



ROBINSON  
NOBLE

August 7, 2017

Nicholas M. Acklam  
VCP/II-SHA/LUST Unit Supervisor  
Toxics Cleanup Program - Southwest Regional Office  
Washington State Department of Ecology  
PO Box 47775  
Olympia, WA 98504-7775

Subject: 3003 Harborview Drive, Gig Harbor, Washington Final Cleanup Report

Dear Mr. Acklam

Robinson Noble, Inc. is pleased to provide this report on behalf of the City of Gig Harbor (City) for the final site remediation and formal closure of the Maritime Pier property (former Stutz Oil site) ("Site"). The assigned address for the property is 3003 Harborview Drive in Gig Harbor, Washington. This project included a final remedial excavation of the Site to allow for the Washington State Department of Ecology's (Ecology) approval of a "no-further-action" (NFA) determination without the need for restrictive covenants. Figure 1, Appendix A shows the general location of the site.

## Background

As you are aware, the "Site" formerly was operated by Stutz Oil as a bulk-fuel storage facility consisting of a warehouse, office, and five above-ground fuel storage tanks (ASTs) ranging in capacity from 12,000 to 25,000 gallons. Characterization and remediation occurred between 2001 and 2005. Confirmation samples from the excavations from that time period showed levels of total petroleum hydrocarbons (TPH) above the respective cleanup levels at five locations (CS-8, CS-13, CS-16, CS-17, and CS-25).

In 2009, the "Site" obtained a NFA determination with an environmental covenant. Groundwater monitoring was completed as part of the covenant in 2010, 2011, and 2013, all showing no detections of petroleum hydrocarbons. In July 2014, the five-year review was completed by Ecology showing that site conditions did not warrant removal of the environmental covenant. Ecology determined this based on the data available at that time showing that the site specific cleanup level was not met throughout the Site. The Site-specific cleanup level for the subject property was, as discussed in the November 12, 2009 NFA letter from the Washington Department of Ecology, established at 2,530 mg/kg for total petroleum hydrocarbons (TPH), which is the sum of gasoline-, diesel-, and oil-range petroleum hydrocarbons.

In 2015, we completed a follow-up investigation to determine the TPH soil concentrations at the five confirmation sample locations from the 2005 remediation. This investigation was completed to reevaluate the remnant concentrations of TPH in the three areas noted in the 2009 NFA letter that did not meet the site-specific cleanup level. The genesis of this investigation was a request by the City of Gig Harbor to remove the environmental covenant from the prop-

erty. The City of Gig Harbor consulted with Mr. Panjini Balaraju of Ecology to develop the scope of work.

We also completed an additional round of monitoring. Groundwater monitoring showed no detections of target analytes. The results of the soil investigation were compared to the Site-specific cleanup levels of 2,530 mg/kg TPH. Table 1, below, shows the results of the soil investigation.

Table 1. 2015 Soil results for petroleum hydrocarbons (mg/kg)

Sample/ID	Gasoline	Diesel	Oil	TPH
BCS-8 19'	<10*	<25*	<50*	42.5
BCS-13 16.5'	32	62	<50*	119
BCS-16 15'	<10	710	<50*	740
BCS-17 13.5'	531 <sub>E</sub>	1,800	<50*	2,356
BCS-25 2'	<10*	666	3,630	<b>4,301</b>

\*below detection limits, TPH calculations using ½ the detection level; <sub>E</sub> reported as an estimate; **BOLD** indicates reported above the Site-specific cleanup level of TPH at 2,530 mg/kg

As shown in the table, soil samples from four of the five locations were reported below the site-specific cleanup levels. The one location remaining above the cleanup level, BCS-25. This location has shallow oil-range contamination occurring approximately two feet below ground.

Subsequently, after consultations with the Ecology via telephone, email and a visit to the site, it was determined that excavation of the shallow soil contamination remaining at the "Site" was feasible, and following the excavation and confirmation of cleanup, the restrictive covenant on the property could be removed.

## Remedial Excavation

Remedial excavation was completed on March 22, 2017. A Robinson Noble geologist was present to complete field screening and sampling activities along with directing and managing site operations. Prior to excavation, the area was secured and traffic controls were implemented. Utilities were located using both public and private utility-location services. Excavation services were provided by Langseth Environmental Services, Inc. under subcontract to us. Figure 2, located in Appendix A depicts the layout of the project site.

Excavation activities were centered on the former location of boring BC-25. During excavation, soils were subjected to field screening using visual, olfactory, and photoionization field screening methods. Excavation was completed until field screening evidence suggested that contamination was likely below the target (site-specific) TPH cleanup limit of 2,530 mg/kg. Confirmation soil samples were collected from the excavation limits for laboratory analysis to confirm the excavation limits and that remaining soil TPH concentrations were below 2,530 mg/kg. Figure 3, Appendix A depicts the location of confirmation samples.

Field screening provided limited evidence of impacted soils. A total of seven soil samples were collected and submitted for laboratory analysis. As shown on the laboratory analytical reports located in Appendix B, none of the samples submitted for laboratory analysis were reported to contain TPH concentrations above laboratory detection limits. In total, 21.13 tons of impacted

soil were transported to the LRI- 304<sup>th</sup> Street Landfill in Graham, Washington for disposal. Trucking and disposal receipts are located in Appendix C.

## Laboratory Analytical Results

Laboratory analysis was completed on site using a mobile laboratory provided by Libby Environmental, Inc. Analysis was completed for gasoline-, diesel-, and oil-range TPH using the NWTPH-GX, and NWTPH-Dx/DX Extended analytical methods. As shown on the laboratory analytical reports, none of the samples analyzed were found to contain concentrations of TPH above the laboratory practical quantitation limits of 50 mg/kg for diesel-range TPH, 10 mg/kg for gasoline-range TPH, and 250 mg/kg for oil-range TPH. Table 2 below summarizes the analytical data.

Table 2. Confirmation Soil Sample Analytical Results (mg/kg)

Sample ID and Depth	Gasoline	Diesel	Oil
SS1-8"	<10	<50	<250
SS2-1.5'	<10	<50	<250
SS3-3'	<10	<50	<250
SS4-2.5"	<10	<50	<250
SS5-1'	<10	<50	<250
SS6-2.5'	<10	<50	<250
SS7-2.5'	<10	<50	<250
MTCA Site Specific Cleanup		2,530	
Laboratory PQL	10	50	250

## Excavation Backfill and Compaction

After excavation of impacted soils was completed, the excavation was backfilled using fill materials meeting the City of Gig Harbor's specifications. Compaction was completed under the direction of a Robinson Noble engineer to the City of Gig Harbor's specifications. Following backfilling, the excavation area was paved with asphalt. Additional details on the compaction of fill and asphalt, including Figure 4 showing the locations of compaction tests, are provide in the geotechnical field reports located in Appendix D.

## Conclusions and Recommendations

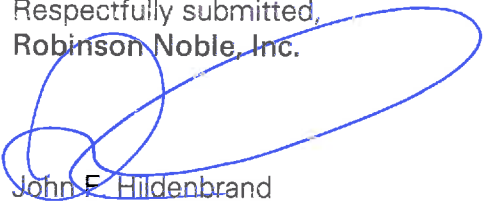
Laboratory analytical data indicates that the previously identified area of TPH impacted soils exceeding the Site-specific cleanup limit of 2,530 mg/kg has been removed from the site. Based on this data, soils at the site now meet the Site-specific cleanup criteria established by Ecology in the 2009 NFA determination. Therefore, the Site now meets the criteria established by Ecology for removal of the environmental covenant and its requirements for long-term groundwater monitoring.

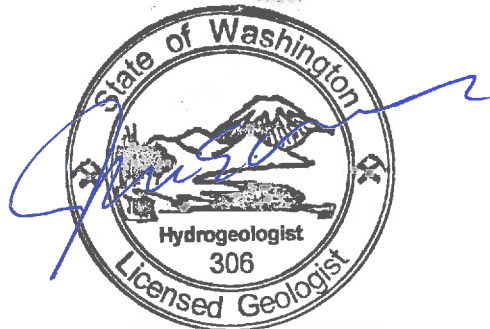
The appropriate application forms for entry into Ecology's Voluntary Cleanup Program (VCP) are included along with this report. We request that Ecology allow the rescission of the existing environmental covenant, and its requirements. We also request the issuance of a final, unrestricted NFA along with the formal delisting of the Site.

## Closing

This concludes our report of final remedial excavation activities at the Gig Harbor Maritime Pier (former Stutz Oil) "Site" located at 3003 Harborview Drive, Gig Harbor Washington. We appreciate this opportunity to be of service. If you have any questions or require additional information please do not hesitate to contact me at 253.475.7711 or you may email me at [jhildenbrand@robinson-noble.com](mailto:jhildenbrand@robinson-noble.com).

Respectfully submitted,  
Robinson Noble, Inc.

  
John F. Hildenbrand  
Principal Environmental Scientist  
Environmental Services Manager



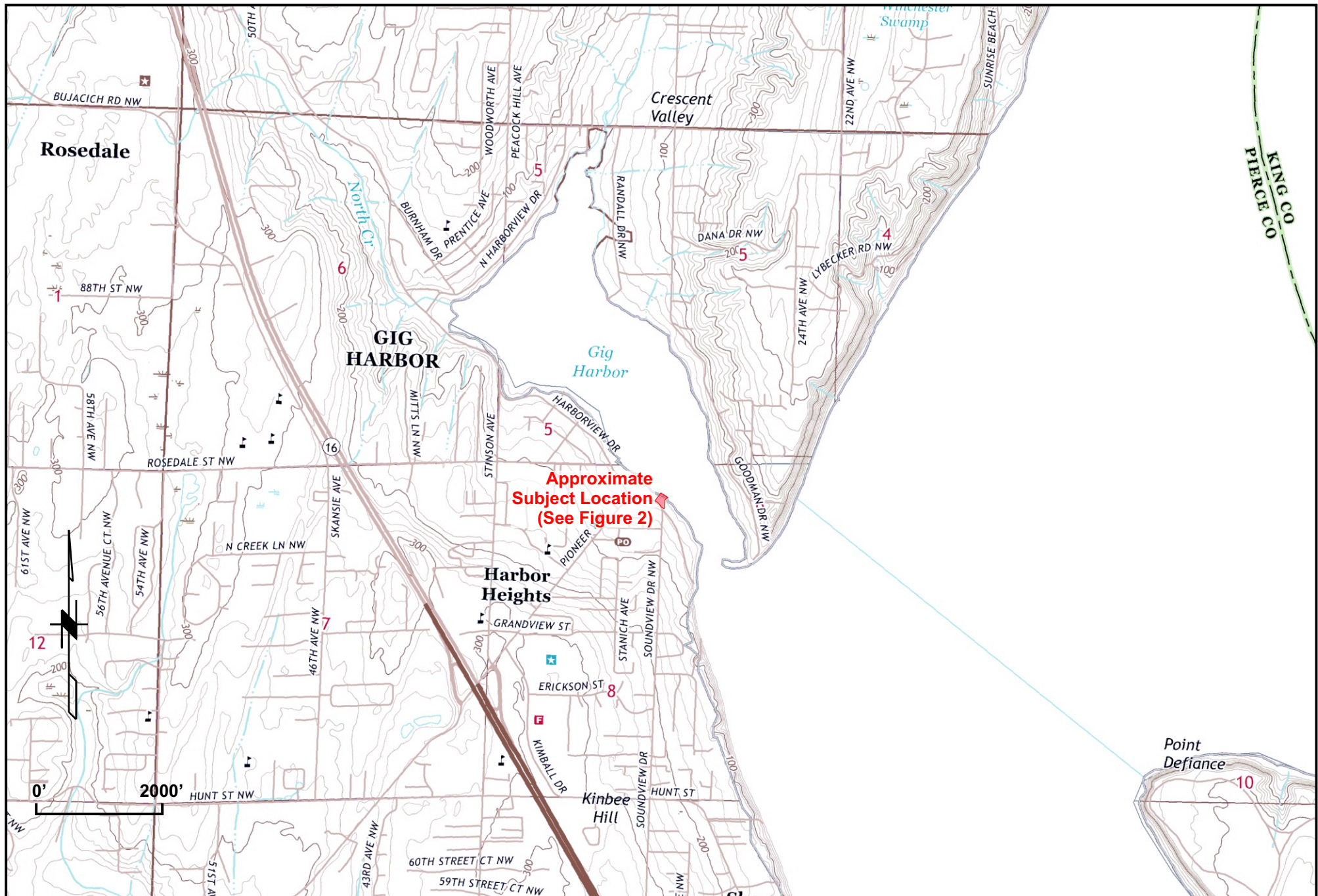
**Joseph E. Becker**

*The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted hydrogeologic and environmental practices and are the result of analysis by Robinson Noble, Inc. staff. This report, and any attachments to it, is for the exclusive use of the City of Gig Harbor. Unless specifically stated in the document, no warranty, expressed or implied, is made. We do not warrant the absence of non-visible mold and we do not accept any liability for the presence of mold, visible or otherwise.*

## APPENDIX A

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Note: Basemap taken from USGS Gig Harbor Quadrangle

PM: JFH  
June 2017  
1326-019E

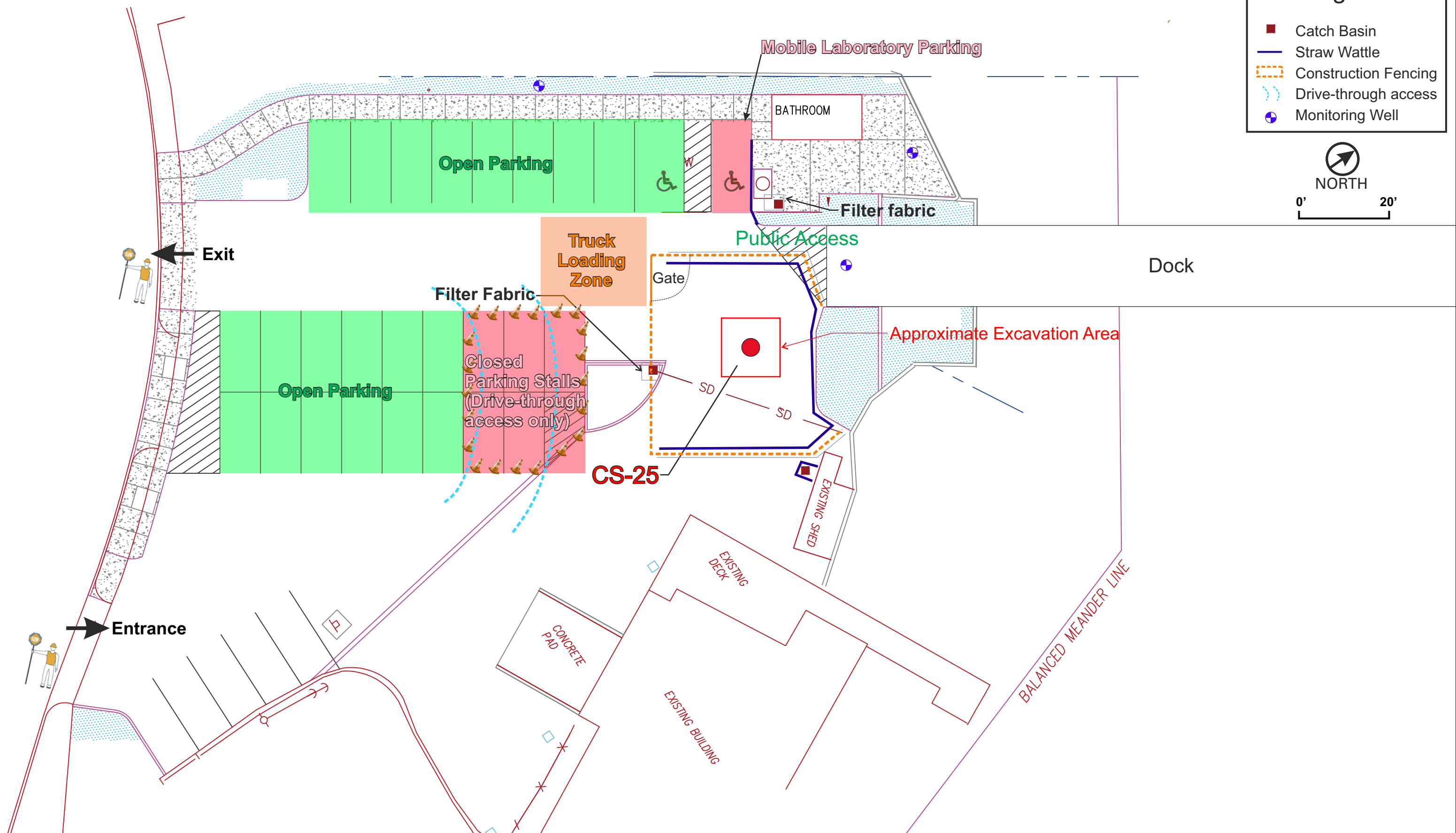
Pierce County  
T 21 N/R 02 E - 08  
Scale 1" = 2000'

Figure 1  
Vicinity Map

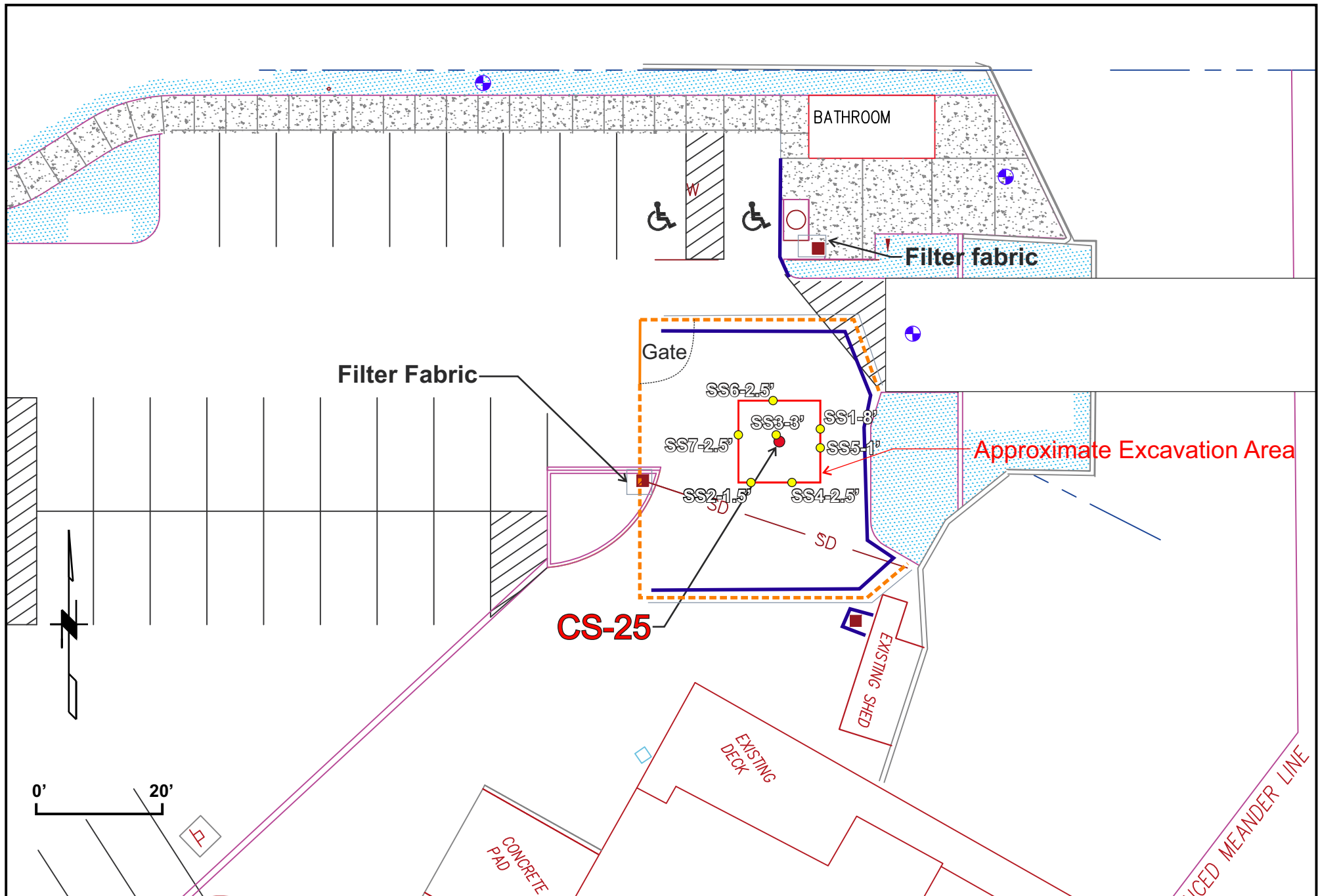
City of Gig Harbor: 3003 Harborview Drive Cleanup and Delisting

# Legend

- Catch Basin
- Straw Wattle
- ▭ Construction Fencing
- ⋯ Drive-through access
- ⊕ Monitoring Well







Note: Basemap taken from Sitts & Hill Engineers, Inc. for City of Gig Harbor

PM: JFH  
June 2017  
1326-019E

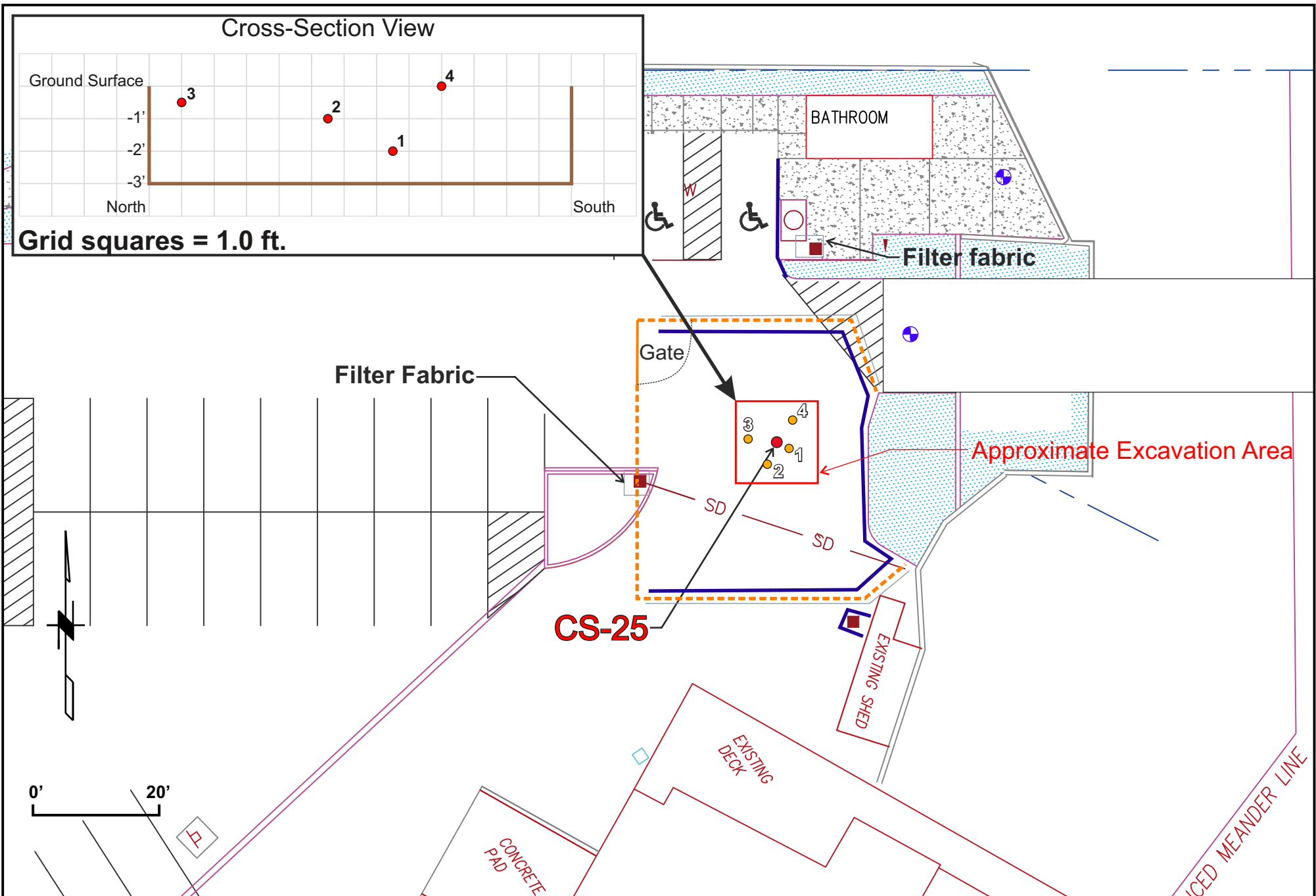
Pierce County  
T 21 N/R 02 E - 08  
Scale 1" = 20'

Figure 3

Confirmation Soil Sample Location Map

City of Gig Harbor: 3003 Harborview Drive Cleanup and Delisting





Note: Basemap taken from Sitts & Hill Engineers, Inc. for City of Gig Harbor

PM: JFH  
June 2017  
1326-019E

Pierce County  
T 21 N/R 02 E - 08  
Scale 1" = 20'

Figure 4

Soil Density Test Location Map

City of Gig Harbor: 3003 Harborview Drive Cleanup and Delisting

## APPENDIX B

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# Libby Environmental, Inc.

4139 Libby Road NE • Olympia, WA 98506-2518

March 30, 2017

John Hildenbrand  
Robinson Noble  
2105 South C Street  
Tacoma, WA 98402

Dear Mr. Hildenbrand:

Please find enclosed the analytical data report for the Gig Harbor Project located in Gig Harbor, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt  
*Senior Chemist*  
*Libby Environmental, Inc.*

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@aol.com

[www.LibbyEnvironmental.com](http://www.LibbyEnvironmental.com)

# Libby Environmental, Inc.

GIG HARBOR PROJECT  
Robinson Noble, Inc.  
Gig Harbor, Washington  
Libby Project # L170322-10  
Client Project # 1326-019E

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

## Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	3/22/17	98	nd
SS1-8"	3/22/17	98	nd
SS1-8" Dup	3/22/17	98	nd
SS2-1.5'	3/22/17	98	nd
SS3-3'	3/22/17	97	nd
SS4-2.5	3/22/17	100	nd
SS5-1'	3/22/17	98	nd
SS6-2.5	3/22/17	97	nd
SS7-2.5	3/22/17	98	nd
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

# Libby Environmental, Inc.

GIG HARBOR PROJECT  
Robinson Noble, Inc.  
Gig Harbor, Washington  
Libby Project # L170322-10  
Client Project # 1326-019E

4139 Libby Road NE  
Olympia, WA 98506  
Phone: (360) 352-2110  
FAX: (360) 352-4154  
Email: libbyenv@aol.com

## Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	3/22/17	98	nd	nd
SS1-8"	3/22/17	83	nd	nd
SS1-8" Dup	3/22/17	97	nd	nd
SS2-1.5'	3/22/17	77	nd	nd
SS3-3'	3/22/17	85	nd	nd
SS4-2.5	3/22/17	82	nd	nd
SS5-1'	3/22/17	104	nd	nd
SS6-2.5	3/22/17	97	nd	nd
SS7-2.5	3/22/17	85	nd	nd
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt



# Chain of Custody Record

**Libby Environmental, Inc.**

4139 Libby Road NE  
Olympia, WA 98506  
Ph: 360-352-2110  
Fax: 360-352-4154

Client: **ROBINSON NARBU**

Address: **2105 S C Street**  
City: **Tacoma** State: **WA** Zip: **98402**  
Phone: **253 475 7711** Fax: **253 472 5846**  
Client Project # **1326-019 E**

www.LibbyEnvironmental.com  
Page: **1** of **1**

Date: **3/22/17**  
Project Manager: **JFH**  
Project Name: **Gig Harbor**  
Location: **Gig Harbor** City, State:  
Collector: **KAT** Date of Collection: **3-21-17**  
Email: **Katherine.Robinson@libby.com**

Sample Number	Depth	Time	Sample Type	Container Type	Field Notes															
					VOC 8260	NWTPH-GX	BTEX 8021	NWTPH-HCID	NWTPH-DX	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals					
1	8"	800	SOIL	JAR/NON	X															
2	1.5'	808	SOIL	T	X															
3	3'	834	SOIL	JAR/NOA	X															
4	2.5	855	SOIL	T	X															
5	1'	843	SOIL	T	X															
6	2.5	845	SOIL	T	X															
7	2.5	850	SOIL	T	X															
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				

Relinquished by: **[Signature]** Date / Time: **3/22/17 11:38** Received by: **[Signature]** Date / Time: **3/22/17 11:52**

Relinquished by: \_\_\_\_\_ Date / Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date / Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date / Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date / Time: \_\_\_\_\_

Remarks: **ML**

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment, client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law. Distribution: White - Lab, Yellow - File, Pink - Originator

## APPENDIX C

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No. 2097

Tacoma - Pierce County  
**Health Department**  
Healthy People In Healthy Communities  
www.pchd.org

**WASTE DISPOSAL AUTHORIZATION**

Tacoma Pierce County  
Health Department

Non-Asbestos  
 Asbestos (PSCAA Case # \_\_\_\_\_)

New   
 Renewal

2/28/2017 11:34:45 AM  
Clerk 62-T2  
Waste Disposal Auth Initial  
4765.00  
Receipt #453067  
ck22170 Langseth Environmental 20

- A. Generator Name: City of Gig Harbor- Maritime Pier
- B. Generator Address: 3003 Harborview Drive - Gig Harbor, WA 98335
- C. Transporter Name: Torn Langseth, (Langseth Environmental)
- D. Technical Contact: John Hildenbrand, (Robinson Noble, Inc.) Phone: (253) 475-7711
- E. Waste Description: Petroleum Contaminated Soils  
 Sludge  Solid  PCS  Other
- F. Authorized Quantity: 100 cubic yards (150 Tons)
- G. Actual Quantity (Filled in upon disposal): \_\_\_\_\_
- H. Multiple Loads:  Yes  No
- I. Dates of Disposal: February 22 2017 through February 21, 2018
- J. Testing: NWTPH-Gx, NWTPH-Dx/Dx Extended
- K. Reviewed by Department of Ecology:  Yes  No
- L. Disposal/Transportation Requirements: A copy of this WDA must be transported with EACH load of waste and presented to the LRI Landfill scale house operator. The wastes associated with this WDA are not suitable for use as daily cover and shall be directly buried (disposed of) in the landfill. Loads shall be covered during transport to the landfill to prevent fugitive emissions of contaminated soils. Load sizes shall comply with conditional-use and solid waste permit criteria.
- M. Facility:  LRI Landfill (304<sup>th</sup> Street LE), 30919 Meridian Street, Eatonville, WA

**CERTIFICATION**

I hereby certify that I have personally examined and am familiar with the information submitted in this document and any supporting material. Based on my inquiry of those individuals immediately responsible for obtaining the information, the information submitted is true, accurate and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. I agree that the generator and/or transporter will abide by all conditions specified in line (L) or any attachments thereto.

2-28-17  
Date

Bookkeeper  
Title

  
Signature

AUTHORIZED BY:

**APPROVED**

FEB 23 2017

  
Troy Rowan, PCND

253-798-6429

TACOMA-PIERCE COUNTY HEALTH DEPT.  
ENVIRONMENTAL HEALTH DIV.  
For Official Use Only

Co: LRI LF Scalehouse via Fax - 253 575 7205

PCRCO, LLC dba LRI-304th  
 17925 Meridian St E  
 Puyallup, WA 98375

001079 LANGSETH ENVIRO SVCS, INC.  
 7517 PORTLAND AVENUE E  
 TACOMA WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	00454171			Rebecca	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
03/22/17	03/22/17	09:05	09:24		
REFERENCE			ORIGIN		
DON			OTHER		

Scale 1 Gross Wt. 53780 LB  
 Scale 2 Tare Wt. 26880 LB  
 Net Weight 26900 LB  
 Inbound - Charge ticket

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
13.45	TON	SPECIAL WASTE-IN CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.  
 304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 1079  
 NOTES HARLOW 11

SIGNATURE \_\_\_\_\_

NET AMOUNT
TENDERED
CHANGE
CHECK NO.

PCRCO, LLC dba LRI-304th  
 17925 Meridian St E  
 Puyallup, WA 98375

001079 LANGSETH ENVIRO SVCS, INC.  
 7517 PORTLAND AVENUE E  
 TACOMA WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	00454233			Rebecca	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
03/22/17	03/22/17	11:09	11:31		
REFERENCE			ORIGIN		
26			OTHER		

Scale 1 Gross Wt. 42980 LB  
 Scale 2 Tare Wt. 27620 LB  
 Net Weight 15360 LB  
 Inbound - Charge ticket

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
7.68	TON	SPECIAL WASTE-IN CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.  
 304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2097  
 NOTES HARLOW 26

SIGNATURE \_\_\_\_\_

NET AMOUNT
TENDERED
CHANGE
CHECK NO.



S Ticket 1257018

3/23/2017 9:35:57AM

Location: 1 Waller Rd. Gravel Pit

Carrier LANENV Langseth Environmental Servi  
Vehicle 12 12

Customer LANENV Langseth Environmental Servi  
Order

Product 1004 5/8" Crushed Rock (CSTC)

P.O. gig harbor  
Deliver

Weighmaster JWS Ticket System  
Received

Product 6.90 Ton  
Freight  
Tax

	Pounds	Tons	Metric
Gross	34940	17.47	15.85
Tare	21140 *	10.57 *	9.59 *
Net	13800	6.90	6.26
	* P. T.		
	<u>Today</u>		
Loads	2		
Qty	18.26		



S Ticket 1256993

3/23/2017 7:48:11AM

Location: 1 Waller Rd. Gravel Pit

Carrier LANENV Langseth Environmental Servi  
Vehicle 12 12

Customer LANENV Langseth Environmental Servi  
Order

Product 1004 5/8" Crushed Rock (CSTC)

P.O. gig harbor  
Deliver

Weighmaster JWS Ticket System  
Received

Product 12.36 Ton  
Freight  
Tax

	Pounds	Tons	Metric
Gross	45680	22.93	20.80
Tare	21140	10.57	9.59
Net	24720	12.36	11.21
	<u>Today</u>		
Loads	1		
Qty	12.36		



PURDY TOPSOIL  
 5819 133RD ST NW  
 BIG HARBOR, WA 98335

SITES: Fredrickson Accounting Office: (253) 531-8835  
 MAILING ADDRESS: 5802 192nd St. E., Puyallup, WA 98375  
 Randles Sand & Gravel Dispatch Office: (253) 531-8800  
 Lynch Creek Quarry: 1 Mile N. on Weyerhaeuser Rd., Eatonville (360) 832-426  
 Purdy Topsoil & Gravel: 5819 133rd NW, Gig Harbor (253) 857-5850

453651 TICKET

DATE	TIME	ACCOUNT	PRODUCT	HAULER	TRUCK	TAX	LOCATION
1/23/2017	11:06	LANG	320	LANG	2	W	5

**CUSTOMER NAME**  
 LANGBETH ENVIRONMENTAL SERVICES  
 Order No: 2010  
 Loads Today: 2  
 Qty. Today: 17.38

QUANTITY	UNIT	PRODUCT	PRICE	AMOUNT
7.95	Ton	5/4- RSG		
		The customer assumes all responsibility for damages inside the curb or property line to property or persons.	Any applicable towing charges are customer's responsibility.	TAX
				TOTAL DUE

	POUNDS	TONS
GROSS:	37040 #	18.52#
TARE:	21140 #	10.57#
NET:	15900	7.95

\* Terms net 20th, 1.5% per month on all accounts overdue.  
 Delinquent accounts may be placed on a cash-only basis.

DELIVER TO: MATERIAL PICKED UP

JENDY P.  
 RECEIVED BY: 

## APPENDIX D

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# FIELD REPORT



**ROBINSON  
NOBLE**

17625 130<sup>th</sup> Avenue NE, Suite 102  
Woodinville, Washington 98072  
Phone: 425-488-0599  
Fax: 425-488-2330  
[www.robison-noble.com](http://www.robison-noble.com)

Project: Harborview Drive Cleanup File No.: 1326-019E  
Owner: City of Gig Harbor Date: 2017-03-29  
Location: Gig Harbor Report #:  
Weather: Light Rain, Low 50's Page: 1 of 1  
Purpose of Visit: Asphalt Compaction Testing By: JRW

We arrived onsite at the request of Langseth Environmental for the purposes of testing compaction of an asphalt patch being placed in an environmental cleanup area that was previously overexcavated for contamination removal.

The paving contractor began by overcutting the asphalt approximately 1 foot around an approximate 13X13 foot area where contaminated soil was removed and observed by Robinson Noble on a previous site visit. The contractor then removed approximately 4 inches of gravel surfacing material out of the excavation that was formally placed up to surface. We observed that existing asphalt was approximately 3 to 4 inches in thickness. The contractor then compacted the disturbed gravel with a smooth drum vibratory roller. Asphalt subgrade appeared firm and unyielding.

The paving contractor then placed 1/2 inch HMA asphalt into the patch area in two approximate 2 inch lifts. Each lift was compacted with a smooth drum vibratory roller. We evaluated the compaction with a nuclear density gauge as meeting minimum 92 percent compaction specifications in the areas tested based on a Rice Value of 154.9 pcf provided to us by the paving contractor. The contractor then sealed the edges of the patch with an asphalt sealant.

Test #	Lift #	Lift Thickness (in)	Wet Density (pcf)	Rice Value (pcf)	% Comp.	% Spec.	Comments
1	1	2	143.8	154.9	93	92	Pass
2	1	2	144.1	154.9	93	92	Pass
3	2	2	142.5	154.9	92	92	Pass
4	2	2	145.2	154.9	94	92	Pass

Attachment:

Signed: \_\_\_\_\_

Distribution:

# FIELD REPORT



**ROBINSON  
NOBLE**

17625 130<sup>th</sup> Avenue NE, Suite 102  
Woodinville, Washington 98072  
Phone: 425-488-0599  
Fax: 425-488-2330  
  
www.robinson-noble.com

Project:	Harborview Drive Cleanup	File No.:	1326-019E
Owner:	City of Gig Harbor	Date:	2017-03-23
Location:	Gig Harbor	Report #:	1
Weather:	Sunny, Low 50's	Page:	1 of 1
Purpose of Visit:	Soil compaction testing	By:	NRG/KAT

We arrived on site at the request of the client for the purposes testing compaction of backfill being placed in an environmental cleanup area that was previously excavated for contamination removal. Contaminated soil removal was observed by Robinson Noble on a previous site visit. We arrived on site at approximately 7:15 am.

Upon arrival the excavation was approximately 3 feet deep and had not yet been backfilled. At approximately 8:23 am the first lift of top coarse fill material was placed in the excavation and compacted with a vibratory hoepack on a backhoe by the contractor, Langseth Environmental. The backfill consisted of imported gravel. We tested the compacted fill with a Troxler nuclear density gage, meeting a minimum 95 percent compaction specifications in the areas tested. A proctor sample was previously collected of the imported material and tested by Robinson Noble. We observed the placement of backfill in approximately one foot lifts. The backfilled excavation appeared firm and unyielding. The test results are presented below. The approximate test locations are shown on the attached figure (figure 1).

Proctor Method: _____ ASTM D 698 <u>XX</u> _____ ASTM D 1557										
Test #	Approx. Feet to Grade	Approx. Fill Depth (feet)	% Moist.	Dry Density (pcf)	Proctor Test #	Optimum Moist. Cont. %	Max. Density (pcf)	% Comp.	% Spec.	Comments
1	2	1	4.0	128.0	1	8	135	95	95	Pass
2	1	2	3.7	129.0	1	8	135	95.5	95	Pass
3	0.5	2.5	4	128.2	1	8	135	95	95	Pass
4	0	3	4.4	129.8	1	8	135	96	95	Pass

Attachment:

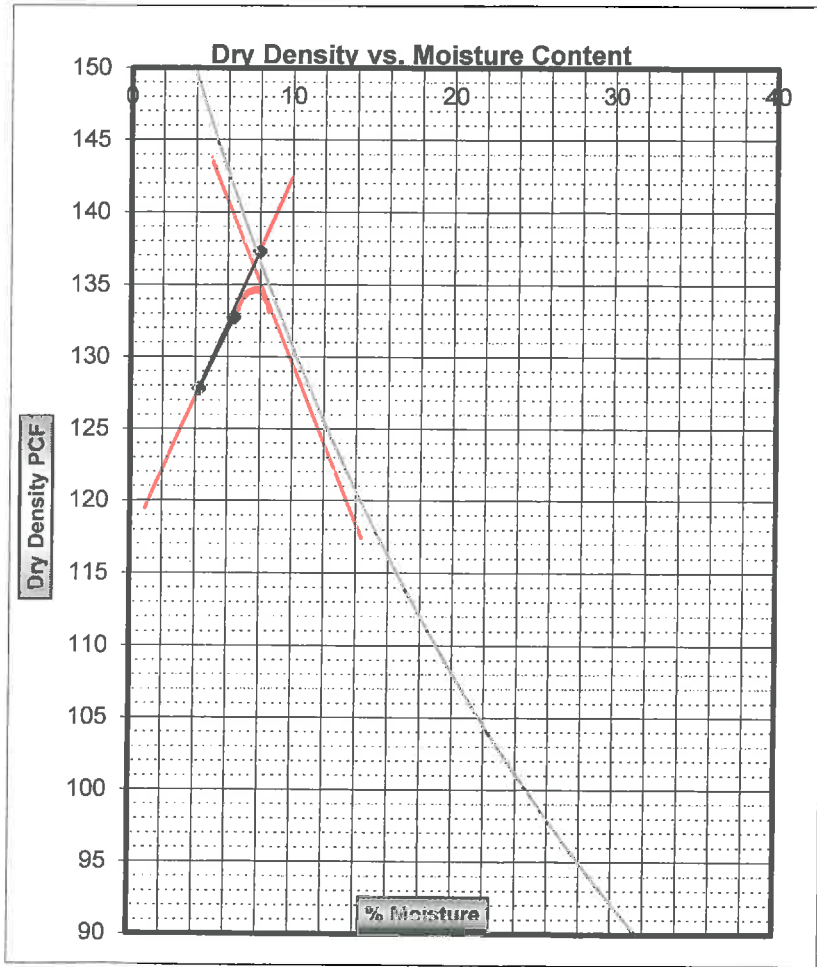
Signed: \_\_\_\_\_

Distribution:

Laboratory Proctor Test

Job Name	Gig Harbor		Job Number	1326-016D	
Soil Description	Top Course		Performed By	NRG	
Proctor Number	Date	3/21/2017		Mold Diam. (in)	6
Proctor Method	ASTM D 1557-	ASTM D 698-	Mold Volume (cu. ft.)	0.075	
Rock Correction	Soil only & Can	41.66 lb	3/4" Rock & Can	lb	Wgt 6" 14.28
	Can	2.75 lb	Can	lb	
		38.91 lb		0 lb	Total (lb) 38.91

Moisture Can #	R	O	C	X	B	I			
Wet Soil + Can	171.9	273.7	225.7	237.7	253.2	183.5			
Dry Soil + Can	166.2	261.4	214	222.6	233.8	171.5			
Weight of Can	8.6	8.5	8.8	8.2	8.6	8.5			
Weight of Water	5.70	12.30	11.70	15.10	19.40	12.00			
Dry Soil	157.60	252.90	205.20	214.40	225.20	163.00			
% Moisture	3.62	4.86	5.70	7.04	8.61	7.36			
Comments									
Soil + Mold	24.27		24.87		25.40				
Weight of Mold	14.28		14.28		14.28				
Weight of Soil	9.99		10.59		11.12				
Wet Density	133.2		141.2		148.3				
Dry Density	127.8		132.7		137.3				
% Moisture	4.2		6.4		8.0				
Use the Results	x		x		x				



Zero Air Voids Curve with a specific gravity =	2.65
Gm - Bulk Specific Gravity of Oversized Fraction =	2.65
(lb/cf)	165
Moisture of oversized Fraction (%) =	-

Percent of Oversized Fraction	0%	Manual Input
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Replot Graph

View Proctor

Full Proctor:	
Optimum Moisture	8
Maximum Dry Density	135
Rock Corr. Opt. Moist.	
Rock. Corr. M. D. D.	

One Point:	
Optimum Moisture	0.0
Maximum Dry Density	0