RAMBOLL

ENVIRONMENT
& HEALTH

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

2017 Annual Report , Cascade Timber #1 (aka, "McFarland, WA") Site, Tacoma, Washington

Date January 15, 2018

Ramboll
400 E Evergreen Boulevard, Suite 304
Vancouver, WA 98660
USA

T +1 360 597 7066
www.ramboll.com

Dear Mr. Smith:

Ramboll US Corporation (Ramboll), 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"). Ramboll's 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), in accordance with the scope of work outlined in Ramboll's work plan dated April 13, 2011, which was approved via email by the Washington State Department of Ecology (Ecology) on April 19, 2011. This letter provides a summary of the above mentioned tasks.

Ground Water Monitoring Activities

On September 7, 2017, Ramboll conducted groundwater sampling activities. Upon arrival at the Site, Ramboll 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 0.05 to 0.1 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 parameters described 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 labelled, recorded on a chain-of-custody, and stored in a cooler with ice pending delivery to Test America 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 Ramboll'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-2). 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 September 2017 monitoring event, groundwater depths ranged from approximately 9.08 feet (MCW-2) to 13.65 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 11.50 feet (MCW-4) to 13.89 feet (MCW-3) above mean sea level (amsl; Table 1)[1]. The groundwater elevations suggest that shallow groundwater flow beneath the Site is towards the southeast (towards the Hylebos Waterway), with a northeasterly component of flow in the vicinity of MCW-1, and is consistent with several monitoring events conducted by Ramboll from 2011 through 2016.

[1] In 2012, 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 recent survey information, obtained on December 11, 2012.

Groundwater Analytical Results

The results of laboratory analyses are summarized in Table 2. The results of this sampling event are similar to the results from Ramboll's previous sampling events conducted from 2011 through 2016. 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 total and dissolved arsenic. Total arsenic was detected at concentrations of 0.0051 milligrams per liter (mg/L; MCW-4), which exceeds the MTCA Method A value (0.005 mg/L). A similar concentration for dissolved arsenic was identified in the groundwater sample from MCW-4 (0.0055 mg/L). Similar concentrations have been observed at MCW-4 since 2011 (ranging from 0.0023 mg/L to 0.0071 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 results from previous sampling events by Ramboll and others, the results from this sampling event are similar to past results for these general groundwater quality parameters. Laboratory results from Ramboll's monitoring event are included in Attachment B.

Operations and Maintenance (O&M) Inspection

Ramboll personnel visually 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 Ramboll personnel on field logs and photographs, as appropriate. Site inspection field notes are included in Attachment C, and select photographs are included in Attachment D.

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 rubber seal beneath the well cover on MCW-2 was observed to be degraded during the 2016 monitoring event. As part of the 2017 O&M activities, this seal was replaced, and was noted to be in good condition during Ramboll's inspection.

The perimeter fence was inspected, and was noted to be in good condition with the exception of a damaged hinge on the southern fence gate (as noted below, the fence was repaired in December 2017). Appropriate signage was observed in place.

Ramboll personnel visually inspected the surface of the containment cell. Vegetation was observed on the surface, consisting of a variety of grasses and young blackberry plants. The two "gas vent boots" protruding from the center of the containment cell appeared to be unobstructed, and in good condition. The "cleanout boots," located in the northeastern and northwestern 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 noted to be in good condition, although the paint coating appeared to be chipping off in some areas.

In addition, Ramboll noted a large Scotch broom shrub along the base of the southeastern side of the containment cell that appears to have grown into the southeastern side of the containment cell at the ground surface. Ramboll also noted an increase in vegetation growth on top of the containment cell and at the base surrounding the containment cell, particularly along the eastern side, partially obstructing access to MCW-4. As noted below, vegetation was cleared from the site (including the top of the cell and ground surface) in December 2017.

Site Repairs – December 2017

Ramboll retained NRC Environmental Services, Inc. (NRCES), of Seattle, Washington to assist with repair of one fence panel (noted requiring repair in during the 2016 monitoring event), and removal of vegetation from the site (including areas on the ground surface, and on top of the containment cell). On December 8, 2017, NRCES adjusted/repaired the fence panel hinge, allowing the fence panel to function normally. NRCES also removed large vegetation (saplings, small shrubs) using manual methods and tools; grass and small shrubs were trimmed using gas-powered equipment. The vegetation waste was transported off-site for disposal at the Pierce County Refuse facility (17925 Meridian Avenue East, Puyallup, Washington). Photographs of the site after completion of the maintenance activities are included in Attachment D.

Conclusions

Based on the results of nine consecutive sampling events conducted by Ramboll from 2011 to 2017, with the exception of arsenic, concentrations of analyzed constituents in groundwater have been below MTCA Method A or B cleanup levels for those analytes which cleanup levels have been established (i.e., arsenic, copper, lead, and zinc). Historically, exceedances of MTCA Method A cleanup levels for arsenic have been identified in MCW-1, MCW-3 and MCW-4, at concentrations that marginally exceeded the cleanup level (0.0050 mg/L). Given that recurring exceedances are limited to one well (MCW-4), and the Site and adjacent properties are currently used for industrial purposes with no current or likely future use of groundwater for drinking water purposes, additional evaluation of the minor arsenic exceedances is not recommended at this time. Consistent with direction from the Trust, and at the request of Ecology, the annual scope of work will continue to be performed until the depletion of Trust funding.

In its 2016 annual report, Ramboll recommended replacing the rubber seal on monitoring well MCW-2, repairing a damaged section of fence, and conducting vegetation removal. Those activities were conducted in December 2017. Ramboll has no recommendations for additional maintenance actions at this time.

If you have any questions or comments regarding the items presented in this letter, please contact me at 360-597-7066, or drowe@ramboll.com.

Sincerely,

Devon Rowe, LG, LHG
Project Manager

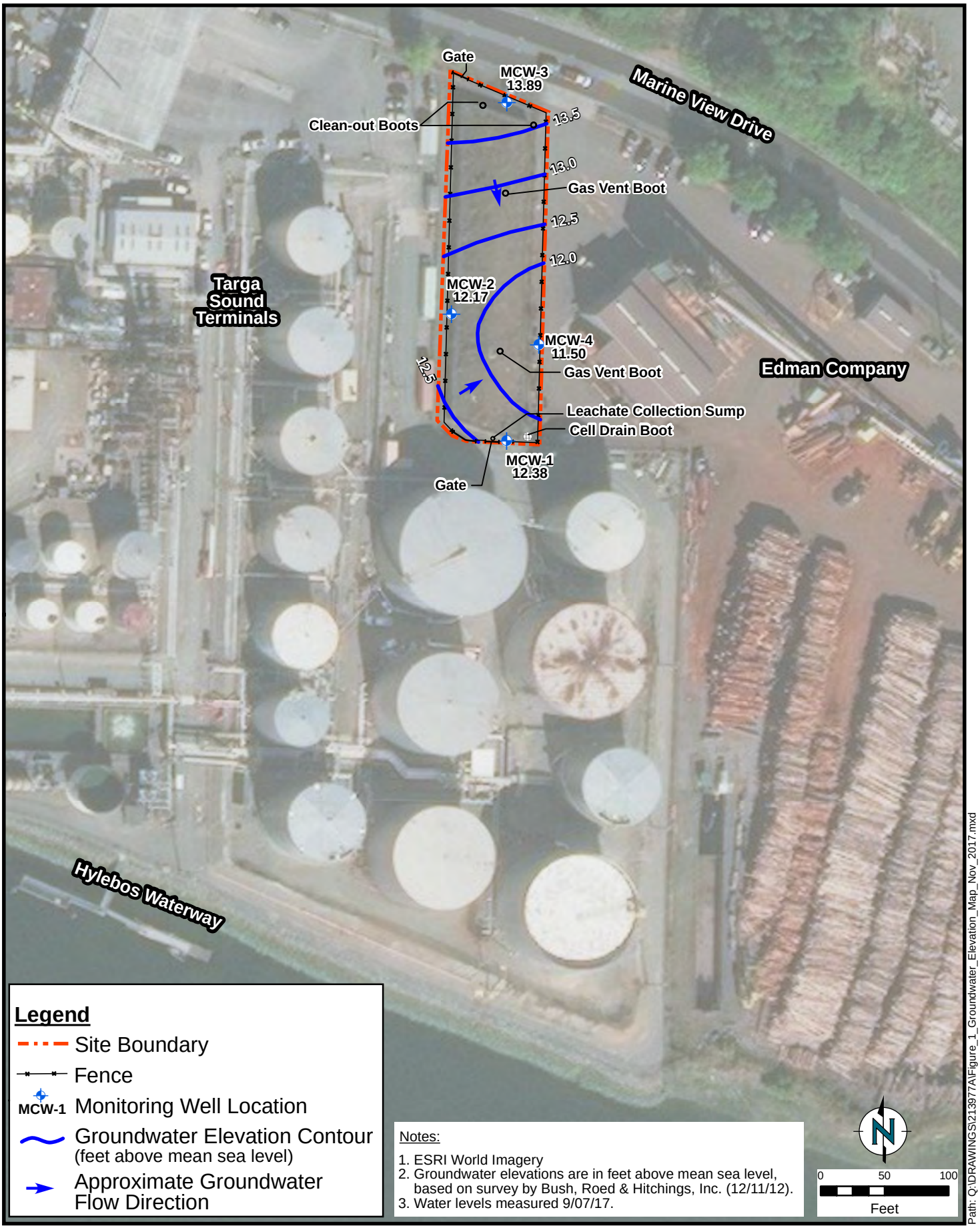
D +1 360 601 8315
drowe@ramboll.com

cc: Asarco Multi-State Environmental Custodial Trust
David Heidlauf, Ramboll

Attachments: Figure 1 – Groundwater Elevation and Site Map
Table 1 – Groundwater Elevation Measurements (2011-2017)
Table 2 – Summary of Groundwater Analytical Results

Attachment A – Purge Logs
Attachment B – Laboratory Data
Attachment C – Field Inspection Notes
Attachment D – Site Photographs

Figure



RAMBOLL

DRAFTED BY: RSO | Date: 1/3/2018

Groundwater Elevation Map - September 2017
Cascade Timber No. 1 Site

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

Figure
1

Project: 1690004975

Tables

Table 1: Groundwater Elevation Measurements (2011 - 2017)
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
					5/21/15	12.18	12.65
					5/20/16	12.83	12.00
					9/7/17	12.45	12.38
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
					5/21/15	8.50	12.75
					5/20/16	8.65	12.60
					9/7/17	9.08	12.17
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
					5/21/15	10.43	14.52
					5/20/16	11.22	13.73
					9/7/17	11.06	13.89
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
					5/21/15	12.82	12.33
					5/20/16	12.38	12.77
					9/7/17	13.65	11.50

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).

RAMBOLL

Table 2: 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	5/21/2015	5/20/2016	9/7/2017
		mg/l	mg/l								
Arsenic	Total	0.005/ 0.0048	< 0.001	<0.001	0.0027	<0.001	0.0037	<0.001	0.0017 J	**0.0052**	0.0013
	Dissolved		< 0.001	<0.001	0.0026	<0.001	0.0038	<0.001	0.0014 J	0.0027	0.0013
Copper	Total	0.64	< 0.002	0.0065 JB	0.001	0.0027	0.00046	0.00069 J	< 0.0030	0.0065	<0.0020
	Dissolved		< 0.002	0.0096 JB	0.00056 J	0.0020	0.00071 J	0.00098 J	< 0.0030	0.0013 J B	<0.0020
Lead	Total	0.015	< 0.001	0.00005 J	0.00079	0.00026 J	0.00013 J	0.00036 J	0.00028 J	0.00065	<0.00080
	Dissolved		< 0.001	<0.0004	0.000064 J	0.000098 J	0.000082 J	0.00025 J	< 0.00017	0.000049 J	<0.00080
Zinc	Total	4.8	< 0.01	<0.0014	0.0054	0.0020	<0.0014	< 0.004	< 0.0095	0.0065 J	<0.0070
	Dissolved		< 0.01	0.0018	0.0016	0.0028	0.0068	0.0028 J	< 0.0095	0.0042 J	0.0019J
Calcium	Total	--	11.4	18	14	14 B	15 B	17	12	8.6	13
Magnesium	Total	--	3.19	5.3	4.6	4.1	5.0	5.1 J	< 15	3.1 J	4.4
Potassium	Total	--	2.28	2.9 J	1.9 J	2.4 J	2.0 J	2.5 J	1.9 J	1.7 J	2.3 J
Sodium	Total	--	15.2	18 B	14	14	14	15	14	13	15
Hardness	Total	--	41.5	71	52	49	69	68	39	70	62
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	<4.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	<4.0	<5.0
Bicarbonate Alkalinity	Total	--	60.2	66	70	61	89	81	69	65	94
Chloride	Total	--	1.8	1.8	3.6	2.01	1.5 B	1.7	0.78 J	1.3	0.48J
Sulfate	Total	--	6.67	11	6.5	11.3	5.3	8.8	3.9	3.4	1.1J
TPH-Gx	--	1	NA	< 0.094	NA	NA	NA	NA	NA	NA	NA
TPH-Dx	--	0.5	NA	< 0.24	NA	NA	NA	NA	NA	NA	NA
TPH-Oil	--	0.5	NA	< 0.47	NA	NA	NA	NA	NA	NA	NA

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.
NA not analyzed
J Result is less than the RL but greater than or equal to the method detection limit and the concentration is an approximate value.
B Compound was found in the blank and sample
< Concentration was below reporting limit

Table 2: 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	12/6/2011 (dup)	6/7/2012	6/7/2012 (dup)	12/11/2012	12/11/2012 (dup)	6/6/2013	6/6/2013 (dup)	1/14/2014	5/21/2015	5/20/2016	5/20/2016 (dup)	9/7/2017	9/7/2017 (dup)
		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	< 0.0014	0.00088 J	0.00084 J	0.0019	0.0020
	Dissolved		0.00116	<0.001	0.0018	0.0017	<0.001	<0.001	0.00096 J	<0.0010	<0.001	<0.001	0.0012	< 0.0014	0.0013	0.0015	0.0013	0.0018
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	< 0.0030	<0.0020	<0.0020	<0.0020	<0.0020
	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	< 0.0030	0.0021 B	0.0015 J B	<0.0020	<0.0020
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	< 0.00017	0.000058 J	0.000042 J	<0.00080	0.00023J
	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	< 0.00017	0.00011 J	0.00014 J	<0.00080	<0.00080
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	< 0.0095	0.0019 J	<0.0070	<0.0070	0.0022J
	Dissolved		<0.01	0.0101	0.0014	0.0015	<0.0014	0.00091 J	<0.0014	0.0030	0.0015	<0.0014	<0.004	< 0.0095	0.0033 J	0.0023 J	<0.0070	<0.0070
Calcium	Total	--	24.4	25.6	26	26	26	26	30 B	28 B	26 B	25 B	27	29	24	25	22	23
Magnesium	Total	--	10.1	10.6	13	13	10	10	12	12	10	10	12	< 15	11	10	10	10
Potassium	Total	--	4.43	4.84	4	4.2	4.8	4.8	6.2	5.7	5.4	5.2	4.9	5.1	5.0	5.1	4.1	4.9
Sodium	Total	--	10.5	11	12 B	12 B	11	11	12	11	12	11	11	12	11	11	10	10
Hardness	Total	--	103	107	140	150	130	130	150	150	110 B	110 B	120	120	120	150	120	110
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	< 5.0	<4.0	<4.0	<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	< 5.0	<4.0	<4.0	<5.0	<5.0
Bicarbonate Alkalinity	Total	--	128	127	140	140	130	130	140	140	140	140	140	140	130	130	130	130
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	6.0	5.9	5.8	7.3	6.7
Sulfate	Total	--	< 1.0	<1.0	<1.2	<1.2	<1.2	<1.2	0.77	<0.5	<1.0	<1.0	<1.2	< 0.40	<0.50	<0.50	<1.2	<1.2
TPH-Gx	--	1	NA	NA	< 0.094	< 0.094	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Dx	--	0.5	NA	NA	< 0.24	< 0.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Oil	--	0.5	NA	NA	< 0.47	< 0.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.
NA not analyzed
J Result is less than the RL but greater than or equal to the method detection limit and the concentration is an approximate value.
B Compound was found in the blank and sample
< Concentration was below reporting limit

Table 2: 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									
			5/18/2011	12/6/2011	6/7/2012	12/11/2012	6/6/2013	1/14/2014	1/14/2014 (dup)	5/21/2015	5/20/2016	9/7/2017
		mg/l	mg/l									
Arsenic	Total	0.005/ 0.0048	0.00189	**0.0083**	0.0025	0.0020	0.0028	0.0018	0.0017	0.0028 J	**0.016**	0.0040
	Dissolved		0.00197	0.0017	0.0022	0.0018	0.0023	0.0017	0.0017	0.0020 J	0.0038	0.0037
Copper	Total	0.64	< 0.002	0.00034 J	0.00056 J	0.00043 J	0.00068 J	<0.001	<0.001	< 0.0030	0.00062 J	<0.0020
	Dissolved		< 0.002	0.00025 J	0.00023 J	0.00022 J	0.00016 J	0.00047 J	<0.001	< 0.0030	0.0016 JB	<0.0020
Lead	Total	0.015	< 0.001	0.00021 J	0.00017 J	0.00018 J	0.00052	0.000068 J	0.000085 J	< 0.00017	0.00035 J	<0.00080
	Dissolved		< 0.001	<0.004	0.000043 J	0.000091 J	<0.0004	0.00008 J	0.000065 J	< 0.00017	0.000034 J	<0.00080
Zinc	Total	4.8	< 0.01	0.0011 J	<0.0014	0.0011 J	0.0011 J	<0.004	<0.004	< 0.0095	0.0079	0.0019J
	Dissolved		< 0.01	0.0017	<0.0014	0.0023	0.0010 J	0.0029J	<0.004	< 0.0095	0.0078	<0.0070
Calcium	Total	--	24.1	24	20	22 B	17 B	20	21	22	23	20
Magnesium	Total	--	15.8	16	12	14	11	13	13	< 15	13	12
Potassium	Total	--	2.08	2.4 J	1.9 J	2.3 J	2.1 J	1.9 J	1.9 J	2.0 J	2.1 J	2.3 J
Sodium	Total	--	11.0	12 B	9.7	11	8.9	9.4	9.5	9.3	8.7	9.8
Hardness	Total	--	125	140	120	120	89 B	110	130	110	200	120
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.0	<5.0
Bicarbonate Alkalinity	Total	--	135	140	120	130	110	120	120	120	130	130
Chloride	Total	--	14.6	7.5	9.2	7.9	8.1 B	7.4	7.4	6.5	7.2	6.2
Sulfate	Total	--	< 1.0	<1.2	<1.2	<0.5	<1.0	<1.2	<1.2	< 0.40	<0.50	<1.2
TPH-Gx	--	1	NA	< 0.094	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Dx	--	0.5	NA	< 0.24	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Oil	--	0.5	NA	< 0.47	NA	NA	NA	NA	NA	NA	NA	NA

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.
NA not analyzed
J Result is less than the RL but greater than or equal to the method detection limit and the concentration is an approximate value.
B Compound was found in the blank and sample
< Concentration was below reporting limit

Table 2: 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									
			5/18/2011	12/6/2011	6/7/2012	12/11/2012	6/6/2013	1/14/2014	5/21/2015	5/21/2015 (dup)	5/20/2016	9/7/2017
		mg/l	mg/l									
Arsenic	Total	0.005/ 0.0048	0.00435	0.0045	0.0025	**0.0063**	**0.0051**	**0.007**	**0.0071**	**0.0061**	**0.0050**	**0.0051**
	Dissolved		0.00444	**0.0050**	0.0023	0.0041	0.0024	**0.0069**	**0.0064**	**0.0071**	**0.0055**	**0.0055**
Copper	Total	0.64	< 0.002	0.00019 J	0.00025 J	0.00094 J	0.00027 J	0.00022 J	< 0.0030	< 0.0030	<0.0020	<0.0020
	Dissolved		< 0.002	0.00029 J	0.00023 J	0.001	0.0011	0.00052 J	< 0.0030	< 0.0030	0.0013 J B	<0.0020
Lead	Total	0.015	< 0.001	0.00004 J	0.000064 J	0.00042	0.00043	0.00015 J	< 0.00017	< 0.00017	<0.00040	<0.00080
	Dissolved		< 0.001	<0.0004	<0.0004	0.00016 J	<0.0004	0.00018 J	< 0.00017	< 0.00017	<0.00040	<0.00080
Zinc	Total	4.8	< 0.01	0.0014	<0.0014	0.0023	<0.0014	<0.004	< 0.0095	< 0.0095	<0.0070	<0.0070
	Dissolved		< 0.01	0.0032	0.0011 J	0.0041	0.00093 J	0.0029 J	< 0.0095	< 0.0095	0.0034 J	0.0029J
Calcium	Total	--	31.5	35	28	36 B	28 B	30	29	29	27	27
Magnesium	Total	--	15.1	14	12	14	11	14	< 15	< 15	12	11
Potassium	Total	--	3.57	4.8	4.4	4.4	3.9	3.6	3.5	3.7	3.6	3.8
Sodium	Total	--	13.5	14 B	14	14	11	14	11	11	11	12
Hardness	Total	--	141	180	150	160	120 B	320	130	130	120	130
Hydroxide Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.0	<5.0
Carbonate Alkalinity	Total	--	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<4.0	<5.0
Bicarbonate Alkalinity	Total	--	176	170	150	140	140	150	140	140	150	140
Chloride	Total	--	7.82	10	8.6	11.2	9.6 B	7.7	6.9	6.8	7.2	6.9
Sulfate	Total	--	0	<1.2	<1.2	<0.5	0.25 J	<1.2	< 0.40	< 0.40	<0.50	<1.2
TPH-Gx	--	1	NA	< 0.094	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Dx	--	0.5	NA	< 0.24	NA	NA	NA	NA	NA	NA	NA	NA
TPH-Oil	--	0.5	NA	< 0.47	NA	NA	NA	NA	NA	NA	NA	NA

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.
NA not analyzed
J Result is less than the RL but greater than or equal to the method detection limit and the concentration is an approximate value.
B Compound was found in the blank and sample
< Concentration was below reporting limit

Attachment A

Purge Logs

DTB: 19' Screen: 10-15'

RAMBOLL

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER:
PROJECT LOCATION: Tacoma

FIELD PERSON: S. Leick
PROJECT MANAGER: D. Rowe
DATE: 9-7-17

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
MW-1-20170907	2.0		DTW: 12.45'	MW-1

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	DO (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
Start	11:40									
	11:43	3.86	17.59		3.07	0.159	1.33	13.70		
	11:46	2.91	17.48		2.88	0.158	1.34	13.48		
	11:49	1.97	17.43		3.04	0.157	1.10	13.48		
	11:52	1.54	17.43		3.19	0.157	1.05	13.48		
	11:57	1.18	17.19		3.08	0.156	0.98	13.48		
	12:02	1.05	17.17		3.09	0.157	0.95	13.48		

PURGE SETTING

SAMPLE SETTING

WELL CHARACTERISTICS

DTB=16' Screen=10-15

RAMBOLL

LOW FLOW WATER PURGING AND SAMPLING L

PROJECT NAME: McFarland
PROJECT NUMBER:
PROJECT LOCATION: Tacoma

FIELD PERSON: S Leick
PROJECT MANAGER: D Rowe
DATE: 9-7-17

SAMPLE ID: MW-2-20170907 | FINAL PURGE VOLUME | QUARTERLY | START: DTW=9.08' | WELL NUMBER: MW-2

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	DO (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
Start	1335									
	1338	2.20	16.27		6.48	0.203	3.80	9.45		
	1341	1.35	16.08		6.47	0.259	2.33	9.45		
	1344	1.49	15.77		6.53	0.252	2.14	9.45		
	1349	1.28	15.58		6.58	0.249	1.96	9.45		Dup collected
	1354	1.25	15.64		6.60	0.247	1.76	9.45		MW-99-20170907

PURGE SETTING | SAMPLE SETTING | WELL CHARACTERISTICS

Screen: 9-14', DTB 14'

RAMBOLL

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER:
PROJECT LOCATION: Tacoma, WA
FIELD PERSON: S. Leick
PROJECT MANAGER: D. Rouse
DATE: 9-7-17

SAMPLE ID	FINAL PURGE VOLUME	QUARTERLY	START	WELL NUMBER
MW-3-20170907	2 gal.		DTW= 11.06	MW-3

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	DO (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
0	9:35									
1	9:38	3.18	17.41°	3.9	6.62	0.243	2.52			
2	9:41	2.14	17.29	3.4	6.63	0.239	2.17	12.45		
	9:44	2.15	17.22	3.7	6.64	0.238	2.20	12.47		
	9:47	2.12	17.10	1.2	6.67	0.237	1.66	12.47		
	9:52	1.72	16.98	0.1	6.69	0.235	1.48	12.46		
	9:58		16.81	0.5	6.70	0.233	1.35	12.46		

PURGE SETTING

SAMPLE SETTING

WELL CHARACTERISTICS

FILE: LOG FORMS\Low Flow Water Purging and Sampling Log

DTB 18' Screen: 12-17'

RAMBOLL

LOW FLOW WATER PURGING AND SAMPLING LOG

PROJECT NAME: McFarland
PROJECT NUMBER:
PROJECT LOCATION: Tacoma

FIELD PERSON: S Leick
PROJECT MANAGER: D. Rowe
DATE: 9-7-17

SAMPLE ID: MW-4-20170907 | FINAL PURGE VOLUME: 1.5 | QUARTERLY | START: DTW: 13.65' | WELL NUMBER: MW-4

READING NUMBER	TIME	TURBIDITY (NTU)	TEMP. (°C)	REDOX (MV)	pH	EC (MS)	DO (ppm)	DTW (FT BGS)	PURGE RATE	COMMENTS/CONTROL INSTRUCTIONS
10:50 ← start	10:53	2.92	14.41		6.42	0.268	2.99	13.70		
	10:56	1.87	14.40		6.38	0.268	2.27	13.70		
	10:59	1.51	14.41		6.46	0.267	1.94	13.70		
	11:02	1.35	14.28		6.51	0.264	1.80	13.70		
	11:07	1.40	14.16		6.53	0.264	1.64	13.70		
	11:12	1.34	14.09		6.57	0.264	1.51	13.70		

PURGE SETTING | SAMPLE SETTING | WELL CHARACTERISTICS

FILE: LOG FORMS\Low Flow Water Purging and Sampling Log

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: 580-71092-1
Client Project/Site: Ramboll-Environ-McFarland

For:
Ramboll Environ US Corporation
8440 SE Sunnybrook Blvd
Suite 204
Clackamas, Oregon 97015

Attn: Devon Rowe

Kristine D. Allen

Authorized for release by:
9/21/2017 5:20:29 PM
Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

Designee for

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

Table of Contents

Job ID: 580-71092-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-71092-1

Comments
No additional comments.

Receipt
The samples were received on 9/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2° C. Only one preserved container received for MW-3-20170907 and MW-4-20170907 for dissolved metals.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-3-20170907
Date Collected: 09/07/17 10:00
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-1
Matrix: Water

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0040**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 11:42	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 11:42	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 11:42	1
Zinc	**0.0019**	**J**	0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 11:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0037**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 11:16	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 11:16	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 11:16	1
Zinc	ND		0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 11:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.2**		0.90	0.14	mg/L			09/08/17 14:05	1
Sulfate	ND		1.2	0.26	mg/L			09/08/17 14:05	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Bicarbonate Alkalinity as CaCO3	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hardness as calcium carbonate	**120**		2.0	2.0	mg/L			09/13/17 16:53	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-4-20170907
Date Collected: 09/07/17 11:20
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-2
Matrix: Water

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0051**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 11:46	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 11:46	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 11:46	1
Zinc	ND		0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 11:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0055**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 12:08	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 12:08	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 12:08	1
Zinc	**0.0029**	**J**	0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 12:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.9**		0.90	0.14	mg/L			09/08/17 14:18	1
Sulfate	ND		1.2	0.26	mg/L			09/08/17 14:18	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**140**		5.0	5.0	mg/L			09/20/17 17:33	1
Bicarbonate Alkalinity as CaCO3	**140**		5.0	5.0	mg/L			09/20/17 17:33	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hardness as calcium carbonate	**130**		2.0	2.0	mg/L			09/13/17 16:53	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-1-20170907
Date Collected: 09/07/17 12:05
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-3
Matrix: Water

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0013**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 12:04	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 12:04	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 12:04	1
Zinc	ND		0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 12:04	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0013**		0.0010	0.00027	mg/L		09/18/17 18:37	09/19/17 21:25	1
Lead	ND		0.00080	0.00020	mg/L		09/18/17 18:37	09/19/17 21:25	1
Copper	ND		0.0020	0.00060	mg/L		09/18/17 18:37	09/19/17 21:25	1
Zinc	**0.0019**	**J**	0.0070	0.0019	mg/L		09/18/17 18:37	09/19/17 21:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**0.48**	**J**	0.90	0.14	mg/L			09/08/17 14:56	1
Sulfate	**1.1**	**J**	1.2	0.26	mg/L			09/08/17 14:56	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**94**		5.0	5.0	mg/L			09/20/17 17:33	1
Bicarbonate Alkalinity as CaCO3	**94**		5.0	5.0	mg/L			09/20/17 17:33	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hardness as calcium carbonate	**62**		2.0	2.0	mg/L			09/13/17 16:53	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-2-20170907
Date Collected: 09/07/17 14:00
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-4
Matrix: Water

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0019**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 11:27	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 11:27	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 11:27	1
Zinc	ND		0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 11:27	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0013**		0.0010	0.00027	mg/L		09/18/17 18:37	09/19/17 21:22	1
Lead	ND		0.00080	0.00020	mg/L		09/18/17 18:37	09/19/17 21:22	1
Copper	ND		0.0020	0.00060	mg/L		09/18/17 18:37	09/19/17 21:22	1
Zinc	ND		0.0070	0.0019	mg/L		09/18/17 18:37	09/19/17 21:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7.3**		0.90	0.14	mg/L			09/08/17 15:09	1
Sulfate	ND		1.2	0.26	mg/L			09/08/17 15:09	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Bicarbonate Alkalinity as CaCO3	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hardness as calcium carbonate	**120**		2.0	2.0	mg/L			09/13/17 16:53	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-99-20170907
Date Collected: 09/07/17 14:10
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-5
Matrix: Water

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0020**		0.0010	0.00027	mg/L		09/19/17 14:49	09/20/17 11:31	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:49	09/20/17 11:31	1
Lead	**0.00023**	**J**	0.00080	0.00020	mg/L		09/19/17 14:49	09/20/17 11:31	1
Zinc	**0.0022**	**J**	0.0070	0.0019	mg/L		09/19/17 14:49	09/20/17 11:31	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0018**		0.0010	0.00027	mg/L		09/18/17 18:37	09/19/17 20:41	1
Lead	ND		0.00080	0.00020	mg/L		09/18/17 18:37	09/19/17 20:41	1
Copper	ND		0.0020	0.00060	mg/L		09/18/17 18:37	09/19/17 20:41	1
Zinc	ND		0.0070	0.0019	mg/L		09/18/17 18:37	09/19/17 20:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.7**		0.90	0.14	mg/L			09/08/17 15:22	1
Sulfate	ND		1.2	0.26	mg/L			09/08/17 15:22	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Bicarbonate Alkalinity as CaCO3	**130**		5.0	5.0	mg/L			09/20/17 17:33	1
Carbonate Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hydroxide Alkalinity as CaCO3	ND		5.0	5.0	mg/L			09/20/17 17:33	1
Hardness as calcium carbonate	**110**		4.0	4.0	mg/L			09/13/17 16:53	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 580-256517/8-A
Matrix: Water
Analysis Batch: 256668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256517

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00027	mg/L		09/18/17 18:37	09/19/17 20:38	1
Copper	ND		0.0020	0.00060	mg/L		09/18/17 18:37	09/19/17 20:38	1
Lead	ND		0.00080	0.00020	mg/L		09/18/17 18:37	09/19/17 20:38	1
Zinc	ND		0.0070	0.0019	mg/L		09/18/17 18:37	09/19/17 20:38	1

Lab Sample ID: LCS 580-256517/9-A
Matrix: Water
Analysis Batch: 256668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256517

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0890		mg/L		89	85 - 115
Copper	0.100	0.0890		mg/L		89	85 - 115
Lead	0.100	0.0913		mg/L		91	85 - 115
Zinc	0.100	0.0893		mg/L		89	85 - 115

Lab Sample ID: LCSD 580-256517/10-A
Matrix: Water
Analysis Batch: 256668

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 256517

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.100	0.0894		mg/L		89	85 - 115	0	20
Copper	0.100	0.0894		mg/L		89	85 - 115	1	20
Lead	0.100	0.0936		mg/L		94	85 - 115	2	20
Zinc	0.100	0.0897		mg/L		90	85 - 115	0	20

Lab Sample ID: MB 580-256614/22-A
Matrix: Water
Analysis Batch: 256731

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256614

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0010	0.00027	mg/L		09/19/17 14:50	09/20/17 10:32	1
Copper	ND		0.0020	0.00060	mg/L		09/19/17 14:50	09/20/17 10:32	1
Lead	ND		0.00080	0.00020	mg/L		09/19/17 14:50	09/20/17 10:32	1
Zinc	ND		0.0070	0.0019	mg/L		09/19/17 14:50	09/20/17 10:32	1

Lab Sample ID: LCS 580-256614/23-A
Matrix: Water
Analysis Batch: 256731

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256614

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0957		mg/L		96	85 - 115
Copper	0.100	0.0959		mg/L		96	85 - 115
Lead	0.100	0.0967		mg/L		97	85 - 115
Zinc	0.100	0.0935		mg/L		94	85 - 115

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

Lab Sample ID: LCSD 580-256614/24-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 256731 — **Prep Batch: 256614**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic			0.100	0.0990		mg/L		99	85 - 115	3	20
Copper			0.100	0.0974		mg/L		97	85 - 115	2	20
Lead			0.100	0.0977		mg/L		98	85 - 115	1	20
Zinc			0.100	0.0971		mg/L		97	85 - 115	4	20

Lab Sample ID: 580-71092-5 MS — **Client Sample ID: MW-99-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 256668 — **Prep Batch: 256517**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0018		0.100	0.0937		mg/L		92	70 - 130
Copper	ND		0.100	0.0905		mg/L		91	70 - 130
Lead	ND		0.100	0.0961		mg/L		96	70 - 130
Zinc	ND		0.100	0.0912		mg/L		91	70 - 130

Lab Sample ID: 580-71092-5 MSD — **Client Sample ID: MW-99-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 256668 — **Prep Batch: 256517**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.0018		0.100	0.0919		mg/L		90	70 - 130	2	20
Copper	ND		0.100	0.0876		mg/L		88	70 - 130	3	20
Lead	ND		0.100	0.0935		mg/L		94	70 - 130	3	20
Zinc	ND		0.100	0.0888		mg/L		89	70 - 130	3	20

Lab Sample ID: 580-71092-5 DU — **Client Sample ID: MW-99-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 256668 — **Prep Batch: 256517**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.0018		0.00167		mg/L		4	20
Copper	ND		ND		mg/L		NC	20
Lead	ND		ND		mg/L		NC	20
Zinc	ND		ND		mg/L		NC	20

Lab Sample ID: 580-71092-1 MS — **Client Sample ID: MW-3-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 256731 — **Prep Batch: 256614**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.0037		0.100	0.100		mg/L		96	70 - 130
Copper	ND		0.100	0.0958		mg/L		96	70 - 130
Lead	ND		0.100	0.0996		mg/L		100	70 - 130
Zinc	ND		0.100	0.0942		mg/L		94	70 - 130

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

Lab Sample ID: 580-71092-1 MSD — **Client Sample ID: MW-3-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 256731 — **Prep Batch: 256614**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.0037		0.100	0.0986		mg/L		95	70 - 130	1	20
Copper	ND		0.100	0.0955		mg/L		95	70 - 130	0	20
Lead	ND		0.100	0.0971		mg/L		97	70 - 130	2	20
Zinc	ND		0.100	0.0925		mg/L		92	70 - 130	2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-255892/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 255892

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.90	0.14	mg/L			09/08/17 12:22	1
Sulfate	ND		1.2	0.26	mg/L			09/08/17 12:22	1

Lab Sample ID: LCS 580-255892/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 255892

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.8		mg/L		104	90 - 110
Sulfate	50.0	50.1		mg/L		100	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 580-256778/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 256778

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	111		mg/L		111	85 - 115

Method: SM 2340C - Hardness, Total (mg/l as CaC03)

Lab Sample ID: MB 580-256109/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 256109

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	ND		2.0	2.0	mg/L			09/13/17 16:53	1

Lab Sample ID: LCS 580-256109/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 256109

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hardness as calcium carbonate	1000	987		mg/L		99	90 - 110

Client Sample ID: MW-3-20170907

Lab Sample ID: 580-71092-1

Date Collected: 09/07/17 10:00

Matrix: Water

Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Dissolved	Analysis	200.8		1	256731	09/20/17 11:16	FCW	TAL SEA
Total/NA	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Total/NA	Analysis	200.8		1	256731	09/20/17 11:42	FCW	TAL SEA
Total/NA	Analysis	300.0		1	255892	09/08/17 14:05	MMM	TAL SEA
Total/NA	Analysis	SM 2320B		1	256778	09/20/17 17:33	EMM	TAL SEA
Total/NA	Analysis	SM 2340C		1	256109	09/13/17 16:53	MMM	TAL SEA

Client Sample ID: MW-4-20170907

Lab Sample ID: 580-71092-2

Date Collected: 09/07/17 11:20

Matrix: Water

Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Dissolved	Analysis	200.8		1	256731	09/20/17 12:08	FCW	TAL SEA
Total/NA	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Total/NA	Analysis	200.8		1	256731	09/20/17 11:46	FCW	TAL SEA
Total/NA	Analysis	300.0		1	255892	09/08/17 14:18	MMM	TAL SEA
Total/NA	Analysis	SM 2320B		1	256778	09/20/17 17:33	EMM	TAL SEA
Total/NA	Analysis	SM 2340C		1	256109	09/13/17 16:53	MMM	TAL SEA

Client Sample ID: MW-1-20170907

Lab Sample ID: 580-71092-3

Date Collected: 09/07/17 12:05

Matrix: Water

Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			255600	09/07/17 17:11	R1K	TAL SEA
Dissolved	Prep	200.8			256517	09/18/17 18:37	PAB	TAL SEA
Dissolved	Analysis	200.8		1	256668	09/19/17 21:25	FCW	TAL SEA
Total/NA	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Total/NA	Analysis	200.8		1	256731	09/20/17 12:04	FCW	TAL SEA
Total/NA	Analysis	300.0		1	255892	09/08/17 14:56	MMM	TAL SEA
Total/NA	Analysis	SM 2320B		1	256778	09/20/17 17:33	EMM	TAL SEA
Total/NA	Analysis	SM 2340C		1	256109	09/13/17 16:53	MMM	TAL SEA

Client Sample ID: MW-2-20170907

Lab Sample ID: 580-71092-4

Date Collected: 09/07/17 14:00

Matrix: Water

Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			255600	09/07/17 17:11	R1K	TAL SEA
Dissolved	Prep	200.8			256517	09/18/17 18:37	PAB	TAL SEA

Lab Chronicle

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Client Sample ID: MW-2-20170907

Lab Sample ID: 580-71092-4

Date Collected: 09/07/17 14:00
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	200.8		1	256668	09/19/17 21:22	FCW	TAL SEA
Total/NA	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Total/NA	Analysis	200.8		1	256731	09/20/17 11:27	FCW	TAL SEA
Total/NA	Analysis	300.0		1	255892	09/08/17 15:09	MMM	TAL SEA
Total/NA	Analysis	SM 2320B		1	256778	09/20/17 17:33	EMM	TAL SEA
Total/NA	Analysis	SM 2340C		1	256109	09/13/17 16:53	MMM	TAL SEA

Client Sample ID: MW-99-20170907

Lab Sample ID: 580-71092-5

Date Collected: 09/07/17 14:10
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			255600	09/07/17 17:11	R1K	TAL SEA
Dissolved	Prep	200.8			256517	09/18/17 18:37	PAB	TAL SEA
Dissolved	Analysis	200.8		1	256668	09/19/17 20:41	FCW	TAL SEA
Total/NA	Prep	200.8			256614	09/19/17 14:49	PAB	TAL SEA
Total/NA	Analysis	200.8		1	256731	09/20/17 11:31	FCW	TAL SEA
Total/NA	Analysis	300.0		1	255892	09/08/17 15:22	MMM	TAL SEA
Total/NA	Analysis	SM 2320B		1	256778	09/20/17 17:33	EMM	TAL SEA
Total/NA	Analysis	SM 2340C		1	256109	09/13/17 16:53	MMM	TAL SEA

Laboratory References:

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

Accreditation/Certification Summary

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 2320B		Water	Hydroxide Alkalinity as CaCO3

Sample Summary

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-71092-1	MW-3-20170907	Water	09/07/17 10:00	09/07/17 15:10
580-71092-2	MW-4-20170907	Water	09/07/17 11:20	09/07/17 15:10
580-71092-3	MW-1-20170907	Water	09/07/17 12:05	09/07/17 15:10
580-71092-4	MW-2-20170907	Water	09/07/17 14:00	09/07/17 15:10
580-71092-5	MW-99-20170907	Water	09/07/17 14:10	09/07/17 15:10

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

Loc: 580
71092

☐ Rush
☐ Short Hold

Chain of Custody Record

Client: Ramboll Environ
Client Contact:
Date: 9/7/17
Chain of Custody Number: 31751
Address: 901 5th Ave, Suite 2820
Telephone Number (Area Code)/Fax Number:
Lab Number:
Page 1 of 1
City: Seattle | State: WA | Zip Code: 98119
Sampler: SL
Lab Contact:
Project Name and Location (State): Mcfarland
Billing Contact:
Contract/Purchase Order/Quote No.:

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	Analysis: Alkalinity	Chloride/Sulfate	Total Metals	Hardness	Ca Carbonate	Dissolved Metals	Dissolved Metals
MW-3-20170907	9-SL-07-17	1000		X			1	3					X	X	X	X	X	X	Y
MW-4-20170907		1120 1130 ESL					1	3											
MW-1-20170907		1200 1205 ESL					2	2											
MW-2-20170907		1400					2	2											
MW-99-20170907		1410					2	2											

580-71092 Chain of Custody

TB A2 Cooler Cor 0.2 Unc 1.0
Cooler Dsc Med Blue @Lab
Wet/Packs Packing Other
Cli do Custody Seal: Yes No X

Special Instructions/ Conditions of Receipt

- Please be sure reporting limits are below MTCA
- samples MW-3-20170907 and MW-4-20170907 both have one filtered preserved container for dissolved metals

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

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: Sam Leidle	9-7-17	1510	1. Received By Sign/Print: B. Gall SEA TA	9/7/17	1510
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

Login Sample Receipt Checklist

Client: Ramboll Environ US Corporation

Job Number: 580-71092-1

Login Number: 71092

List Source: TestAmerica Seattle

List Number: 1

Creator: Ponce-McDermott, Monica

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	
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.	True	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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: 580-71092-2
Client Project/Site: Ramboll-Environ-McFarland

For:
Ramboll Environ US Corporation
8440 SE Sunnybrook Blvd
Suite 204
Clackamas, Oregon 97015

Attn: Devon Rowe

Authorized for release by:
11/7/2017 4:04:22 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

Table of Contents

Job ID: 580-71092-2

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-71092-2

Comments
No additional comments.

Receipt
The samples were received on 9/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

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.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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 Sample Results

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-3-20170907
Date Collected: 09/07/17 10:00
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-1
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	0.16	mg/L		11/03/17 15:17	11/05/17 11:26	1
Potassium	2.3	J	3.3	0.41	mg/L		11/03/17 15:17	11/05/17 11:26	1
Sodium	9.8		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 11:26	1
Magnesium	12		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 11:26	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	17		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 11:56	1
Magnesium	11		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 11:56	1
Potassium	2.0	J	3.3	0.41	mg/L		11/03/17 17:23	11/05/17 11:56	1
Sodium	8.5		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 11:56	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-4-20170907
Date Collected: 09/07/17 11:20
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-2
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	27	F1	1.1	0.16	mg/L		11/03/17 15:17	11/05/17 11:00	1
Potassium	3.8		3.3	0.41	mg/L		11/03/17 15:17	11/05/17 11:00	1
Sodium	12		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 11:00	1
Magnesium	11		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 11:00	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	25		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 12:22	1
Magnesium	10		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 12:22	1
Potassium	3.6		3.3	0.41	mg/L		11/03/17 17:23	11/05/17 12:22	1
Sodium	11		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 12:22	1

Client Sample Results

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-1-20170907
Date Collected: 09/07/17 12:05
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-3
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	13		1.1	0.16	mg/L		11/03/17 15:17	11/05/17 11:30	1
Potassium	2.3	J	3.3	0.41	mg/L		11/03/17 15:17	11/05/17 11:30	1
Sodium	15		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 11:30	1
Magnesium	4.4		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 11:30	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	14		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 12:26	1
Magnesium	4.7		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 12:26	1
Potassium	2.4	J	3.3	0.41	mg/L		11/03/17 17:23	11/05/17 12:26	1
Sodium	15		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 12:26	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-2-20170907
Date Collected: 09/07/17 14:00
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-4
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	22		1.1	0.16	mg/L		11/03/17 15:17	11/05/17 11:33	1
Potassium	4.1		3.3	0.41	mg/L		11/03/17 15:17	11/05/17 11:33	1
Sodium	10		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 11:33	1
Magnesium	10		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 11:33	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	22		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 12:29	1
Magnesium	10		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 12:29	1
Potassium	4.4		3.3	0.41	mg/L		11/03/17 17:23	11/05/17 12:29	1
Sodium	10		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 12:29	1

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-99-20170907
Date Collected: 09/07/17 14:10
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-5
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	23		1.1	0.16	mg/L		11/03/17 15:17	11/05/17 11:36	1
Potassium	4.9		3.3	0.41	mg/L		11/03/17 15:17	11/05/17 11:36	1
Sodium	10		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 11:36	1
Magnesium	10		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 11:36	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	21		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 12:32	1
Magnesium	9.7		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 12:32	1
Potassium	4.6		3.3	0.41	mg/L		11/03/17 17:23	11/05/17 12:32	1
Sodium	9.8		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 12:32	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 580-260695/9-A
Matrix: Water
Analysis Batch: 260723

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 260695

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		11/03/17 15:17	11/05/17 10:50	1
Potassium	ND		3.3	0.41	mg/L		11/03/17 15:17	11/05/17 10:50	1
Magnesium	ND		1.1	0.13	mg/L		11/03/17 15:17	11/05/17 10:50	1
Sodium	ND		2.0	0.33	mg/L		11/03/17 15:17	11/05/17 10:50	1

Lab Sample ID: LCS 580-260695/10-A
Matrix: Water
Analysis Batch: 260723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 260695

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	9.11		mg/L		91	85 - 115
Potassium	10.0	9.20		mg/L		92	85 - 115
Magnesium	10.0	9.04		mg/L		90	85 - 115
Sodium	10.0	9.32		mg/L		93	85 - 115

Lab Sample ID: LCSD 580-260695/11-A
Matrix: Water
Analysis Batch: 260723

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 260695

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	10.0	9.23		mg/L		92	85 - 115	1	20
Potassium	10.0	9.27		mg/L		93	85 - 115	1	20
Magnesium	10.0	9.16		mg/L		92	85 - 115	1	20
Sodium	10.0	9.45		mg/L		95	85 - 115	1	20

Lab Sample ID: 580-71092-2 MS
Matrix: Water
Analysis Batch: 260723

Client Sample ID: MW-4-20170907
Prep Type: Total/NA
Prep Batch: 260695

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	27	F1	10.0	36.4		mg/L		91	70 - 130
Potassium	3.8		10.0	13.4		mg/L		96	70 - 130
Magnesium	11		10.0	20.3		mg/L		92	70 - 130
Sodium	12		10.0	21.4		mg/L		96	70 - 130

Lab Sample ID: 580-71092-2 MSD
Matrix: Water
Analysis Batch: 260723

Client Sample ID: MW-4-20170907
Prep Type: Total/NA
Prep Batch: 260695

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	27	F1	10.0	33.9	F1	mg/L		66	70 - 130	7	20
Potassium	3.8		10.0	12.9		mg/L		91	70 - 130	4	20
Magnesium	11		10.0	19.2		mg/L		81	70 - 130	6	20
Sodium	12		10.0	20.4		mg/L		86	70 - 130	5	20

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 580-71092-2 DU — **Client Sample ID: MW-4-20170907**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 260723 — **Prep Batch: 260695**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	27	F1	26.0		mg/L		5	20
Potassium	3.8		3.71		mg/L		2	20
Magnesium	11		10.6		mg/L		4	20
Sodium	12		11.6		mg/L		2	20

Lab Sample ID: LCS 580-260698/11-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10.0	8.81		mg/L		88	85 - 115
Potassium	10.0	8.85		mg/L		88	85 - 115
Magnesium	10.0	8.72		mg/L		87	85 - 115
Sodium	10.0	8.96		mg/L		90	85 - 115

Lab Sample ID: LCSD 580-260698/12-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	10.0	9.09		mg/L		91	85 - 115	3	20
Potassium	10.0	9.15		mg/L		92	85 - 115	3	20
Magnesium	10.0	9.06		mg/L		91	85 - 115	4	20
Sodium	10.0	9.32		mg/L		93	85 - 115	4	20

Lab Sample ID: MB 580-260609/6-C — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		11/03/17 17:23	11/05/17 11:46	1
Potassium	ND		3.3	0.41	mg/L		11/03/17 17:23	11/05/17 11:46	1
Magnesium	ND		1.1	0.13	mg/L		11/03/17 17:23	11/05/17 11:46	1
Sodium	ND		2.0	0.33	mg/L		11/03/17 17:23	11/05/17 11:46	1

Lab Sample ID: 580-71092-1 MS — **Client Sample ID: MW-3-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	17		10.0	29.5		mg/L		124	70 - 130
Potassium	2.0	J	10.0	11.3		mg/L		94	70 - 130
Magnesium	11		10.0	21.6		mg/L		108	70 - 130
Sodium	8.5		10.0	18.9		mg/L		104	70 - 130

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 580-71092-1 MSD — **Client Sample ID: MW-3-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	17		10.0	28.4		mg/L		113	70 - 130	4	20
Potassium	2.0	J	10.0	10.9		mg/L		89	70 - 130	4	20
Magnesium	11		10.0	21.0		mg/L		101	70 - 130	3	20
Sodium	8.5		10.0	18.4		mg/L		99	70 - 130	3	20

Lab Sample ID: 580-71092-1 DU — **Client Sample ID: MW-3-20170907**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 260723 — **Prep Batch: 260698**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	17		18.1		mg/L		6	20
Potassium	2.0	J	2.10	J	mg/L		6	20
Magnesium	11		11.4		mg/L		5	20
Sodium	8.5		9.10		mg/L		6	20

Client Sample ID: MW-3-20170907
Lab Sample ID: 580-71092-1
Date Collected: 09/07/17 10:00
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			260609	11/02/17 18:13	PAB	TAL SEA
Dissolved	Prep	200.7			260698	11/03/17 17:23	PAB	TAL SEA
Dissolved	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:56	SPP	TAL SEA
Total/NA	Prep	200.7			260695	11/03/17 15:17	ASJ	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:26	SPP	TAL SEA

Client Sample ID: MW-4-20170907
Lab Sample ID: 580-71092-2
Date Collected: 09/07/17 11:20
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			260609	11/02/17 18:13	PAB	TAL SEA
Dissolved	Prep	200.7			260698	11/03/17 17:23	PAB	TAL SEA
Dissolved	Analysis	200.7 Rev 4.4		1	260723	11/05/17 12:22	SPP	TAL SEA
Total/NA	Prep	200.7			260695	11/03/17 15:17	ASJ	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:00	SPP	TAL SEA

Client Sample ID: MW-1-20170907
Lab Sample ID: 580-71092-3
Date Collected: 09/07/17 12:05
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			260609	11/02/17 18:13	PAB	TAL SEA
Dissolved	Prep	200.7			260698	11/03/17 17:23	PAB	TAL SEA
Dissolved	Analysis	200.7 Rev 4.4		1	260723	11/05/17 12:26	SPP	TAL SEA
Total/NA	Prep	200.7			260695	11/03/17 15:17	ASJ	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:30	SPP	TAL SEA

Client Sample ID: MW-2-20170907
Lab Sample ID: 580-71092-4
Date Collected: 09/07/17 14:00
Matrix: Water
Date Received: 09/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			260609	11/02/17 18:13	PAB	TAL SEA
Dissolved	Prep	200.7			260698	11/03/17 17:23	PAB	TAL SEA
Dissolved	Analysis	200.7 Rev 4.4		1	260723	11/05/17 12:29	SPP	TAL SEA
Total/NA	Prep	200.7			260695	11/03/17 15:17	ASJ	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:33	SPP	TAL SEA

Lab Chronicle

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Client Sample ID: MW-99-20170907

Date Collected: 09/07/17 14:10
Date Received: 09/07/17 15:10

Lab Sample ID: 580-71092-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			260609	11/02/17 18:13	PAB	TAL SEA
Dissolved	Prep	200.7			260698	11/03/17 17:23	PAB	TAL SEA
Dissolved	Analysis	200.7 Rev 4.4		1	260723	11/05/17 12:32	SPP	TAL SEA
Total/NA	Prep	200.7			260695	11/03/17 15:17	ASJ	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	260723	11/05/17 11:36	SPP	TAL SEA

Laboratory References:

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

Accreditation/Certification Summary

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Laboratory: TestAmerica Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-18

Sample Summary

Client: Ramboll Environ US Corporation
Project/Site: Ramboll-Environ-McFarland

TestAmerica Job ID: 580-71092-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-71092-1	MW-3-20170907	Water	09/07/17 10:00	09/07/17 15:10
580-71092-2	MW-4-20170907	Water	09/07/17 11:20	09/07/17 15:10
580-71092-3	MW-1-20170907	Water	09/07/17 12:05	09/07/17 15:10
580-71092-4	MW-2-20170907	Water	09/07/17 14:00	09/07/17 15:10
580-71092-5	MW-99-20170907	Water	09/07/17 14:10	09/07/17 15:10

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

Loc: 580
71092

☐ Rush
☐ Short Hold

Chain of Custody Record

Client: Ramboll Environ
Client Contact:
Date: 9/7/17
Chain of Custody Number: 31751
Address: 901 5th Ave, Suite 2820
Telephone Number (Area Code)/Fax Number:
Lab Number:
Page 1 of 1
City: Seattle | State: WA | Zip Code: 98119
Sampler: SL
Lab Contact:
Project Name and Location (State): McFarland
Billing Contact:
Contract/Purchase Order/Quote No.:

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	Analysis: Alkalinity	Chloride/Sulfate	Total Metals	Hardness	Ca Carbonate	Dissolved Metals	Special Instructions/ Conditions of Receipt
MW-3-20170907	9-7-17 SL	1000		X			1	3					X	X	X	X	X	X	- Please be sure reporting limits are below MTCA - samples MW-3-20170907 and MW-4-20170907 both have one filtered preserved container for dissolved metals
MW-4-20170907		1120 ESL					1	3											
MW-1-20170907		1205 ESL					2	2											
MW-2-20170907		1400					2	2											
MW-99-20170907		1410					2	2											

580-71092 Chain of Custody

TB A2 Cooler Cor 0.2 Unc 1.0
Cooler Dsc Med Bive @Lab
Wet/Packs Packing Other
Cli do Custody Seal: Yes No X

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

Turn Around Time Required (business days)
☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☑ 10 Days ☐ 15 Days ☐ Other
QC Requirements (Specify)

	Date	Time
1. Relinquished By Sign/Print: Sam Leidle	9-7-17	1510
2. Relinquished By Sign/Print:		
3. Relinquished By Sign/Print:		

	Date	Time
1. Received By Sign/Print: B. Hall B Hall SEA TA	9/7/17	1510
2. Received 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)

11/7/2017

Login Sample Receipt Checklist

Client: Ramboll Environ US Corporation

Job Number: 580-71092-2

Login Number: 71092
List Number: 1
Creator: Ponce-McDermott, Monica

List Source: TestAmerica Seattle

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	
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.	True	
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 (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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").	True	
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 -9/7/17

System Component	Notes/Actions Taken or Needed
1.0 - Signs	Signs are present + readable on perimeter fence
1.1 - Fence	Perimeter fence is functional w/ locked gates. Gate in SW corner is damaged/bent and a hinge is broken.
1.2 - Gate	Gate and lock are functional
1.3 - Manhole	Manhole is in place + functional
2.0 - Open Ditches	there are no open ditches on site.
3.0 - Pipes and Culverts	No damage observed to the pipes + vents (viewed from a ladder at the perimeter of cell) - appear functional.
3.1 - Pipes and Culverts	Vegetation is not obstructing flow to pipes.
3.2 - Pipes and Culverts	Protective coating is present + functional on pipes. Coating wear noted in previous visits (2015, 2016) - similar condition.
3.3 - Pipes and Culverts	No damage visible to vent pipes. No culverts present.
3.4 - Pipes and Culverts	All pipes + vents appear functional from perimeter vantage point.
3.5 - Pipes and Culverts	No misalignment of pipes or vents observed.
3.6 - Pipes and Culverts	No erosion or blockage of pipes + vents.
4.0 - Vegetative Cover	No lack of vegetation, as viewed from cell perimeter. Increased vegetation from last visit (2016)
4.1 - Vegetative Cover	No disturbance of earth (erosion, cracks, mounds) observed from cell perimeter.
4.2 - Vegetative Cover	Increase in blackberry + scotch broom observed along SE sideof cell at base. Increase in vegetative growth along east side base of cell - mow-4 - difficult to access
5.1 - Cover liner	Liner is not visible due to rock covering on portions of cell viewed from perimeter + grass + small trees/bushes
5.2 - Cover liner	No bulging observed from perimeter.

* Due to safety constraints, Ramboll Environ was not able to walk on top of the cell - observations made from a ladder along perimeter of the cell.

RAMBOLL

Attachment D

Site Photographs

Photo 1: Top of containment cell looking east from northwest corner, northwest cleanout boot is visible in the foreground

Photo 2: Top of containment cell looking east from the northwest corner, Marine View Drive visible to the north, northeast cleanout boot is visible

RAMBOLL

Site Photographs
Cascade Timber #1 ("McFarland, WA")
2502 Marine View Drive, Tacoma, Washington
September and December 2017

Photo 3: Top of containment cell, view to the south, southern gas boot visible

Photo 4: Top of containment cell, view to the north, northern gas boot visible

RAMBOLL

Site Photographs
Cascade Timber #1 ("McFarland, WA")
2502 Marine View Drive, Tacoma, Washington
September and December 2017

Photo 5: View to the east along the southern side of the containment cell. MCW-1 (stick-up metal pipe in background) is visible.

Photo 6: Leachate collection sump (manhole)

Photo 7: View to the northeast of the cell drain boot showing some aging on the paint coating

Photo 8: View to north from southeast corner, scotch broom and other vegetation visible

Photo 9: Fence and gate with broken hinge along southwestern boundary

Photo 10: View to the east from northwestern corner, MCW-3 visible

Photo 11: View to the south from northeastern corner. Excess vegetation growth visible

Photo 12: View to the south from northwest corner.

Photo 13: Three 55-gallon drums maintained on-site. One is empty, and the other two contain varying amounts of non-hazardous purge water from groundwater sampling. They are both less than halfway full.

Photo 14: Top of containment cell after tree removal (December 2017), view to the south

Photo 15: West side of containment cell after cleanup activities (December 2017), view to the south

Photo 16: East side of containment cell after cleanup activities (December 2017), view to the south