August 29, 2014

Via Email

Mr. Andy Smith
Site Manager
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Re: Transmittal of 2014 Annual Report, Cascade Timber No.1 (aka, "McFarland, WA") Site, Tacoma, Washington

Dear Mr. Smith:

ENVIRON International Corporation (ENVIRON), on behalf of the ASARCO Multi-State Environmental Custodial Trust ("the Trust"), has been conducting periodic groundwater monitoring and site inspection activities at the above referenced site since 2011. ENVIRON's case manager for this project has been Guy Barrett, who we understand has retired from the Washington State Department of Ecology (Ecology) in recent months. It is our understanding that you will assume the case management role for this site going forward.

The results of ENVIRON's 2014 annual groundwater monitoring and inspection event are provided for your review and comment. For your convenience, we are also providing below a brief background on the site, significant milestones in the site remediation history, and a summary of ENVIRON's activities at the site.

Site Background

From the late 1970s to approximately 1981, slag produced from smelting at the ASARCO facility in Tacoma was placed on the site (which operated as a log sorting yard) as ballast to keep heavy equipment from sinking in to soft soil. In the early 1980s, Ecology began evaluating potential sources of metal impacts to the Hylebos Waterway, and conducted a surface water investigation at the site. Elevated arsenic, copper, lead and zinc concentrations were identified, and subsequent investigations identified the slag as a source of metals impacting surface water and sediment in Hylebos Waterway. In 1995, ASARCO accepted liability for cleanup costs and natural resource damages resulting from releases from the site. Slag, soil and wood waste from the Cascade Timber No. 1 site were removed and placed into a lined containment cell, as described in the Final Engineering Report (Hydrometrics, 1995).

After construction of the containment cell was completed (1995), post-construction monitoring was performed in accordance with the Final Remedial Design Report (Appendix D, Compliance Monitoring Sampling and Analysis Plan), to evaluate the effectiveness of the containment cell remedy. The requirements for long-term monitoring included evaluating surface water quality, groundwater quality, and leachate quality, and performing facility inspections. Specifically, the following activities were required:

Surface Water: Collect samples for analysis of pH, specific conductivity, common ions, and total and dissolved arsenic, lead, copper, and zinc, from two outfalls quarterly for one year, semi-annually for two years, and annually for two years.

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Groundwater:	Collect samples for analysis of pH, specific conductivity, common ions, and total and dissolved arsenic, lead, copper, and zinc from four monitoring wells installed along the four sides of the containment cell quarterly for three years. Monitoring frequency to be reviewed at that time to determine if additional monitoring is required.
Leachate:	Quantity of leachate monitored weekly, and reduced to monthly or every three months once the containment cell cover is completed. If possible, leachate samples were then to be collected every three months for analysis of pH and total arsenic.
Facility Inspections:	To be carried out concurrently with other compliance monitoring activities to ensure proper functioning of surface drainage system, leachate collection and recovery system (LCRS), and gas ventilation system. Signs of containment cell instability, cover erosion or deterioration, and vandalism was to also be evaluated.

The McFarland, WA site was to be conveyed to the Trust in December of 2009 through the confirmation of the ASARCO bankruptcy. However, due to administrative delays, the site was not properly conveyed to the Trust until February 2011. During the time period from December 2009 to February 2011, the Trust retained ENVIRON to develop a scope of work for compliance monitoring and inspection, which was presented to Ecology in April 2011; however during this time, ENVIRON was unable to access the site. A summary of site historical events is provided below:

1995:	Containment cell constructed.
1996 to 1998:	Surface run-off water monitoring conducted through 1998.
	Groundwater monitoring at four wells conducted through 1998 (reduced to annual events in March, 1998)
2009:	Ecology conducted a site visit as part of its requirement to conduct 5-year reviews of the site, noting that the containment cell and supporting improvements (cap, wells) were in good condition. Ecology concluded that annual groundwater sampling was still required, although none had been performed since 1998.
Dec. 2009:	Trust inception.
Dec. 2010:	ENVIRON met with Ecology (Max Coleman, Guy Barrett) to discuss continuing groundwater sampling.
Feb. 11:	Site conveyed to the Trust
2011:	ENVIRON submitted scope of work for approval by Ecology, which included semi-annual groundwater monitoring and inspection of the containment cell.
	ENVIRON conducted two semi-annual monitoring/inspection events in 2011 (May, December).
	Ecology finalized its 5-year review (based on site visit conducted in 2009).
2012:	ENVIRON conducted two semi-annual monitoring/inspection events (June, December).

2013: ENVIRON conducted one monitoring/inspection event in June, and in December submitted a request to Ecology to reduce the frequency to one annual event. Ecology approved the request.

2014: ENVIRON conducted one annual monitoring/inspection event (January).

Results of ENVIRON Monitoring/Inspection

The results of ENVIRON's groundwater monitoring conducted from 2011 to 2014 are summarized in the attached 2014 Annual Report. In general, concentrations of arsenic, copper, lead, and zinc have been below Model Toxics Control Act (MTCA) Method A or B values, except for arsenic in one well (MCW-4), which has periodically exhibited a slight exceedance of the MTCA Method A and B value. Although the groundwater beneath the site exhibits a slight mound in the southwestern portion of the site (the cause of which is not known), conditions are similar to historic monitoring events dating back to the 1990s. Based on its inspections, the containment cell and supporting improvements continue to be in good condition.

Based upon prior direction received from Ecology, ENVIRON plans to conduct its next annual groundwater sampling event and site inspection in January 2015. Prior to the next round of site activities, ENVIRON suggests an introductory meeting at your office to be followed by a same day site visit. Such a meeting / site visit should provide you an efficient way to get up to speed on the site, align on a long-term strategy and could also provide Ecology the opportunity to conduct its site visit in support of its 5-year review, which ENVIRON understands may need to be conducted in 2014 (based on the previous 5-year review site visit [November 2009]).

We look forward to continuing to work with Ecology on this site. Please contact Devon Rowe at (503) 305-2373 with any questions.

Sincerely,

Devon Rowe, LHG
Senior Manager

Cc. ASARCO Multi-State Environmental Custodial Trust
David Heidlauf - ENVIRON

Attachments

August 12, 2014

Via Email

Mr. Andy Smith
Site Manager
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Re: 2014 Annual Report, Cascade Timber #1 (aka, "McFarland, WA") Site, Tacoma, Washington

Dear Mr. Smith:

ENVIRON International Corporation (ENVIRON), on behalf of the Asarco Multi-State Environmental Custodial Trust, is pleased to present the results of recent field activities conducted at the Cascade Timber #1 Site, located at 2502 Marine View Drive, Tacoma, Washington ("Site"). ENVIRON's January 2014 recent activities included purging and sampling of four existing groundwater monitoring wells (MCW-1 through MCW-4), and inspection of the on-Site waste containment cell and associated Site improvements (e.g., fencing, gates). From 2011 to 2013, ENVIRON conducted semi-annual sampling at the Site. In an email dated November 14, 2013, the Washington State Department of Ecology (Ecology) approved ENVIRON's request to reduce groundwater monitoring frequency from two semi-annual events to one annual event, beginning in January 2014. This letter provides a summary of the January 2014 Annual monitoring event.

Groundwater Monitoring Activities

On January 14, 2014, ENVIRON conducted groundwater monitoring activities. Upon arrival at the Site, ENVIRON field personnel removed the well caps to allow the monitoring wells to equilibrate with atmospheric pressure for approximately 30 minutes. Water levels were then measured to the nearest 0.01 feet (relative to the top-of-casing) using an electric water level indicator. Groundwater level measurements and well construction information are summarized in Table 1.

After measuring the water level at each well, groundwater purging and sampling was conducted using a peristaltic pump, and new ¼-inch tubing employing "low-flow" techniques. Groundwater was purged at a rate ranging from approximately 0.1 to 0.5 liter per minute (L/min). During purging, the groundwater level was monitored, adjusting the purge rate, as necessary, to limit the drawdown to less than approximately 0.33 feet. After purging at least one tubing volume, groundwater parameters including temperature, pH, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were monitored using an in-line flow-through cell. Parameter readings were recorded every 3 to 5 minutes on field purge logs, until parameter measurements indicated that groundwater conditions had stabilized. Generally, the criterion for achieving stabilization is three consecutive readings of each of the parameters listed above within 10% of each other. Purge logs are included in Attachment A.

Upon achieving stabilization, groundwater samples were collected into laboratory prepared bottles. After collection, the groundwater samples were labeled, recorded on a chain-of-custody, and stored in a cooler with ice pending delivery to TestAmerica Incorporated (TAI), a Washington-certified analytical laboratory in Fife, Washington. Purged water was contained in Department of Transportation (DOT)-approved 55-gallon steel drums, and stored at the Site pending disposal. Based on the analytical results from ENVIRON's prior groundwater monitoring events, the purged water stored at the Site can be managed as non-regulated waste.

Laboratory Analysis

Groundwater samples obtained from wells MCW-1 through MCW-4 were analyzed for the following constituents:

- Total and dissolved metals (arsenic, copper, lead, and zinc) by United States Environmental Protection Agency (USEPA) Method 200 series;
- Total hardness by USEPA Method SM2340B;
- Total alkalinity, bicarbonate, and carbonate by USEPA Method SM2320B;
- Total chloride and sulfate by USEPA Method 300;
- Total calcium, magnesium, sodium, and potassium by USEPA Method 200 series.

One blind duplicate sample (all analyses) was included in the analytical program for this monitoring event (collected from MCW-3). Because the groundwater sampling method did not include the use of any reusable equipment (only new, disposable sampling equipment was used), equipment rinsate blank samples were not collected as part of the groundwater sampling program.

Groundwater Monitoring Results

In the January 2014 monitoring event, groundwater depths ranged from approximately 8.56 feet (MCW-2) to 12.96 feet (MCW-4) below the respective top-of-casing pipes. Based on these measurements and the top-of-casing elevations (surveyed in December 2012), groundwater elevations beneath the Site ranged from approximately 12.19 (MCW-4) to 14.33 (MCW-3) feet above mean sea level (amsl; Table 1)[1]. Similar to the results from ENVIRON's previous monitoring events, the January 2014 groundwater elevations suggest that shallow groundwater flow beneath the northern portion of the Site is towards the southeast (towards the Hylebos Waterway, and generally consistent with the inferred groundwater flow direction based on nearby topography), with a component of groundwater flow beneath the southern portion of the Site (near MCW-1) towards the northeast.

ENVIRON evaluated this apparent groundwater flow anomaly in its Fourth Quarter 2012 report, which included historic groundwater elevation maps dating back to the 1990s. Based on the historic groundwater elevation maps, considerable variability in groundwater flow directions beneath the Site was noted, including groundwater flow directions to the south (June 1995), southwest (March 1996 and March 1997), and east (December 1996). The anomalous flow behavior observed by ENVIRON from 2011 to 2014 was also noted for several monitoring

[1] Historically, the top-of-casing values used to calculate groundwater elevations in the wells were obtained from the document titled *Final Engineering Report for Cascade Timber No. 1 Remediation*, prepared by Hydrometrics, Inc. (Hydrometrics) in April 1995. Table 1 has been updated with the recent survey information, obtained on December 11, 2012.

events in the 1990s (December 1995, June 1996, September 1996, June 1997, September 1997, and June 1998).

Therefore, while the current groundwater flow patterns observed by ENVIRON along the southern portion of the Site appear to be anomalous based on topographic considerations and the proximity of the Site to the Hylebos Waterway (to the south), it appears that the January 2014 data (and prior results from sampling by ENVIRON in 2011 - 2013) are consistent with data collected in historic monitoring events at the Site dating back to the 1990s. The current distribution of monitoring wells at the Site limits characterization of groundwater flow conditions to the immediate vicinity of the containment cell.

Groundwater Analytical Results

The results of laboratory analyses are summarized in Table 3. The results of this sampling event are similar to the results from ENVIRON's previous sampling events conducted from 2011 through 2013. For analytes where Model Toxics Control Act (MTCA) cleanup levels have been established (arsenic, copper, lead, and zinc), concentrations were below respective MTCA Method A or Method B values, with the exception of arsenic. Total and dissolved arsenic were detected at concentrations of 0.0070 milligrams per liter (mg/L) and 0.0069 mg/L, respectively, in MCW-4. These concentrations are slightly above the MTCA Method A value for arsenic (0.005 mg/L) and similar to concentrations that have been observed for arsenic in this well since 2011 (ranging from 0.0025 mg/L to 0.0063 mg/L).

While MTCA has not established cleanup levels for general groundwater parameters (e.g., hardness, alkalinity, chloride, sulfate, calcium, etc.), based on a review of previous analytical results (including sampling conducted at the Site in 2000 by Hydrometrics, and ENVIRON's previous sampling), the results from this sampling event are similar to past results for these general groundwater quality parameters. Laboratory results from ENVIRON's monitoring event are included in Attachment C.

Operations and Maintenance (O&M) Inspection

ENVIRON personnel inspected the containment cell and general Site improvements (monitoring wells, vent pipes, drainage channels, fences, etc.) to evaluate their condition, and to identify items requiring repair (e.g., damaged wells, clogged drains, damaged gates or fences). Routine grounds-keeping tasks (e.g., litter pickup, vegetation control, maintaining signage) were also performed as necessary. The O&M inspection was documented by ENVIRON personnel on field logs and photographs, as appropriate. Site inspection field notes are included in Attachment D, and select photographs are included in Attachment E.

The monitoring wells were inspected and found to be in good condition. Three wells are completed with aboveground monuments (MCW-1, MCW-3, and MCW-4) and one well (MCW-2) is completed with a flush-mount vault. Each of the wells were locked, contained well caps, and the concrete surrounding the well casings was observed to be in good condition, free of significant cracks.

The perimeter fence was inspected, and was noted to be in good condition with the exception of one strand of barbed wire along the top of the fence in the southwest corner of the Site that was severed (two strands remain intact). All appropriate signage was observed to be securely affixed to the existing perimeter fence and the signs are legible.

ENVIRON personnel walked and visually inspected the surface of the containment cell. Vegetation was observed on the surface, consisting of a variety of grasses and young blackberry plants. Removal or limited application of herbicide to control blackberry growth may be used in future maintenance inspections. The two “gas vent boots” protruding from the center of the containment cell were visually inspected and were found to be unobstructed, and in good condition although the painted coating exhibited some signs of deterioration (cracking and peeling). The painted coating will be monitored and repaired if deterioration of the paint continues to the point where the integrity of the gas vent boot is in jeopardy. Two “cleanout boots,” located in the northeast and northwest corners of the containment cell were visually inspected and were found to be unobstructed and in good condition. The “cell drain boot,” located in the southeast corner of the containment cell was also visually inspected, and found to be in good condition.

Closure

ENVIRON will continue the existing groundwater sampling on an annual basis with the next groundwater sampling event scheduled to occur in January 2015. ENVIRON will conduct a Site inspection to perform O&M activities during late August.. ENVIRON will arrange for the observed strand of severed barbed wire to be repaired during the next Site inspection. If you have any questions or comments regarding the items presented in this letter, please contact me at 503-305-2373, or drowe@environcorp.com .

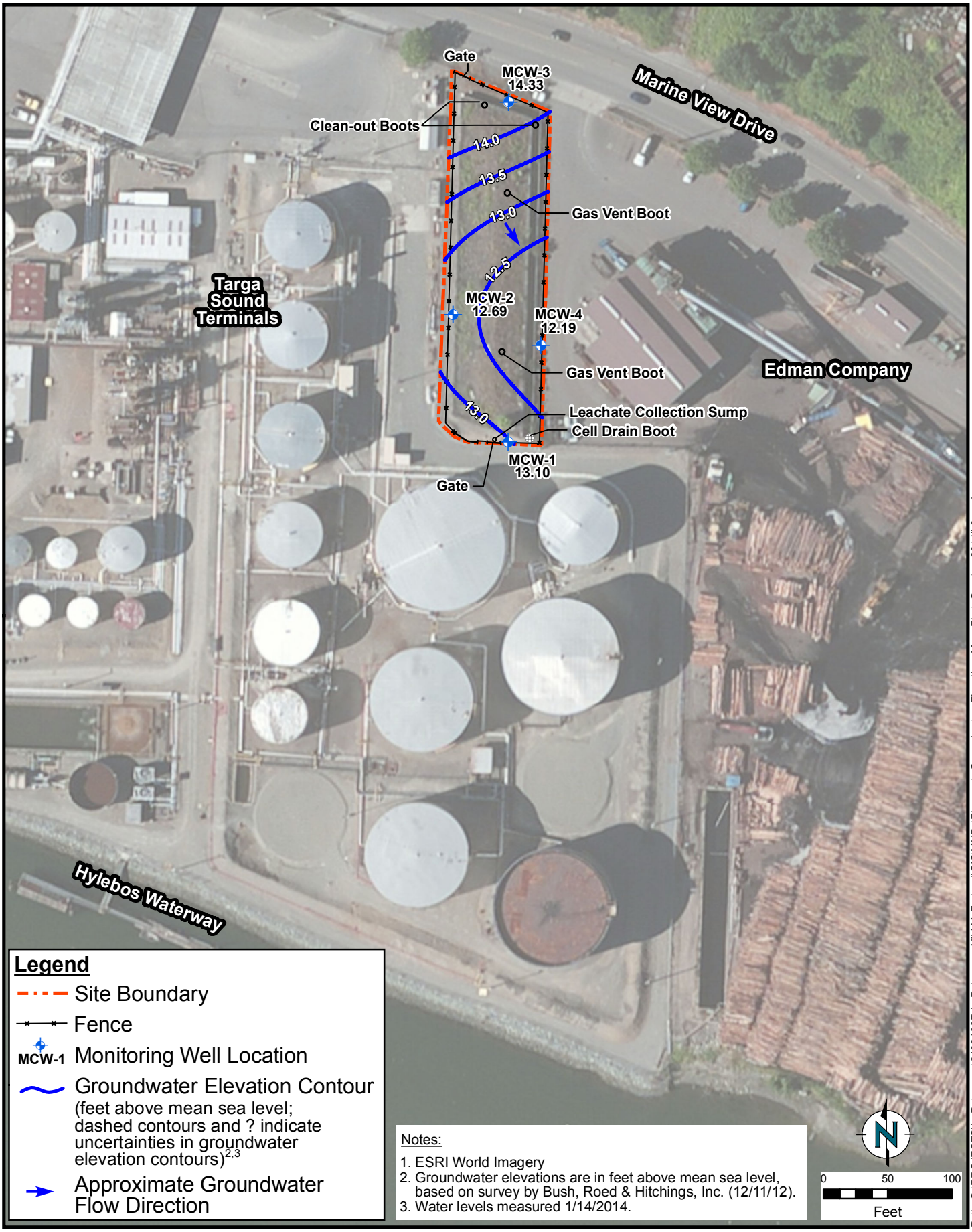
Sincerely,

Devon Rowe, LG, LHG
Project Manager

cc: Tanya O’Neill, Foley & Lardner
David Heidlauf, ENVIRON
Asarco Multi-State Environmental Custodial Trust

Attachments: Figure 1 – Groundwater Elevation and Site Map
Table 1 – Groundwater Elevation Measurements (2011-2014)
Table 2 – Summary of Historical Groundwater Elevation Measurements
Table 3 – Summary of Groundwater Analytical Results
Attachment A – Purge Logs
Attachment B – Laboratory Data
Attachment C – Field Inspection Notes
Attachment D – Site Photographs

Figure



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ENVIRON

DRAFTED BY: JBrown | Date: 3/19/2014

Groundwater Elevation Map - January 2014
Cascade Timber No. 1 Site

Cascade Timber No. 1 ("McFarland, WA") Site
2502 Marine View Drive
Tacoma, WA 98422

Figure
1

PROJECT: 2132108R

Tables

Table 1: Groundwater Elevation Measurements (2011 - 2014)
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Well Number[1]	Casing Diameter (inches)	Total Depth (feet)	Screen Interval (feet below ground surface)	Top of Casing Elevation[2]	Measurement Date	Depth to Water (feet below top of casing)	Elevation (ft)
MCW-1	2	19	10-15	24.83	5/18/11	12.14	12.69
					12/6/11	12.19	12.64
					6/7/12	12.29	12.54
					12/11/12	11.34	13.49
					6/6/13	12.18	12.65
					1/14/14	11.73	13.10
MCW-2	2	16	10-15	21.25	5/18/11	8.51	12.74
					12/6/11	8.98	12.27
					6/7/12	8.61	12.64
					12/11/12	8.03	13.22
					6/6/13	8.66	12.59
					1/14/14	8.56	12.69
MCW-3	2	14	9-14	24.95	5/18/11	10.69	14.26
					12/6/11	11.07	13.88
					6/7/12	10.65	14.30
					12/11/12	10.04	14.91
					6/6/13	10.54	14.41
					1/14/14	10.62	14.33
MCW-4	2	18	12-17	25.15	5/18/11	12.71	12.44
					12/6/11	13.55	11.60
					6/7/12	13.22	11.93
					12/11/12	12.57	12.58
					6/6/13	13.12	12.03
					1/14/14	12.96	12.19

Notes

1. MCW-1, MCW-2, MCW-3, MCW-4 constructed on August 31, 1994.
2. Elevations obtained from Bush, Roed and Hitchings (resurveyed on 12/11/12).

Table 2: Summary of Historical Groundwater Measurements
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Well Number[1]	Casing Diameter (inches)	Total Depth (feet)	Screen Interval (feet below ground surface)	Top of Casing Elevation[2]	Measurement Date	Depth to Water (feet below top of casing)	Elevation (ft)
MCW-1	2	19	10-15	35.56	9/8/1994	13.19	22.37
					12/6/1994	12.11	23.45
					3/6/1995	12.62	22.94
					6/21/1995	13.05	22.51
					9/27/1995	13.06	22.50
					12/21/1995	11.65	23.91
					3/8/1996	12.29	23.27
					6/25/1996	12.72	22.84
					9/20/1996	13.11	22.45
					12/3/1996	11.38	24.18
					3/26/1997	12.75	22.81
					6/20/1997	12.49	23.07
					9/29/1997	13.35	22.21
					12/3/1997	12.58	22.98
					6/16/1998	12.99	22.57

Table 2: Summary of Historical Groundwater Measurements
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Well Number[1]	Casing Diameter (inches)	Total Depth (feet)	Screen Interval (feet below ground surface)	Top of Casing Elevation[2]	Measurement Date	Depth to Water (feet below top of casing)	Elevation (ft)
MCW-2	2	16	10-15	32.00	9/8/1994	9.65	22.35
					12/6/1994	9.04	22.96
					3/6/1995	8.64	23.36
					6/21/1995	9.32	22.68
					9/27/1995	10.43	21.57
					12/21/1995	8.14	23.86
					3/8/1996	9.95	22.05
					6/25/1996	9.22	22.78
					9/20/1996	9.48	22.52
					12/3/1996	5.61[3]	26.39
					3/26/1997	9.15	22.85
					6/20/1997	8.76	23.24
					9/27/1997	9.31	22.69
					12/3/1997	9.76	22.24
					6/16/1998	9.14	22.86

Table 2: Summary of Historical Groundwater Measurements
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Well Number[1]	Casing Diameter (inches)	Total Depth (feet)	Screen Interval (feet below ground surface)	Top of Casing Elevation[2]	Measurement Date	Depth to Water (feet below top of casing)	Elevation (ft)
MCW-3	2	14	9-14	35.61	9/8/1994	10.76	24.85
					12/6/1994	10.29	25.32
					3/6/1995	10.17	25.44
					6/21/1995	10.82	24.79
					9/27/1995	11.22	24.39
					12/21/1995	10.42	25.19
					3/8/1996	10.44	25.17
					6/25/1996	10.88	24.73
					9/20/1996	11.10	24.51
					12/3/1996	10.47	25.14
					3/26/1997	10.44	25.17
					6/20/1997	11.11	24.50
					9/27/1997	11.65	23.96
					12/3/1997	11.23	24.38
					6/16/1998	11.37	24.24

Table 2: Summary of Historical Groundwater Measurements
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

Well Number[1]	Casing Diameter (inches)	Total Depth (feet)	Screen Interval (feet below ground surface)	Top of Casing Elevation[2]	Measurement Date	Depth to Water (feet below top of casing)	Elevation (ft)
MCW-4	2	18	12-17	35.83	9/8/1994	13.46	22.37
					12/6/1994	12.77	23.06
					3/6/1995	13.01	22.82
					6/21/1995	13.03	22.80
					9/27/1995	13.58	22.25
					12/21/1995	12.34	23.49
					3/8/1996	12.46	23.37
					6/25/1996	13.20	22.63
					9/20/1996	13.59	22.24
					12/3/1996	12.42	23.41
					3/26/1997	12.38	23.45
					6/20/1997	13.21	22.62
					9/27/1997	13.79	22.04
					12/3/1997	13.29	22.54
					6/16/1998	13.59	22.24

Notes

1. MCW-1, MCW-2, MCW-3, MCW-4 constructed on August 31, 1994.
2. Elevations obtained from the "Final Engineering Report" for the Cascade Timber #1 Log Yard Remediation, prepared by Hydrometrics Inc. (April 1995).
All historic water levels were collected by Hydrometrics.
3. ENVIRON suspects that this measurement reflects a transcription error in the data tables provided in the Hydrometrics Inc. report (April 1995).

Table 3: Summary of Groundwater Analytical Results
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

		MTCA Method A/B[1]	MCW-1					
			05/18 /2011	12/06/ 2011	06/07/ 2012	12/11/ 2012	6/6/ 2013	1/14/2014
		mg/l	mg/l					
Arsenic	Total	0.005/ 0.0048	< 0.001	<0.001	0.0027	<0.001	0.0037	<0.001
	Dissolved		< 0.001	<0.001	0.0026	<0.001	0.0038	<0.001
Copper	Total	0.64	< 0.002	0.0065 JB	0.001	0.0027	0.00046	0.00069 J
	Dissolved		< 0.002	0.0096 JB	0.00056 J	0.0020	0.00071 J	0.00098 J
Lead	Total	0.015	< 0.001	0.00005 J	0.00079	0.00026 J	0.00013 J	0.00036 J
	Dissolved		< 0.001	<0.0004	0.000064 J	0.000098 J	0.000082 J	0.00025 J
Zinc	Total	4.8	< 0.01	<0.0014	0.0054	0.0020	<0.0014	< 0.004
	Dissolved		< 0.01	0.0018	0.0016	0.0028	0.0068	0.0028 J
Calcium	Total	--	11.4	18	14	14 B	15 B	17
Magnesium	Total	--	3.19	5.3	4.6	4.1	5.0	5.1 J
Potassium	Total	--	2.28	2.9 J	1.9 J	2.4 J	2.0 J	2.5 J
Sodium	Total	--	15.2	18 B	14	14	14	15
Hardness	Total	--	41.5	71	52	49	69	68
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bicarbonate Alkalinity	Total	--	60.2	66	70	61	89	81
Chloride	Total	--	1.8	1.8	3.6	2.01	1.5 B	1.7
Sulfate	Total	--	6.67	11	6.5	11.3	5.3	8.8
TPH-Gx	--	1	--	< 0.094	--	--	--	--
TPH-Dx	--	0.5	--	< 0.24	--	--	--	--
TPH-Oil	--	0.5	--	< 0.47	--	--	--	--

Notes
[1] MTCA - Model Toxics Control Act Cleanup Regulation Standard
mg/l milligrams per liter
dup duplicate
-- criteria not established
TPH-Gx gasoline range petroleum hydrocarbons
TPH-Dx diesel range petroleum hydrocarbons (>C12-C24)
TPH-Oil motor oil range petroleum hydrocarbons
Bold values and cells shaded grey represent an exceedance of the MTCA Method A/B criteria.

Table 3: Summary of Groundwater Analytical Results
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

		MTCA Method A/B[1]	MCW-2										
			05/18/ 2011	05/18/2011 (dup)	12/06/ 2011	12/06/ 2011 (dup)	06/07/ 2012	06/07/ 2012 (dup)	12/11 /2012	12/11/ 2012 (dup)	6/6/2013	6/6/2013 (dup)	1/14/2014
		mg/l	mg/l										
Arsenic	Total	0.005/ 0.0048	0.00138	<0.001	0.0026	0.0019	<0.001	<0.001	0.0013	0.0014	<0.001	<0.001	0.0013
	Dissolved		0.00116	<0.001	0.0018	0.0017	<0.001	<0.001	0.00096 J	<0.0010	<0.001	<0.001	0.0012
Copper	Total	0.64	< 0.002	< 0.002	0.00022 J	0.0021 J	<0.001	0.0003 J	0.00056 J	0.00052 J	0.00013 J	<0.001	<0.001
	Dissolved		< 0.002	< 0.002	0.00011 J	0.0032 J	0.00027 J	0.00018 J	0.00026 J	0.00070 J	0.00011 J	<0.001	0.00037 J
Lead	Total	0.015	< 0.001	< 0.001	0.00004 J	0.00004 J	<0.0004	0.000052 J	0.00020 J	0.00016 J	0.0012	0.000057 J	0.00016 J
	Dissolved		< 0.001	< 0.001	<0.0004	<0.0004	<0.0004	<0.0004	<0.00040	0.000073 J	<0.0004	<0.0004	0.00030 J
Zinc	Total	4.8	< 0.01	< 0.01	0.0013 J	0.0013 J	0.00092 J	<0.0014	0.0015	0.0019	<0.0014	<0.0014	<0.004
	Dissolved		<0.01	0.0101	0.0014	0.0015	<0.0014	0.00091 J	<0.0014	0.0030	0.0015	<0.0014	<0.004
Calcium	Total	--	24.4	25.6	26	26	26	26	30 B	28 B	26 B	25 B	27
Magnesium	Total	--	10.1	10.6	13	13	10	10	12	12	10	10	12
Potassium	Total	--	4.43	4.84	4	4.2	4.8	4.8	6.2	5.7	5.4	5.2	4.9
Sodium	Total	--	10.5	11	12 B	12 B	11	11	12	11	12	11	11
Hardness	Total	--	103	107	140	150	130	130	150	150	110 B	110 B	120
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bicarbonate Alkalinity	Total	--	128	127	140	140	130	130	140	140	140	140	140
Chloride	Total	--	5.52	5.49	9.6	8.7	6	6.1	9.06	8.77	7.0 B	8.1 B	6.4
Sulfate	Total	--	< 1.0	<1.0	<1.2	<1.2	<1.2	<1.2	0.77	<0.5	<1.0	<1.0	<1.2
TPH-Gx	--	1	--	--	< 0.094	< 0.094	--	--	--	--	--	--	--
TPH-Dx	--	0.5	--	--	< 0.24	< 0.24	--	--	--	--	--	--	--
TPH-Oil	--	0.5	--	--	< 0.47	< 0.47	--	--	--	--	--	--	--

Notes
[1] MTCA - Model Toxics Control Act Cleanup Regulation Standard
mg/l milligrams per liter
dup duplicate
-- criteria not established
TPH-Gx gasoline range petroleum hydrocarbons
TPH-Dx diesel range petroleum hydrocarbons (>C12-C24)
TPH-Oil motor oil range petroleum hydrocarbons
Bold values and cells shaded grey represent an exceedance of the MTCA Method A/B criteria.

Table 3: Summary of Groundwater Analytical Results
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

		MTCA Method A/B[1]	MCW-3						
			05/18/ 2011	12/06/ 2011	06/07/ 2012	12/11/ 2012	6/6/ 2013	1/14/2014	1/14/2014 (dup)
		mg/l	mg/l						
Arsenic	Total	0.005/ 0.0048	0.00189	**0.0083**	0.0025	0.0020	0.0028	0.0018	0.0017
	Dissolved		0.00197	0.0017	0.0022	0.0018	0.0023	0.0017	0.0017
Copper	Total	0.64	< 0.002	0.00034 J	0.00056 J	0.00043 J	0.00068 J	<0.001	<0.001
	Dissolved		< 0.002	0.00025 J	0.00023 J	0.00022 J	0.00016 J	0.00047 J	<0.001
Lead	Total	0.015	< 0.001	0.00021 J	0.00017 J	0.00018 J	0.00052	0.000068 J	0.000085 J
	Dissolved		< 0.001	<0.004	0.000043 J	0.000091 J	<0.0004	0.00008 J	0.000065 J
Zinc	Total	4.8	< 0.01	0.0011 J	<0.0014	0.0011 J	0.0011 J	<0.004	<0.004
	Dissolved		< 0.01	0.0017	<0.0014	0.0023	0.0010 J	0.0029J	<0.004
Calcium	Total	--	24.1	24	20	22 B	17 B	20	21
Magnesium	Total	--	15.8	16	12	14	11	13	13
Potassium	Total	--	2.08	2.4 J	1.9 J	2.3 J	2.1 J	1.9 J	1.9 J
Sodium	Total	--	11.0	12 B	9.7	11	8.9	9.4	9.5
Hardness	Total	--	125	140	120	120	89 B	110	130
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bicarbonate Alkalinity	Total	--	135	140	120	130	110	120	120
Chloride	Total	--	14.6	7.5	9.2	7.9	8.1 B	7.4	7.4
Sulfate	Total	--	< 1.0	<1.2	<1.2	<0.5	<1.0	<1.2	<1.2
TPH-Gx	--	1	--	< 0.094	--	--	--	--	--
TPH-Dx	--	0.5	--	< 0.24	--	--	--	--	--
TPH-Oil	--	0.5	--	< 0.47	--	--	--	--	--

Notes
[1] MTCA - Model Toxics Control Act Cleanup Regulation Standard
mg/l milligrams per liter
dup duplicate
-- criteria not established
TPH-Gx gasoline range petroleum hydrocarbons
TPH-Dx diesel range petroleum hydrocarbons (>C12-C24)
TPH-Oil motor oil range petroleum hydrocarbons
Bold values and cells shaded grey represent an exceedance of the MTCA Method A/B criteria.

Table 3: Summary of Groundwater Analytical Results
Cascade Timber No.1 ("McFarland, WA") Site
2502 Marine View Drive, Tacoma, Washington

		MTCA Method A/B[1]	MCW-4					
			05/18/ 2011	12/06/ 2011	06/07/ 2012	12/11/ 2012	6/6/ 2013	1/14/2014
		mg/l	mg/l					
Arsenic	Total	0.005/ 0.0048	0.00435	0.0045	0.0025	**0.0063**	**0.0051**	**0.007**
	Dissolved		0.00444	**0.0050**	0.0023	0.0041	0.0024	**0.0069**
Copper	Total	0.64	< 0.002	0.00019 J	0.00025 J	0.00094 J	0.00027 J	0.00022 J
	Dissolved		< 0.002	0.00029 J	0.00023 J	0.001	0.0011	0.00052 J
Lead	Total	0.015	< 0.001	0.00004 J	0.000064 J	0.00042	0.00043	0.00015 J
	Dissolved		< 0.001	<0.0004	<0.0004	0.00016 J	<0.0004	0.00018 J
Zinc	Total	4.8	< 0.01	0.0014	<0.0014	0.0023	<0.0014	<0.004
	Dissolved		< 0.01	0.0032	0.0011 J	0.0041	0.00093 J	0.0029 J
Calcium	Total	--	31.5	35	28	36 B	28 B	30
Magnesium	Total	--	15.1	14	12	14	11	14
Potassium	Total	--	3.57	4.8	4.4	4.4	3.9	3.6
Sodium	Total	--	13.5	14 B	14	14	11	14
Hardness	Total	--	141	180	150	160	120 B	320
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bicarbonate Alkalinity	Total	--	176	170	150	140	140	150
Chloride	Total	--	7.82	10	8.6	11.2	9.6 B	7.7
Sulfate	Total	--	< 1.0	<1.2	<1.2	<0.5	0.25 J	<1.2
TPH-Gx	--	1	--	< 0.094	--	--	--	--
TPH-Dx	--	0.5	--	< 0.24	--	--	--	--
TPH-Oil	--	0.5	--	< 0.47	--	--	--	--

Notes
[1] MTCA - Model Toxics Control Act Cleanup Regulation Standard
mg/l milligrams per liter
dup duplicate
-- criteria not established
TPH-Gx gasoline range petroleum hydrocarbons
TPH-Dx diesel range petroleum hydrocarbons (>C12-C24)
TPH-Oil motor oil range petroleum hydrocarbons
Bold values and cells shaded grey represent an exceedance of the MTCA Method A/B criteria.

Attachment A

Purge Logs

ENVIRON
2010 Main St., Suite 900
Irvine, California 92614
(949) 261-5151
(949) 261-6202 (FAX)

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER: ~~212805R~~ 2132108R
PROJECT LOCATION: Tacoma, WA

FIELD PERSON: J. Brown, A. Kephart
PROJECT MANAGER: D. Rowe
DATE: 1-14-14

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
	1 92		DTW 11.73	MCW-1

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	O_2 (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
	921							11.73		
	1126	3.9	10.22	105	6.72	.220	3.80	12.35	~3	slow initial pump rate
	1129	4.3	10.21	103	6.71	.220	3.33	12.45		
	1132	1.4	10.19	103	6.71	.219	2.98	12.55	Δ2.2	(debris in tubing - lt brown gelatin-like
	1135	2.1	10.22	104	6.71	.219	2.52	12.57		
	1138	1.8	10.16	104	6.71	.219	2.42	12.58		
	1143	1.6	10.18	106	6.72	.219	2.18	12.56		Δ to 5 minute
	1148	1.8	10.20	107	6.72	.219	2.04	12.55		
	1150								2.2	Sample MCW-1

PURGE SETTING | SAMPLE SETTING | WELL CHARACTERISTICS

ENVIRON
2010 Main St., Suite 900
Irvine, California 92614
(949) 261-5151
(949) 261-6202 (FAX)

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER: ~~212585R~~ 2132108R
PROJECT LOCATION: Tacoma, WA

FIELD PERSON: J. Brown / A. Kephart
PROJECT MANAGER: D. Rowe
DATE: 1-14-14

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
	1.75 g		Initial DTW = 8.56	MCW-2

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	O_2 (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
	918							8.56		
	1010	2.2	10.27	-41	6.77	.347	6.55	6.79		Slow rate of pump
	1013	2.4	10.29	-49	6.76	.344	4.60	8.7		
	1016	2.6	10.33	-53	6.75	.343	3.92	8.7 68		
	1019	1.4	10.34	-57	6.76	.341	3.59	8.68		
	1021	1.6	10.35	-60	6.76	.341	3.47	8.68		
	1024	.1	10.41	-64	6.76	.340	3.18	8.68		
	1027	.2	10.44	-68	6.76	.339	2.94	8.68		
	1032	.2	10.45	-72	6.76	.338	2.70	8.68		0 to 5 minute
	1037	0.0	10.51	-75	6.76	.336	2.51	8.70		
	1042	0.0	10.53	-79	6.76	.336	2.35	8.70		
	1044									Sample MCW-2

PURGE SETTING	SAMPLE SETTING	WELL CHARACTERISTICS

ENVIRON
2010 Main St., Suite 900
Irvine, California 92614
(949) 261-5151
(949) 261-6202 (FAX)

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER: ~~212980SR~~ 2132108R
PROJECT LOCATION: Tacoma WA

FIELD PERSON: S. Braun
PROJECT MANAGER: D. Rence
DATE: 1-14-2013

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
	1.759		DTW 10.62'	MCW-~~4~~3

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	O_2 (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
	926							10.62		
	1501	1.8	10.44	-11	6.92	.283	3.41	~~3.41~~ 11.7	4.2	
	1504	1.4	10.40	-21	6.92	.283	2.78	11.75	3.5	←slow pump rate
	1507	1.2	10.38	-30	6.92	.283	2.38	11.8		
	1510	0.9	10.37	-33	6.92	.283	2.11	11.8		
	1513	1.0	10.37	-36	6.92	.283	1.97	11.8		
	1516	1.0	10.37	-37	6.92	.283	1.83	11.8		
	1519	1.1	10.36	-40	6.92	.283	1.73	11.8		
	1521	0.9	10.37	-41	6.92	.283	1.65	11.8		Δ to 5 minute
	1526	1.0	10.36	-42	6.92	.283	1.56	11.8		
	1528									Sample MCW-3
										" MCW-100

PURGE SETTING | SAMPLE SETTING | WELL CHARACTERISTICS

ENVIRON
2010 Main St., Suite 900
Irvine, California 92614
(949) 261-5151
(949) 261-6202 (FAX)

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER: ~~212805.R~~ 213208R
PROJECT LOCATION: Tacoma, WA

FIELD PERSON: J. Brown
PROJECT MANAGER: D. Rouse
DATE: 1-14-14

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
	2.5 g		DTW 12.96'	MCW-~~3~~4

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	O_2 (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
	923							12.96		
	1230									Lt. Brown Gel like on Startup
	1300	12.1	10.67	-74	6.62	.425	1.64	12.94	4.5	caused NTU to increase
	1303	13.4	10.68	-75	6.62	.423	1.58	12.96	4.0	-slow pump
	1306	5.4	10.71	-77	6.62	.422	1.53	12.96	3.4	
	1309	5.2	10.73	-78	6.63	.421	1.49	12.96		
	1314	5.5	10.75	-81	6.63	.420	1.44	12.96		Δ to 5 minute interval
	1319	5.0	10.76	-82	6.64	.419	1.40	12.96		
	1320									Sample MCW-4
	1325	Battery dying - Susp to fresh battery								
		failed sample due to turbidity								Sample MCW100
		will redo duplicate on well 3								

PURGE SETTING

SAMPLE SETTING

WELL CHARACTERISTICS

Attachment B

Laboratory Results

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-41957-1
Client Project/Site: McFarland, Tacoma WA

For:
Environ International
8440 SE Sunnybrook Blvd
Suite 204
Clackamas, Oregon 97015

Attn: Devon Rowe

Kim Presley

Authorized for release by:
1/24/2014 2:05:35 PM
Kim Presley, Project Management Assistant I
(253)922-2310
kim.presley@testamericainc.com

Designee for

Melissa Armstrong, Project Manager I
(253)922-2310 x135
melissa.armstrong@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Job ID: 580-41957-1

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 1/14/2014 4:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 8.8º C.

Except:
The chain of custody (COC) was not filled out completely. Only the first sample has a sampling date. There are no sample times on the COC and there are multiple sampling times on the container labels of any given sample. The samples are logged in with the earliest time on the labels of each respective sample.

Metals

No analytical or quality issues were noted.

General Chemistry

No analytical or quality issues were noted.

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery exceeds the control 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
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: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-1
Date Collected: 01/14/14 11:50
Date Received: 01/14/14 16:30

Lab Sample ID: 580-41957-1
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	17		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 14:43	1
Potassium	2.5	J	3.3	0.41	mg/L		01/20/14 11:26	01/21/14 14:43	1
Sodium	15		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 14:43	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	5.1	J	10	3.0	mg/L		01/20/14 11:26	01/22/14 00:26	1
Lead	0.00036	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 00:26	1
Arsenic	ND		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 00:26	1
Copper	0.00069	J	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 00:26	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 00:26	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:22	1
Copper	0.00098	J	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:22	1
Lead	0.00025	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:22	1
Zinc	0.0028	J	0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.7		0.90	0.30	mg/L			01/17/14 15:44	1
Sulfate	8.3		1.2	0.40	mg/L			01/17/14 15:44	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	81		5.0	5.0	mg/L			01/16/14 12:08	1
Bicarbonate Alkalinity as CaCO3	81		5.0	5.0	mg/L			01/16/14 12:08	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hardness as calcium carbonate	68		2.0	2.0	mg/L			01/24/14 09:00	1

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-2
Date Collected: 01/14/14 10:44
Date Received: 01/14/14 16:30

Lab Sample ID: 580-41957-2
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**27**		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 15:04	1
Potassium	**4.9**		3.3	0.41	mg/L		01/20/14 11:26	01/21/14 15:04	1
Sodium	**11**		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 15:04	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**12**		10	3.0	mg/L		01/20/14 11:26	01/22/14 01:01	1
Lead	**0.00016**	**J**	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:01	1
Arsenic	**0.0013**		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:01	1
Copper	ND		0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:01	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:01	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0012**		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:27	1
Copper	**0.00037**	**J**	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:27	1
Lead	**0.00030**	**J**	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:27	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.4**		0.90	0.30	mg/L			01/17/14 16:27	1
Sulfate	ND		1.2	0.40	mg/L			01/17/14 16:27	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**140**		5.0	5.0	mg/L			01/16/14 12:08	1
Bicarbonate Alkalinity as CaCO3	**140**		5.0	5.0	mg/L			01/16/14 12:08	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hardness as calcium carbonate	**120**		4.0	4.0	mg/L			01/24/14 09:00	1

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-3
Date Collected: 01/14/14 15:28
Date Received: 01/14/14 16:30

Lab Sample ID: 580-41957-3
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	20		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 15:07	1
Potassium	1.9	J	3.3	0.41	mg/L		01/20/14 11:26	01/21/14 15:07	1
Sodium	9.4		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 15:07	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	13		10	3.0	mg/L		01/20/14 11:26	01/22/14 01:06	1
Lead	0.000068	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:06	1
Arsenic	0.0018		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:06	1
Copper	ND		0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:06	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:06	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0017		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:32	1
Copper	0.00047	J	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:32	1
Lead	0.000080	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:32	1
Zinc	0.0029	J	0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.4		0.90	0.30	mg/L			01/21/14 13:21	1
Sulfate	ND		1.2	0.40	mg/L			01/21/14 13:21	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	120		5.0	5.0	mg/L			01/16/14 12:08	1
Bicarbonate Alkalinity as CaCO3	120		5.0	5.0	mg/L			01/16/14 12:08	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hardness as calcium carbonate	110		2.0	2.0	mg/L			01/24/14 09:00	1

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-4
Date Collected: 01/14/14 13:20
Date Received: 01/14/14 16:30

Lab Sample ID: 580-41957-4
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	30		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 15:10	1
Potassium	3.6		3.3	0.41	mg/L		01/20/14 11:26	01/21/14 15:10	1
Sodium	14		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 15:10	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	14		10	3.0	mg/L		01/20/14 11:26	01/22/14 01:11	1
Lead	0.00015	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:11	1
Arsenic	0.0070		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:11	1
Copper	0.00022	J	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:11	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:11	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0069		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:37	1
Copper	0.00052	J	0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:37	1
Lead	0.00018	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:37	1
Zinc	0.0029	J	0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.7		0.90	0.30	mg/L			01/17/14 16:57	1
Sulfate	ND		1.2	0.40	mg/L			01/17/14 16:57	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	150		5.0	5.0	mg/L			01/16/14 12:08	1
Bicarbonate Alkalinity as CaCO3	150		5.0	5.0	mg/L			01/16/14 12:08	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hardness as calcium carbonate	320		20	20	mg/L			01/24/14 09:00	1

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-100
Date Collected: 01/14/14 15:28
Date Received: 01/14/14 16:30

Lab Sample ID: 580-41957-5
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	21		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 15:14	1
Potassium	1.9	J	3.3	0.41	mg/L		01/20/14 11:26	01/21/14 15:14	1
Sodium	9.5		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 15:14	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	13		10	3.0	mg/L		01/20/14 11:26	01/22/14 01:17	1
Lead	0.000085	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:17	1
Arsenic	0.0017		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:17	1
Copper	ND		0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:17	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:17	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0017		0.0010	0.00075	mg/L		01/20/14 11:26	01/22/14 01:42	1
Copper	ND		0.0010	0.00011	mg/L		01/20/14 11:26	01/22/14 01:42	1
Lead	0.000065	J	0.00040	0.000034	mg/L		01/20/14 11:26	01/22/14 01:42	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/22/14 01:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.4		0.90	0.30	mg/L			01/17/14 17:12	1
Sulfate	ND		1.2	0.40	mg/L			01/17/14 17:12	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	120		5.0	5.0	mg/L			01/16/14 12:08	1
Bicarbonate Alkalinity as CaCO3	120		5.0	5.0	mg/L			01/16/14 12:08	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			01/16/14 12:08	1
Hardness as calcium carbonate	130		2.0	2.0	mg/L			01/24/14 09:00	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 580-152301/24-A
Matrix: Water
Analysis Batch: 152433

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152301

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.10	mg/L		01/20/14 11:26	01/21/14 14:31	1
Potassium	ND		3.3	0.41	mg/L		01/20/14 11:26	01/21/14 14:31	1
Sodium	ND		2.0	0.55	mg/L		01/20/14 11:26	01/21/14 14:31	1

Lab Sample ID: LCS 580-152301/25-A
Matrix: Water
Analysis Batch: 152433

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	10.1		mg/L		101	80 - 120
Potassium	10.0	9.26		mg/L		93	80 - 120
Sodium	10.0	9.84		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-152301/26-A
Matrix: Water
Analysis Batch: 152433

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	10.0	9.99		mg/L		100	80 - 120	1	20
Potassium	10.0	9.05		mg/L		90	80 - 120	2	20
Sodium	10.0	9.62		mg/L		96	80 - 120	2	20

Lab Sample ID: 580-41957-1 MS
Matrix: Water
Analysis Batch: 152433

Client Sample ID: MCW-1
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	17		10.0	28.1		mg/L		110	80 - 120
Potassium	2.5	J	10.0	11.9		mg/L		94	80 - 120
Sodium	15		10.0	26.3		mg/L		108	80 - 120

Lab Sample ID: 580-41957-1 MSD
Matrix: Water
Analysis Batch: 152433

Client Sample ID: MCW-1
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	17		10.0	27.5		mg/L		103	80 - 120	2	20
Potassium	2.5	J	10.0	11.8		mg/L		93	80 - 120	1	20
Sodium	15		10.0	25.7		mg/L		102	80 - 120	2	20

Lab Sample ID: 580-41957-1 DU
Matrix: Water
Analysis Batch: 152433

Client Sample ID: MCW-1
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	17		17.4		mg/L		1	20
Potassium	2.5	J	2.53	J	mg/L		1	20
Sodium	15		15.6		mg/L		1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 580-152301/24-A
Matrix: Water
Analysis Batch: 152492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152301

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		10	3.0	mg/L		01/20/14 11:26	01/21/14 15:49	1
Lead	ND		0.00040	0.000034	mg/L		01/20/14 11:26	01/21/14 15:49	1
Arsenic	ND		0.0010	0.00075	mg/L		01/20/14 11:26	01/21/14 15:49	1
Copper	ND		0.0010	0.00011	mg/L		01/20/14 11:26	01/21/14 15:49	1
Zinc	ND		0.0040	0.0019	mg/L		01/20/14 11:26	01/21/14 15:49	1

Lab Sample ID: LCS 580-152301/25-A
Matrix: Water
Analysis Batch: 152492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Magnesium	10.0	10.0		mg/L		100	80 - 120
Lead	0.100	0.0993		mg/L		99	80 - 120
Arsenic	0.100	0.105		mg/L		105	80 - 120
Copper	0.100	0.101		mg/L		101	80 - 120
Zinc	0.100	0.106		mg/L		106	80 - 120

Lab Sample ID: LCSD 580-152301/26-A
Matrix: Water
Analysis Batch: 152492

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Magnesium	10.0	9.93	J	mg/L		99	80 - 120	1	20
Lead	0.100	0.0984		mg/L		98	80 - 120	1	20
Arsenic	0.100	0.104		mg/L		104	80 - 120	0	20
Copper	0.100	0.101		mg/L		101	80 - 120	0	20
Zinc	0.100	0.106		mg/L		106	80 - 120	0	20

Lab Sample ID: 580-41957-1 MS
Matrix: Water
Analysis Batch: 152492

Client Sample ID: MCW-1
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Magnesium	5.1	J	10.0	14.9		mg/L		97	80 - 120
Lead	0.00036	J	0.100	0.102		mg/L		101	80 - 120
Arsenic	ND		0.100	0.102		mg/L		102	80 - 120
Copper	0.00069	J	0.100	0.0987		mg/L		98	80 - 120
Zinc	ND		0.100	0.101		mg/L		101	80 - 120

Lab Sample ID: 580-41957-1 MSD
Matrix: Water
Analysis Batch: 152492

Client Sample ID: MCW-1
Prep Type: Total/NA
Prep Batch: 152301

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Magnesium	5.1	J	10.0	15.1		mg/L		100	80 - 120	2	20
Lead	0.00036	J	0.100	0.103		mg/L		102	80 - 120	1	20
Arsenic	ND		0.100	0.105		mg/L		105	80 - 120	3	20
Copper	0.00069	J	0.100	0.101		mg/L		101	80 - 120	3	20
Zinc	ND		0.100	0.104		mg/L		104	80 - 120	3	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-41957-1 DU — **Client Sample ID: MCW-1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152492 — **Prep Batch: 152301**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Magnesium	5.1	J	5.17	J	mg/L		1	20
Lead	0.00036	J	0.000342	J	mg/L		6	20
Arsenic	ND		ND		mg/L		NC	20
Copper	0.00069	J	0.000675	J	mg/L		3	20
Zinc	ND		ND		mg/L		NC	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-152328/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152328

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.90	0.30	mg/L			01/17/14 13:40	1
Sulfate	ND		1.2	0.40	mg/L			01/17/14 13:40	1

Lab Sample ID: LCS 580-152328/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152328

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.00	9.04		mg/L		100	90 - 110
Sulfate	12.0	13.2		mg/L		110	90 - 110

Lab Sample ID: LCSD 580-152328/5 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152328

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.00	8.99		mg/L		100	90 - 110	1	15
Sulfate	12.0	13.1		mg/L		110	90 - 110	0	15

Lab Sample ID: 580-41957-1 MS — **Client Sample ID: MCW-1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152328

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1.7		9.00	14.1	F1	mg/L		138	90 - 110
Sulfate	8.3		12.0	26.7	F1	mg/L		153	90 - 110

Lab Sample ID: 580-41957-1 DU — **Client Sample ID: MCW-1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 152328

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	1.7		1.66		mg/L		0.6	10
Sulfate	8.3		8.29		mg/L		0.2	10

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 580-152430/3
Matrix: Water
Analysis Batch: 152430

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.90	0.30	mg/L			01/21/14 09:51	1
Sulfate	ND		1.2	0.40	mg/L			01/21/14 09:51	1

Lab Sample ID: LCS 580-152430/4
Matrix: Water
Analysis Batch: 152430

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			9.00	9.05		mg/L		101	90 - 110		
Sulfate			12.0	13.1		mg/L		109	90 - 110		

Lab Sample ID: LCSD 580-152430/5
Matrix: Water
Analysis Batch: 152430

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			9.00	9.09		mg/L		101	90 - 110	0	15
Sulfate			12.0	13.2		mg/L		110	90 - 110	1	15

Lab Sample ID: 580-41957-3 MS
Matrix: Water
Analysis Batch: 152430

Client Sample ID: MCW-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	7.4		9.00	16.3		mg/L		99	90 - 110		
Sulfate	ND		12.0	11.1		mg/L		93	90 - 110		

Lab Sample ID: 580-41957-3 DU
Matrix: Water
Analysis Batch: 152430

Client Sample ID: MCW-3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	7.4			7.39		mg/L				0	10
Sulfate	ND			ND		mg/L				NC	10

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 580-152175/2
Matrix: Water
Analysis Batch: 152175

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Alkalinity			100	107		mg/L		107	85 - 115		

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Method: SM 2340C - Hardness, Total

Lab Sample ID: MB 580-152506/1
Matrix: Water
Analysis Batch: 152506

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	ND		2.0	2.0	mg/L			01/24/14 09:00	1

Lab Sample ID: LCS 580-152506/2
Matrix: Water
Analysis Batch: 152506

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Hardness as calcium carbonate			1000	993		mg/L		99	90 - 110		

Lab Chronicle

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-1

Lab Sample ID: 580-41957-1

Date Collected: 01/14/14 11:50

Matrix: Water

Date Received: 01/14/14 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	152433	01/21/14 14:43	HJM	TAL SEA
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.8		1	152492	01/22/14 00:26	FCW	TAL SEA
Dissolved	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Dissolved	Analysis	200.8		1	152492	01/22/14 01:22	FCW	TAL SEA
Total/NA	Analysis	SM 2320B		1	152175	01/16/14 12:08	ZF	TAL SEA
Total/NA	Analysis	300.0		1	152328	01/17/14 15:44	ZF	TAL SEA
Total/NA	Analysis	SM 2340C		1	152506	01/24/14 09:00	RSB	TAL SEA

Client Sample ID: MCW-2

Lab Sample ID: 580-41957-2

Date Collected: 01/14/14 10:44

Matrix: Water

Date Received: 01/14/14 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	152433	01/21/14 15:04	HJM	TAL SEA
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.8		1	152492	01/22/14 01:01	FCW	TAL SEA
Dissolved	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Dissolved	Analysis	200.8		1	152492	01/22/14 01:27	FCW	TAL SEA
Total/NA	Analysis	SM 2320B		1	152175	01/16/14 12:08	ZF	TAL SEA
Total/NA	Analysis	300.0		1	152328	01/17/14 16:27	ZF	TAL SEA
Total/NA	Analysis	SM 2340C		1	152506	01/24/14 09:00	RSB	TAL SEA

Client Sample ID: MCW-3

Lab Sample ID: 580-41957-3

Date Collected: 01/14/14 15:28

Matrix: Water

Date Received: 01/14/14 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	152433	01/21/14 15:07	HJM	TAL SEA
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.8		1	152492	01/22/14 01:06	FCW	TAL SEA
Dissolved	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Dissolved	Analysis	200.8		1	152492	01/22/14 01:32	FCW	TAL SEA
Total/NA	Analysis	SM 2320B		1	152175	01/16/14 12:08	ZF	TAL SEA
Total/NA	Analysis	300.0		1	152430	01/21/14 13:21	RSB	TAL SEA
Total/NA	Analysis	SM 2340C		1	152506	01/24/14 09:00	RSB	TAL SEA

Lab Chronicle

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Client Sample ID: MCW-4

Lab Sample ID: 580-41957-4

Date Collected: 01/14/14 13:20
Matrix: Water
Date Received: 01/14/14 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	152433	01/21/14 15:10	HJM	TAL SEA
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.8		1	152492	01/22/14 01:11	FCW	TAL SEA
Dissolved	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Dissolved	Analysis	200.8		1	152492	01/22/14 01:37	FCW	TAL SEA
Total/NA	Analysis	SM 2320B		1	152175	01/16/14 12:08	ZF	TAL SEA
Total/NA	Analysis	300.0		1	152328	01/17/14 16:57	ZF	TAL SEA
Total/NA	Analysis	SM 2340C		1	152506	01/24/14 09:00	RSB	TAL SEA

Client Sample ID: MCW-100

Lab Sample ID: 580-41957-5

Date Collected: 01/14/14 15:28
Matrix: Water
Date Received: 01/14/14 16:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	152433	01/21/14 15:14	HJM	TAL SEA
Total/NA	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Total/NA	Analysis	200.8		1	152492	01/22/14 01:17	FCW	TAL SEA
Dissolved	Prep	200.8			152301	01/20/14 11:26	PAB	TAL SEA
Dissolved	Analysis	200.8		1	152492	01/22/14 01:42	FCW	TAL SEA
Total/NA	Analysis	SM 2320B		1	152175	01/16/14 12:08	ZF	TAL SEA
Total/NA	Analysis	300.0		1	152328	01/17/14 17:12	ZF	TAL SEA
Total/NA	Analysis	SM 2340C		1	152506	01/24/14 09:00	RSB	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Laboratory: TestAmerica Seattle

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-022	03-04-14
California	NELAP	9	01115CA	01-31-14
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-14
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-14

Sample Summary

Client: Environ International
Project/Site: McFarland, Tacoma WA

TestAmerica Job ID: 580-41957-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-41957-1	MCW-1	Water	01/14/14 11:50	01/14/14 16:30
580-41957-2	MCW-2	Water	01/14/14 10:44	01/14/14 16:30
580-41957-3	MCW-3	Water	01/14/14 15:28	01/14/14 16:30
580-41957-4	MCW-4	Water	01/14/14 13:20	01/14/14 16:30
580-41957-5	MCW-100	Water	01/14/14 15:28	01/14/14 16:30

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

☐ Rush
☐ Short Hold

Chain of Custody Record

Client	Client Contact	Date	Chain of Custody Number
ENVIRON	Devon Rowe	1-14-2014	20836
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 **of** 1
8440 SE Sunnybrook Blvd	503 353 1734	41957	
City / **State** / **Zip Code**	**Sampler**	**Lab Contact**	
Suite 204, Clackamas OR 97015	J. Brown		
Project Name and Location (State)	**Billing Contact**		
McFarland, Tacoma WA			
Contract/Purchase Order/Quote No.			
212985 05R			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Total Dissolved As, Cu, Pb, Zn	Total Hardness	Total Alkalinity, Bicarbonate and Carbonate	Total Chloride & Sulfate	Total Ca, Mg, Na, K
-1 MCW-1	1/14/14			X			1		3				X	X	X	X	X
-2 MCW-2				X			1		3								
-3 MCW-3				X			1		3								
-4 MCW-4				X			1		3								
-5 MCW-100				X			1		3								

Special Instructions/ Conditions of Receipt

TOTAL DISSOLVED METALS BY EPA 200: As, Cu, Pb, Zn
TOTAL Hardness by by EPA SM2340B
TOTAL ALKALINITY, Bicarbonate and Carbonate by EPA 2320B
TOTAL Chloride + Sulfate by EPA 300
TOTAL Ca, Mg, Na, K by EPA 200

AZ 8.8 8.7
LG BLU WH
ICE NONE
w/cs CLIENT DO-

580-41957 Chain of Custody

Cooler	Possible Hazard Identification	Sample Disposal	(A fee may be assessed if samples are retained longer than 1 month)
☐ Yes ☐ No Cooler Temp: ____	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months	

Turn Around Time Required (business days)
☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☐ 10 Days ☐ 15 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By Sign/Print: Jim W Brown	1/14/14	16:30	1. Received By Sign/Print: R.T. McDANIEL	1-14-14	16:30
2. Relinquished By Sign/Print:			2. Received By Sign/Print:		
3. Relinquished By Sign/Print:			3. Received By Sign/Print:		

Comments

DISTRIBUTION: WHITE – Stays with the Samples; CANARY – Returned to Client with Report; PINK – Field Copy

TAL-8274-580 (0210)

Login Sample Receipt Checklist

Client: Environ International

Job Number: 580-41957-1

Login Number: 41957

List Source: TestAmerica Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	multiple times per sample.
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment C

Field Inspection Notes

Site Inspection Field Notes

System Component	Notes/Actions Taken or Needed 1/14/2014
1.0 - Signs	Signs are present and readable on perimeter fence
1.1 - Fence	Perimeter fence is functional with locked gates, although the middle strand of barbed wire is broken in NW corner
1.2 - Gate	Gate and lock are functional
1.3 - Manhole	The manhole is in place and functional
2.0 - Open Ditches	There are no open ditches on the site The runoff ditch on the containment cell is functional
3.0 - Pipes and Culverts	The pipes and vents are functional and free of obstructions. No culverts are present
3.1 - Pipes and Culverts	Vegetation is not obstructing flow to pipes
3.2 - Pipes and Culverts	Protective coating is present and functional on pipes. The center vent pipe is beginning to show coating wear
3.3 - Pipes and Culverts	no damage is visible on the vent pipes
3.4 - Pipes and Culverts	All pipes and vents are functional
3.5 - Pipes and Culverts	No misalignment of pipe or vents observed
3.6 - Pipes and Culverts	No erosion or blockage of pipes and vents
4.0 - Vegetative Cover	No lack of vegetation
4.1 - Vegetative Cover	No disturbance of earth (erosion, etc) observed
4.2 - Vegetative Cover	Minor blackberry and scotts broom observed along south side of site
5.1 - Cover liner	The liner is not visible due to rock covering on containment cell
5.2 - Cover liner	The liner is not visible; thus no bulging observed

Attachment D

Site Photographs

Photo 1: Cleanout boot; looking to the northwest (Marine View Drive access gate in background).

Photo 2: Top of the containment cell; looking south.

Photo 3: The northern gas vent; looking north.

Photo 4: Side view of the northern gas vent; looking west. Some deterioration of the white coating is apparent.

Photo 5: The southern gas vent and excess liner material; looking east.

Photo 6: Overall top view of the containment cell with moss and low grasses; looking north.

Photo 7: Cell drain boot in the southeast corner of the containment cell.

Photo 8: View of east side of the containment cell; looking north.

Photo 9: View of west side of the containment cell; looking north. Broken barbed wire strand in lower left.

Photo 10: View of the front access gate, storage drums and signage; looking south.

Photo 11: View of monitoring well MCW-2 prior to sampling.

Photo 12: View looking into the leachate collection sump.

PERIODIC REVIEW

Edman Co Side 1 (Cascade Timber #1)
Facility Site ID#: 1204

2502 Marine View Drive Southwest
Tacoma, Washington 98421

Southwest Regional Office

TOXICS CLEANUP PROGRAM

May 2011

1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup site conditions and monitoring data to ensure that human health and the environment are being protected at the former Edman Company site (Site), formerly known as the Cascade Timber #1 site. Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC).

Cleanup activities at this Site were conducted under a Proposed Purchaser Consent Decree (PPCD). The cleanup actions resulted in concentrations of metals in soil exceeding MTCA Method A Industrial cleanup levels remaining at the Site. The MTCA Method A cleanup levels for soil are established under WAC 173-340-745(3). WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

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

    1. Institutional controls or financial assurance are required as part of the cleanup
    2. Where the cleanup level is based on a practical quantitation limit
    3. 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 assure 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;
(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 higher preference technologies; and
(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 History

The former Cascade Timber property is comprised of two lots located in the City of Tacoma in Pierce County, Washington (Vicinity Map - Appendix 6.1). Consent Decree No. 932100995 was issued by Ecology to Mcfarland Cascade Holdings, Inc., Cascade Pole Company and ASARCO Incorporated in 1993. In 1997, a Prospective Purchase Consent Decree was executed between the EPA and Edman Holdings, LLC for one of the two lots at the Site.

The site is located along Hylebos Waterway and is in the Commencement Bay Nearshore/Tideflats (CBN/T) Superfund site. The CBN/T site includes the head of Hylebos Waterway and those upland sites that are believed to contribute contamination to the waterway. The United States Environmental Protection Agency (EPA) is responsible for cleanup of waterway sediment, while Ecology is responsible for cleanup of the upland areas that are sources of contamination to the waterway.

The entire site (Lots 1 and 2) was formerly owned by Cascade Pole Company, which leased it to Cascade Timber Company from 1977 to 1981. Cascade Timber Company used the property as a log sort yard. Cascade Pole Company transferred the property to McFarland Cascade Holdings, Inc., (MCHI) in 1986. The property has not been used for any purpose other than log storage since 1981. In 1997 Edman Holdings, LLC, purchased Lot 2 from MCHI (Ecology 1993). From at least 1977 to 1981, slag, a product of the ore smelting process produced at the ASARCO smelting facility in Tacoma, Washington, was placed on the site as ballast to keep heavy equipment from sinking into the soft soil. The primary components of the logyard are a combination of wood waste, soil, and crushed slag.

ASARCO had been responsible for the McFarland Site until December 9, 2009. On that date, the United States Bankruptcy Court for the Southern District of Texas entered an order associated with ASARCO's bankruptcy, Case No. 05-21207, that approved a Settlement Agreement establishing the ASARCO Multi-State Custodial Trust for certain ASARCO owned sites, including the “McFarland Designated Property” (i.e., the Site), approval of the appointment of a Custodial Trust, approval of a Custodial Trust Agreement, and for the conveyance of the Site to the ASARCO Multi-State Custodial Trust.

In 2007, Ecology and Environment (E&E) was contracted to conduct a five-year periodic review for the Site. A significant amount of the information in the review done by E&E was verified and used in this document.

2.2 Site Investigations

Ecology conducted a surface water investigation at the site between November 1983 and June 1984. The study found the following metals in surface water runoff: arsenic, copper, lead, and

zinc, which were found at concentrations as high as 7,280, 695, 710, and 3,000 parts per billion, respectively. The study theorized that the cause of contamination was the use of ASARCO slag as yard ballast.

Further investigation conducted by MCHI's contractor, Applied Geotechnology, Inc., in 1998 found arsenic, copper, lead, and zinc at concentrations up to 1,200, 2,600, 15, and 6,200 parts per billion, respectively, in surface water on the site. On November 6, 1989, Ecology issued an Agreed Order that named MCHI and Cascade Pole Company as potentially liable parties under the MTCA. The mutual objective of the Agreed Order was to provide a framework for a Remedial Investigation/Feasibility Study (RI/FS) and the draft Cleanup Action Plan for the Site.

After the Agreed Order was issued by Ecology, an RI/FS was conducted, during which four rounds of groundwater sampling were conducted. All samples were analyzed for total and dissolved metals. Soil samples were also collected for analysis for metals. This investigation demonstrated that arsenic, copper, lead, and zinc were present at elevated levels in surface soil samples. Samples from the slag/soil interface showed a maximum soil concentration of 180 milligrams per kilogram (mg/kg) arsenic.

2.3 Remedial Activities

Under the initial Consent Decree with MCHI, Cascade Pole Company and ASARCO, Inc., a Final Remedial Design Report was completed in December 1993. The report included plans for the installation of a containment cell and cap, the installation of a storm water collection system, and monitoring of surface water and groundwater. As per the Consent Decree, a Restrictive Covenant limiting the use of most of the site to industrial purposes was to be filed.

In July 1995, MCHI and ASARCO executed an agreement under which ASARCO is fully responsible for all sediment cleanup costs and for all natural resource damage claims relating to sediment contamination caused by release of hazardous substances from ASARCO slag at the site. ASARCO removed all soils and material containing ASARCO slag or related hazardous substances that exceeded MTCA industrial cleanup standards for soil and placed these materials in the containment cell constructed on Lot 1.

The containment cell is approximately 0.5 acres and contains the consolidated wood waste/soil/slag material that is above the cleanup levels from the remainder of the site. The containment cell consists of a single bottom flexible membrane liner and a leachate collection and recovery system and has a multi-layer cover. Surface water runoff from rainfall on the cell is diverted to one discharge point at the southwest corner of the site. Four monitoring wells (MCW-1, CMW-2, MCW-3, and MCW-4) were installed at the four sides of the containment cell. As a component of capping activities, ecology blocks (i.e., large concrete blocks) were placed around the perimeter of the cap, forming a berm.

2.4 Cleanup Levels and Points of Compliance

The cleanup levels and points of compliance identified in the consent decree are the following:

- MTCA Method A industrial soil cleanup standards are 200 mg/kg for arsenic and 1,000 mg/kg for lead. Copper and zinc concentrations were evaluated and determined not to be present on site at levels that would present a human health (direct contact) hazard.

- As groundwater cannot be used for drinking water due to salinity and as the Site is immediately adjacent to Hylebos Waterway and groundwater discharges to this waterway, the groundwater cleanup levels were set to surface water standards protective of sediment and water column quality. For these reasons, state and federal marine chronic ambient surface water quality criteria were applied to groundwater at the site to protect the adjacent Hylebos Waterway. The cleanup standards for groundwater at the site were set for arsenic at 36 micrograms per liter (µg/L), for copper at 2.9 µg/L, for lead at 8.5 µg/L, and for zinc at 86 µg/L.

Points of compliance included the following:

- The point of compliance for groundwater cleanup standards was at the edge of the containment facility. All wells were completed to sample the uppermost aquifer system.

- Monitoring of storm water runoff for the metals of concern at the post-remediation point of surface water discharge to the Hylebos Waterway.

- The site soils remaining outside the containment system must comply with soil cleanup standards.

2.5 Surface and Ground Water Monitoring

Groundwater monitoring from September 1994 through June 1998 indicates the following:

- Dissolved arsenic was measured below the site cleanup level (0.036 milligrams per liter [mg/L]) in all wells in every monitoring episode since the beginning of the groundwater monitoring program, except for one instance in one well (0.046 mg/L in MCW-1 in June 21, 1995).

- Dissolved lead and zinc were measured below the site cleanup levels (0.0085 mg/L and 0.086 mg/L, respectively) in all wells in every monitoring episode since the inception of the groundwater monitoring program.

- Dissolved copper was detected below the site cleanup level (i.e., 0.0029 mg/L) for all wells in every monitoring episode since the inception of the groundwater monitoring program, except for one episode when all four wells exceeded this cleanup level (i.e., on December 5, 1996).

No surface water cleanup standards were set for this site since the proposed remedial action eliminated surface water as a contaminant pathway. However, surface water was monitored for

the same parameters as groundwater to insure the efficacy of the cleanup and to determine whether an individual NPDES permit and/or additional cleanup was required. Surface water runoff from the cap was being monitored at two locations (MSW-1 and MSW-2) concurrently with groundwater monitoring. Surface water monitoring since September of 1994 thru June 1998 indicates the following:

- Dissolved arsenic, lead, and zinc were measured below the site cleanup level (0.036 mg/L) in all surface water samples in every monitoring episode since the beginning of the monitoring program.

- Dissolved copper was detected above the cleanup level in one sampling event (0.009 mg/L at MSW-2 on March 10, 1995).

In March 1998, Ecology reduced the groundwater monitoring requirements from quarterly to annually since groundwater had been meeting the cleanup standards. Ecology also approved the discontinuation of surface runoff monitoring at MSW-2 since surface water had been meeting the cleanup standards. The last annual monitoring results available in the State's files are from June 1998. It is not known why there has not been sampling since June 1998.

2.6 Restrictive Covenant

Following remediation, Restrictive Covenants were recorded for each lot at the Site. The Restrictive Covenant for Lot 1, where the containment cell and cap are located, included the following three provisions:

1. The property may be used only for industrial uses as defined in and allowed under the City of Tacoma's zoning regulations codified in the Tacoma City Code;
2. Activities on the property that interfere with or reduce the effectiveness of the cleanup action or any operation, maintenance, or monitoring required by the Decree are prohibited; and
3. Activities on the property that may result in the release of a hazardous substance that was contained as a part of the cleanup action are prohibited, and continued maintenance of the containment system must be provided for.

The Restrictive Covenant for Lot 1 (file number 9609100214) was filed in Pierce County, Washington, on September 10, 1996.

The Restrictive Covenant for Lot 2 included the following two provisions:

1. The property may be used only for industrial uses as defined in and allowed under the City of Tacoma's zoning regulations, codified in the Tacoma City Code as of the date of the Restrictive Covenant; and
2. Activities on the property that interfere with the continuing obligation of surface water monitoring required by the Consent Decree are prohibited.

The Restrictive Covenant for Lot 2 (file number 9609100213) was filed in Pierce County, Washington, on September 10, 1996.

The Restrictive Covenants are available as Appendix 6.3.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Based upon the site visit conducted on March 6, 2009, the cap, berm, and monitoring wells were observed to be in good repair. No cracks in the cap greater than two inches were observed. The ecology block berm was observed to surround the three sides of the cap that were visible. The excavation and containment of contaminated soils has effectively eliminated the risk of human and wildlife exposure to contaminated sediment/soils. The cap also prevents storm water from coming into contact with these contaminated soils.

The Restrictive Covenants for the Site were recorded and are still in place. The Restrictive Covenants state that the property may only be used for industrial purposes and that any activity that reduces the effectiveness of the cleanup action is prohibited.

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

Cleanup levels at the site were based on regulatory standards rather than calculated risk for chemicals and/or media. These standards continue to be protective of site-specific conditions.

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

The cleanup at the site was governed by Chapter 173-340 WAC (1996 ed.). WAC 173-340-702(12) (c) [2001 ed.] provides that,

"A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment."

The current MTCA Method A Industrial soil cleanup standard for arsenic has been reduced from 200 mg/kg to 20 mg/kg since the consent decree was issued. Because contaminated soils at the Site have been capped, the modification to the MTCA cleanup standard does not represent an increase in risk to human health or the environment. Several of the state marine chronic surface water quality criteria have also changed since the Enforcement Order was issued. Values for lead and zinc have been reduced to 8.1 and 81 µg/L, respectively. Overall, the changes to the original standards have not resulted in the need for additional remedial actions at the site.

3.4 Current and projected site use

The site is currently used for industrial purposes. The Site continues to be used as a log storage yard and wood chipping facility. Future use of the Site is not expected to change. These uses are not likely to have a negative impact on the integrity of the Site cap.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous substances, 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 A 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 may not be protective of human health and the environment since the required monitoring, cap inspection and maintenance was not performed.

- Soils cleanup levels have not been met at the Site; however, under WAC 173-340-740(6)(f), the cleanup action is determined to comply with cleanup standards since the long-term integrity of the containment system is ensured, and the requirements for containment technologies in WAC 173-340-360(8) have been met.

- The Restrictive Covenants for the property are in place and will be effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the cleanup action.

- Annual groundwater monitoring is still required at the Site. Monitoring does not appear to have been conducted since 1998, at which time contaminants were at acceptable levels. Additional groundwater monitoring is required to be conducted at the Site.

- Continued cap inspection and maintenance are required. Cap maintenance appears to be adequate at this time, but there is no record of ongoing inspection or maintenance activity to ensure protection of the cap.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Restrictive Covenant are being met. The cap is currently in satisfactory condition. It is the property owner's responsibility to continue to inspect the site to ensure that the integrity of the cap is maintained and to continue groundwater monitoring. Ecology requires that additional ground water sampling events be conducted at the Site.

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

Applied Geotechnology, Inc. December 8, 1989. Remedial Investigation – Cascade Timber Yard No. 1.

Ecology. October 12, 1993. Consent Decree No. 93-2-10099-5.

Hydrometrics, Inc. December 10, 1993. Final Remedial Design Report – Cascade Timber No.1 Remediation.

Hydrometrics, Inc. December 10, 1997. Third Quarter 1997 Status Report – Cascade Timber #1.

Hydrometrics, Inc. September 9, 1998. September Status Report – Cascade Timber #1.

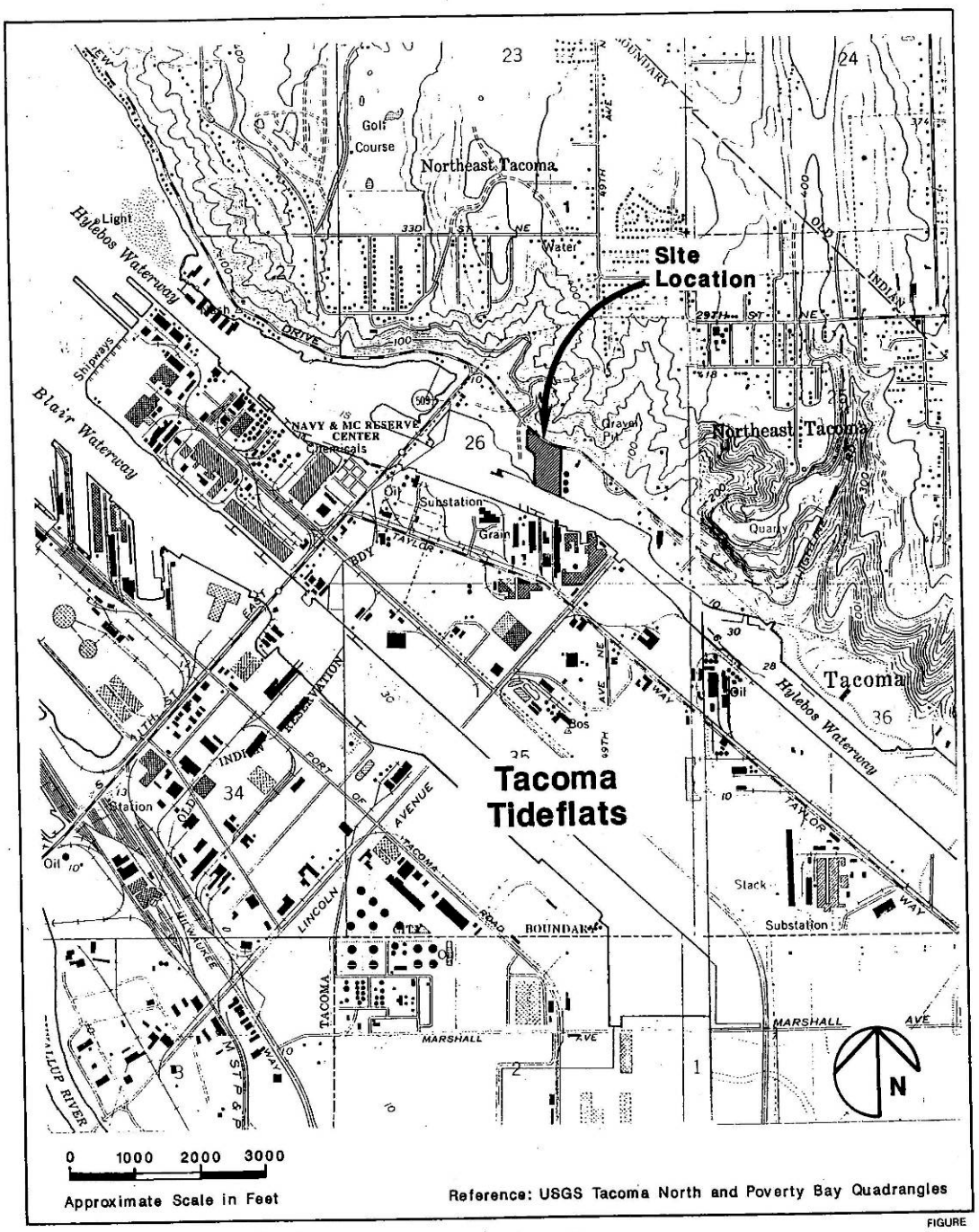
Ecology. 1996. Restrictive Covenant

Ecology and Environment, Inc. November 9, 2007. Cascade Timber No. 1 Periodic Review Report.

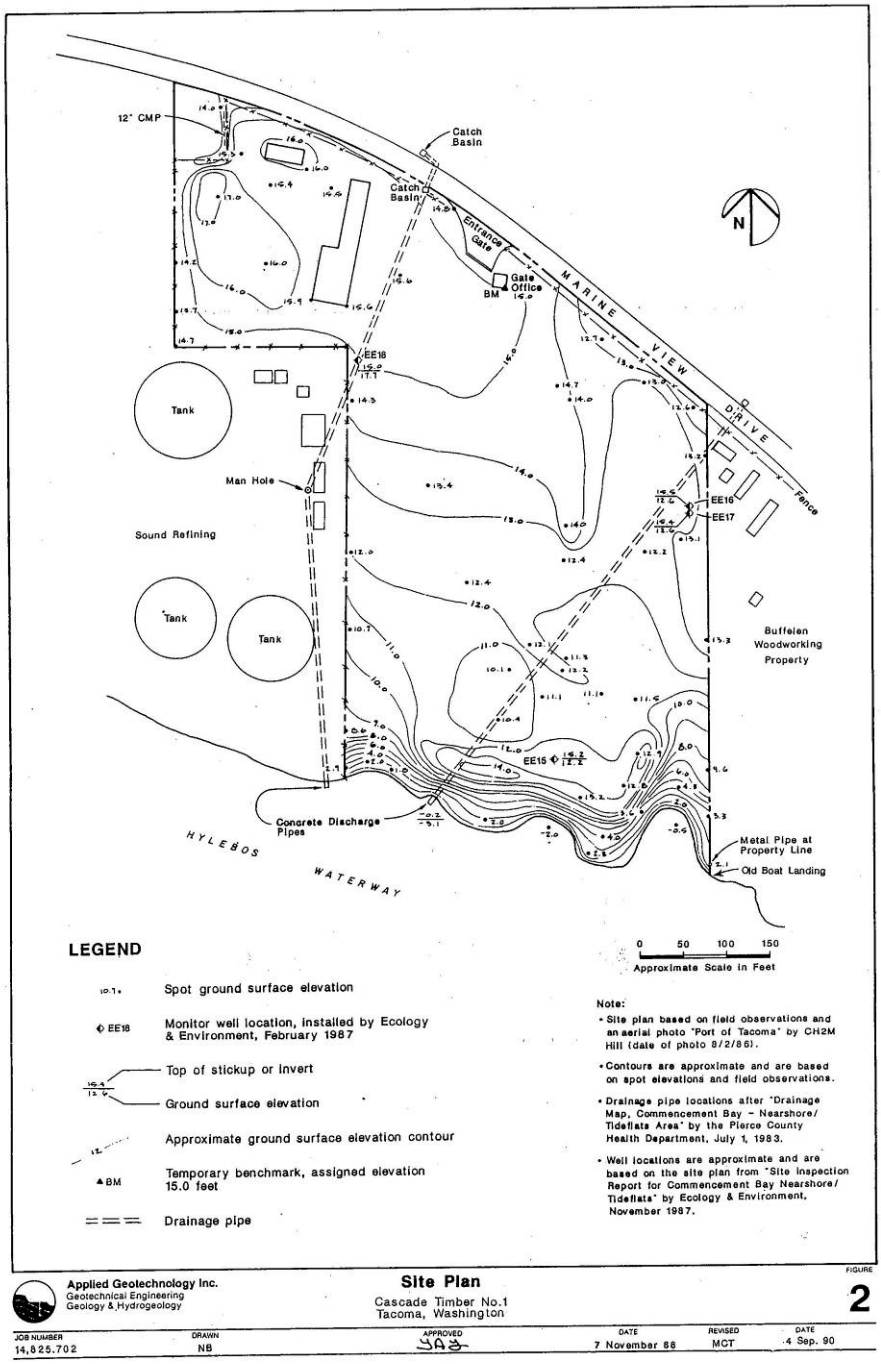
Ecology. 2009. Site Visit.

6.0 APPENDICES

6.1 Vicinity Map



6.2 Site Plan


12" CMP
Catch Basin
Catch Basin
Entrance Gate
Gate Office
BM
MARINE VIEW DRIVE
Fence
EE18
EE16
EE17
EE15
Tank
Man Hole
Sound Refining
Tank
Tank
Buffelen Woodworking Property
Concrete Discharge Pipes
HYLEBOS WATERWAY
Metal Pipe at Property Line
Old Boat Landing
N
0 50 100 150
Approximate Scale in Feet
LEGEND
Spot ground surface elevation
Monitor well location, installed by Ecology & Environment, February 1987
Top of stickup or invert
Ground surface elevation
Approximate ground surface elevation contour
Temporary benchmark, assigned elevation 15.0 feet
Drainage pipe
Note:
• Site plan based on field observations and an aerial photo "Port of Tacoma" by CH2M Hill (date of photo 8/2/86).
• Contours are approximate and are based on spot elevations and field observations.
• Drainage pipe locations after "Drainage Map, Commencement Bay – Nearshore/ Tideflats Area" by the Pierce County Health Department, July 1, 1983.
• Well locations are approximate and are based on the site plan from "Site Inspection Report for Commencement Bay Nearshore/ Tideflats" by Ecology & Environment, November 1987.
Applied Geotechnology Inc.
Geotechnical Engineering
Geology & Hydrogeology
Site Plan
Cascade Timber No.1
Tacoma, Washington
FIGURE
2
JOB NUMBER 14,825.702
DRAWN NB
APPROVED JAB
DATE 7 November 88
REVISED MCT
DATE 4 Sep. 90

6.3 Environmental Covenant

AFTER RECORDING RETURN TO:

_____
_____
_____

_____

RESTRICTIVE COVENANT
2502 Marine View Drive - LOT 1

Notice is hereby given that the property, which is the subject of this Restrictive Covenant, described as, Lot 1 of City of Tacoma Short Plat recorded in the real property records of Pierce County, Washington on April 1, 1996, under Auditor's Recording No. 9604010402, (the "Property") is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the Property (hereinafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree, Pierce County No. 93-2-10099-5, and in exhibits to the Decree. The Consent Decree is filed with the Superior Court of the State of Washington in and for Pierce County.

The restrictions and obligations described in this Restrictive Covenant are intended to run with the land and be binding on any and all persons who acquire an interest in the Property.

Potential purchasers and lessees are further put on notice that,

1. The Property may be used only for Industrial uses as defined in and allowed under the City of Tacoma's Zoning Regulations codified in the Tacoma City Code as of the date of this Restrictive Covenant, attached hereto as Exhibit A.

2. Activities on the Property that interfere with or reduce the effectiveness of the Cleanup Action or any operation, maintenance, or monitoring required by the Decree are prohibited.

3. Activities on the Property that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action are prohibited, and continued maintenance of the containment system must be provided for.

The owner of the Property and owner's assigns and successors in interest reserve the right to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Property or be of any further force or effect. However, such an instrument

may be recorded only with the consent of the Department of Ecology or of a successor agency.

Executed as of the ____ day of _____, 1996.

PROPERTY OWNER: _____

By _____
Its _____

Attachments:
Exhibit A - Applicable Zoning Regulations

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

On this _____ day of _____, 1996, before me, a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument, on oath stated that he/she was authorized to execute the instrument, and acknowledged it as the _____ of _____ to be the free and voluntary act and deed of said corporation for the uses and purposes mentioned in the instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

_____
NOTARY PUBLIC in and for the State of Washington, residing at _____
My appointment expires _____
Print Name _____

EXHIBIT A

TACOMA MUNICIPAL CODE

13.06.330 M-2 district.

The following are regulations of the M-2 Heavy Industrial Districts:

A. Use Regulations. A building, structure or land or a building or structure hereafter built, altered or enlarged shall be used for only the following permitted uses:

1. Any use permitted in the M-1 Light Industrial District within or outside a building or fence; provided, however, that all residential uses are prohibited in the M-2 Heavy Industrial Districts except necessary quarters for caretakers and watchmen. Automobile house trailers and mobile homes are allowed for such caretaker and watchman quarters provided a special permit has been approved in accordance with Section 13.06.375; provided further, that group care homes, day care centers and nursery schools are also prohibited from M-2 Heavy Industrial Districts.

1.5. Automobile house trailers and mobile homes as temporary office space in accordance with provisions of Section 13.06.375.

2. Alcohol manufacture or liquor distillery.

3. Asbestos products manufacture.

4. Asphalt manufacture and creosote manufacture and treatment plants.

5. Bag cleaning.

6. Brick, tile, terra cotta and pottery manufacture.

7. Carborundum and abrasive manufacture.

8. Cloth, cord, rope and thread manufacture.

9. Chemicals manufacture but excluding acid manufacture.

10. Concrete and concrete products manufacture.

11. Coke ovens.

12. Felt manufacture.

13. Fish curing, smoking and canning.

14. Flour, feed and cereal manufacture.

15. Gutta percha, tar and rubber goods manufacture.

16. Iron, steel, brass, copper and other metals, foundry and fabrication but excluding smelter and blast furnace.

17. Lampblack, paint, varnish, oil and turpentine manufacture.

18. Linoleum and oil cloth manufacture.

19. Meat and food manufacture and processing but excluding the slaughter of animals and rendering of fat.

20. Mining, rock quarry and rock, sand and gravel cleaning, crushing and processing.

21. Railroad repair and classification yard.

22. Rolling mill.

23. Petroleum and petroleum products aboveground storage in excess of 1,000 gallons.

24. Plastics manufacture.

25. Saltworks.

26. Saw and planing mill.

27. Soap manufacture.

28. Shipyard.

29. Tobacco products manufacture.

30. Wool pulling or scouring.

31. Accessory uses when located on the same lot.

32. Conditional Uses. When authorized by the Hearing Examiner after a duly advertised public hearing, the following uses shall also be permitted in an M-2 District:

a. Construction/demolition/land-clearing debris recycling. Application for a conditional use permit shall be made to the Public Works Department, and shall include site development plans showing all existing and proposed structures, existing and proposed drainage, existing and proposed topography circulation, access drives/fire lanes, equipment and/or material storage location and size, parking and loading areas, and natural or environmentally sensitive features. This application shall be accompanied by filing fees as set forth in Sections 13.06.471 and 13.06.473.

The intent and purpose of this section, and criteria for granting of conditional use permits by the Hearing Examiner, shall be the same as those stated in Section 13.06.375 of this chapter regarding special use permits.

In authorizing a conditional use the Hearing Examiner may attach thereto such conditions as are authorized under Section 13.03.070 of this title.

A conditional use permit so authorized shall expire as provided in Section 13.06.474 hereof if no substantial development has taken place in accordance with plans for which such conditional uses were authorized.

Conditional use permits authorized under this section shall not become effective until expiration of the appeal period following the granting thereof by the Hearing Examiner, and shall be subject to the appellate procedures set forth in Section 13.06.485 hereof, and shall not become effective

EXHIBIT A (CONT.)

TACOMA MUNICIAL CODE

until the expiration of the appeal period; provided however, that a permit granted by the Hearing Examiner shall not become effective in the event there is an appeal filed within the limits prescribed.

B. Height Regulations. A building, structure or portion thereof erected shall not exceed a height of 100 feet, unless such building or structure is set back on all sides one foot for each four feet such building or structure exceeds 100 feet in height.

C. Area Regulations. A building or structure hereafter built, enlarged or moved shall provide the following yards or lot areas:

1. Front Yard. Where all the frontage is located in the M-2 Heavy Industrial District no front yard is required. Where the frontage is partly in the M-2 Heavy Industrial District and partly in a Dwelling District the front yard requirement of the Dwelling District shall apply in the M-2 Heavy Industrial District.

2. Side Yard. Where the side of a lot in the M-2 Heavy Industrial District abuts the side of a lot in a Dwelling District there shall be a side yard of not less than seven and one-half feet in width. In other cases, a side yard for a commercial or industrial building shall not be required.

3. Rear Yard. Where a lot in the M-2 Heavy Industrial District abuts upon a Dwelling District there shall be a rear yard having a depth of not less than 20 feet for interior lots and 10 feet for corner lots. In other cases a rear yard is not required.

D. Parking and Loading Space Regulations. Parking space for buildings as required in Section 13.06.350.

Loading space as required in Section 13.06.350. (Ord. 25374 § 2; passed Oct. 5, 1993: Ord. 20220 § 10; passed Oct. 1, 1974: Ord. 19858 § 6; passed July 3, 1973: Ord. 19286 § 2; passed Jan. 26, 1971: Ord. 15003; passed May 3, 1954: Ord. 14793 § 26; passed May 18, 1953.)

4

AFTER RECORDING RETURN TO:

_____
_____
_____
_____

RESTRICTIVE COVENANT
2502 Marine View Drive - LOT 2

Notice is hereby given that the property, which is the subject of this Restrictive Covenant, legally described as, Lot 2 of City of Tacoma Short Plat recorded in the real property records of Pierce County, Washington on April 1, 1996, under Auditor's Recording No. 9604010402, (the "Property") was the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the Property (hereinafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree, Pierce County No. 93-2-10099-5, and in exhibits to the Decree. The Consent Decree is filed with the Superior Court of the State of Washington in and for Pierce County.

The restrictions and obligations described in this Restrictive Covenant are intended to run with the land and be binding on any and all persons who acquire an interest in the Property.

Potential purchasers and lessees are further put on notice that,

1. The Property may be used only for Industrial uses as defined in and allowed under the City of Tacoma's Zoning Regulations codified in the Tacoma City Code as of the date of this Restrictive Covenant, attached hereto as Exhibit A.

2. Activities on the Property that interfere with the continuing obligation of surface water monitoring required by the Decree are prohibited.

The owner of the Property and owner's assigns and successors in interest reserve the right to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Property or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology or of a successor agency.

Executed as of the ____ day of _____, 1996.

PROPERTY OWNER: MCFARLAND CASCADE HOLDINGS, INC.

By _____
Its _____

Attachment:
Exhibit A - Applicable Zoning Regulations

STATE OF WASHINGTON)
) ss.
COUNTY OF PIERCE)

On this _____ day of _____, 1996, before me, a Notary Public in and for the State of Washington, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument, on oath stated that he was authorized to execute the instrument, and acknowledged it as the _____ of McFarland Cascade Holdings, Inc. to be the free and voluntary act and deed of said corporation for the uses and purposes mentioned in the instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

_____
NOTARY PUBLIC in and for the State of Washington, residing at _____
My appointment expires _____
Print Name _____

EXHIBIT A

TACOMA MUNICIPAL CODE

13.06.330 M-2 district.

The following are regulations of the M-2 Heavy Industrial Districts:

A. Use Regulations. A building, structure or land or a building or structure hereafter built, altered or enlarged shall be used for only the following permitted uses:

1. Any use permitted in the M-1 Light Industrial District within or outside a building or fence; provided, however, that all residential uses are prohibited in the M-2 Heavy Industrial Districts except necessary quarters for caretakers and watchmen. Automobile house trailers and mobile homes are allowed for such caretaker and watchman quarters provided a special permit has been approved in accordance with Section 13.06.375; provided further, that group care homes, day care centers and nursery schools are also prohibited from M-2 Heavy Industrial Districts.

1.5. Automobile house trailers and mobile homes as temporary office space in accordance with provisions of Section 13.06.375.

2. Alcohol manufacture or liquor distillery.

3. Asbestos products manufacture.

4. Asphalt manufacture and creosote manufacture and treatment plants.

5. Bag cleaning.

6. Brick, tile, terra cotta and pottery manufacture.

7. Carborundum and abrasive manufacture.

8. Cloth, cord, rope and thread manufacture.

9. Chemicals manufacture but excluding acid manufacture.

10. Concrete and concrete products manufacture.

11. Coke ovens.

12. Felt manufacture.

13. Fish curing, smoking and canning.

14. Flour, feed and cereal manufacture.

15. Gutta percha, tar and rubber goods manufacture.

16. Iron, steel, brass, copper and other metals, foundry and fabrication but excluding smelter and blast furnace.

17. Lampblack, paint, varnish, oil and turpentine manufacture.

18. Linoleum and oil cloth manufacture.

19. Meat and food manufacture and processing but excluding the slaughter of animals and rendering of fat.

20. Mining, rock quarry and rock, sand and gravel cleaning, crushing and processing.

21. Railroad repair and classification yard.

22. Rolling mill.

23. Petroleum and petroleum products aboveground storage in excess of 1,000 gallons.

24. Plastics manufacture.

25. Saltworks.

26. Saw and planing mill.

27. Soap manufacture.

28. Shipyard.

29. Tobacco products manufacture.

30. Wool pulling or scouring.

31. Accessory uses when located on the same lot.

32. Conditional Uses. When authorized by the Hearing Examiner after a duly advertised public hearing, the following uses shall also be permitted in an M-2 District:

a. Construction/demolition/land-clearing debris recycling. Application for a conditional use permit shall be made to the Public Works Department, and shall include site development plans showing all existing and proposed structures, existing and proposed drainage, existing and proposed topography circulation, access drives/fire lanes, equipment and/or material storage location and size, parking and loading areas, and natural or environmentally sensitive features. This application shall be accompanied by filing fees as set forth in Sections 13.06.471 and 13.06.473.

The intent and purpose of this section, and criteria for granting of conditional use permits by the Hearing Examiner, shall be the same as those stated in Section 13.06.375 of this chapter regarding special use permits.

In authorizing a conditional use the Hearing Examiner may attach thereto such conditions as are authorized under Section 13.03.070 of this title.

A conditional use permit so authorized shall expire as provided in Section 13.06.474 hereof if no substantial development has taken place in accordance with plans for which such conditional uses were authorized.

Conditional use permits authorized under this section shall not become effective until expiration of the appeal period following the granting thereof by the Hearing Examiner, and shall be subject to the appellate procedures set forth in Section 13.06.485 hereof, and shall not become effective

EXHIBIT A (CONT.)

TACOMA MUNICIAL CODE

until the expiration of the appeal period; provided however, that a permit granted by the Hearing Examiner shall not become effective in the event there is an appeal filed within the limits prescribed.

B. Height Regulations. A building, structure or portion thereof erected shall not exceed a height of 100 feet, unless such building or structure is set back on all sides one foot for each four feet such building or structure exceeds 100 feet in height.

C. Area Regulations. A building or structure hereafter built, enlarged or moved shall provide the following yards or lot areas:

1. Front Yard. Where all the frontage is located in the M-2 Heavy Industrial District no front yard is required. Where the frontage is partly in the M-2 Heavy Industrial District and partly in a Dwelling District the front yard requirement of the Dwelling District shall apply in the M-2 Heavy Industrial District.

2. Side Yard. Where the side of a lot in the M-2 Heavy Industrial District abuts the side of a lot in a Dwelling District there shall be a side yard of not less than seven and one-half feet in width. In other cases, a side yard for a commercial or industrial building shall not be required.

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Loading space as required in Section 13.06.350. (Ord. 25374 § 2; passed Oct. 5, 1993: Ord. 20220 § 10; passed Oct. 1, 1974: Ord. 19858 § 6; passed July 3, 1973: Ord. 19286 § 2; passed Jan. 26, 1971: Ord. 15003; passed May 3, 1954: Ord. 14793 § 26; passed May 18, 1953.)

6.4 Photo log

Photo 1: Edman Holdings Log Yard – from the south

Photo 2: Northern Parcel – from the east

Photo 3: Edman Parcel - from the south

Photo 4: Edman Parcel with Containment Cell on Right – from the east