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400 Valley Ave NE
Puyallup, WA 98372-2516

September 28, 2021

Eli Newby
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98507-7775

RE: Response to Notice of Violation (NOV) 16952, Lakeview Facility

Mr. Newby,

Miles Resources (Miles) is reaching out to expand on our previous report as a follow up to NOV #16952. Attached is a new report building on new information gathered in the last 18 months along with historic site data. Based on the available data Miles still believes any identified issues with groundwater contamination are not related to the ongoing recycling activity.

Miles again consulted with Blue Sage Environmental, Inc. to assist in evaluation of the alleged NOV at the Lakeview Plant in Lakewood. Blue Sage Environmental has provided their expert opinion, based on analysis of existing data for the site as well as new gathered data. Enclosed you will find their report. The site is under an active VCP action by the former owner, which is discussed in the report. The previous owner of the site has been actively working on solutions to find closure on VCP #SW1012 for over a decade.

In addition to the information contained in the report, on site BMPs to control and monitor Stormwater runoff are consistent with Department of Ecology's permit for the Facility. The monitoring of the Stormwater has not revealed any inconsistencies.

Based the evaluation by Blue Sage Environmental, Inc. of the significant amount of data prepared by Farallon Consulting, LLC, in relation to VCP #S1012, as well as the additional data gathered by Blue Sage Environmental, Inc, NOV #16952 should be rescinded and items related to this alleged NOV should continue to be conducted under the VCP Program (VCP #SW1012).

Thank you for taking the time to review the provided report.

Please to reach out with any questions you may have.

Sincerely,

Ryan Ransavage
Earth Resources Manager
253-833-3705 x 436

CC: Mike Schuh
Patricia Larson
Alex Koch
Jeff Woodworth

Miles Sand & Gravel Company
Miles Sand & Gravel Company
Blue Sage Environmental
Woodworth Capital, inc.



Miles Resources, LLC

WWW.MILESRESOURCES.COM

TECHNICAL MEMORANDUM

Date: September 24, 2021

Prepared for: Miles Resources, LLC

Prepared by: Alex Koch, Project Manager
Tim Stott, P.E., Environmental Engineer

Subject: pH Study
Miles Resources Lakeview Facility
2800 104th Street Court South
Lakewood, Washington

The Washington Department of Ecology, Water Quality Program, issued a Notice of Violation (NOV) to the Lakeview Plant on December 26, 2019, for elevated pH in groundwater (**Figure 1**). The NOV was based on reported measurements of groundwater parameters received by Ecology from Farallon Consulting (Farallon). Groundwater parameters were part of ongoing voluntary cleanup program (VCP) actions being conducted by Farallon for the previous owner of this property, Woodworth & Company. On December 7, 2017, monitoring well MW-9B (deep aquifer) had an elevated pH measurement of 13.01, and monitoring well MW-31 (shallow aquifer) had an elevated pH measurement of 12.52. Based on these pH measurements, and the assumption that the crushed concrete and asphalt stockpiles were the source of the elevated pH values, Ecology issued the NOV.

Blue Sage Environmental, Inc. (BSE) began recording groundwater pH in select Site monitoring wells in June 2020 to investigate groundwater pH conditions in both the previously identified shallow and deep aquifers (Farallon 2009). We offer the following interpretation and recommendations.

Groundwater History

On June 22, and September 29, 2020, BSE measured depth to water and pH in select Site monitoring wells (**Figure 2**). Shallow aquifer wells used for this study of pH and direction of groundwater were monitoring wells MW-4, MW-9R, MW-12, and MW-17A. Deep aquifer wells used were MW-9B, MW-12B, MW-14C, MW-16R, MW-17, and MW-21. Other than MW-9B (deep aquifer), and MW-12 (shallow aquifer), all measured pH values were between 6.5 and 8.5.

Both monitoring wells MW-9B and MW-12 are located in imported backfill material consisting of concrete products, and Atlas Foundry sand and slag (**Figure 3**). Based on this information, in January 2021, Farallon decided to inspect the MW-9B well casing with a camera. This well, installed by Farallon as part of their investigations, was found to have a breach in the casing wall at approximately 30 feet below ground surface (bgs). This was allowing saturated soil and sand pack to seep into the well affecting the pH. The well was abandoned, and two new monitoring wells were installed in the immediate location of MW-9B (**Figure 4**). They are monitoring wells MW-9A (shallow aquifer), and MW-9D (deep aquifer).

On January 4 and 5, 2021, the boring for monitoring well MW-9A was advanced to a total depth of 115 feet bgs. A Farallon geologist collected soil and groundwater samples at selected intervals starting from the ground surface to the final depth of the boring for field-screening. Soil samples were collected generally every 10 feet, while groundwater water samples were collected at depths of 32, 55, 75, 95, 102, and 115 feet bgs. The pH of soil and groundwater samples were measured using a pH meter. Field measurements of pH in soil ranged from 7.2 to 11.0, with the highest pH of approximately 11.0 measured at a depth of 30 to 32 feet bgs. A pH of 9.5 to 8.9 was measured in soil samples collected at depths from 35 to 70 feet bgs, respectively, and of 7.2 to 8.2 in soil samples collected at depths greater than 80 feet bgs. Field measurements of pH in groundwater samples ranged from 6.55 to 8.24, indicating that groundwater was not affected by the elevated pH in soil (Farallon, 2021).

Monitoring well MW-9A was installed in the boring and screened from 22 to 32 feet bgs in the shallow water-bearing zone. The boring void below the screened interval was filled with hydrated bentonite. Following well development on January 6, 2021, Farallon measured a field pH value of 6.55 in a groundwater sample collected from monitoring well MW-9A, further confirming that groundwater in the shallow water-bearing zone in the vicinity of monitoring well MW-9A is not impacted by elevated pH. A groundwater sample was collected from monitoring well MW-9A on February 23, 2021, and laboratory-analyzed for pH by Standard Method SM 4500-H B. The laboratory reported a pH of 6.8 (Farallon 2021).

Installation of replacement deep water-bearing zone monitoring well MW-9D was conducted over the course of several days between February 10 and 18, 2021. The boring for monitoring well MW-9D was advanced to a depth of 119 feet bgs, and the well screen was placed from 109 to 119 feet bgs. During boring

advancement, a soil sample was collected at a depth of 30 feet bgs and laboratory-analyzed for pH by EPA Method 9045D. A pH of 11.3 was detected in the soil sample. Following completion of well development, Farallon recorded a field pH measurement of 7.6 in a groundwater sample collected from monitoring well MW-9D on February 24, 2021 (Farallon 2021).

BSE measured pH and depth to water in select monitoring wells that included the new wells on March 25, 2021, and July 1, 2021. Measured pH in the shallow aquifer wells (MW-4, MW-9A, MW-9R, and MW-17A), and in the deep aquifer monitoring wells (MW-9D, MW-16R, MW-17, and MW-23) was between 6.5 to 8.5. pH measurements over time can be found in Table 1 (shallow aquifer), and Table 2 (deep aquifer).

Direction of groundwater in the shallow aquifer (Figures WC-S1 and WC-S2) in March and July 2021 is from the northeast (MW-12) to west/southwest across the area where stockpiled concrete and asphalt are located. Direction of groundwater in the deep aquifer (Figures WC-D1 and WC-D2) in March and July 2021 is from the south/southwest to the north/northeast.

Interpretation

With the abandonment of monitoring well MW-9B and the installation of monitoring well MW-9D in the same general location and depth, elevated pH in both the shallow and deep aquifers has not been found. Groundwater in the shallow water-bearing zone, evaluated in shallow monitoring well MW-9A (adjacent to deep well MW-9B) also is not affected by elevated pH in soil based on testing during reconnaissance groundwater sampling and multiple round of sampling of the well in 2021. The previous elevated measurements of pH in monitoring well MW-9B were the result of the breach in the casing wall at approximately 30 ft bgs which was allowing saturated soil to seep into the well, affecting the pH in the well casing. Soils with elevated pH were detected in both monitoring wells MW-9D and MW-9A at approximately 30 feet below the surface.

The direction of the shallow aquifer mirrors the direction of seasonal surface water runoff, basically downhill from east to west. From June 2020 through July 2021, all shallow aquifer monitoring wells that were measured for pH were between 6.5 to 8.5.

There is no supporting evidence of any elevated pH impact to either shallow or deep aquifers from stormwater that has been in contact with the crushed concrete and asphalt stockpiles.

Recommendations

Submit to Ecology with a request to withdraw the NOV.

Blue Sage Environmental, Inc.



Alexander H. Koch
Project Manager



Timothy W. Stott, P.E.
Environmental Engineer

Attachments: Figure 1, *Vicinity Map*

Figure 2, *pH Study Area*

Figure 3, *Fill Area*

Figure 4, *MW-9B Replacement Wells*

Figure WC-S1, *Shallow Aquifer 3/25/2021*

Figure WC-S2, *Shallow Aquifer 7/2/2021*

Figure WC-D1, *Deep Aquifer 3/25/2021*

Figure WC-D2, *Deep Aquifer 7/2/2021*

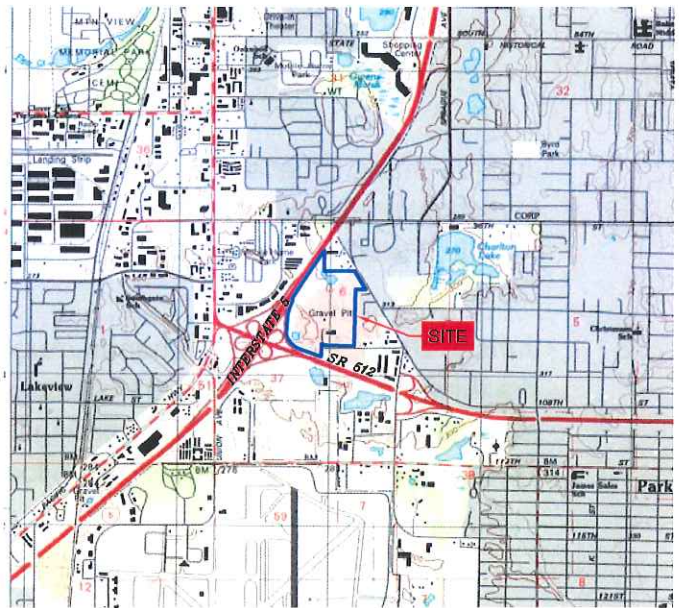
Table 1, *Shallow Aquifer pH Measurements*

Table 2, *Deep Aquifer pH Measurements*

REFERENCES

Jurista, Brani, Broesder, Shane, C., Jewett, Peter, August 19, 2009, Remedial Investigation/Feasibility Study Report, Woodworth & Company, Inc., Lakeview Facility, Farallon Consulting, LLC, Issaquah, Washington, Consultant's report to Client.

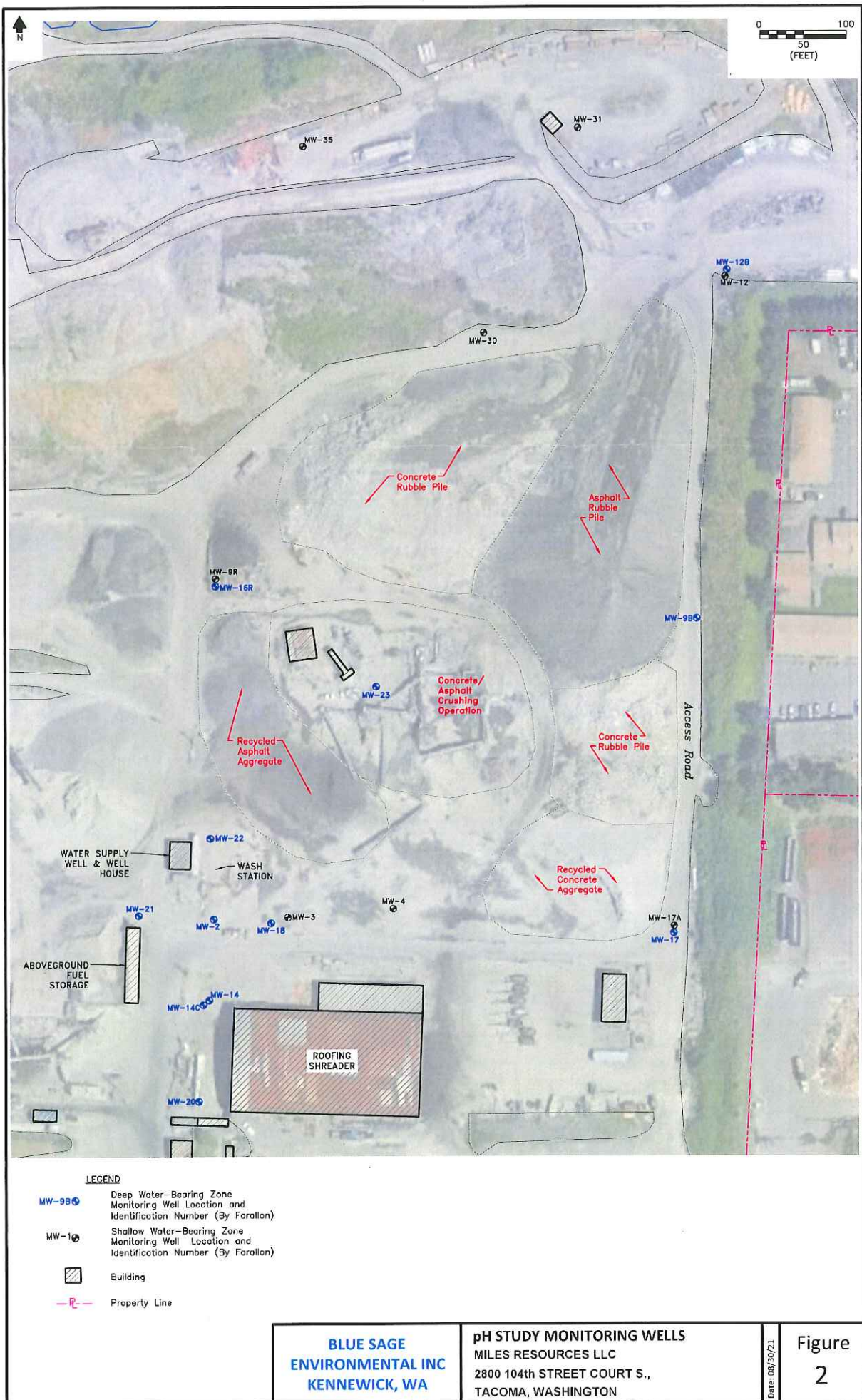
Jurista, Brani, Meugniot, Amanda, August 16, 2021, to Nicholas Aklam, Washington State Department of Ecology, Southwest Regional Office, *Response to August 30, 2019, Letter Regarding Further Action At The Woodworth & Co Inc. Plant, Lakewood, Washington*, Farallon Consulting, LLC, Issaquah, Washington.

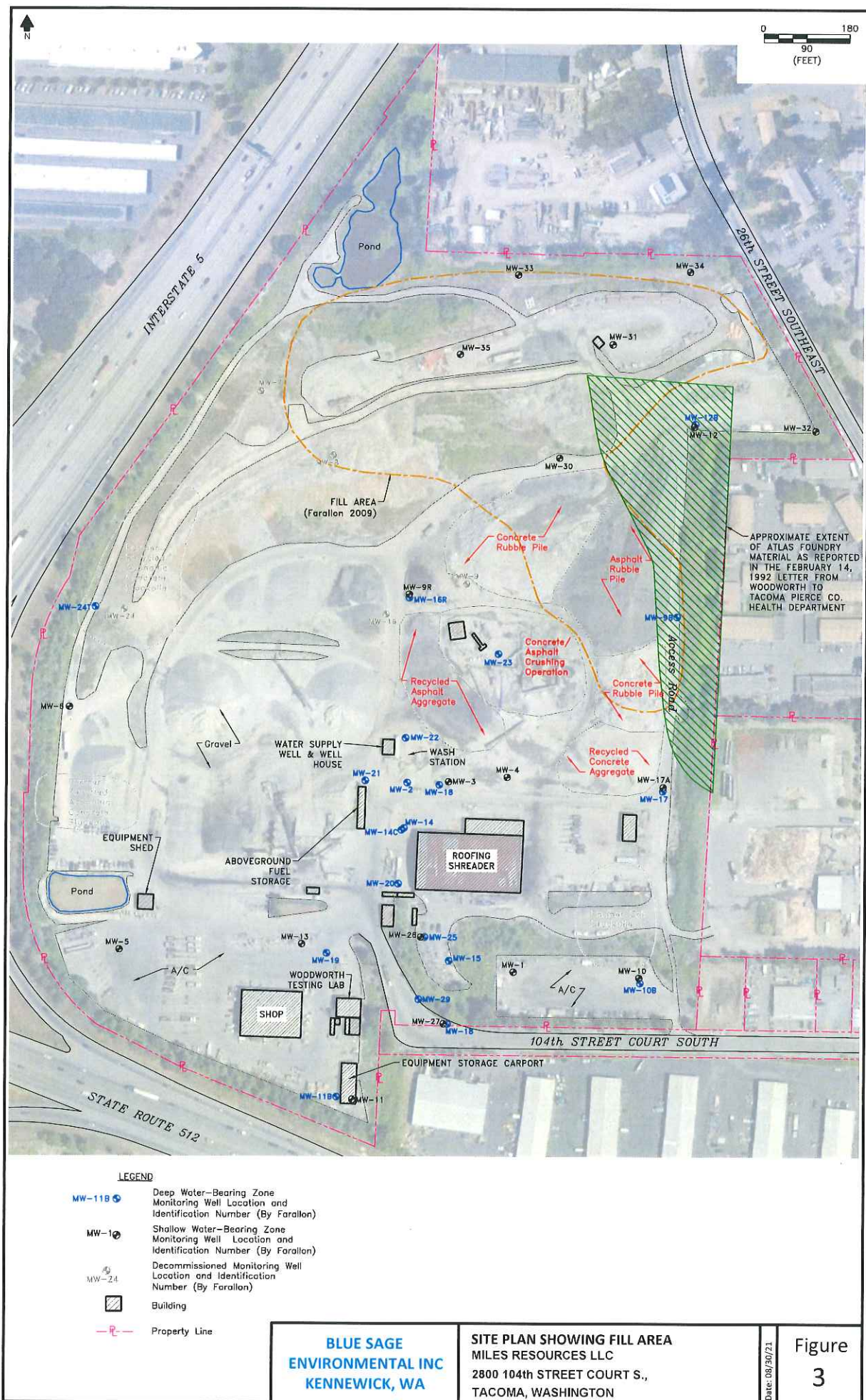


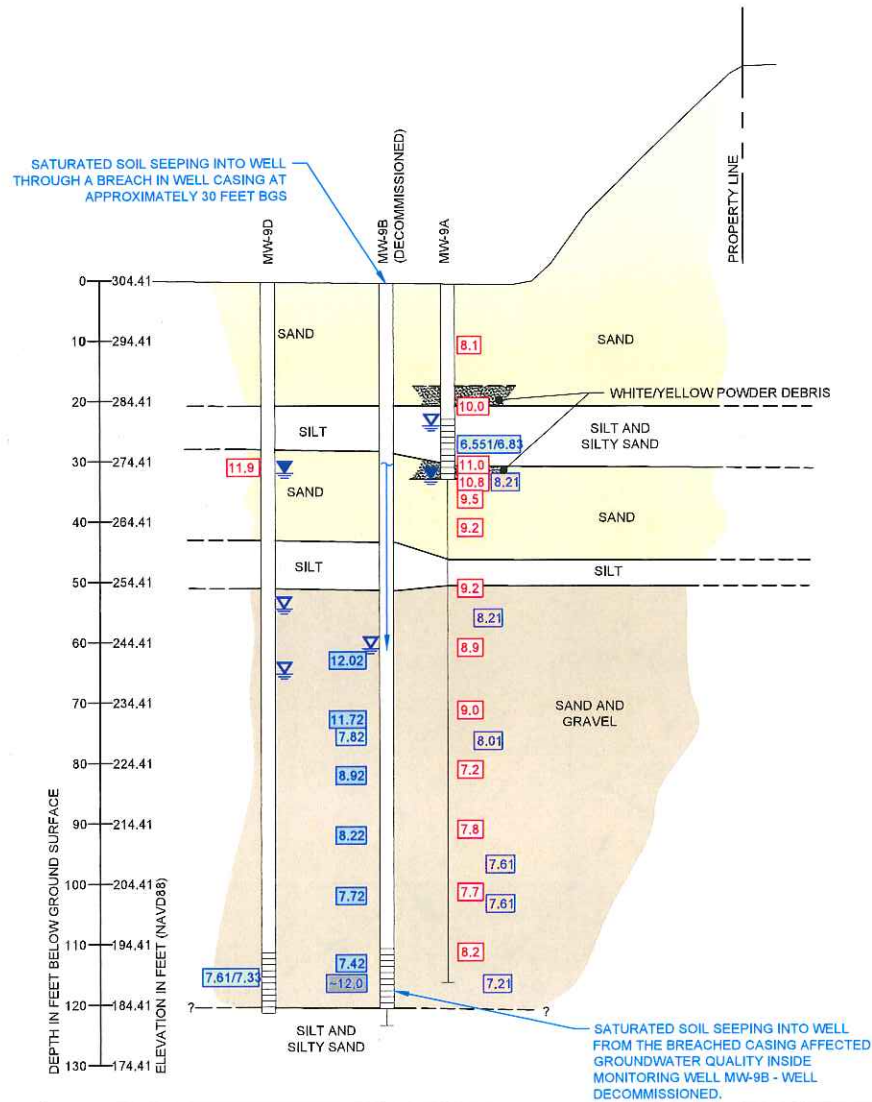
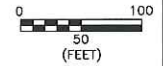
**BLUE SAGE
ENVIRONMENTAL INC
KENNEWICK, WA**

**SITE LOCATION MAP
MILES SAND & GRAVEL
2800 104th STREET COURT S.,
TACOMA, WASHINGTON**

**Figure
1**







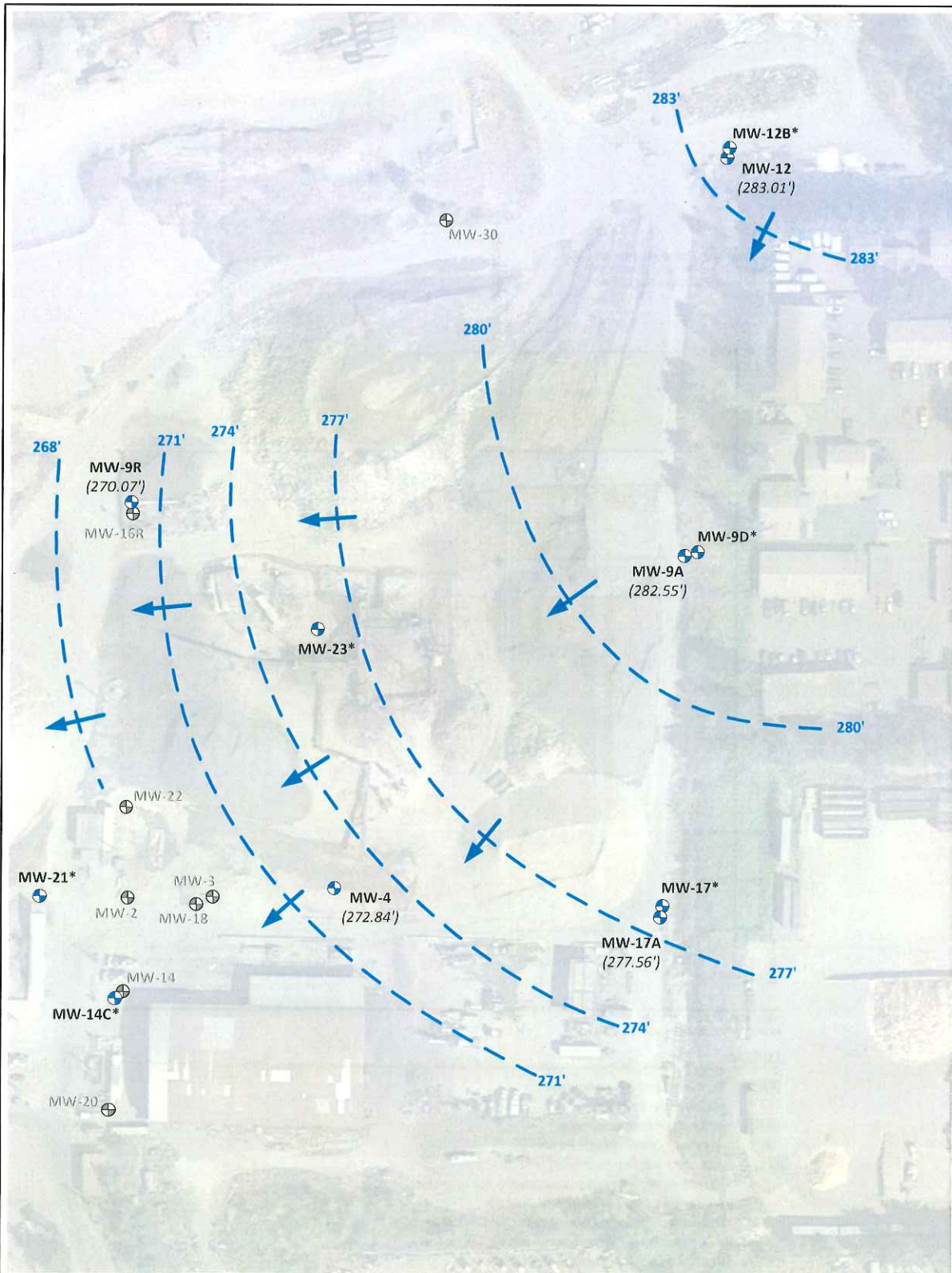
BLUE SAGE
ENVIRONMENTAL INC
KENNEWICK, WA

REPLACE MW-9B
MILES RESOURCES LLC
2800 104th STREET COURT S.,
TACOMA, WASHINGTON

Date: 08/30/21

Figure
4

Project No. Groundwater Contours (Shallow) 3.25.vsd



General Legend

- MW-11**
(64.25') Well Name
Groundwater Elevation
- Approx. Groundwater Contour
- 180' Approx. Groundwater Elevation
- Approx. Groundwater-Flow Direction
- ⊕ Groundwater-Monitoring Wells
- ⊕ Groundwater-Monitoring Wells Not Measured (3/2021)
- * Deep Aquifer Well



Scale: 1" = 100'
0 ft. 60 ft. 100 ft. 200 ft.

Groundwater Contours 3/25/21
(Shallow)
Miles Resources LLC
2800 104th St Court S., Tacoma, WA
Figure and notations are in color. Black and white copies may not be suitable for use.

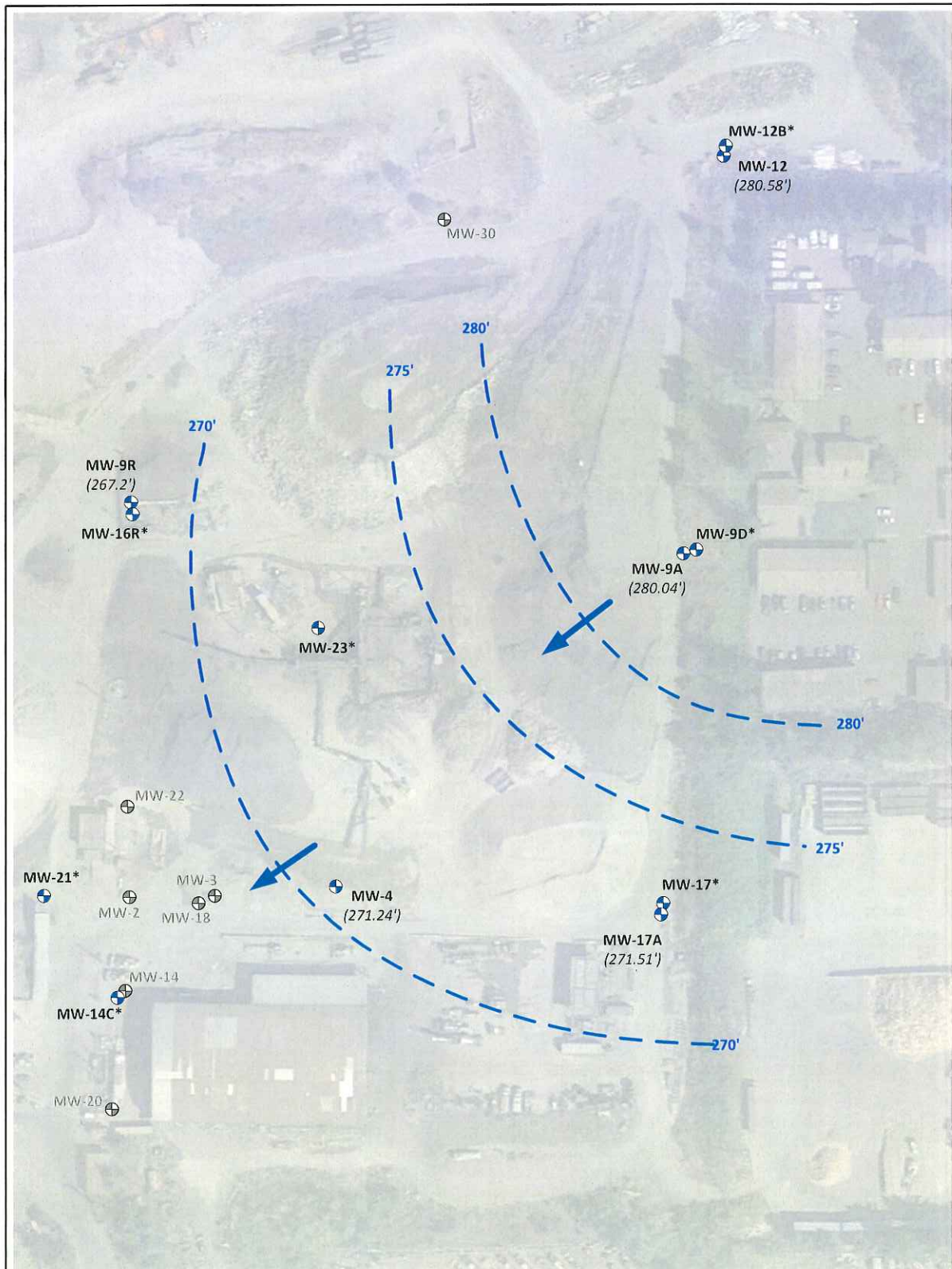
Figure
WC-
S1

Blue Sage
Environmental
INC

Drawing Date: 9/23/2021

Drawing References: Pierce County Public GIS, Farallon Figure 2 Site Plan, BSE Measurements

Project No. Groundwater Contours (Shallow) 7.1 vsdx



General Legend

- | | |
|-------------------|--|
| MW-11
(64.25') | Well Name |
| 267.2' | Groundwater Elevation |
| --- | Approx. Groundwater Contour |
| 180' | Approx. Groundwater Elevation |
| → | Approx. Groundwater-Flow Direction |
| ⊕ | Groundwater-Monitoring Wells |
| ⊙ | Groundwater-Monitoring Wells Not Measured (3/2021) |
| * | Deep Aquifer Well |

Groundwater Contours July 1, 2021 (Shallow)

Miles Resources LLC
2800 104th St Court S., Tacoma, WA

Figure and notations are in color. Black and white copies may not be suitable for use.

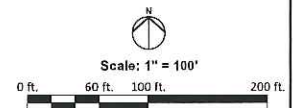
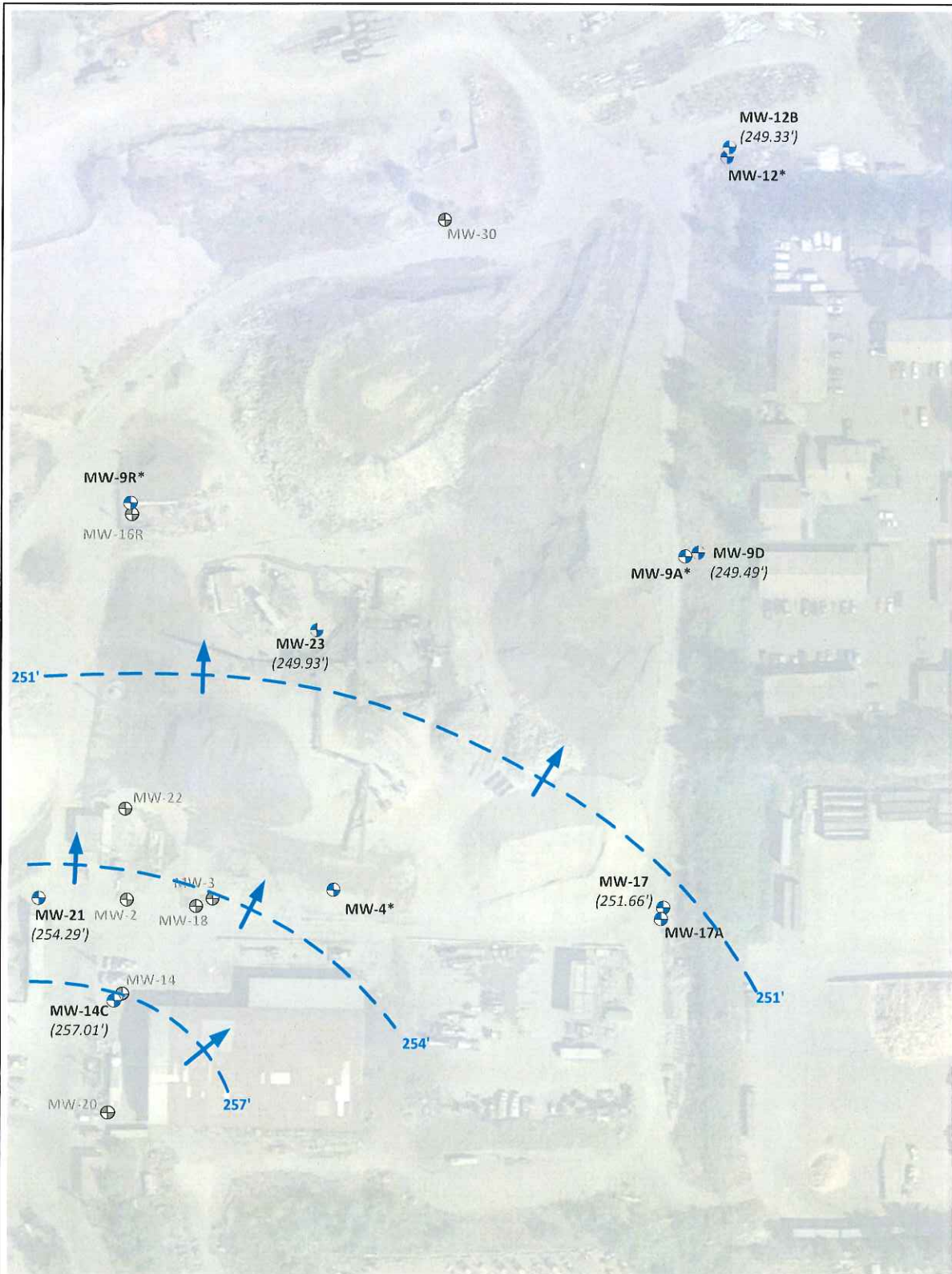


Figure
WC-
S2

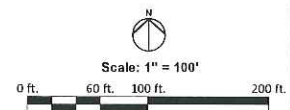
Blue Sage
Environmental
INC

Drawing Date: 9/23/2021



General Legend

- | | |
|--------------------------|---|
| MW-11
(64.25') | Well Name |
| | Groundwater Elevation |
| | Approx. Groundwater Contour |
| 180' | Approx. Groundwater Elevation |
| | Approx. Groundwater-Flow Direction |
| | Groundwater-Monitoring Wells |
| | Groundwater-Monitoring Wells Not Measured (3/2021) |
| * | Shallow Aquifer Well |



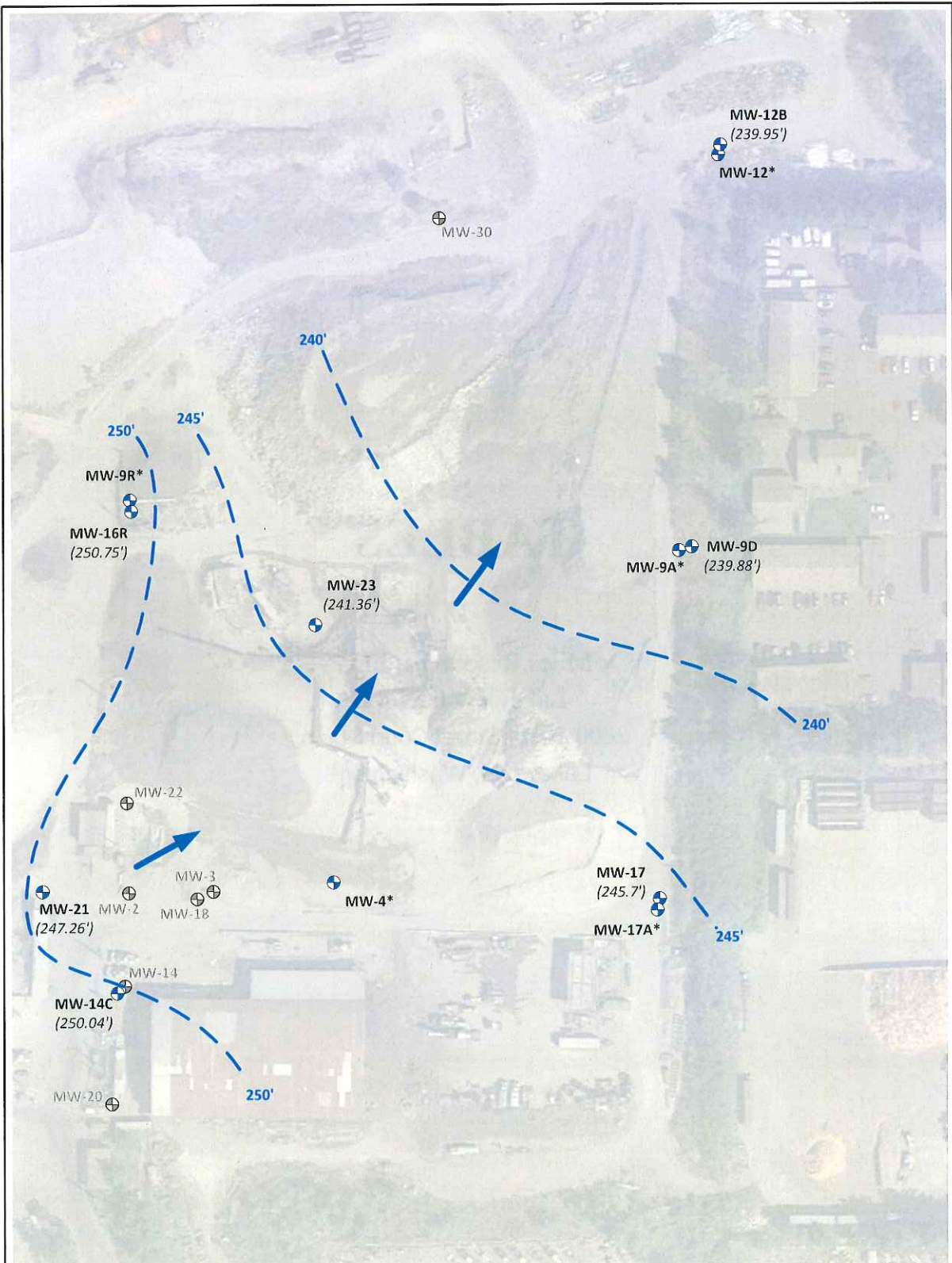
Groundwater Contours 3/25/21 (Deep)

Miles Resources LLC
2800 104th St Court S., Tacoma, WA

Figure and notations are in color. Black and white copies may not be suitable for use.

Figure
WC-
D1

Blue Sage
Environmental
INC



Project No. Groundwater Contours (Deep) 7.1.vsd

General Legend

- | | |
|--------------------------|--|
| MW-11
(64.25') | Well Name |
| | Groundwater Elevation |
| | Approx. Groundwater Contour |
| 180' | Approx. Groundwater Elevation |
| | Approx. Groundwater-Flow Direction |
| | Groundwater-Monitoring Wells |
| | Groundwater-Monitoring Wells Not Measured (3/2021) |
| * | Shallow Aquifer Well |

Groundwater Contours July 1, 2021 (Deep)

Miles Resources LLC
2800 104th St Court S., Tacoma, WA

Figure and notations are in color. Black and white copies may not be suitable for use.

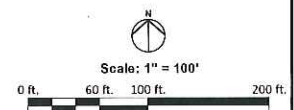


Figure
WC-
D2

Blue Sage
Environmental
INC

Drawing Date: 9/23/2021

Drawing References: Pierce County Public GIS, Farallon Figure 2 Site Plan, BSE Measurements.

TABLES

Miles Resources, LLC
Lakeview Facility
2800 104th Street Court South
Lakewood, Washington

Table 1 Miles Resources, LLC Groundwater pH Study
Lakeview Facility Shallow Aquifer

Monitoring Well #	Sample Date	Consultant	pH	Elevation (MSL)		Depth to Water		Adjusted Elevation	
				feet		feet		feet	
MW-4	1/6/2020	Farallon	NM	284.19		12.91		271.28	
	5/15/2020	Farallon	6.47	284.19		12.42		271.77	
	3/25/2021	BSE	6.67	284.19		11.35		272.84	
	7/1/2021	BSE	7.47	284.19		12.95		272.84	
MW-9A	3/25/2021	BSE	6.73	304.05		21.50		282.55	
	7/1/2021	BSE	6.92	304.05		24.01		282.55	
MW-9R	1/7/2020	Farallon	6.60	281.17		13.85		267.32	
	6/22/2020	BSE	6.35	281.17		13.87		267.3	
	9/29/2020	BSE	6.30	281.17		14.06		267.11	
	3/25/2021	BSE	6.59	281.17		11.10		270.07	
	7/1/2021	BSE	7.24	281.17		13.97		270.07	
MW-12	12/5/2017	Farallon	8.92	316.73		NM		-	
	1/7/2020	Farallon	9.11	316.73		36.18		280.55	
	3/25/2020	BSE	8.33	316.73		33.72		283.01	
	7/1/2021	BSE	NM	316.73		36.15		283.01	
MW-17A	5/15/2020	Farallon	6.58	285.14		8.55		276.59	
	3/25/2021	BSE	6.73	285.14		7.58		277.56	
	7/1/2021	BSE	7.44	285.14		13.63		277.56	

new well, installed February 2021

well obstructed, pH probe could not pass

Notes:

NM not measured

Table 2

Miles Resources, LLC
Lakeview FacilityGroundwater pH Study
Deep Aquifer

Blue Sage Environmental, Inc.

Monitoring Well #	Sample Date	Consultant	pH	Elevation (MSL) feet	Depth to Water feet	Adjusted Elevation feet
MW-9B	12/7/2017	Farallon	13.01	304.65	NM	-
	1/7/2020	Farallon	12.14	304.65	43.70	260.95
	5/15/2020	Farallon	12.12	304.65	57.37	247.28
	6/22/2020	BSE	11.69	304.65	59.92	244.73
	9/29/2020	BSE	11.86	304.65	60.54	244.11
MW-9D	3/25/2021	BSE	6.73	303.99	55.80	248.19
	7/1/2021	BSE	7.34	303.99	64.11	239.88
MW-12B	12/6/2017	Farallon	6.91	316.95	NM	-
	1/7/2020	Farallon	7.62	316.95	69.97	246.98
	3/25/2021	BSE	NM	316.95	NM	-
	7/1/2021	BSE	NM	316.95	77.00	239.95
MW-14C	12/8/2017	Farallon	7.52	283.41	NM	-
	1/7/2020	Farallon	7.43	283.41	28.72	254.69
	3/25/2021	BSE	NM	283.41	26.40	257.01
	7/1/2021	BSE	NM	283.41	33.37	250.04
MW-16R	1/8/2020	Farallon	6.61	281.32	29.95	251.37
	6/22/2020	BSE	6.60	281.32	27.90	253.42
	9/29/2020	BSE	6.49	281.32	30.25	251.07
	3/25/2021	BSE	NM	281.32	NM	-
	7/1/2021	BSE	7.18	281.32	30.55	250.77
MW-17	1/6/2020	Farallon	NM	285.2	NM	-
	5/15/2020	Farallon	6.69	285.2	34.98	250.22
	3/25/2020	BSE	7.06	285.2	33.54	251.66
	7/1/2021	BSE	7.53	285.2	39.5	245.7

replaced damaged well MW-9B

obstruction, well blocked
obstruction, well blocked

Table 2 Miles Resources, LLC Groundwater pH Study
Lakeview Facility Deep Aquifer

Blue Sage Environmental, Inc.

Monitoring Well #	Sample Date	Consultant	pH	Elevation (MSL)		Depth to Water		Adjusted Elevation	
				feet	feet	feet	feet	feet	feet
MW-21	12/7/2017	Farallon	7.70	284.65	NM	NM	-	-	-
	3/25/2021	BSE	NM	284.65	30.36	30.36	254.29	254.29	254.29
	7/1/2021	BSE	NM	284.65	37.39	37.39	247.26	247.26	247.26
MW-23	12/7/2017	Farallon	6.44	281.37	NM	NM	-	-	-
	1/9/2020	Farallon	6.81	281.37	33.45	33.45	247.92	247.92	247.92
	6/22/2020	BSE	6.58	281.37	34.80	34.80	246.57	246.57	246.57
	3/25/2021	BSE	6.67	281.37	31.44	31.44	249.93	249.93	249.93
	7/1/2021	BSE	7.08	281.37	40.01	40.01	241.36	241.36	241.36

Notes: NM not measured

RECEIVED

OCT 01 2021

WA State Department
of Ecology (SWRO)