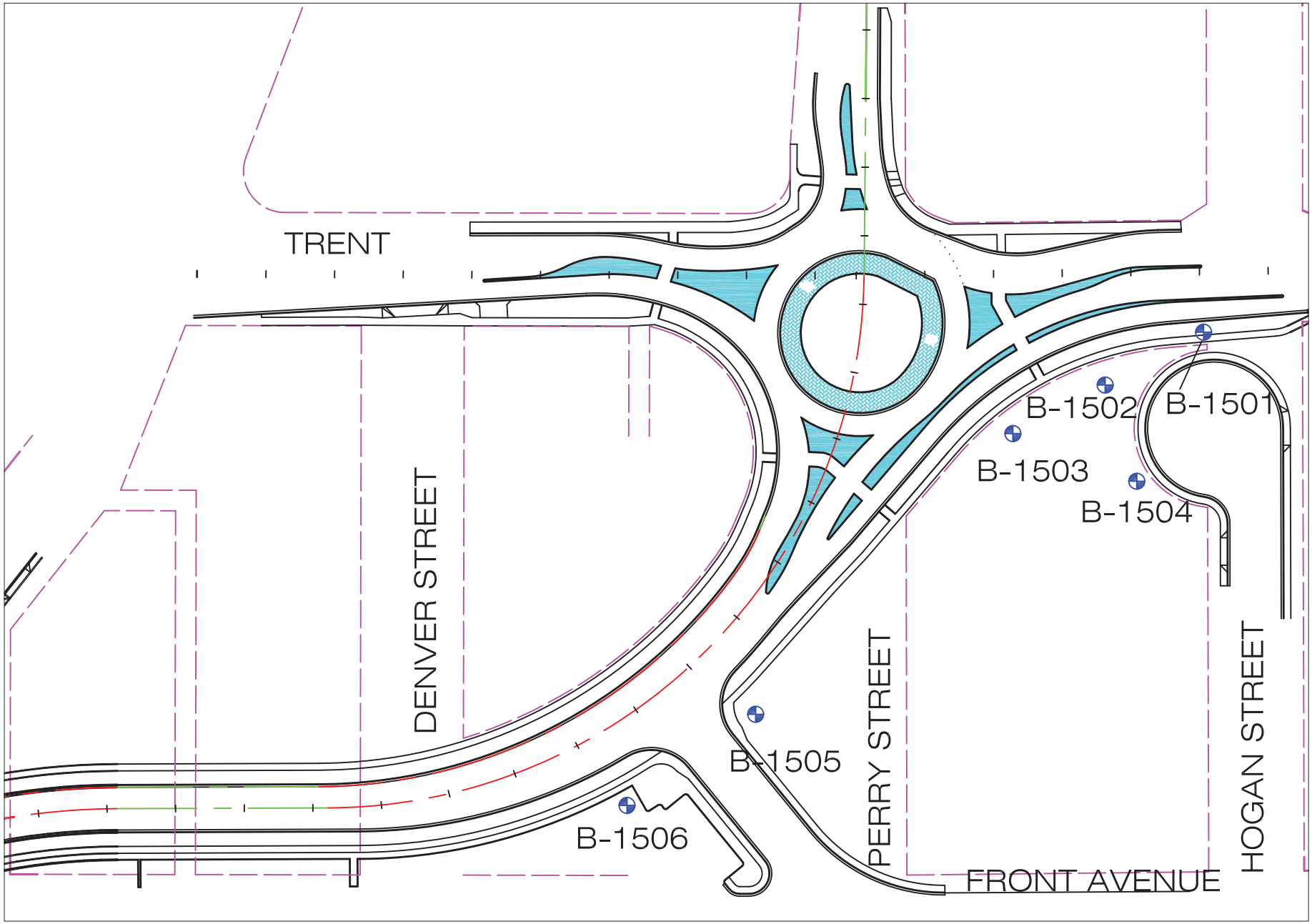
SITE PLAN	FIGURE 2-1
MLK Phase 2 UIC (revised)	PROJECT NUMBER H14568
SPOKANE, WA	DATE: 3/2015



N

SCALE: 1"=100'
0 50 100

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SITE PLAN

MLK PHASE 2 UIC (revised)

SPOKANE, WASHINGTON

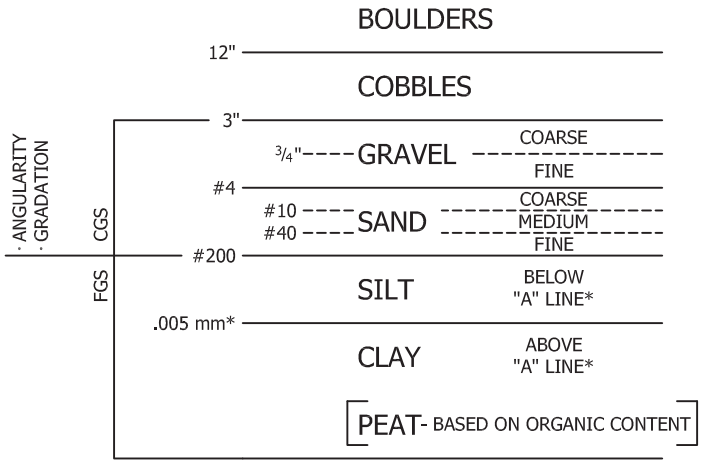
FIGURE: 2-2

Job No: H14568

Date: 3/2015

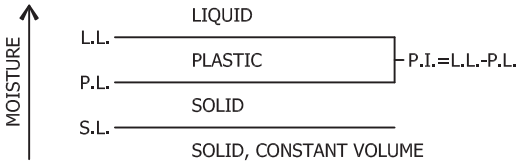
GUIDE TO SOIL & ROCK DESCRIPTIONS

SOIL CLASSIFICATION

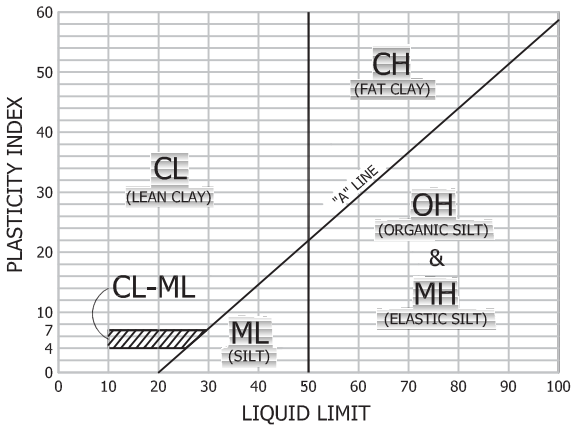


** SEE PLASTICITY CHART*
CGS - COARSE GRAINED SOIL - MORE THAN 50% RETAINED ON A #200 SIEVE
FGS - FINE GRAINED SOIL - 50% MORE PASSES, #200 SIEVE
FINES - PORTION FINER THAN #200 SIEVE

ATTERBERG LIMITS



PLASTICITY CHART



NOTE - CHART APPLIES TO FGS AND MINUS #40 SIEVE FRACTION OF CGS

GUIDE TO SOIL DESCRIPTION MODIFIERS, MOISTURE, AND CONDITION PRESENTED ON LOGS

MODIFIER	ESTIMATED PERCENTAGE OF MATERIAL
SUFFIX "LY" OR "Y"	30% OR MORE FOR COARSE PARTS IN FGS GREATER THAN 12% FOR FINES IN CGS
WITH	15% - 29% FOR COARSE PARTS IN FGS 5% - 12% FOR FINES IN CGS
SMALL AMOUNT	8% - 25%
TRACE/OCCASIONAL	1% - 12%

NOTE - BOUNDARIES APPLY ONLY TO CLASSIFICATIONS FROM LABORATORY TESTING. VISUAL ESTIMATES OF MATERIAL PERCENTAGES TYPICALLY VARY 0 TO 10% FROM THOSE DETERMINED BY LABORATORY TESTING.

MOISTURE

DRY
MOIST
SATURATED OR WET

SOIL CONDITION

CGS:
- VERY LOOSE
- LOOSE
- MEDIUM DENSE
- DENSE
- VERY DENSE

FGS:
- VERY SOFT
- SOFT
- MEDIUM STIFF
- STIFF
- VERY STIFF
- HARD

SAMPLES

- STANDARD 2" PENETRATION TEST SAMPLER WITH BLOWS PER FOOT
- 3" SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- DRILL CUTTING SAMPLE
- BULK SAMPLE
- THIN-WALLED TUBE SAMPLE
- DIAMOND CORE RUN WITH % RECOVERY & ROCK QUALITY DESIGNATION
- 4" SPLIT SPOON SAMPLER WITH BLOWS PER FOOT
- R — REFUSAL OF SAMPLE (50+ BLOWS PER 6")

ROCK WEATHERING	ROCK CONDITION
FRESH	EXTREMELY WEAK
SLIGHTLY WEATHERED	VERY WEAK
MODERATELY WEATHERED	MODERATELY WEAK
HIGHLY WEATHERED	MODERATELY STRONG
COMPLETELY WEATHERED	STRONG
RESIDUAL SOIL	VERY STRONG

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FIGURE 3

TEST BORING 1501

Date of Boring: 1-5-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: Trent Ave. 2+30, 50 ft RT
Surface: gravel

Elevation: 1886 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown/gray, medium dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded	
	23 (80%)			
		dry, gray, medium dense to dense	GRAVEL with Sand and Cobbles, poorly graded (coarse), subrounded	
5	35 (60%)			
10	48 (70%)			
15		wet	Groundwater level during drilling (15.4 feet)	
20			End of Boring @ 20 ft	

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-1**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1502

Date of Boring: 1-7-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: Trent Ave. 1+70, 95 ft RT
Surface: gravel

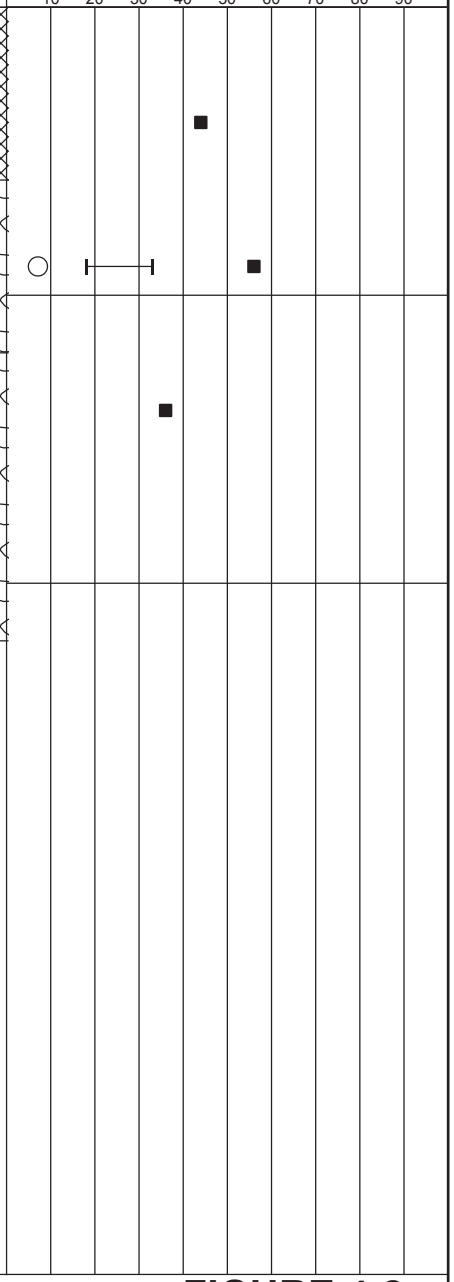
Elevation: 1888 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0	44 (80%)	moist, dark brown/brown, medium dense	SILTY GRAVEL with Sand and Cobbles, subrounded to angular, (Fill)	
5	56 (60%)	dry, brown, medium dense to dense	GRAVEL with Sand, Silt, and Cobbles, poorly graded (coarse), subrounded, (possible fill)	
10	36 (50%)	dry, gray, medium dense to dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded	
	27 (0%)	no free groundwater observed	End of Boring @ 11 ft	
15				
20				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90



LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS

FIGURE 4-2

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1503

Date of Boring: 1-5-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: Trent Ave. 1+35, 105 ft RT
Surface: gravel

Elevation: 1887 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION
0	42 (80%)	moist, brown, medium dense to dense	GRAVEL with Sand, Silt and Cobbles, subrounded to angular, (fill)
5	44 (80%)	moist, brown/gray, medium dense to dense	GRAVEL with Sand, Silt, and Cobbles, poorly graded (coarse), subrounded, (possible fill)
		dry, gray, medium dense to dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded
10	22 (0%)		Seepage infiltration test at 9 ft below grade: Injected 250 gallons at 36 gpm (max test flow) Drawdown in 25 seconds
	40 (70%)		
15		wet	Groundwater level during drilling (17.7 feet)
20			End of Boring @ 20 ft

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-3**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1504

Date of Boring: 1-5-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: Trent Ave. 1+90, 125 ft RT
Surface: gravel

Elevation: 1889 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown, medium dense	SILTY GRAVEL with Sand and Cobbles, subrounded to angular, (possible fill)	
	21 (80%)			
		moist, gray with brown, medium dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded	
	31 (20%)			
5				
	12 (20%)			
10				
		gray, dense to very dense		
	R (80%)			
15				
		wet	▽ Groundwater level during drilling (16.4 feet)	
20				
			End of Boring @ 20 ft	

TEST RESULTS

ATTERBERG LIMITS
PL ——— LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-4**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1505

Date of Boring: 1-7-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: MLK 57+00, 35 ft RT
Surface: gravel

Elevation: 1886 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0	18 (80%)	moist, brown, loose to medium dense	SILTY GRAVEL with Sand and Cobbles, poorly graded, subrounded, (possible fill)	
5	32 (60%)	dry, gray/brown, medium dense to dense	GRAVEL with Sand, Silt, and Cobbles, poorly graded (coarse), subrounded	
10	R (70%)	dense to very dense	Seepage infiltration test at 8 ft below grade: Injected 250 gallons at 38 gpm (max test flow) Drawdown less than 30 seconds	
15	76 (70%)	wet	Groundwater level during drilling (14.8 feet)	
			End of Boring @ 16 ft	
20				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-5**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1506

Date of Boring: 1-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: MLK 55+90, 60 ft RT
Surface: gravel

Elevation: 1886 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown, medium dense	SILTY GRAVEL with Sand and Cobbles, subrounded to angular, (possible fill)	
	25 (70%)			
		moist, brown, medium dense to dense	GRAVEL with Sand and Cobbles, trace Silt, poorly graded (coarse), subrounded	
5	33 (80%)	gray/brown		
10	34 (10%)		Seepage infiltration test at 9 ft below grade: Injected 250 gallons at 39 gpm (max test flow) Drawdown less than 30 seconds	
		gray		
15	R (0%)			
		wet	Groundwater level during drilling (16.5 feet)	
20			End of Boring @ 20 ft	

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED)
3" SPLIT SPOON PENETRATION, BLOWS/FT

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-6**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1507

Date of Boring: 2-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: swale dw-m2
Surface: gravel

Elevation: 1887 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION
0	R (30%)	moist, brown/gray, dense to very dense	SILTY GRAVEL with Sand, Cobbles and Debris (brick, glass), angular to subrounded, (Fill)
5	56 (40%)		
	25 (70%)	medium dense to dense	Seepage infiltration test at 8 ft below grade: Injected 250 gallons at 40 gpm (max test flow) Drawdown less than 15 seconds
10	54 (0%)		
	20 (10%)	wet	Groundwater level during drilling (14 feet)
15			End of Boring @ 14.5 ft
20			

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS **FIGURE 4-7**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1508

Date of Boring: 2-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: swale dw-m1
Surface: gravel

Elevation: 1890 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		moist, brown/gray, dense to very dense	SILTY GRAVEL with Sand, Cobbles and Debris, angular to subrounded, (Fill)	
	44 (50%)			
5	89 (20%)			
	R (10%)		Seepage infiltration test at 9 ft below grade: Injected 250 gallons at 40 gpm (max test flow) Drawdown less than 15 seconds	
	32 (10%)	dry to moist		
10	20 (40%)			
	36 (20%)			
15	15 (30%)			
	38 (5%)	wet	Groundwater level during drilling (18.4 feet)	
			End of Boring @ 19 ft	
20				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED) ◪
3" SPLIT SPOON PENETRATION, BLOWS/FT ■

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS

FIGURE 4-8

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1509

Date of Boring: 2-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: wsu dw-2
Surface: gravel

Elevation: 1892 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0	23 (50%)	dry, brown/gray, medium dense	GRAVEL and COBBLES with Sand, Silt, and Debris (brick top 5 ft), angular to subrounded, (Fill)	
5	23 (30%)			
	20 (20%)		Seepage infiltration test at 7 ft below grade: Injected 250 gallons at 40 gpm (max test flow) Drawdown less than 15 seconds	
10	18 (20%)			
	R (0%)		12 in BASALT BOULDER at 13 ft	
15	R (0%)			
	23 (10%)	wet	Groundwater level during drilling (18.5 feet)	
20			End of Boring @ 19.5 ft	

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED)
3" SPLIT SPOON PENETRATION, BLOWS/FT

10 20 30 40 50 60 70 80 90

+100

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.GDT 3/11/15

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BORING LOGS

FIGURE 4-9

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1514

Date of Boring: 2-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: wsu dw-1
Surface: gravel

Elevation: 1893 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0		dry, gray, dense	GRAVEL and COBBLES with Sand, Silt, and Debris (brick top 3 ft), angular to subrounded, (Fill)	
	50 (10%)			
5	R (50%)		BASALT Boulder	
		no free groundwater observed	End of Boring @ 9 ft	
10				
15				
20				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED)
3" SPLIT SPOON PENETRATION, BLOWS/FT

10 20 30 40 50 60 70 80 90

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.

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BORING LOGS **FIGURE 4-10**

Project: MLK Phase II
Location: Spokane, WA
Number: H14568

TEST BORING 1515

Date of Boring: 2-6-15
Driller: Budinger & Assoc., Inc.
Type of Drill: Mobile B-57 with automatic SPT hammer
Location: wsu dw-3 (25' E of wsu dw-2)
Surface: gravel

Elevation: 1892 ft
Logged by: E. Hageman
Size of hole: air rotary overburden system, 4.5 in O.D. casing

DEPTH	SAMPLES RQD, BLOW COUNTS N (% RECOVERY)	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG
0	R (20%)	dry to moist, gray, dense to very dense	GRAVEL and COBBLES with Sand and Silt, angular to subrounded, (Fill)	
5	R (0%)		SILTY GRAVEL with Sand zone at 5 to 6 ft	
	52 (5%)	medium dense		
10	7 (5%)			
	19 (0%)			
15		no free groundwater observed	End of Boring @ 14 ft	
20				

TEST RESULTS

ATTERBERG LIMITS
PL — LL
WATER CONTENT ○
STANDARD PEN TEST, N-VALUE (OBSERVED)
3" SPLIT SPOON PENETRATION, BLOWS/FT

10 20 30 40 50 60 70 80 90

+100

+100

LOGS WITHOUT WELL WITH TESTS H14568 BORING LOGS.GPJ BUDINGER.

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BORING LOGS **FIGURE 4-11**

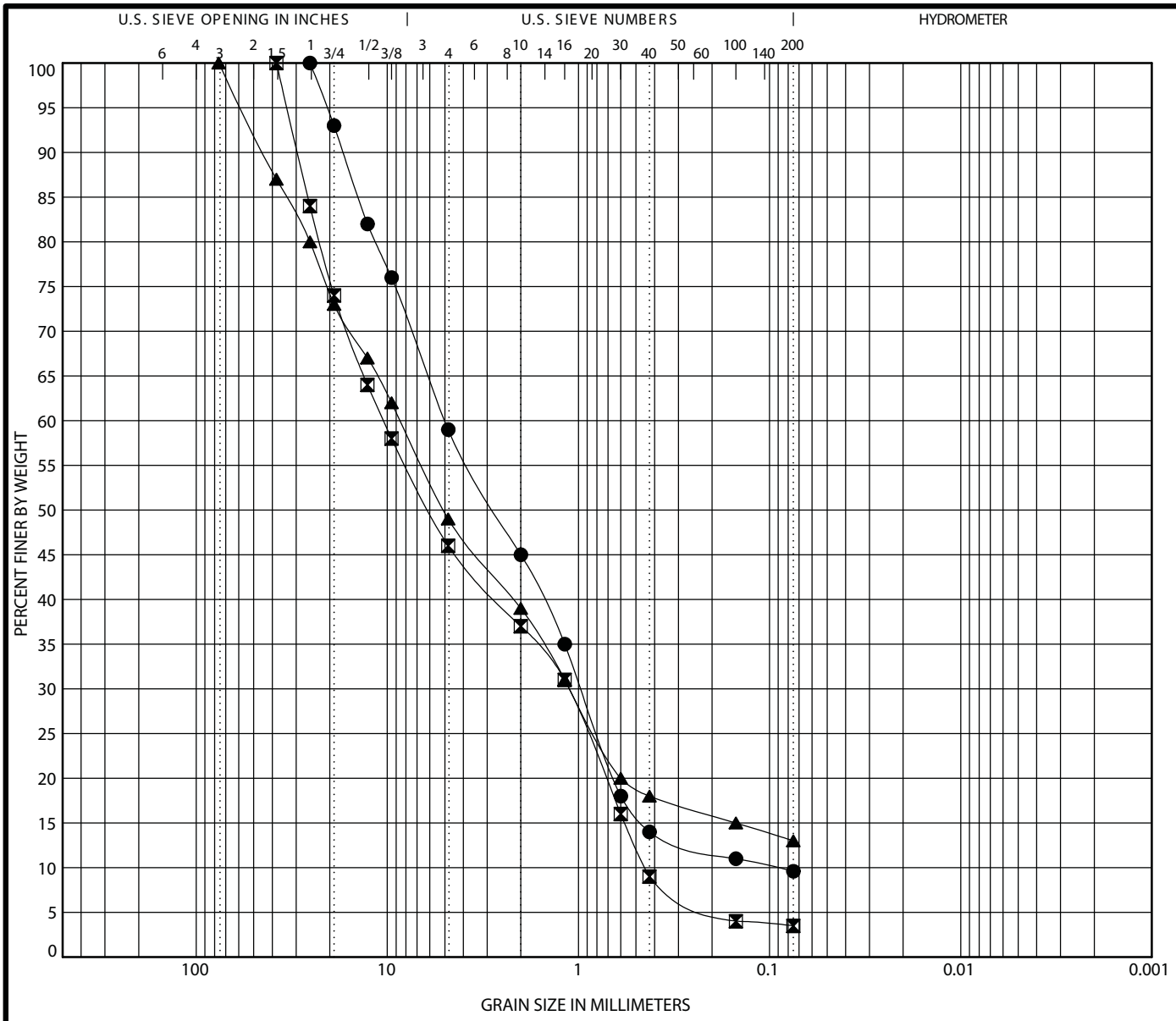
Project: MLK Phase II
Location: Spokane, WA
Number: H14568

SOILS

LABORATORY SUMMARY

		Units	Test Methods									
LABORATORY NUMBER				15-5004	15-5006	15-5008	15-5012	15-5015	15-5018	15-5138	15-5144	15-5147
BORING NUMBER				1501	1501	1502	1503	1504	1505	1507	1508	1509
DEPTH	TOP	feet		2	9	4.5	11.5	14	4.5	7	12	5
	BOTTOM	feet		3	10.5	6	13	15	6	9	14	7
MOISTURE		%	ASTM D 2216	4.4	5.7	7.1	4.0	5.1	4.8	12.7	11.9	4.4
LIQUID LIMIT		%		27		33				31		
PLASTIC LIMIT		%	ASTM D-4318	22		18				24		
PLASTICITY INDEX		%		5		15				7		
UNIFIED CLASSIFICATION			ASTM D2487	SW-SM	GP	GC	GP	GW	GP	GM	GP	GW
SIEVE ANALYSIS	3"		ASTM D 6913			100	100				100	100
	1½"	%			100	87	88	100	100	100	79	71
S	1"			100	84	80	61	87	78	89	69	42
I	3/4" GRAVEL	P		93	74	73	53	74	70	84	49	33
E	1/2"	A		82	64	67	34	56	51	63	35	28
V	3/8"	S		76	58	62	30	45	39	56	28	20
E	#4	S		59	46	49	23	27	23	44	20	10
	#10	I		45	37	39	18	14	16	32	14	6
S	#16	N		35	31	31	16	9	12	29	12	5
I	#30 SAND	G		18	16	20	9	6	8	26	9	4
Z	#40			14	9	18	5	5	6	25	8	3
E	#100			11	4	15	3	3	4	22	6	2
	#200			9.6	3.5	13	1.9	2.7	3.3	19	4.6	1.8

FIGURE 5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1501	2.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	27	22	5	2.05	54.65
⊠	1501	9.0	POORLY GRADED GRAVEL with SAND(GP)				0.27	23.44
▲	1502	4.5	CLAYEY GRAVEL with SAND(GC)	33	18	15		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1501	2.0	25.4	4.997	0.967	0.091	41.2	49.2	9.6	
⊠	1501	9.0	38	10.465	1.128	0.446	54.1	42.4	3.5	
▲	1502	4.5	76.2	8.553	1.11		50.8	35.9	13.0	

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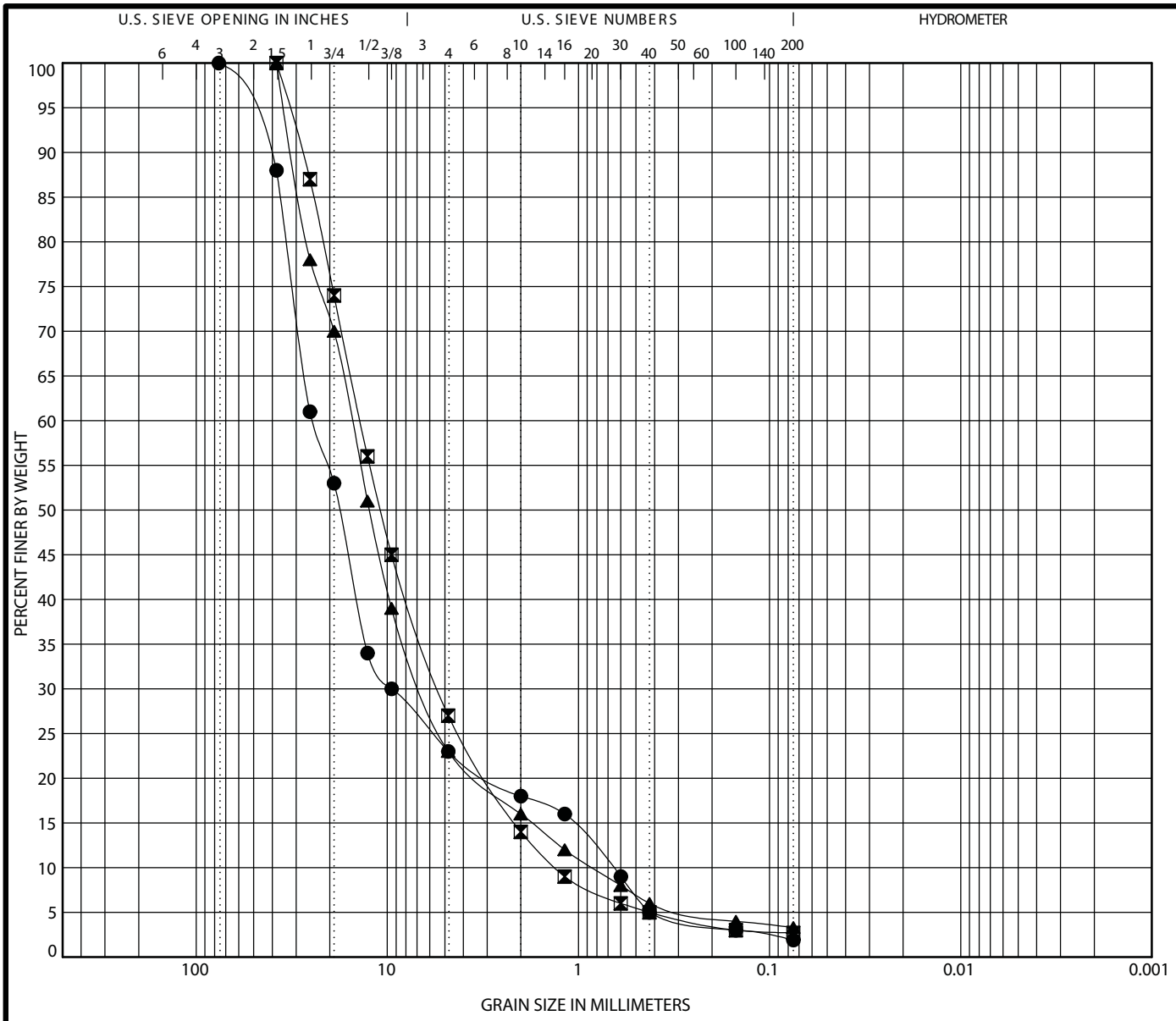
GRAIN SIZE DISTRIBUTION RESULTS

Project: MLK Phase II

Location: Spokane, WA

Number: H14568

FIGURE 6-1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1503	11.5	POORLY GRADED GRAVEL with SAND(GP)				5.58	37.06
⊠	1504	14.0	WELL-GRADED GRAVEL with SAND(GW)				1.59	10.59
▲	1505	4.5	POORLY GRADED GRAVEL with SAND(GP)				3.24	18.27

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1503	11.5	76.2	24.495	9.5	0.661	76.8	21.0	1.9	
⊠	1504	14.0	38	13.889	5.378	1.311	73.2	24.1	2.7	
▲	1505	4.5	38	15.37	6.471	0.841	77.1	19.6	3.3	

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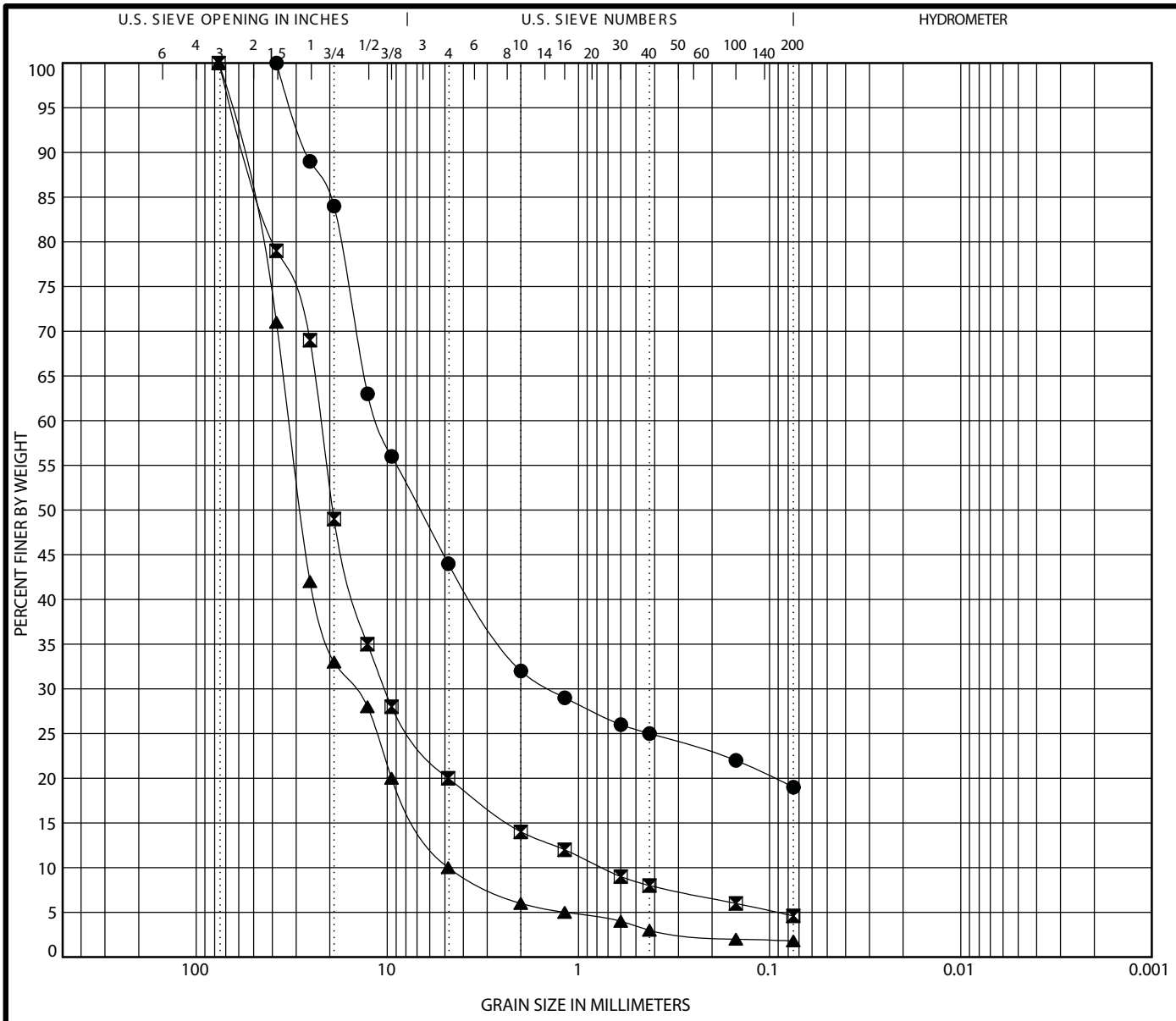
GRAIN SIZE DISTRIBUTION RESULTS

Project: MLK Phase II

Location: Spokane, WA

Number: H14568

FIGURE 6-2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	1507	7.0	SILTY GRAVEL with SAND(GM)	31	24	7		
⊠	1508	12.0	POORLY GRADED GRAVEL with SAND(GP)				6.36	29.65
▲	1509	5.0	WELL-GRADED GRAVEL(GW)				1.42	6.79

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1507	7.0	38	11.214	1.407		56.1	24.9	19.0	
⊠	1508	12.0	76.2	22.289	10.322	0.752	79.6	15.3	4.6	
▲	1509	5.0	76.2	32.615	14.921	4.8	89.4	8.2	1.8	

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GRAIN SIZE DISTRIBUTION RESULTS

Project: MLK Phase II

Location: Spokane, WA

Number: H14568

FIGURE 6-3

Important Information About Your
Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one -not even you* -should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on a Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes-even minor ones-and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Options

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ-sometimes significantly-from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not over-rely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from the judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled “limitations” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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LABORATORY SUMMARY ***Table 1***

SAMPLE NUMBER	Swale DW-M1 (2'-4')	Composite DW-M1 (10.5'-14.5)	Swale DW-M2 (4.5' - 6')	Swale DW-M2 (7'-9')	WSU DW-2 (2.5'-4.5')	WSU DW-3 (1'-2')	REGULATORY LIMITS Unrestricted	REGULATORY LIMITS Industrial	cPAH EQUIVLENT TOXICITY VALUE
HEAVY METALS									
Arsenic							20	20	
TCLP Arsenic									
Barium							-	-	
TCLP Barium									
Cadmium							2	2	
TCLP Cadmium									
Chromium							19	19	
TCLP Chromium									
Lead							250	1000	
TCLP Lead									
Mercury							2	2	
TCLP Mercury									
Selenium							-	-	
TCLP Selenium									
Silver							-	-	
TCLP Silver									
Cyanide	48.8	1.05	1.25	0.330	0.294	0.239			
PETROLEUM HYDROCARBONS									
Diesel	122	<25	<25	<25	<25	<25	2000	2000	
Lube Oil	<100	<100	<100	<100	<100	133	2000	2000	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC'S)									
1-Methylnaphthalene	0.119	0.0231	0.139	<0.01	0.0102	0.0325			
2-Methylnaphthalene	0.176	0.031	0.216	<0.01	<0.01	0.0459			NA
Acenaphthene	0.0344	<0.01	0.178	<0.01	<0.01	<0.01			NA
Acenaphthylene	0.322	<0.01	0.313	<0.01	<0.01	0.0156			NA
Anthracene	0.29	<0.01	0.614	<0.01	<0.01	0.032			NA
Benzo(ghi)perylene	1.81	0.0164	1.38	<0.01	<0.01	0.132			NA
*Benzo[a]anthracene	1.9	<0.01	1.74	<0.01	<0.01	0.167			0.1
*Benzo[a]pyrene	1.49	0.0129	1.83	<0.01	<0.01	0.173	0.1	2	1
*Benzo[b]fluoranthene	2.83	0.0199	2.12	<0.01	<0.01	0.203			0.1
*Benzo[k]fluoranthene	0.877	<0.01	0.717	<0.01	<0.01	0.068			0.1
*Chrysene	2.13	0.015	1.85	<0.01	<0.01	0.205			0.01
*Dibenz[a,h]anthracene	0.524	<0.01	0.348	<0.01	<0.01	0.0346			0.1
Fluoranthene	3.33	0.0202	3.53	<0.01	<0.01	0.267			NA
Fluorene	0.0517	<0.01	0.211	<0.01	<0.01	0.0114			NA
*Indeno[1,2,3-cd]pyrene	1.51	0.0156	1.14	<0.01	<0.01	0.098			0.1
Naphthalene	0.472	<0.01	0.379	<0.01	<0.01	0.0249	5	5	NA
Phenanthrene	1.52	0>0.0187	2.58	<0.01	<0.01	0.143			NA
Pyrene	4.06	0.022	3.93	<0.01	<0.01	0.299			NA
Carbazole	0.09	<0.05	0.22	<0.05	<0.05	<0.05			
TOTAL cPAH EQUIVALENT TOXICITY V	2.2754	0.016602	2.455	0	0	0.23206	0.1	2	

Results are presented in parts per millions by weight (ppm, mg/Kg or mg/L).

* Carcinogenic Polycyclic Aromatic Hydrocarbons

**Model Toxics Control Act Method A cleanup levels for unrestricted and industrial land use are presented for comparison purposes.

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-001
Client Sample ID 1
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 10:47 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	8.77	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Barium	110	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	M3
Cadmium	0.518	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Chromium	8.50	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Lead	134	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0628	mg/Kg	0.0449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.449	7/29/2013 6:24:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Barium	0.545	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 4:03:00 PM	KEA	EPA 6020A	
%moisture	3.4	Percent		7/19/2013	MJL	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-002
Client Sample ID 2
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 10:51 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	10.0	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Barium	147	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	M3
Cadmium	0.800	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Chromium	11.2	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Lead	198	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.141	mg/Kg	0.0479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
Silver	0.505	mg/Kg	0.479	7/29/2013 7:09:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Barium	0.538	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 4:18:00 PM	KEA	EPA 6020A	
%moisture	1.8	Percent		7/19/2013	MJL	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-003	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013	1:26 PM	
Client Sample ID	3	**Sampling Time**	11:02 AM	**Extraction Date**			
Matrix	Soil	**Sample Location**					
Comments							

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	6.64	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Barium	101	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	M3
Cadmium	ND	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Chromium	9.99	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Lead	57.0	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0488	mg/Kg	0.0464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.464	7/29/2013 7:16:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Barium	0.683	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 4:33:00 PM	KEA	EPA 6020A	
%moisture	4.3	Percent		7/19/2013	MJL	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-004
Client Sample ID 4
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:07 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	6.25	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Barium	64.6	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	M3
Cadmium	0.540	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Chromium	6.86	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Lead	63.2	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0584	mg/Kg	0.0491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.491	7/29/2013 7:46:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Barium	0.704	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Lead	0.0590	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 4:25:00 PM	KEA	EPA 6020A	
%moisture	2.1	Percent		7/19/2013	MJL	%moisture	

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Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-005
Client Sample ID 5
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:12 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	8.28	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Barium	211	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	M3
Cadmium	1.10	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Chromium	11.9	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Lead	236	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.117	mg/Kg	0.0503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.503	7/29/2013 7:53:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Barium	0.561	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 5:10:00 PM	KEA	EPA 6020A	
%moisture	5.3	Percent		7/19/2013	MJL	%moisture	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-006
Client Sample ID 6
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:26 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	6.28	mg/kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Barium	99.1	mg/kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	M3
Cadmium	0.573	mg/Kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Chromium	6.65	mg/Kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Lead	35.7	mg/Kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0792	mg/Kg	0.0458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.458	7/29/2013 6:47:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Barium	0.467	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 5:17:00 PM	KEA	EPA 6020A	
%moisture	4.1	Percent		7/19/2013	MJL	%moisture	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-007	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013	1:26 PM
Client Sample ID	7	**Sampling Time**	11:32 AM	**Extraction Date**		
Matrix	Soil	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	10.4	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Barium	111	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	M3
Cadmium	ND	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Chromium	11.6	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Lead	33.1	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	ND	mg/Kg	0.0585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.585	7/29/2013 8:01:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Barium	0.650	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 5:25:00 PM	KEA	EPA 6020A	
%moisture	9.5	Percent		7/19/2013	MJL	%moisture	

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-008
Client Sample ID 8
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:39 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	9.55	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Barium	117	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	M3
Cadmium	1.39	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Chromium	11.0	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Lead	76.7	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0985	mg/Kg	0.0511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.511	7/29/2013 8:08:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Barium	0.587	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 5:32:00 PM	KEA	EPA 6020A	
%moisture	4.9	Percent		7/19/2013	MJL	%moisture	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-009
Client Sample ID 9
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:45 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Arsenic	7.07	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Barium	197	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	M3
Cadmium	1.53	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Chromium	11.6	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Lead	202	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Mercury-ICPMS	0.0716	mg/Kg	0.0515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Selenium	ND	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
Silver	ND	mg/Kg	0.515	7/29/2013 8:15:00 PM	KEA	EPA 6020A	
TCLP Arsenic	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Barium	0.712	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Cadmium	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Chromium	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Lead	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Mercury	ND	ppm	0.01	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Selenium	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
TCLP Silver	ND	ppm	0.05	7/29/2013 5:39:00 PM	KEA	EPA 6020A	
%moisture	4.8	Percent		7/19/2013	MJL	%moisture	

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Client:	BUDINGER AND ASSOCIATES	**Batch #:**	130716053
Address:	1101 N FANCHER RD	**Project Name:**	X13254
	SPOKANE VALLEY, WA 99212		
Attn:	STEVE BURCHETT		

Analytical Results Report

Authorized Signature

Kathleen A. Sattler

Kathy Sattler, Lab Manager

M3	Spike recovery value is unusable. Analyte concentration disproportionate to the spike level. Blank spike recovery acceptable
MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-001
Client Sample ID 1
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 10:47 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	ND	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	26.1	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	225	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	3.4	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-001

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	73.0	30-130
hexacosane	NWTPHDX	84.8	50-150

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-002	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	2	**Sampling Time**	10:51 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	ND	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	1.8	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-002

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	89.8	50-150

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-003	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	3	**Sampling Time**	11:02 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	ND	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	ND	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	4.3	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-003

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	73.0	30-130
hexacosane	NWTPHDX	90.4	50-150

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-004	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	4	**Sampling Time**	11:07 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	ND	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	54.2	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	129	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	2.1	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-004

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	75.0	30-130
hexacosane	NWTPHDX	94.6	50-150

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-005	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	5	**Sampling Time**	11:12 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	0.250	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	0.250	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	35.5	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	141	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	5.3	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-005

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	67.0	30-130
hexacosane	NWTPHDX	86.0	50-150

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-006	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	6	**Sampling Time**	11:26 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	ND	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	4.1	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-006

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	85.2	50-150

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-007	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	7	**Sampling Time**	11:32 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	ND	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	ND	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	9.5	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-007

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	73.0	30-130
hexacosane	NWTPHDX	87.4	50-150

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Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-008	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	8	**Sampling Time**	11:39 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Diesel	ND	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	142	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	4.9	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-008

Surrogate Standard	Method	Percent Recovery	Control Limits
hexacosane	NWTPHDX	83.8	50-150

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-009	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	9	**Sampling Time**	11:45 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Aroclor 1016 (PCB-1016)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1221 (PCB-1221)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1232 (PCB-1232)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1242 (PCB-1242)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1248 (PCB-1248)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1254 (PCB-1254)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
Aroclor 1260 (PCB-1260)	ND	mg/Kg	0.1	7/27/2013	APM	EPA 8082	
PCB 8082 (total)	ND	mg/kg	0.1	7/27/2013	APM	EPA 8082	
Diesel	41.1	mg/kg	25	7/26/2013	MJL	NWTPHDX	
Lube Oil	203	mg/kg	100	7/26/2013	MJL	NWTPHDX	
%moisture	4.8	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-009

Surrogate Standard	Method	Percent Recovery	Control Limits
DCB	EPA 8082	78.0	30-130
hexacosane	NWTPHDX	84.6	50-150

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Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client:	BUDINGER AND ASSOCIATES	**Batch #:**	130716053
Address:	1101 N FANCHER RD	**Project Name:**	X13254
	SPOKANE VALLEY, WA 99212		
Attn:	STEVE BURCHETT		

Analytical Results Report

Authorized Signature

Kathleen A. Sattler

Kathy Sattler, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-001	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	1	**Sampling Time**	10:47 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.404	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0131	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0232	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0388	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.161	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.186	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.179	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.301	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.0682	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.225	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0403	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.331	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0181	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.139	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.352	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.329	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.307	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	3.4	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-001

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	94.4	18-137

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-002	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	2	**Sampling Time**	10:51 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.248	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0388	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0510	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.112	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.671	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.577	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.715	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	1.01	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.272	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.633	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.159	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.806	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0253	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.513	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.210	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.434	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.844	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	1.8	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-002

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	97.0	18-137

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Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-003	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	3	**Sampling Time**	11:02 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.195	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0108	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0162	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0307	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.115	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.124	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.122	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.181	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.0400	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.130	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0239	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.194	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	ND	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.0891	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.135	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.141	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.201	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	4.3	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-003

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	94.0	18-137

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Batch #: 130716053
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Analytical Results Report

Sample Number	130716053-004	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	4	**Sampling Time**	11:07 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.268	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0214	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0336	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.0947	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.0971	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.0902	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.159	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.0407	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.134	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0324	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.168	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0240	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.0921	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.160	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.209	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.195	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	2.1	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-004

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	93.0	18-137

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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-005	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	5	**Sampling Time**	11:12 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.582	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0183	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0451	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0874	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.218	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.216	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.191	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.371	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.100	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.276	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0539	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.426	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0300	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.179	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.387	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.433	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.400	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	5.3	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-005

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	102.5	18-137

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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-006	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	6	**Sampling Time**	11:26 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.132	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	ND	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	ND	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0621	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.164	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.220	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.228	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.277	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.0612	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.229	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0375	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.442	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	ND	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.121	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.0938	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.364	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.531	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	4.1	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-006

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	100.8	18-137

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-007	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	7	**Sampling Time**	11:32 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.0432	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0171	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0207	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.181	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.752	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	1.06	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	1.01	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	1.27	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.406	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	1.06	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.158	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	1.89	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0155	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.624	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.0960	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.712	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	2.12	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	9.5	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-007

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	98.1	18-137

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Address: 1101 N FANCHER RD
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Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-008	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	8	**Sampling Time**	11:39 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.159	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.360	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0342	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.591	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.862	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	1.34	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	1.30	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	1.46	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.546	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	1.37	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.178	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	3.05	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.281	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.718	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.199	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	2.47	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	3.32	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	4.9	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-008

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	100.4	18-137

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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-009	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	9	**Sampling Time**	11:45 AM	**Extraction Date**	7/22/2013
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
2-Methylnaphthalene	0.698	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthene	0.0234	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Acenaphthylene	0.0437	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Anthracene	0.0868	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo(ghi)perylene	0.277	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]anthracene	0.329	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[a]pyrene	0.326	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[b]fluoranthene	0.601	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Benzo[k]fluoranthene	0.215	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Chrysene	0.431	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Dibenz[a,h]anthracene	0.0672	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluoranthene	0.640	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Fluorene	0.0357	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Indeno[1,2,3-cd]pyrene	0.218	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Naphthalene	0.382	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Phenanthrene	0.538	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
Pyrene	0.658	mg/Kg	0.01	7/22/2013	EMP	EPA 8270D	
%moisture	4.8	Percent		7/19/2013	MJL	%moisture	

Surrogate Data

Sample Number 130716053-009

Surrogate Standard	Method	Percent Recovery	Control Limits
Terphenyl-d14	EPA 8270D	96.8	18-137

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Client:	BUDINGER AND ASSOCIATES	**Batch #:**	130716053
Address:	1101 N FANCHER RD	**Project Name:**	X13254
	SPOKANE VALLEY, WA 99212		
Attn:	STEVE BURCHETT		

Analytical Results Report

Authorized Signature

Kathleen A. Sattler

Kathy Sattler, Lab Manager

MCL	EPA's Maximum Contaminant Level
ND	Not Detected
PQL	Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-003 | **Sampling Date** 7/16/2013 | **Date/Time Received** 7/16/2013 1:26 PM
Client Sample ID 3 | **Sampling Time** 11:02 AM | **Extraction Date**
Matrix Soil | **Sample Location**
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,1-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromo-3-chloropropane(DBCP)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromoethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3,5-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,4-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-hexanone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
4-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Acetone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Acrylonitrile	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Benzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromodichloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromoform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon disulfide	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon Tetrachloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-003
Client Sample ID 3
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:02 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Chlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloroform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,2-dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dichlorodifluoromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Ethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Hexachlorobutadiene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Isopropylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
m+p-Xylene	ND	µg/Kg	20	7/26/2013	WOZ	EPA 8260C	
Methyl ethyl ketone (MEK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methyl isobutyl ketone (MIBK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methylene chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
methyl-t-butyl ether (MTBE)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Naphthalene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Propylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
o-Xylene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
p-isopropyltoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
sec-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Styrene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
tert-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Tetrachloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Toluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,2-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroflouromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Vinyl Chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
%moisture	4.3	Percent		7/19/2013	MJL	%moisture	

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Address: 1101 N FANCHER RD
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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-003	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	3	**Sampling Time**	11:02 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier

Surrogate Data

Sample Number 130716053-003

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	106.8	70-130
4-Bromofluorobenzene	EPA 8260C	94.8	70-130
Toluene-d8	EPA 8260C	93.2	70-130

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Address: 1101 N FANCHER RD
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Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-004 | **Sampling Date** 7/16/2013 | **Date/Time Received** 7/16/2013 1:26 PM
Client Sample ID 4 | **Sampling Time** 11:07 AM | **Extraction Date**
Matrix Soil | **Sample Location**
Comments

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,1-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromo-3-chloropropane(DBCP)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromoethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3,5-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,4-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-hexanone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
4-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Acetone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Acrylonitrile	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Benzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromodichloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromoform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon disulfide	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon Tetrachloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-004
Client Sample ID 4
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:07 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Chloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloroform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,2-dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dichlorodifluoromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Ethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Hexachlorobutadiene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Isopropylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
m+p-Xylene	ND	µg/Kg	20	7/26/2013	WOZ	EPA 8260C	
Methyl ethyl ketone (MEK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methyl isobutyl ketone (MIBK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methylene chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
methyl-t-butyl ether (MTBE)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Naphthalene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Propylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
o-Xylene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
p-isopropyltoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
sec-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Styrene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
tert-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Tetrachloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Toluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,2-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroflouromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Vinyl Chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
%moisture	2.1	Percent		7/19/2013	MJL	%moisture	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-004	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	4	**Sampling Time**	11:07 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier

Surrogate Data

Sample Number 130716053-004

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	97.6	70-130
4-Bromofluorobenzene	EPA 8260C	102.0	70-130
Toluene-d8	EPA 8260C	94.4	70-130

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-005
Client Sample ID 5
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:12 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,1,1,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,1-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2,2-Tetrachloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1,2-Trichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,1-dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,3-Trichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2,4-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromo-3-chloropropane(DBCP)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dibromoethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3,5-Trimethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,3-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
1,4-Dichlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2,2-Dichloropropane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
2-hexanone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
4-Chlorotoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Acetone	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Acrylonitrile	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Benzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromodichloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromoform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Bromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon disulfide	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Carbon Tetrachloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chlorobenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number 130716053-005
Client Sample ID 5
Matrix Soil
Comments

Sampling Date 7/16/2013
Sampling Time 11:12 AM
Sample Location

Date/Time Received 7/16/2013 1:26 PM
Extraction Date

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Chloroethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloroform	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Chloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,2-dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
cis-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromochloromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dibromomethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Dichlorodifluoromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Ethylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Hexachlorobutadiene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Isopropylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
m+p-Xylene	ND	µg/Kg	20	7/26/2013	WOZ	EPA 8260C	
Methyl ethyl ketone (MEK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methyl isobutyl ketone (MIBK)	ND	µg/Kg	50	7/26/2013	WOZ	EPA 8260C	
Methylene chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
methyl-t-butyl ether (MTBE)	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Naphthalene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
n-Propylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
o-Xylene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
p-isopropyltoluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
sec-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Styrene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
tert-Butylbenzene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Tetrachloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Toluene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,2-Dichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
trans-1,3-Dichloropropene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroethene	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Trichloroflouromethane	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
Vinyl Chloride	ND	µg/Kg	10	7/26/2013	WOZ	EPA 8260C	
%moisture	5.3	Percent		7/19/2013	MJL	%moisture	

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Client: BUDINGER AND ASSOCIATES
Address: 1101 N FANCHER RD
SPOKANE VALLEY, WA 99212
Attn: STEVE BURCHETT

Batch #: 130716053
Project Name: X13254

Analytical Results Report

Sample Number	130716053-005	**Sampling Date**	7/16/2013	**Date/Time Received**	7/16/2013 1:26 PM
Client Sample ID	5	**Sampling Time**	11:12 AM	**Extraction Date**	
Matrix	Soil	**Sample Location**			
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier

Surrogate Data

Sample Number 130716053-005

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260C	114.4	70-130
4-Bromofluorobenzene	EPA 8260C	108.4	70-130
Toluene-d8	EPA 8260C	92.8	70-130

Authorized Signature

Kathleen A. Sattler

Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

Anatek Labs, Inc.

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Login Report

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

Sample #: 130716053-001 **Customer Sample #:** 1

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
PCB 8082	S	EPA 8082	7/26/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT

Project Name: X13254

Comment:

Sample #: 130716053-002 **Customer Sample #:** 2

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-003 **Customer Sample #:** 3

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

PCB 8082	S	EPA 8082	7/26/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/26/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-004 **Customer Sample #:** 4

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
PCB 8082	S	EPA 8082	7/26/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/26/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-005 **Customer Sample #:** 5

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
PCB 8082	S	EPA 8082	7/26/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
VOC 8260 SPO	S	EPA 8260C	7/26/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-006 **Customer Sample #:** 6

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT

Project Name: X13254

Comment:

Sample #: 130716053-007 **Customer Sample #:** 7

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
PCB 8082	S	EPA 8082	7/26/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-008 **Customer Sample #:** 8

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

Sample #: 130716053-009 **Customer Sample #:** 9

Recv'd: ☑ **Collector:** STEVE WARD **Date Collected:** 7/16/2013
Quantity: 1 **Matrix:** Soil **Date Received:** 7/16/2013 1:26:00 PM
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	S	%moisture	7/30/2013	***Normal (~10 Days)***
PAH 8270D MOSC	M	EPA 8270D	7/30/2013	***Normal (~10 Days)***
PCB 8082	S	EPA 8082	7/30/2013	***Normal (~10 Days)***
TPHDX-NW	S	NWTPHDX	7/30/2013	***Normal (~10 Days)***
TCLP Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TCLP Cadmium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Chromium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Lead	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Mercury	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***

Customer Name: BUDINGER AND ASSOCIATES
1101 N FANCHER RD
SPOKANE VALLEY WA 99212

Order ID: 130716053
Order Date: 7/16/2013

Contact Name: STEVE BURCHETT
Project Name: X13254

Comment:

TCLP METALS	S	N/A	7/26/2013	***Normal (~10 Days)***
TCLP Selenium	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
TCLP Silver	S	EPA 6020A	7/23/2013	***Normal (~10 Days)***
Arsenic	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Barium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Cadmium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Chromium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Lead	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Mercury-ICPMS	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Selenium	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
Silver	S	EPA 6020A	7/26/2013	***Normal (~10 Days)***
TOTAL 8	S	N/A	7/30/2013	***Normal (~10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	28.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

Anatek Labs, Inc.

Chain of Custody Record

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246
504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

30716 053 BUDI Last Due 7/30/2013
t SAMP 7/16/2013 1st RCVD 7/16/2013
13254

Company Name: BUDINGER	Project Manager: STEVE BURCHETT
Address: 1101 N. FANCHER	Project Name & # : X13254
City: SPOKANE State: WA Zip: 99212	Email Address : SBURCHETT@BUDINGERINC.COM
Phone: 535-8841	Purchase Order #: X13254
Fax: 535-9589	Sampler Name & phone: STEVE WARD 251-5705

Please refer to our normal turn around times at:
http://www.anateklabs.com/services/guidelines/reporting.asp

X Normal
__Next Day*
__2nd Day*
__Other*_____

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

Provide Sample Description / List Analyses Requested

Lab ID	Sample Identification	Sampling Date/Time (7/16/13)	Matrix	# of Containers	Sample Volume	Preservative: TOTAL METALS (8)	TCLP METALS	TPH Dx	PAH	PCB	VOC's
	1	10:47	SOIL	1	9	X	X	X	X	X	
	2	10:51		1	9	X	X	X	X		
	3	11:02		2	9	X	X	X	X	X	X
	4	11:07		2	9	X	X	X	X	X	X
	5	11:12		2	9	X	X	X	X	X	X
	6	11:26		1	9	X	X	X	X		
	7	11:32		1	9	X	X	X	X	X	
	8	11:39		1	9	X	X	X	X		
	9	11:45	↓	1	9	X	X	X	X	X	

Note Special Instructions/Comments

SMBS

PAH - M
Rest - S

	Printed Name	Signature	Company	Date	Time
Relinquished by	STEVE WARD	Steph E Ward	BUDINGER	7-16-13	
Received by	B Riggin	BJR	Anatek	7-16-13	1326
Relinquished by					
Received by					
Relinquished by					
Received by					

Inspection Checklist

Received Intact?	(Y)	N
Labels & Chains Agree?	(Y)	N
Containers Sealed?	(Y)	N
VOC Head Space?	Y	N

Hand Cooler

Temperature (°C): 2.8.4

Preservative: _____

Date & Time: 7.16.13 1325

Inspected By: BJR

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Spokane
11922 East 1st. Avenue
Spokane, WA 99206
Tel: (509)924-9200

TestAmerica Job ID: SXE0181
Client Project/Site: 2005264
Client Project Description: MLK Ph.2 Sewer

For:
City of Spokane
808 W. Spokane Falls Blvd.
Spokane, WA 99201

Attn: Dan Buller

Authorized for release by:
6/2/2014 3:45:07 PM

Randee Arrington, Project Manager
(509)924-9200
Randee.Arrington@testamericainc.com

Table of Contents

Sample Summary

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
SXE0181-01	MLK Ph 2 Sewer	Water	05/29/14 10:30	05/29/14 11:55

Definitions/Glossary

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Qualifiers

Metals

Qualifier	Qualifier Description
M1	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
R	The RPD exceeded the method control limit due to sample matrix effects. The individual analyte QA/QC recoveries, however, were within acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Client Sample ID: MLK Ph 2 Sewer
Date Collected: 05/29/14 10:30
Date Received: 05/29/14 11:55

Lab Sample ID: SXE0181-01
Matrix: Water

Method: NWTPH-Dx - Semivolatile Petroleum Products by NWTPH-Dx

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Hydrocarbons	ND		0.271		mg/l		05/30/14 11:02	05/30/14 21:53	1.00
Heavy Oil Range Hydrocarbons	ND		0.452		mg/l		05/30/14 11:02	05/30/14 21:53	1.00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*73.7*		*50 - 150*	*05/30/14 11:02*	*05/30/14 21:53*	*1.00*
n-Triacontane-d62	*90.0*		*50 - 150*	*05/30/14 11:02*	*05/30/14 21:53*	*1.00*

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		05/30/14 13:52	05/30/14 19:58	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		05/30/14 14:09	05/30/14 20:39	1

Method: EPA 245.1 - Total Metals by EPA 200 Series Methods

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200		ug/l		06/02/14 09:01	06/02/14 13:35	1.00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.0050		mg/L		05/30/14 14:33	05/30/14 17:46	1

Method: NWTPH-Dx - Semivolatile Petroleum Products by NWTPH-Dx

Lab Sample ID: 14E0167-BLK1
Matrix: Water
Analysis Batch: 14E0167

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 14E0167_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Hydrocarbons	ND		0.240		mg/l		05/30/14 11:02	05/30/14 17:05	1.00
Heavy Oil Range Hydrocarbons	ND		0.400		mg/l		05/30/14 11:02	05/30/14 17:05	1.00

Surrogate	*Blank %Recovery*	*Blank Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*68.0*		*50 - 150*	*05/30/14 11:02*	*05/30/14 17:05*	*1.00*
n-Triacontane-d62	*79.3*		*50 - 150*	*05/30/14 11:02*	*05/30/14 17:05*	*1.00*

Lab Sample ID: 14E0167-BS1
Matrix: Water
Analysis Batch: 14E0167

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 14E0167_P

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Hydrocarbons			3.20	2.25		mg/l		70.2	54.5 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*70.9*		*50 - 150*
n-Triacontane-d62	*81.4*		*50 - 150*

Lab Sample ID: 14E0167-DUP1
Matrix: Water
Analysis Batch: 14E0167

Client Sample ID: MLK Ph 2 Sewer
Prep Type: Total
Prep Batch: 14E0167_P

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Diesel Range Hydrocarbons	ND			ND		mg/l					25

Surrogate	*Duplicate %Recovery*	*Duplicate Qualifier*	*Limits*
o-Terphenyl	*73.4*		*50 - 150*
n-Triacontane-d62	*95.7*		*50 - 150*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 250-27486/1-A
Matrix: Water
Analysis Batch: 27502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 27486

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		05/30/14 13:52	05/30/14 19:50	1

Lab Sample ID: LCS 250-27486/2-A
Matrix: Water
Analysis Batch: 27502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 27486

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			0.100	0.0985		mg/L		99	85 - 115		

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 250-19300-D-2-B MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27502 — **Prep Batch: 27486**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0032		0.100	0.107		mg/L		104	70 - 130

Lab Sample ID: 250-19323-1 DU — **Client Sample ID: SXE0181-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27502 — **Prep Batch: 27486**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	ND		ND		mg/L		NC	20

Lab Sample ID: MB 250-27487/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27502 — **Prep Batch: 27487**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010		mg/L		05/30/14 14:09	05/30/14 20:20	1

Lab Sample ID: LCS 250-27487/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27502 — **Prep Batch: 27487**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.102		mg/L		102	85 - 115

Lab Sample ID: 250-19323-1 MS — **Client Sample ID: SXE0181-01**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 27502 — **Prep Batch: 27487**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		0.100	0.103		mg/L		103	70 - 130

Lab Sample ID: 250-19323-1 DU — **Client Sample ID: SXE0181-01**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 27502 — **Prep Batch: 27487**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	ND		ND		mg/L		NC	20

Method: EPA 245.1 - Total Metals by EPA 200 Series Methods

Lab Sample ID: 14F0001-BLK1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 14F0001 — **Prep Batch: 14F0001_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200		ug/l		06/02/14 09:01	06/02/14 13:21	1.00

Method: EPA 245.1 - Total Metals by EPA 200 Series Methods (Continued)

Lab Sample ID: 14F0001-BS1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 14F0001 — **Prep Batch: 14F0001_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	2.00	2.06		ug/l		103	85 - 115

Lab Sample ID: 14F0001-MS1 — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 14F0001 — **Prep Batch: 14F0001_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		2.00	2.72	M1	ug/l		136	70 - 130

Lab Sample ID: 14F0001-MSD1 — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 14F0001 — **Prep Batch: 14F0001_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	trix Spike Dup Result	Matrix Spike Du Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		2.00	2.21	R	ug/l		110	70 - 130	20.7	18.2

Lab Sample ID: 14F0001-DUP1 — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 14F0001 — **Prep Batch: 14F0001_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Mercury	ND		ND		ug/l			17.1

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 250-27489/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27500 — **Prep Batch: 27489**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Weak Acid Dissociable	ND		0.0050		mg/L		05/30/14 14:33	05/30/14 17:35	1

Lab Sample ID: LCS 250-27489/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27500 — **Prep Batch: 27489**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	0.200	0.188		mg/L		94	90 - 110

Lab Sample ID: 250-19323-1 MS — **Client Sample ID: SXE0181-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 27500 — **Prep Batch: 27489**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Weak Acid Dissociable	ND		0.200	0.188		mg/L		93	75 - 125

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable (Continued)

Lab Sample ID: 250-19323-1 MSD
Matrix: Water
Analysis Batch: 27500

Client Sample ID: SXE0181-01
Prep Type: Total/NA
Prep Batch: 27489

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	ND		0.200	0.189		mg/L		93	75 - 125	1	20

Lab Sample ID: 250-19323-1 DU
Matrix: Water
Analysis Batch: 27500

Client Sample ID: SXE0181-01
Prep Type: Total/NA
Prep Batch: 27489

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Weak Acid Dissociable	ND		ND		mg/L		NC	20

Lab Chronicle

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Client Sample ID: MLK Ph 2 Sewer — **Lab Sample ID: SXE0181-01**
Date Collected: 05/29/14 10:30 — **Matrix: Water**
Date Received: 05/29/14 11:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	EPA 3510/600 Series		1.13	14E0167_P	05/30/14 11:02	MS	TAL SPK
Total	Analysis	NWTPH-Dx		1.00	14E0167	05/30/14 21:53	MRS	TAL SPK
Dissolved	Prep	200.8			27487	05/30/14 14:09	KTN	TAL PRT
Dissolved	Analysis	200.8		1	27502	05/30/14 20:39	TNL	TAL PRT
Total/NA	Prep	200.8			27486	05/30/14 13:52	KTN	TAL PRT
Total/NA	Analysis	200.8		1	27502	05/30/14 19:58	TNL	TAL PRT
Total	Prep	EPA 200 Series		1.00	14F0001_P	06/02/14 09:01	JSP	TAL SPK
Total	Analysis	EPA 245.1		1.00	14F0001	06/02/14 13:35	ZZZ	TAL SPK
Total/NA	Prep	SM 4500 CN I			27489	05/30/14 14:33	ACG	TAL PRT
Total/NA	Analysis	SM 4500 CN I		1	27500	05/30/14 17:46	ACG	TAL PRT

Laboratory References:

TAL PRT = TestAmerica Portland, 9405 SW Nimbus Ave., Beaverton, OR 97008, TEL (503)906-9200

TAL SPK = TestAmerica Spokane, 11922 East 1st. Avenue, Spokane, WA 99206, TEL (509)924-9200

Certification Summary

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Laboratory: TestAmerica Spokane

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-071	10-31-14
Washington	State Program	10	C569	01-06-15

Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-012	12-26-13 *
California	State Program	9	2597	09-30-15
Oregon	NELAP	10	OR100021	01-09-15
USDA	Federal		P330-11-00092	04-17-17
Washington	State Program	10	C586	06-23-14

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Client: City of Spokane
Project/Site: 2005264

TestAmerica Job ID: SXE0181

Method	Method Description	Protocol	Laboratory
NWTPH-Dx	Semivolatile Petroleum Products by NWTPH-Dx		TAL SPK
200.8	Metals (ICP/MS)	EPA	TAL PRT
EPA 245.1	Total Metals by EPA 200 Series Methods		TAL SPK
SM 4500 CN I	Cyanide, Weak Acid Dissociable	SM	TAL PRT

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL PRT = TestAmerica Portland, 9405 SW Nimbus Ave., Beaverton, OR 97008, TEL (503)906-9200

TAL SPK = TestAmerica Spokane, 11922 East 1st. Avenue, Spokane, WA 99206, TEL (509)924-9200

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East, Tacoma, WA 98424-1317 253-922-2310 FAX 922-5047
11922 E. First Ave., Spokane WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave., Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: SXE0181

CLIENT: CITY OF SPOKANE

REPORT TO: ADDRESS: 808 W. SPOKANE FALLS BLVD.

PHONE: 625-6391 FAX: 625-6349

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: MLK Ph. 2 SEWER

PROJECT NUMBER: 2005264

SAMPLED BY: DAN BULLER

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: Total TSS	REQUESTED ANALYSES: WAD Cyanide	REQUESTED ANALYSES: Hg	REQUESTED ANALYSES: TOC	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 MLK Ph.2 SEWER	5-29-14 / 10:30am									
2 "	"									
3 "	"									
4 "	"									
5										
6										
7										
8										
9										
10										

RELEASED BY:		DATE:	RECEIVED BY:		DATE: 5-29-14
PRINT NAME:	FIRM:	TIME:	PRINT NAME: Cat Stapleton	FIRM: TestAmerica	TIME: 11:55
RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

TEMP: 16.6 PAGE OF

TAL-1000 (0612)

TestAmerica Spokane
Sample Receipt Form

Work Order #: SXE0181	Client: City of Spokane	Project:
Date/Time Received: 5-29-14 11:55	By: CS	

Samples Delivered By: ☐ Shipping Service ☒ Courier ☐ Client ☐ Other: _____

List Air Bill Number(s) or Attach a photocopy of the Air Bill:

Receipt Phase	Yes	No	NA	Comments
Were samples received in a cooler:	X			
Custody Seals are present and intact:			X	
Are CoC documents present:	X			
Necessary signatures:	X			

Thermal Preservation Type: ☐ Blue Ice ☐ Gel Ice ☐ Real Ice ☐ Dry Ice ☒ None ☐ Other: _____

Temperature: 16.6 °C Thermometer (Circle **one** Serial #122208348 Keyring IR Serial # 111874910 IR Gun 2)(acceptance criteria 0-6

Temperature out of range: ☐ Not enough ice ☐ Ice melted ☐ w/in 4hrs of collection ☐ NA ☐ Other: _____

Log-in Phase Date/Time: 5-29-14 12:57 By: CS	Yes	No	NA	Comments
Are sample labels affixed and completed for each container	X			
Samples containers were received intact:	X			
Do sample IDs match the CoC	X			
Appropriate sample containers were received for tests requested	X			
Are sample volumes adequate for tests requested	X			
Appropriate preservatives were used for the tests requested	X			
pH of inorganic samples checked and is within method specification	X			
Are VOC samples free of bubbles >6mm (1/4" diameter)	X			
Are dissolved parameters field filtered			X	
Do any samples need to be filtered or preserved by the lab			X	
Does this project require quick turnaround analysis	X			2 days
Are there any short hold time tests (see chart below)		X		
Are any samples within 2 days of or past expiration		X		
Was the CoC scanned	X			
Were there Non-conformance issues at login		X		
If yes, was a CAR generated #			X	

24 hours or less	48 hours	7 days
Coliform Bacteria	BOD, Color, MBAS	TDS, TSS, VDS, FDS
Chromium +6	Nitrate/Nitrite	Sulfide
	Orthophosphate	Aqueous Organic Prep

Form No. SP-FORM-SPL-002 12 December 2012

SPOKANE ENVIRONMENTAL ORDINANCE

(WAC 197-11-970) Section 11.10.230(3)
Determination of Non-Significance (DNS)

File No. 2004047

DETERMINATION OF NON-SIGNIFICANCE

Description of Proposal: Riverside Drive Extension – Division Street to Trent Avenue

Proponent: City of Spokane

Location of proposal, including street address, if any: Riverside Drive from Division Street to Trent Avenue

Lead agency: City of Spokane, Department of Engineering Services

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed Environmental Checklist and other information on file with the lead agency. This information is available to the public on request.

[ ] There is no comment period for this DNS.

[ ] This DNS is issued after using the optional DNS process in Section 197-11-355 WAC. There is no further comment period on the DNS.

[X] This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by November 21, 2007.

Responsible official: Eldon Brown, P.E.

Position/Title: Acting Director, Engineering Services Phone: (509) 625-6700

Address: 2nd Floor, Municipal Building, 808 W. Spokane Falls Blvd., Spokane, WA 99201-3343

Date: November 8, 2007 Signature: Eldon Brown

You may appeal this determination to Eldon Brown, P.E.

at (location): 2nd Floor, Municipal Building, Spokane, WA 99201-3343

no later than (date): November 21, 2007

by (method): written

You should be prepared to make specific factual objections.

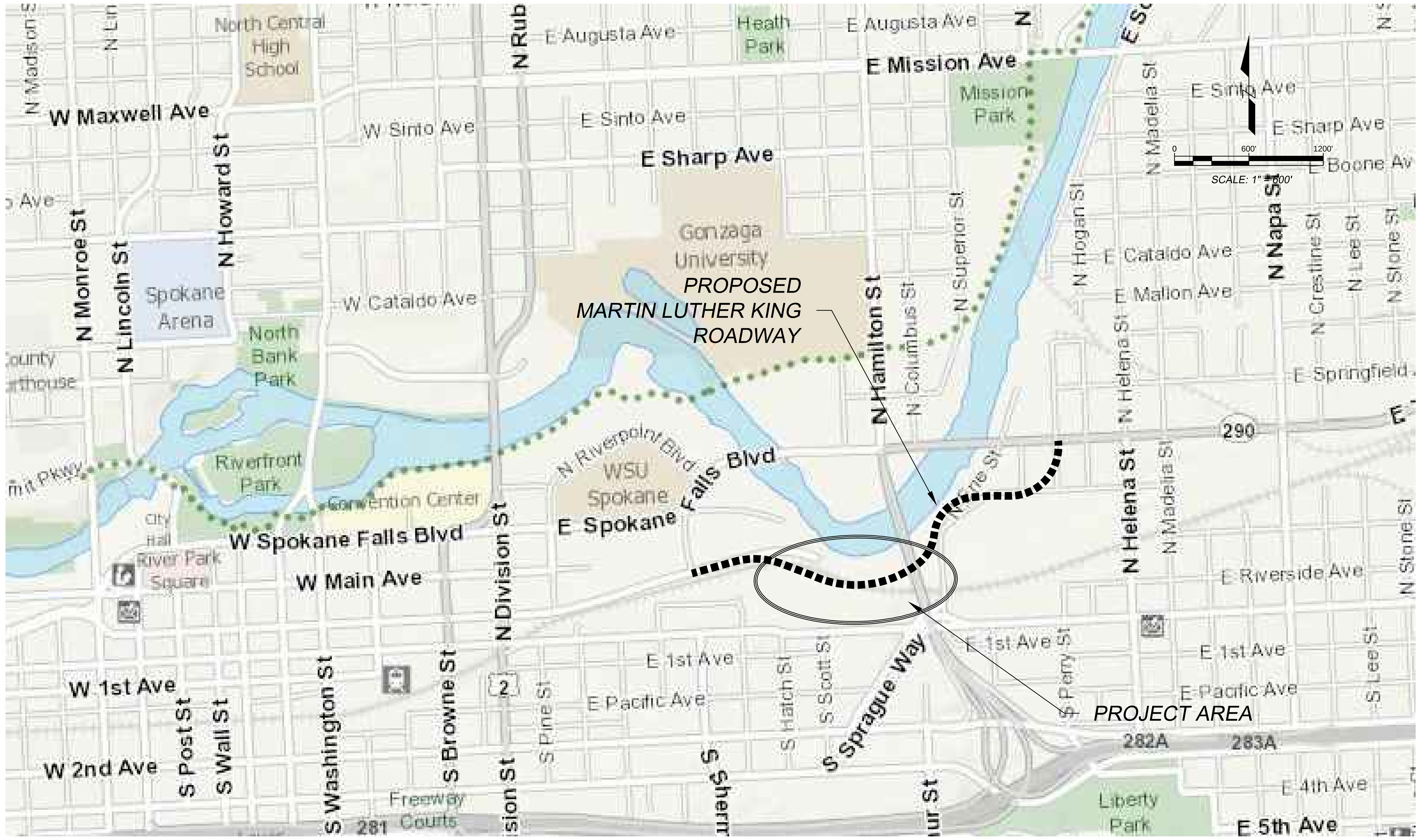
Contact John Mercer at (509) 625-6270 to read or ask about the procedures for SEPA appeals.

Appendix D

Preliminary Project Stormwater Plans and Drainage Basin Maps

- Cover/Index/Vicinity Map Street
- DOE-2 – Overall Site Plan and Profile Sheet
- DOE-3 – Project Details and Sections
- DOE-4 – Borehole and Monitor Wells
- DOE-5 – Drainage Area Mapping

REGION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
EASTERN	WASH.		



MARTIN LUTHER KING JR. WAY: VICINITY MAP

CITY OF SPOKANE, WASHINGTON

DEPARTMENT OF ENGINEERING SERVICES

RIVERSIDE EXTENSION: PHASE 2

Sherman Street to Hogan Street

City Project # 2005264

Soils & Drainage Overview

SHEET INDEX

	Cover Sheet / Index / Vicinity Maps
DOE-2	Overall Site Plan & Profile
DOE-3	Project Details & Sections
DOE-4	Borehole & Monitor Wells
DOE-5	Drainage Area Mapping

DATE	BY	PROJ.	DESCRIPTION
REVISIONS			

DATE	BY	PROJ.	E.F.N.	U.S.N.	FROM	TO	COUNCIL ACCEPT DATE
AS BUILT							

FROM	TO	ORD. NO.	DATE	FILE NO.
GRADE ORDINANCE LIST				

NAVD88 = (OLD CBM ELEV.) - (13.13)

AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

BENCH MARK LOCATION: SE Corner 9th & Hatch, 13.3' SSC 1.5' EEC

NAVD88 ELEV. 2069.98

CBM NO. 9S 7E

NAVD88 DATUM

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

HORIZONTAL PLAN&PROFILE 1" = 50'

VERTICAL PROFILE ONLY 1" = 10'

SCALE

CURRENT CITY/COUNTY DESIGN STANDARDS ADOPTED FEB, 1995

	BY	DATES
DRAWN:	RJS	7/2013
REVISED:		
CHECKED:	DAB	7/2013
APPROVED:	DAB	7/2013

CITY OF SPOKANE, WASHINGTON

DEPARTMENT OF ENGINEERING SERVICES

808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

PROJECT NAME: RIVERSIDE EXTENSION - PHASE 2

SEGMENT LIMITS: COVER SHEET

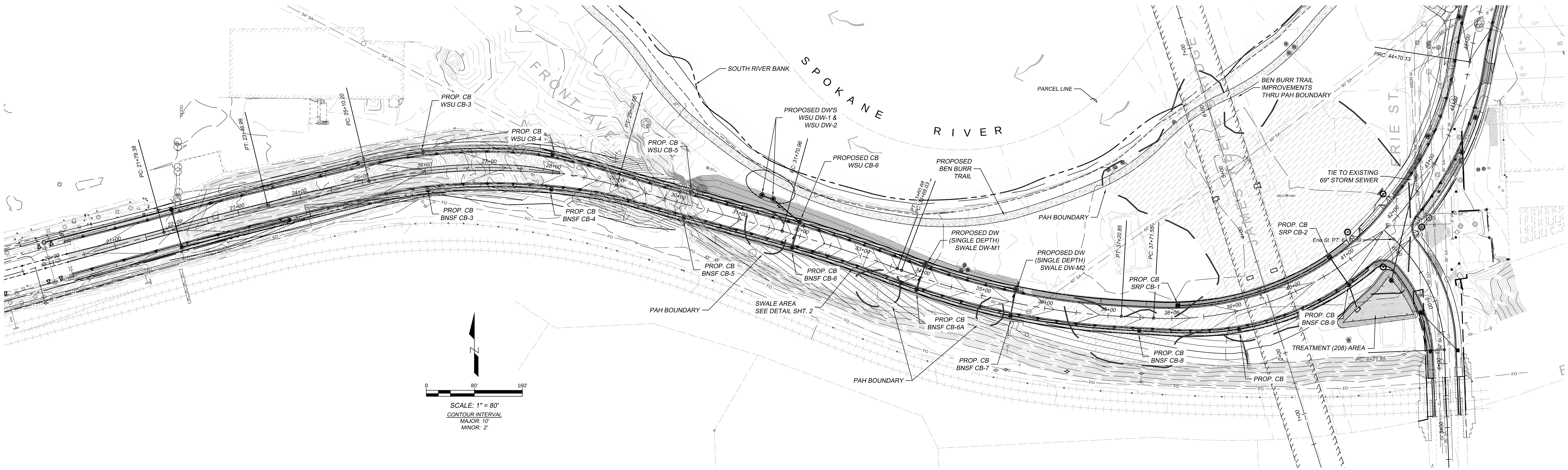
PROJECT LIMITS: Sherman Street to Trent Avenue

TYPE OF IMPROVEMENT: DETAILS

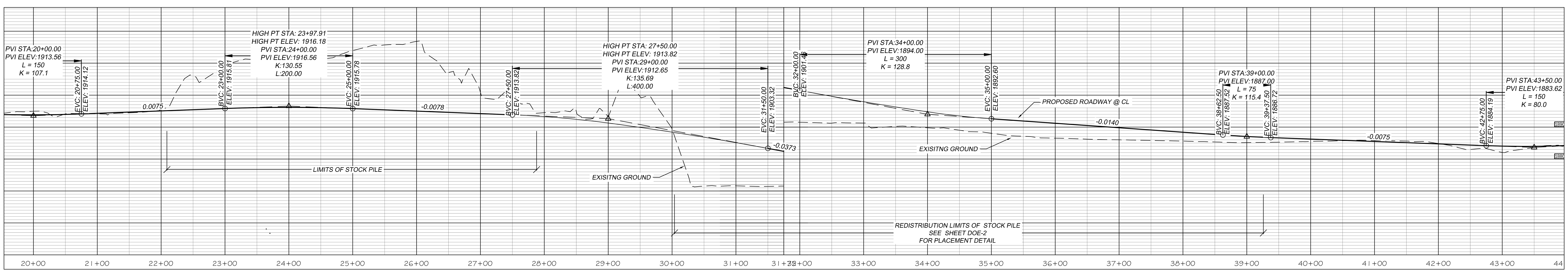
CITY PROJECT NUMBER	CITY PLAN NUMBER
2005264	MARTI W (3) 3 17-25-43
EFN:	

CALL BEFORE YOU DIG 1-800-424-5555

REGION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
EASTERN	WASH.		



MARTIN LUTHER KING JR. WAY: OVERALL SITE PLAN



MARTIN LUTHER KING JR. WAY: PROPOSED ROADWAY PROFILE

PAH BOUNDARY

* PAH Boundary from Figure 7 of the Final Cleanup Action Plan, Published on August 10, 2001

TREATMENT (208) AREA

* Treatment-208 Will be Lined, Overflow Will Go to Existing Storm Water System. See Detail on Sht. DOE-3

SWALE/BIO-INFILTRATION

* Swale/Bio-Infiltration is a Lined System with a Perforated Piping System. See Detail on Sht DOE-3.

DOE-2
2 of 5

REVISIONS: DATE | BY | PROJ | DESCRIPTION

AS BUILT: DATE | BY | PROJ | E.F.N. U.S.N. | FROM | TO | COUNCIL ACCEPT DATE

GRADE ORDINANCE LIST: FROM | TO | ORD. NO. | DATE | FILE NO.

NAVD88 = (OLD CBM ELEV.) - (13.13) AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

BENCH MARK LOCATION: SE Corner 9th & Hatch 13.3' SSC 1.5' EEC

NAVD88 ELEV.: 2069.98

CBM NO.: 9S 7E

NAVD88 DATUM

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

HORIZONTAL PLAN&PROFILE 1" = 50'
VERTICAL PROFILE ONLY 1" = 10'
SCALE

CURRENT CITY/COUNTY DESIGN STANDARDS ADOPTED FEB. 1995

	BY	DATES
DRAWN:	RJS	7/2013
REVISED:		
CHECKED:	DAB	7/2013
APPROVED:	DAB	7/2013

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES
808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

PROJECT NAME: RIVERSIDE EXTENSION - PHASE 2

SEGMENT LIMITS: OVERALL SITE PLAN & PROFILE

PROJECT LIMITS: Sherman Street to Trent Avenue

TYPE OF IMPROVEMENT: DETAILS

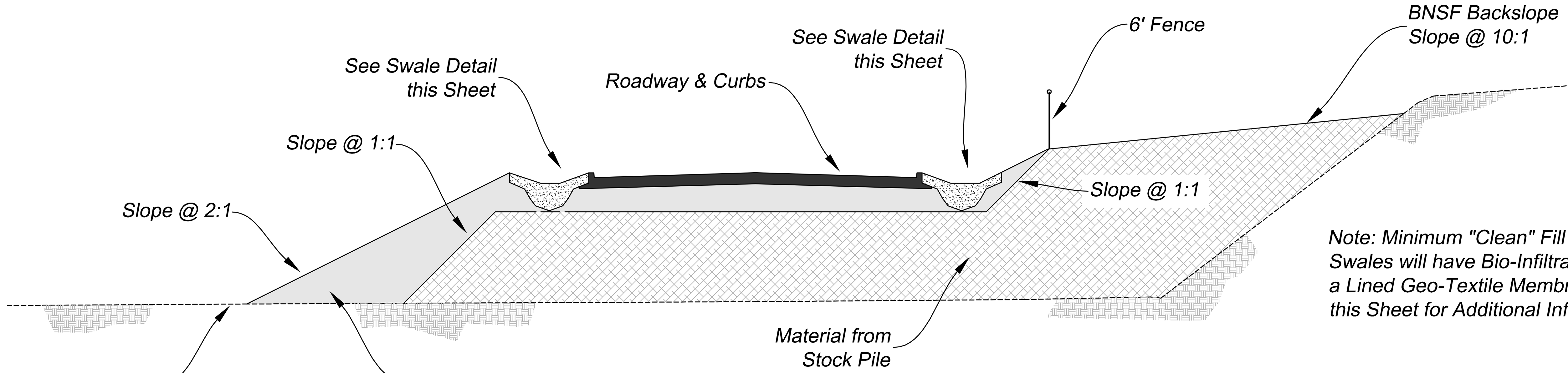
CITY PROJECT NUMBER: 2005264

CITY PLAN NUMBER: MARTI W (3) 3 17-25-43

EFN:

CALL BEFORE YOU DIG 1-800-424-5555

REGION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
EASTERN	WASH.		

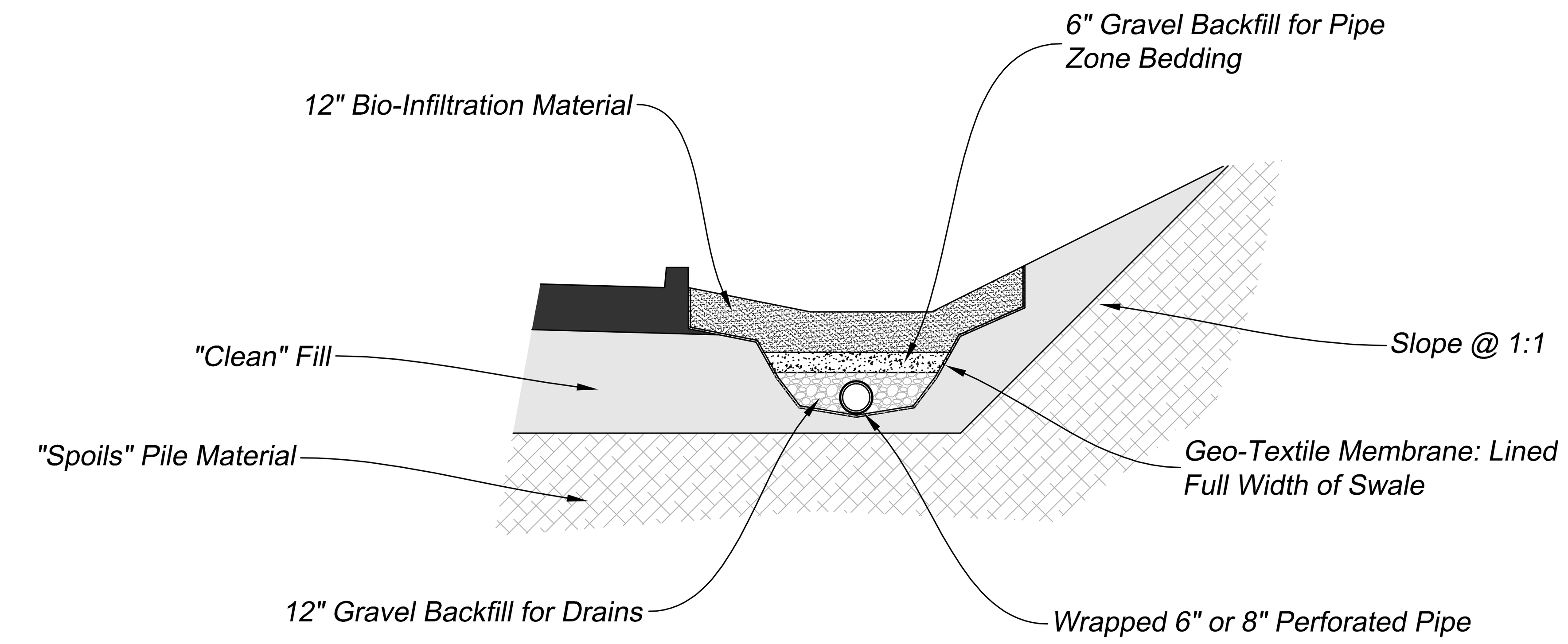


Note: Minimum "Clean" Fill Material Depth will be 3.0'. Swales will have Bio-Infiltration Material Placed inside a Lined Geo-Textile Membrane. See Swale Detail this Sheet for Additional Information.

Roadway @ Approx. Sta 31+10
Looking Easterly

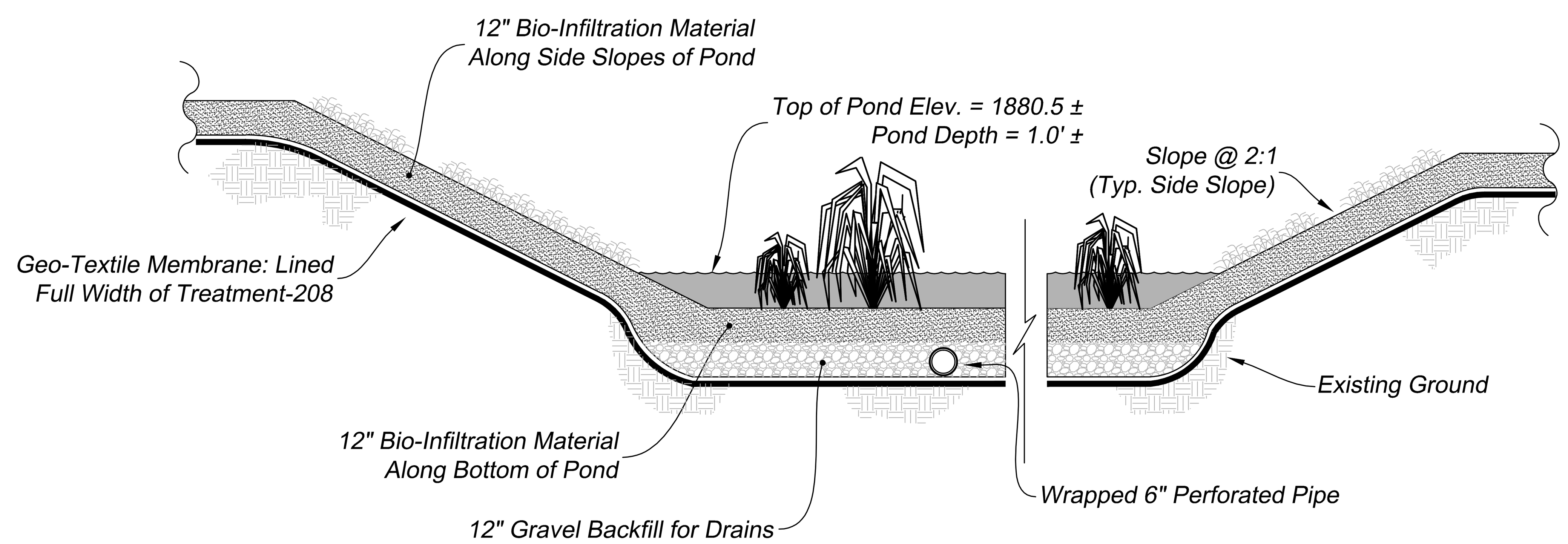
TYPICAL SECTION: MATERIALS PLACEMENT

"CLEAN" FILL & MATERIAL FROM STOCK PILE

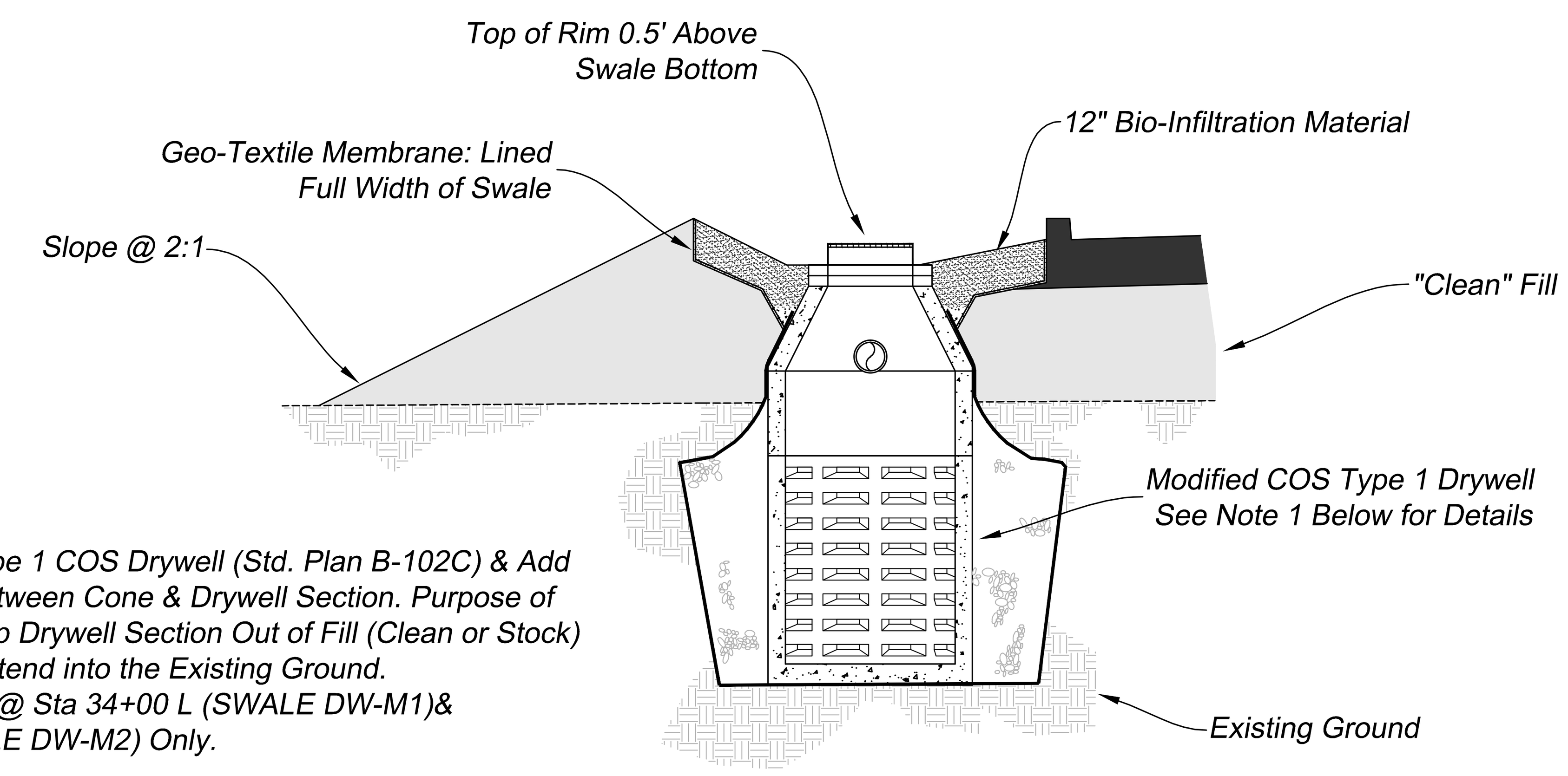


TYPICAL SECTION: BIO-INFILTRATION SWALE

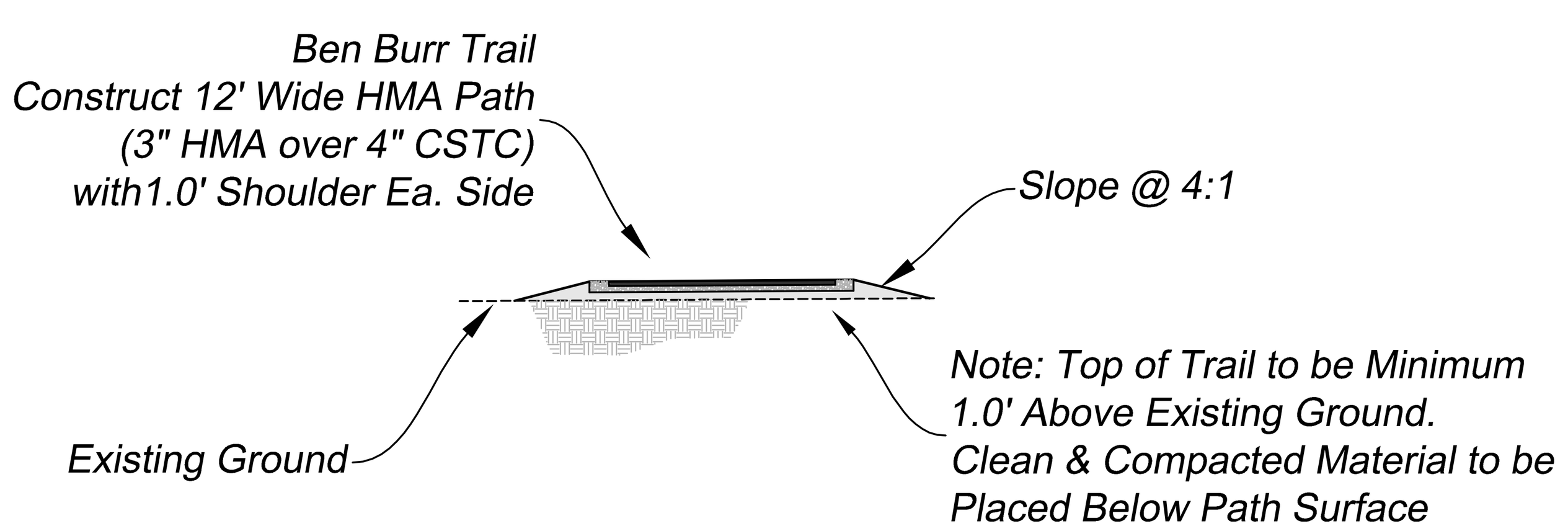
GENERALIZED SWALE CONSTRUCTION



TYPICAL SECTION: TREATMENT (208) AREA



Note 1: Use Type 1 COS Drywell (Std. Plan B-102C) & Add a 2.0' Barrel Between Cone & Drywell Section. Purpose of Barrel is to Keep Drywell Section Out of Fill (Clean or Stock) Material and Extend into the Existing Ground.
Modified DW"s @ Sta 34+00 L (SWALE DW-M1)&
35+50 L (SWALE DW-M2) Only.



Note: Top of Trail to be Minimum 1.0' Above Existing Ground. Clean & Compacted Material to be Placed Below Path Surface

Typical Section: Ben Burr Trail
Looking Easterly

TYPICAL SECTION: MODIFIED TYPE 1 COS DRYWELL

TYPICAL BEN BURR TRAIL TREATMENT WITHIN PAH BOUNDARY

DOE-3
3 of 5

DATE / BY / PROJ. / DESCRIPTION	REVISIONS	
DATE / BY / PROJ. / E.F.N. / U.S.N. / FROM / TO / COUNCIL ACCEPT DATE	AS BUILT	
FROM / TO / ORD. NO. / DATE / FILE NO.	GRADE ORDINANCE LIST	

NAVD88 = (OLD CBM ELEV.) - (13.13) — AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

BENCH MARK LOCATION	SE Corner 9th & Hatch 13.3' SSC 1.5' EEC	
NAVD88 ELEV.	2069.98	
CBM NO.	9S 7E	
NAVD88 DATUM		

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HORIZONTAL PLAN&PROFILE	1" = 50'
VERTICAL PROFILE ONLY	1" = 10'
SCALE	

CURRENT CITY/COUNTY DESIGN STANDARDS ADOPTED FEB,1995

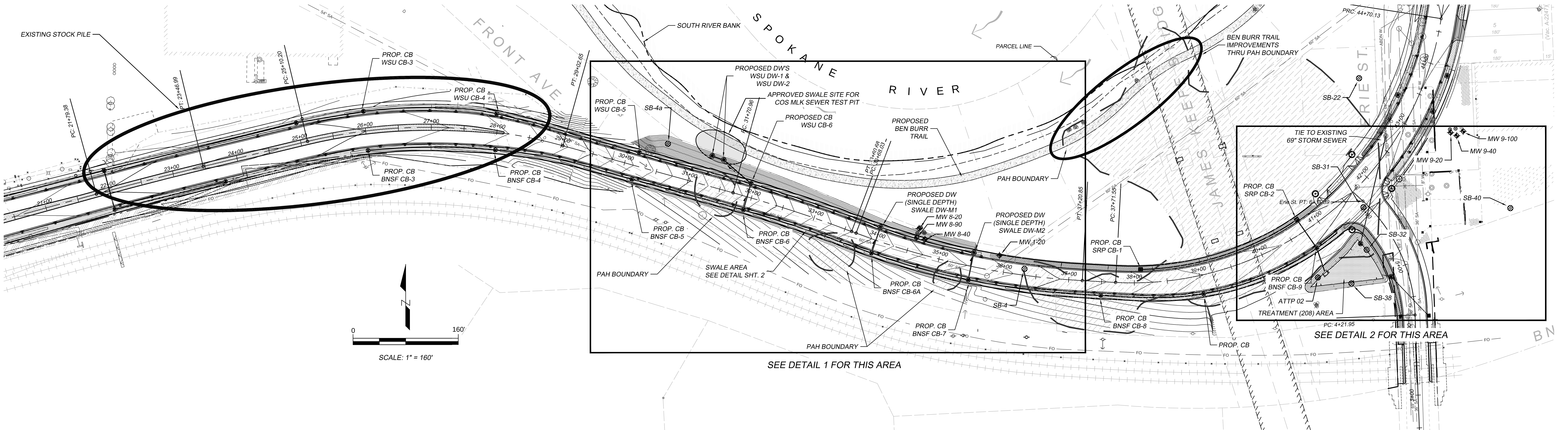
	BY	DATES
DRAWN:	RJS	7/2013
REVISED:		
CHECKED:	DAB	7/2013
APPROVED:	DAB	7/2013

THE CITY OF SPOKANE

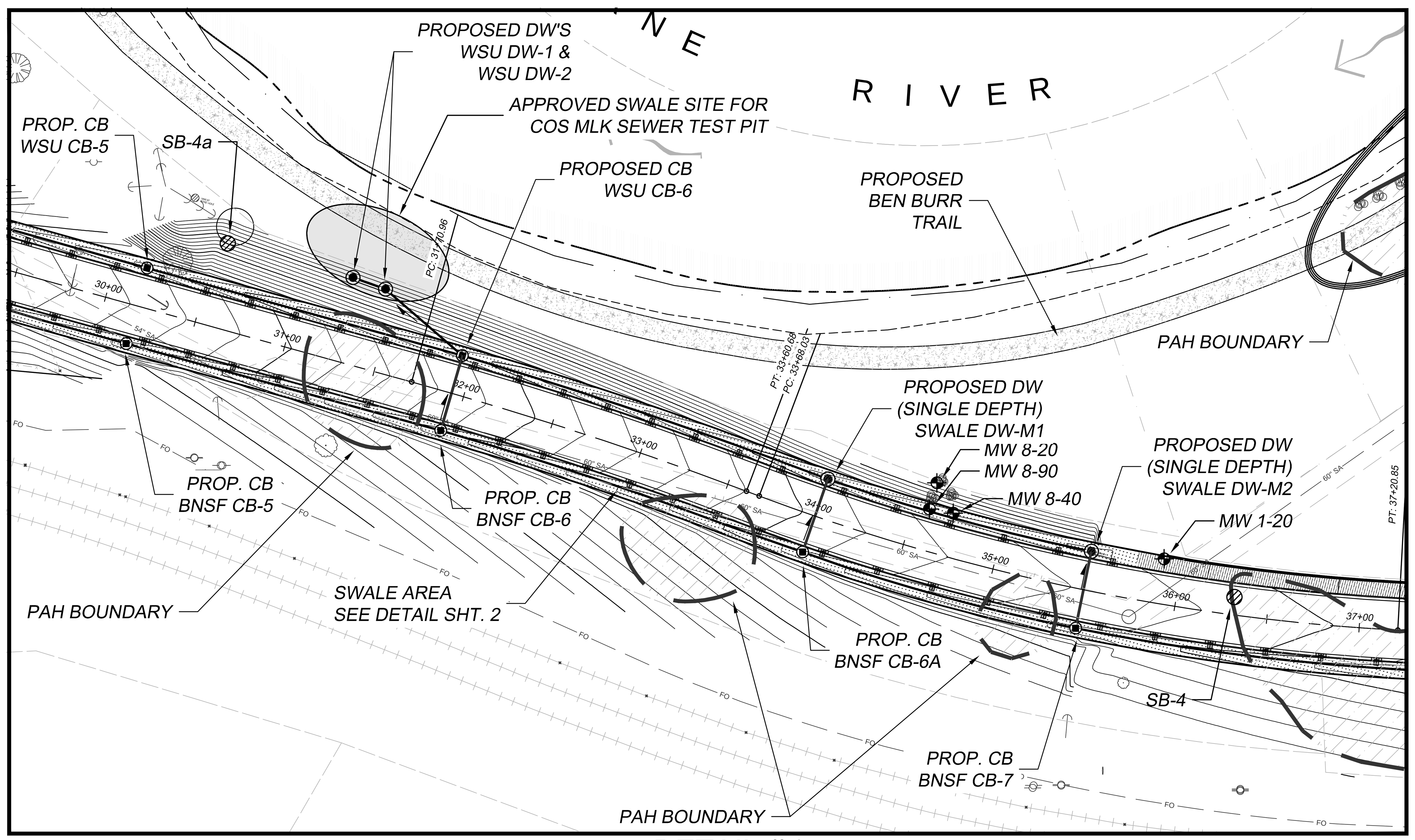
CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES
808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

PROJECT NAME:	RIVERSIDE EXTENSION - PHASE 2	
SEGMENT LIMITS: MATERIALS PLACEMENT DETAILS	TYPE OF IMPROVEMENT: DETAILS	
	CITY PROJECT NUMBER: 2005264	CITY PLAN NUMBER: MARTI W (3) 3 17-25-43
PROJECT LIMITS: Sherman Street to Trent Avenue	EFN:	

CALL BEFORE YOU DIG 1-800-424-5555

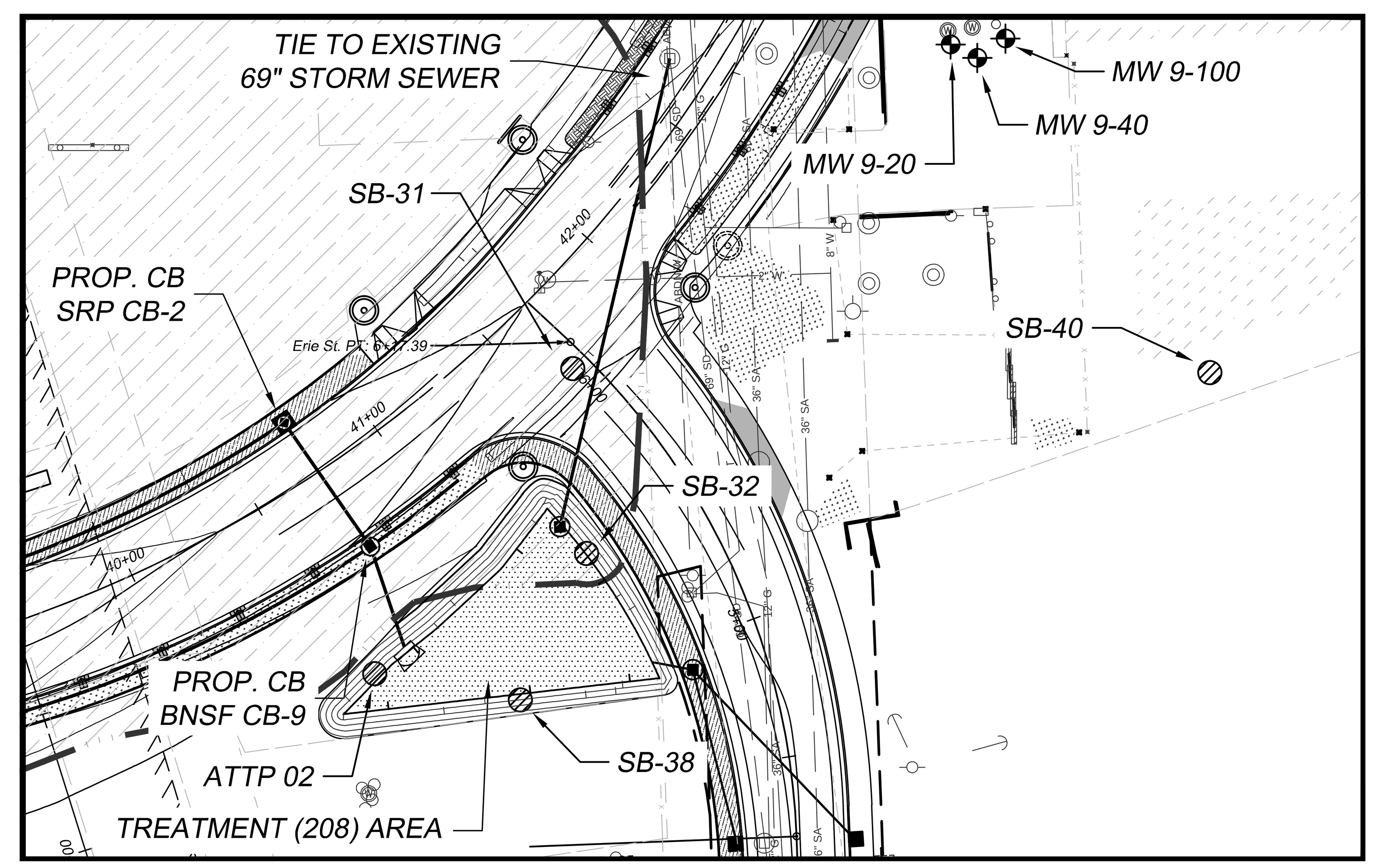


MARTIN LUTHER KING JR. WAY: OVERALL SITE PLAN



DETAIL #1

Scale: 1" - 100'



DETAIL #2:

See Treatment-208 Section on Sht. DOE-3

Scale: 1" - 100'

LEGEND

BOREHOLE LOCATION (See Note 1)

MONITORING WELL (See Note 1)

* Note 1: Borehole & Monitoring Wells from Figure 4 of the Final Cleanup Action Plan, Hamilton Street Bridge Site Published on August 10, 2001. ONLY Boreholes & Wells Adjacent to Proposed Drywells & Ponds Shown for Clarity.

PAH BOUNDARY LIMITS

* PAH Boundary from Figure 7 of the Final Cleanup Action Plan, Hamilton Street Bridge Site Published on August 10, 2001

TREATMENT (208) AREA

* Treatment-208 Will be Lined, Overflow Will Go to Existing Storm Water System. See Detail on Sht. DOE-3

SWALE/BIO-INFILTRATION

* Swale/Bio-Infiltration is a Lined System with a Perforated Piping System. See Detail on Sht DOE-3

APPROVED SWALE SITE

* In August of 2014 the City of Spokane (COS) Excavated a Test Pit to Examine the Viability of Replacing an Existing Sewer Manhole. The Test Determined Soil & Water Contamination Levels and the Viability of Pumping Groundwater from the Excavation Site. DOE Approved the Bermed Swale Site for the Dewatering of the Excavation.

DATE	BY	PROJ.	DESCRIPTION	DATE	BY	PROJ.	E.F.N.	U.S.N.	FROM	TO	COUNCIL ACCEPT DATE	FROM	TO	ORD. NO.	DATE	FILE NO.
REVISIONS				AS BUILT								GRADE ORDINANCE LIST				

NAVD88 = (OLD CBM ELEV.) - (13.13)

AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

BENCH MARK LOCATION: SE Corner 9th & Hatch 13.3' SSC 1.5' EEC

NAVD88 ELEV. 2069.98

CBM NO. 9S 7E

NAVD88 DATUM

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

HORIZONTAL PLAN&PROFILE 1" = 50'

VERTICAL PROFILE ONLY 1" = 10'

SCALE

CURRENT CITY/COUNTY DESIGN STANDARDS ADOPTED FEB, 1995

	BY	DATES
DRAWN:	RJS	7/2013
REVISED:		
CHECKED:	DAB	7/2013
APPROVED:	DAB	7/2013

THE CITY OF SPOKANE

CITY OF SPOKANE, WASHINGTON

DEPARTMENT OF ENGINEERING SERVICES

808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

PROJECT NAME: **RIVERSIDE EXTENSION - PHASE 2**

SEGMENT LIMITS: **BOREHOLE & MONITORING WELLS**

Existing Boreholes & Monitoring Wells

PROJECT LIMITS: Sherman Street to Trent Avenue

TYPE OF IMPROVEMENT: DETAILS

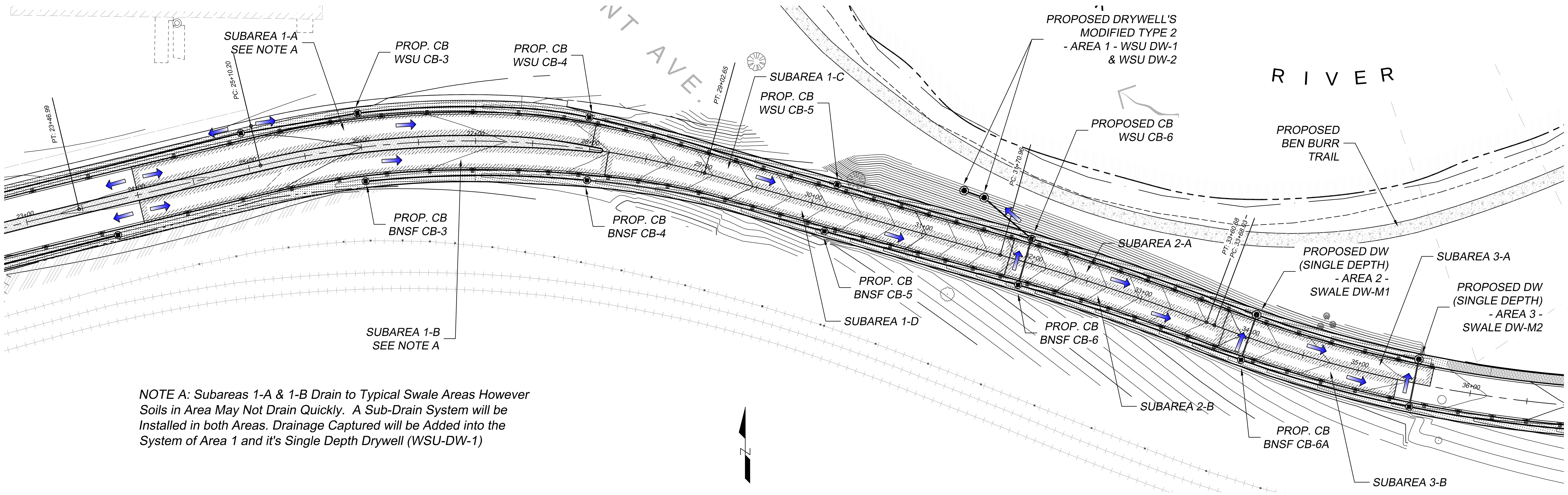
CITY PROJECT NUMBER: 2005264

CITY PLAN NUMBER: MARTI W (3) 3 17-25-43

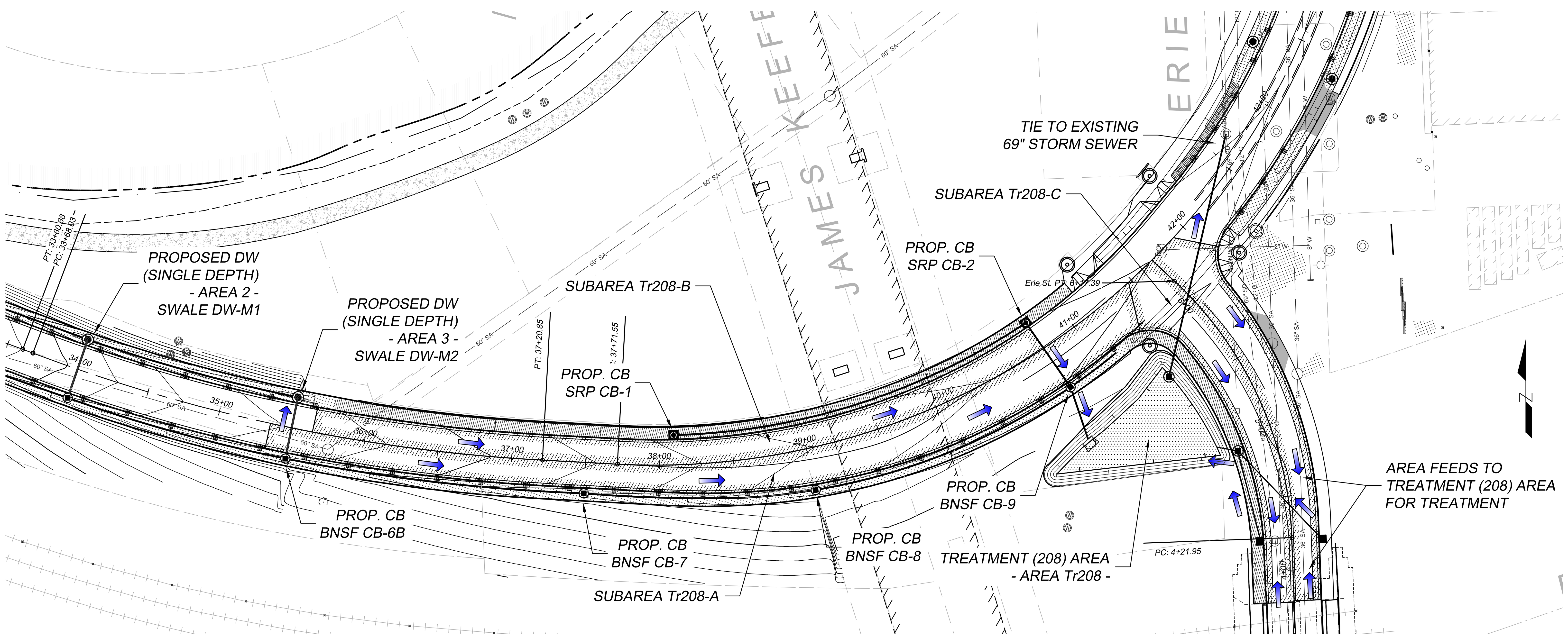
EFN:

CALL BEFORE YOU DIG 1-800-424-5555

REGION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
EASTERN	WASH.		



NOTE A: Subareas 1-A & 1-B Drain to Typical Swale Areas However Soils in Area May Not Drain Quickly. A Sub-Drain System will be Installed in both Areas. Drainage Captured will be Added into the System of Area 1 and it's Single Depth Drywell (WSU-DW-1)



LEGEND

- DRAINAGE ARROW (FLOW DIRECTION)
- DRAINAGE AREA BOUNDARY
  - * Estimated Boundary of a Proposed Drainage Area
- PAH BOUNDARY LIMITS
  - * PAH Boundary from Figure 7 of the Final Cleanup Action Plan, Hamilton Street Bridge Site Published on August 10, 2001
- TREATMENT (208) AREA
  - * Treatment-208 Will be Lined, Overflow Will Go to Existing Storm Water System. See Detail on Sht. DOE-3
- SWALE/BIO-INFILTRATION
  - * Swale/Bio-Infiltration is a Lined System with a Perforated Piping System. See Detail on Sht DOE-3.

Basin Name	Subbasin Name	Area (s.f)	Treatment Vol. Reqd. (c.f.) where V=1133A	Treatment Volume Provided. (c.f.)	10-Year Storm Volume (c.f.)	Drywell Facility Names	Drywell Type	Flow Rate/Drywell (cfs)
AREA 1	1-A	10275						
	1-B	8240						
	1-C	6800						
	1-D	6340						
TOTAL		**31655**	**824**	**2000**	**2750**	**WSU-DW1 WSU-DW2**	**Two (2) - Type2 (Mod)**	**0.6**
AREA 2	2-A	3350						
	2-B	3360						
TOTAL		**6710**	**175**	**1200**	**583**	**DW D1-M1**	**Type 2**	**1**
AREA 3	3-A	3180						
	3-B	2720						
TOTAL		**5900**	**153**	**490**	**512**	**DW D2-M2**	**Type 2**	**1**

DOE-5
5 of 5

PROJECT NAME: RIVERSIDE EXTENSION - PHASE 2

SEGMENT LIMITS: DRAINAGE AREA MAPPING

PROJECT LIMITS: Sherman Street to Trent Avenue

TYPE OF IMPROVEMENT: DETAILS

CITY PROJECT NUMBER: 2005264

CITY PLAN NUMBER: MARTI W (3) 3 17-25-43

CITY OF SPOKANE, WASHINGTON
DEPARTMENT OF ENGINEERING SERVICES
808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

BENCH MARK LOCATION: SE Corner 9th & Hatch 13.3' SSC 1.5' EEC

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