2022 Product Recovery Report
Pump Station 9 Mainline Turbine Sump

Prepared for: Alyeska Pipeline Service Company

Client Ref: 105.01288.22012

November 2022

Alyeska pipeline SERVICE COMPANY

SLR

2022 Product Recovery Report
Pump Station 9 Mainline Turbine Sump

Prepared for:

Alyeska Pipeline Service Company

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This document has been prepared by SLR International Corporation. The material and data in this report were prepared under the supervision and direction of the undersigned.

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
Alyeska	Alyeska Pipeline Service Company
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel range organics
ft	feet or foot
gal	gallons
MLT	Mainline Turbine
MW	monitoring well
PAH	polynuclear aromatic hydrocarbon
PS09	Pump Station 9
SLR	SLR International Corporation

SUMMARY

SLR International Corporation (SLR) conducted multiple separate-phase hydrocarbon recovery events at the Pump Station 9 Mainline Turbine Sump site in 2022 on behalf of Alyeska Pipeline Service Company. The work was performed to remove free product from recovery wells.

Free product recovery was conducted nine times from recovery wells MW-1 and MW-5 in 2022. A total of 0.3 gallons (gal) of product was recovered from MW-1 in 2022, the least amount of product recovered annually on record. Initial product thickness for well MW-1 was the lowest of any year on record. Final product thickness on the last site visit was lower than the previous two years and below the target final thickness of 0.1 feet (ft) or less. A total of 4.6 gal of product was recovered from well MW-5. The initial product thickness measured in well MW-5 was the lowest of any year on record, although the measured product thickness varied throughout the field season. The final product thickness for MW-5 was lower than the previous two years but still above the target final thickness of 0.1 ft or less.

It is estimated that a total of 4.9 gal of free product was recovered in 2022 from both product recovery wells. Approximately 1,260 gal of free product have been recovered from this site to date. This total accounts for about 63 percent of the estimated 2,000 gal of free product present at the site; however, only 175 gal of the total volume has been recovered since the shutdown of the active recovery system in 2009. In all years prior to 2019, entrained water in the recovered product mix biased the total product recovery measurements. The recovered product estimates from 2019 through 2022 were adjusted to account for the water fraction present in recovered fluid based on measurements of water and product recovered in sorbent socks in 2020.

SLR recommends conducting annual product recovery activities and biennial groundwater monitoring in 2023.

1. INTRODUCTION

SLR International Corporation (SLR) conducted recovery of separate-phase hydrocarbons (hereafter referred to as free product) at the Mainline Turbine (MLT) Sump site at Pump Station 9 (PS09) for Alyeska Pipeline Service Company (Alyeska) in 2022. Recovery well product thicknesses were gauged, and product was recovered on nine site visits. This report summarizes the project approach, methodology, and product recovery results.

1.1 PHYSICAL SETTING

PS09 is located approximately 7 miles south of Delta Junction on the Richardson Highway in the Tanana-Kuskokwim lowlands region of interior Alaska (Figure 1). The pump station is situated in an area of relatively flat topography at an elevation of 1,500 feet (ft) above mean sea level. The pump station is built upon a gravel pad and consists of several buildings, pipeline infrastructure, and a tank farm (Figure 2). Monitoring and free product recovery wells are situated around and hydraulically downgradient of the former MLT sump (Figure 3).

Soil and sediments at PS09 consist of glacial outwash and Pleistocene surficial deposits of the Tanana River drainage. During subsurface investigations and monitoring well installations conducted in 1998, the underlying soil at PS09 was predominantly poorly-sorted, well-rounded sand and gravel with cobbles and boulders consistent with glacial outwash deposits (EMCON, 1999). The lithology recorded on the PS09 drinking water well log indicates that the pump station is underlain by at least 420 ft of unconsolidated, coarse sediments consisting of sand, cobbles, and boulders also indicative of glacial outwash sediments. During the 1998 investigation, groundwater was encountered at approximately 110 ft below ground surface (bgs). This aquifer appeared to be discontinuous and only a few feet thick, terminating in a dry, dense stratum of gravel and cobbles (EMCON, 1999).

1.2 PROJECT BACKGROUND

Alyeska encountered petroleum-contaminated soil during the removal of the PS09 MLT sump in October 1996 (Alyeska spill number 1996130). The site was excavated to the extent practical; however, diesel range organics (DRO)-contaminated soil remained in the subsurface at concentrations greater than the Alaska Department of Environmental Conservation (ADEC) soil cleanup level.

Environmental investigations have been ongoing at this site since 1997 when an Alyeska contractor advanced three soil borings to assess the extent of subsurface contamination underlying the former MLT sump. The site activities from 1997 to 2016 are described in the 2017 *Groundwater and Product Recovery Report* (SLR, 2018), and relevant details are summarized below.

1.2.1 1997 AND 1998 SOIL INVESTIGATIONS

A subsurface investigation conducted in July 1997 confirmed the presence of contamination to at least 65 ft bgs near the MLT sump. During drilling, cobbles and boulders prevented boring advancement beyond

65 ft bgs; an additional boring was advanced through the source area using an air rotary drill rig later in 1997 and was completed as monitoring well (MW) MW-1. While drilling monitoring well MW-1, petroleum hydrocarbon-impacted soil was noted to extend to a depth of 110 ft bgs, where groundwater was encountered. A thin layer of free product was measured on the top of the groundwater table and was tentatively identified as weathered turbine fuel. Beginning in 1998, monitoring well MW-1 was used as a product recovery well (Figure 3; EMCON, 1998). Two additional monitoring wells, MW-2 and MW-3, were installed in 1997 to evaluate the direction of groundwater flow and the hydraulic gradient at the site. Monitoring well MW-2 was installed west of the MLT sump and monitoring well MW-3 was installed approximately 200 ft southwest of the MLT sump (Figure 3; EMCON, 1998).

In 1998, eight additional soil borings were advanced, seven of which were converted into monitoring wells (MW-4 through MW-10). Soil and groundwater samples were also collected as part of the 1998 investigation. Monitoring well MW-9 was decommissioned in 1998 and monitoring well MW-4 was destroyed in the winter of 2004-2005, leaving the current total of eight monitoring and recovery wells on site (EMCON, 1999). Product recovery began in 1998 and has continued to the present. Recovery well MW-6 was decommissioned in 2017 and is no longer used for product recovery (SLR, 2018).

1.2.2 FREE PRODUCT RECOVERY

Free product recovery was initiated following the installation of MW-1 in 1997 and MW-5 and MW-6 in 1998, and performed each subsequent summer at all three product recovery wells until MW-6 was decommissioned in 2017. Product recovery events continued at the other two wells through 2020 are included in the 2020 Groundwater Monitoring and Product Recovery Report (SLR, 2020a).

Overall, annual recovery from the product recovery system declined steadily until 2013, when the estimated recovery volume increased, likely due to using product-selective sorbent socks (hereafter referred to as sorbent socks) during site visits rather than the product recovery canisters. Recovery volumes then decreased until 2016, when they increased slightly from the previous year. The increased recovery may have occurred due to an increase in product recovery events. Recovery has shown an overall decrease since 2013, culminating in the 2020 recovery event, which saw the lowest recovered volume since 2012. The total volume of product recovered through 2020 was approximately 1,241 gallons (gal).

In 2020, SLR recovered fluid from 2-inch and 4-inch sorbents using a wringer and quantified recovered fuel and water using a graduated cylinder and electronic scale. Reduced product capacity in the sorbents was due to water entrained in the hydrophobic sorbent material. Based on the water and product recovery measurements, correction factors of 0.36 and 0.60 were established for 2-inch and 4-inch sorbent socks, respectively. Using these correction factors, volume recovery estimates from 2019 through 2021 were revised to reflect product-only volumes recovered using sorbent socks. Product volume recovery estimates could not be updated for years up to and including 2018 because product bailers were used in addition to sorbents.

1.3 GROUNDWATER MONITORING

Groundwater sampling at this site has been conducted at various frequencies (quarterly to biennial) since the initial sampling event in 1997. Analytical results show that for the wells sampled, concentrations of

benzene, toluene, ethylbenzene, and xylenes (BTEX) and DRO have remained below ADEC groundwater cleanup levels in the monitoring wells since 2001, except for samples collected from monitoring wells MW-2 and MW-7. Exceedances were reported for DRO in monitoring well MW-2 in 2010 and benzene in monitoring well MW-7 from 2004 to 2011 (SLR, 2014).

Only a single polynuclear aromatic hydrocarbon (PAH), naphthalene, has ever been detected at the site, at a concentration approaching ADEC cleanup levels (EMCON, 1998). Following the 2003 sampling event, analysis for PAHs was discontinued, except for naphthalene. Samples continued to be analyzed for naphthalene through 2009. With no detections of naphthalene since 2006, analysis was discontinued after 2009 with ADEC approval (SLR, 2010).

Groundwater monitoring results for the five wells sampled in 2015 and 2016 found that analyte concentrations were below their respective laboratory detection limits at all except for well MW-7, where DRO and benzene concentrations were detected well below ADEC cleanup levels and 2014 concentrations. Detected analyte concentrations at monitoring well MW-7 generally declined from 2011 to 2016 (SLR, 2016).

Groundwater sampling was changed to biennial in 2017. Groundwater monitoring results in 2017 indicated that low levels of DRO and benzene, well below applicable ADEC cleanup levels, were present at sampled wells. In 2019, petroleum hydrocarbon impacts were limited to low-level detections of DRO well below applicable cleanup levels. In 2019, for the first time at the Site, BTEX was not detected above the laboratory limit of detection. In 2021, concentrations of all analytes remained low and well below ADEC cleanup levels for all wells sampled (SLR, 2021). The results of groundwater monitoring indicate that the remaining quantity of product present in recovery wells does not result in exceedances in nearby groundwater.

1.4 PROJECT OBJECTIVES

The objectives of the project activities completed in 2022 included:

- Continued free product recovery from recovery wells MW-1 and MW-5 using sorbent socks; and
- After product recovery activities, installation of heat trace in recovery wells MW-1 and MW-5 to facilitate well thawing and early resumption of product recovery in early June 2023.

2. FIELD ACTIVITIES

This section describes product recovery activities conducted during the 2022 field season. Field activities were conducted in accordance with the *Groundwater Monitoring and Product Recovery Work Plan* (SLR, 2020b) and ADEC *Field Sampling Guidance* (ADEC, 2022). Field Activities were documented in the photo log, included as Appendix A, and the field logbook, included as Appendix B.

2.1 PRODUCT GAUGING

Product recovery activities were performed between May 19 and October 17, 2022, and included the measurement of free product thicknesses and product recovery from wells MW-1 and MW-5. Recovery wells MW-1 and MW-5 were gauged for free product and depth to water using an oil/water interface probe. The apparent product thickness in recovery wells was calculated by subtracting the depth to product from the depth to water. The interface probe was decontaminated using a non-ionic detergent solution following gauging activities. Product recovery activities are documented in the project field logbook (Appendix B).

The thickness of free product present in a formation (true thickness) is less than the thickness of product observed floating on top of the water in a monitoring well (apparent thickness). Factors affecting the difference between the true thickness and the apparent thickness include the density of the free product, the density of the groundwater, and the characteristics of the formation. All product thicknesses described in this report are presented in terms of apparent thickness as measured in the product recovery wells.

2.2 FREE PRODUCT RECOVERY

SLR visited the site on nine separate occasions in 2022 to thaw, gauge, and/or conduct product recovery from recovery wells MW-1 and MW-5. Both wells were thawed on May 19 and MW-1 was thawed on June 7. Free product recovery was conducted beginning on May 19 at MW-5 and June 7 at MW-1 and continued on each subsequent visit. Field measurements of depth to free product, depth to water, and free product thickness before and after recovery were recorded in the Field Logbook.

2.3 WELL THAWING

Heat trace wire installed the previous fall was used to thaw ice in the upper casing of recovery wells MW-1 and MW-5 during the May 19 and June 7 site visits. Thawing of ice in recovery wells was necessary to facilitate early product measurement and product recovery. This is a significant improvement over waiting for natural thawing, which occurred as late as August in previous years.

2.4 RECOVERY METHODS

Product recovery was accomplished using only sorbent socks. The sorbent socks used were DGSI Geo Slope Indicator SoakEase™ 2- and 4-inch nominal diameter absorbent socks. The sorbent socks used

typically reduced product thickness to less than 0.10 ft after two to five deployments. Product selective bailers were not used in 2022 at either recovery well.

Passive recovery using sorbent socks deployed between visits was eliminated in 2018 to improve the accuracy of the initial gauging of product thickness before product recovery during each site visit.

2.5 PRODUCT VOLUME MEASUREMENT

The volume of free product recovered using the sorbent socks was estimated using the percentage of the sock visually wetted with product, the vendor's published product absorbing capacity for the sorbent sock used, and the assumption that only free product was absorbed. Typically, however, a water and turbine fuel mix has been observed in the oily waste bags containing the spent 4-inch absorbent socks, suggesting that the larger-diameter socks entrain water along with oil within their fibrous filling. Therefore, the calculated volume of free product recovered with sorbent socks has been considered biased high, but that bias was not quantified until 2020. As discussed in the *Pump Station 9 Mainline Turbine Sump 2020 Product Recovery Report* (SLR, 2020a), SLR established product recovery correction factors in 2020 for 2- and 4-inch sorbent socks and applied those factors to recovery volumes in 2019 and 2020. These same correction factors were used again in 2022.

2.6 HEAT TRACE EMPLACEMENT

SLR placed heat trace in the two recovery wells after the product recovery event on October 17, 2022. The heat trace was first installed following the product recovery event in October 2013 to enable thawing of the shallow ice plugs that typically form between 8 ft and 14 ft bgs in the zone of seasonal frost. The heat traces extend to approximately 20 ft bgs in each well and are powered by a portable gasoline-powered generator placed in a rubber drip containment mat.

2.7 WORK PLAN DEVIATIONS

No Work Plan deviations were noted.

2.8 WASTE MANAGEMENT

Solid and liquid wastes generated during field activities were managed as follows:

- Used sorbent socks and product bailers were placed in double-bagged oily-waste bags and left in the appropriate oily-waste receptacle at PS09 for offsite disposal; and
- Prior to each field event, the disposal of waste materials was discussed with the PS09 Waste Single Point of Contact and/or Operations and Maintenance Supervisor.

3. PRODUCT RECOVERY RESULTS

This section describes the results of field activities completed in 2022 which included measurement of groundwater elevations, measurement of free product thickness, and recovery of free product. Measurements of groundwater elevations and product thickness at recovery wells are presented in Table 1. The maximum gauged free product thicknesses from 1998 through 2010 and recovery volumes and product thicknesses from 2011 through 2022 for wells MW-1 and MW-5 are presented in Tables 2 and 3, respectively.

3.1 GROUNDWATER ELEVATIONS

Groundwater elevations measured in product recovery wells in 2022 were comparable to typical elevations seen since recovery events began (Table 1). The elevations collected over the life of the project in monitoring and product recovery wells suggest a general north-northwest flow direction; however, the aquifer is perched and discontinuous; therefore, the assumed gradient is subject to uncertainty (SLR, 2018).

3.2 APPARENT FREE PRODUCT THICKNESS

Initial product thicknesses in both product recovery wells were the lowest on record and were followed by variable but generally decreasing thicknesses throughout the summer. Product thicknesses measured on the final recovery event at MW-1 showed a decrease in thickness from post-thaw thicknesses due to product recovery efforts. At MW-5, a slightly elevated product thickness measured on the final recovery event was greater than the measured post-thaw thickness but was less than the maximum product thickness measured on July 8, 2022.

Historical product gauging results for MW-1 and MW-5 are shown on Tables 2 and 3, respectively, and are summarized as follows:

- **MW-1**: The apparent pre-recovery product thickness of 0.21 ft in 2022 was less than the 0.97 ft measured in 2021 and the lowest on record. Additionally, the final product thickness of 0.09 ft achieved after nine recovery events was lower than the final measurement of 0.17 ft in 2021. The final product thickness of 0.09 ft was also lower than the true product thickness of 0.27 to 0.30 ft determined from the 2015 baildown test.

- **MW-5:** The pre-recovery product thickness of 0.13 ft was significantly less than the 4.24 ft pre-recovery thickness measured in 2021 and is the lowest initial thickness ever recorded at MW-5. The final product thickness of 0.51 ft achieved after nine recovery events was lower than the 1.59 ft in 2021. Additionally, the final product thickness of 0.51 ft was greater than the 0.21 to 0.31 ft true thickness determined from the 2015 baildown test.

Variations in product thickness between years may result from continued product recovery and seasonal changes in groundwater elevations. Overall, the apparent free product thicknesses have decreased since the gauging of recovery wells began in 1997.

3.3 FREE PRODUCT RECOVERY

The total volume of product recovered during nine visits conducted in 2022 decreased for both MW-1 and MW-5 compared to recovery totals from 2021. The results of annual product recovery events completed for wells MW-1 and MW-5 are presented in Tables 2 and 3, respectively, and a comparison of annual product recovery periods are provided in Table 4. Results of 2022 product recovery activities are summarized as follows:

- **MW-1:** The total free product recovered using sorbent socks was approximately 0.3 gal, the lowest amount of product recovered annually from this well. The volume recovered in 2022 accounts for approximately 1 percent (%) of the 33.7 gal of product recovered from this well since 2011.
- **MW-5:** The total free product recovered using sorbent socks was approximately 4.6 gal, the lowest amount of product recovered annually from this well. The measured recovery volume recovered represents approximately 3% of the 132.3 gal of product recovered from this well since 2011.

The year-end total product recovery volumes for wells MW-1 and MW-5 are variable and do not correlate directly to the number of recovery events indicating that the effectiveness of recovery events varies from year to year and may also not correlate to pre-recovery product thicknesses.

The total volume of recovered product to date of approximately 1,260 gal represents a substantial portion (63%) of the approximately 2,000 gal thought to have been released. The product recovered in 2022 represents only 0.4 % of the total of approximately 1,260 gal of free product recovered by all methods since discovering the contamination in 1996 (Table 4). Additionally, the 175 gal of product recovered between 2011 and 2022 represents only a small fraction (14 %) of the total volume recovered since 1996.

4. CONCLUSIONS AND RECOMMENDATIONS

Activities completed in 2022 at the PS09 MLT Sump site included thawing and product recovery at MW-1 and MW-5, and reinstallation of heat trace in the product recovery wells for the 2023 product recovery season.

At the start of the 2022 product recovery season, initial product thicknesses were the lowest on record at both MW-1 and MW-5. Product thickness in both wells varied during the summer but showed an overall decrease by the end of the field season. The total volume of product recovered from wells MW-1 and MW-5 decreased by 9.9 gal from the recovery total documented for 2021 to a total of only 4.9 gal in 2022.

SLR recommends continuing product recovery and conducting biennial groundwater sampling in 2023.

5. REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2022. Field Sampling Guidance. January.

--------. 2021. 18 Alaska Administraive Code 75, Oil and Other Hazardous Substances Pollution Control, as amended through November 18, 2021.

EMCON Alaska, Inc. (EMCON). 1999. Final Contamination Assessment Report, Former Main Line Turbine Sump, Pump Station 9, Trans Alaska Pipeline, Delta Junction, Alaska. February.

--------. 1998. Final Contamination Assessment Report, Former Main Line Turbine Sump, Pump Station 9, Trans Alaska Pipeline, Delta Junction, Alaska. May.

SLR International Corporation (SLR). 2021. 2021 Groundwater Monitoring and Product Recovery Report, Pump Station 9 Mainline Turbine Sump. November.

--------. 2020a. 2020 Product Recovery Report, Pump Station 9 Mainline Turbine Sump. December.

--------. 2020b. 2020-2022 Groundwater Monitoring and Product Recovery Work Plan, Pump Station 9 Mainline Turbine Sump. June.

--------. 2018. 2017 Groundwater Monitoring and Product Recovery Report, Pump Station 9 Mainline Turbine Sump. March.

--------. 2016. 2015 Groundwater Monitoring and Product Recovery Report, Pump Station 9 Mainline Turbine Sump. March.

--------. 2014. 2014 Groundwater Monitoring and Product Recovery Report, Pump Station 9 Mainline Turbine Sump. December.

--------. 2010. 2009 Product Recovery and Ground Water Monitoring Report, Pump Station 9 Mainline Turbine Sump. April.

LIMITATIONS

The services described in this work product were performed in accordance with generally accepted professional consulting principles and practices. No other representations or warranties, expressed or implied, are made. These services were performed consistent with our agreement with our client. This work product is intended solely for the use and information of our client unless otherwise noted. Any reliance on this work product by a third party is at such party's sole risk.

Opinions and recommendations contained in this work product are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. The data reported and the findings, observations, and conclusions expressed are limited by the scope of work. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this work product.

The purpose of an environmental assessment is to reasonably evaluate the potential for, or actual impact of, past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an appropriate level of analysis for each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

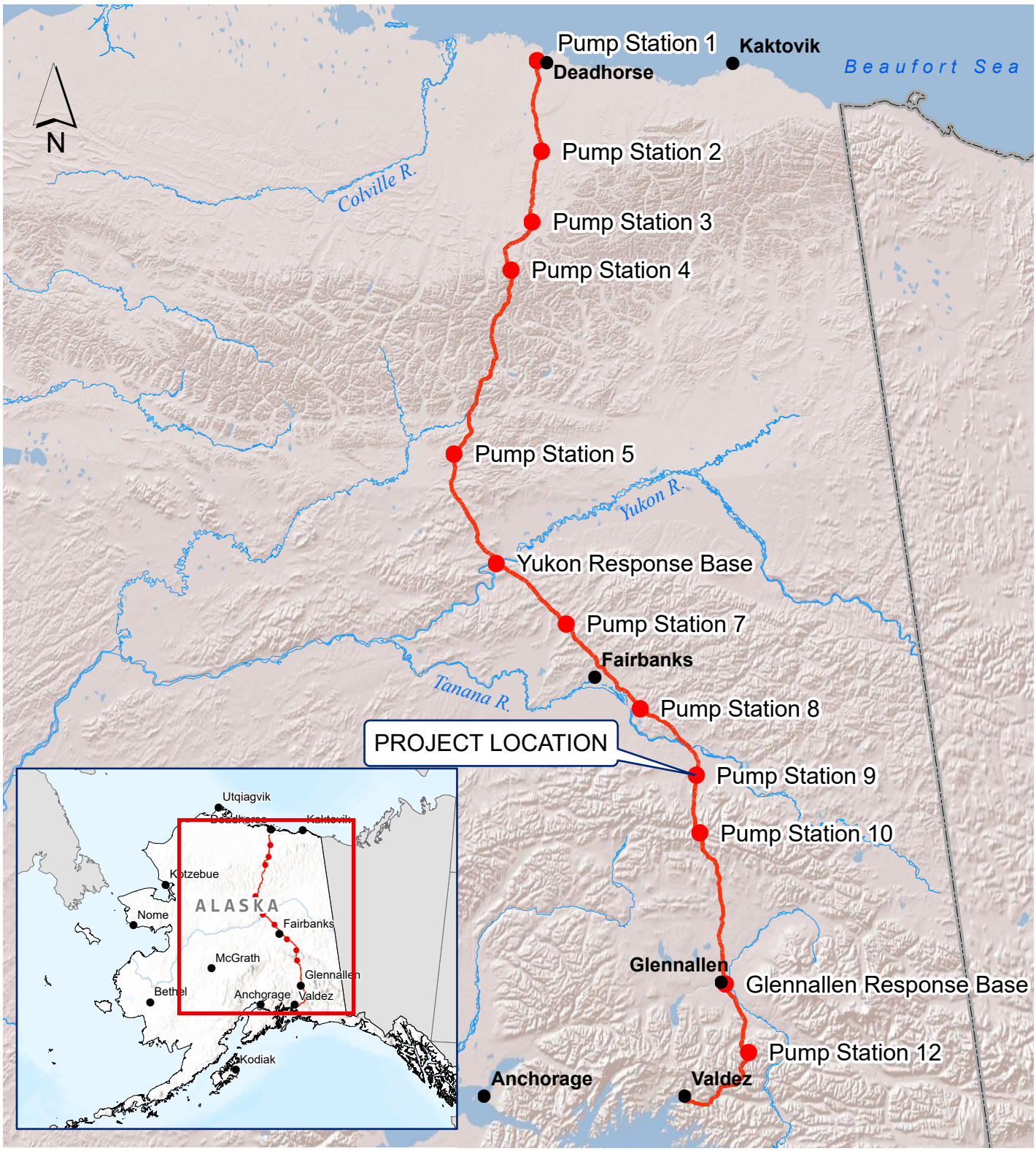
No investigation can be thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such materials on the site, but rather as the result of the services performed within the scope, practical limitations, and cost of the work performed.

Environmental conditions that are not apparent may exist at the site. Our professional opinions are based in part on interpretation of data from a limited number of discrete sampling locations and therefore may not be representative of the actual overall site environmental conditions.

The passage of time, manifestation of latent conditions, or occurrence of future events may require further study at the site, analysis of the data, and/or reevaluation of the findings, observations, and conclusions in the work product.

This work product presents professional opinions and findings of a scientific and technical nature. The work product shall not be construed to offer legal opinion or representations as to the requirements of, nor the compliance with, environmental laws rules, regulations, or policies of federal, state or local governmental agencies.

FIGURES



Legend

- City
- Pump Station
- Trans-Alaska Pipeline System (TAPS)

Miles
0 20 40 80 120 160

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SLR

Site
ALYESKA PIPELINE SERVICE COMPANY
PUMP STATION 9
PIPELINE MILEPOST 548.7

Report
2022 PRODUCT RECOVERY REPORT

Drawing
SITE LOCATION MAP

Date November 2022	Scale As Shown	Fig. No. 1
File Name F1_PS09_MTS_RPT_22012.mxd	Project No. 105.01288.22012	

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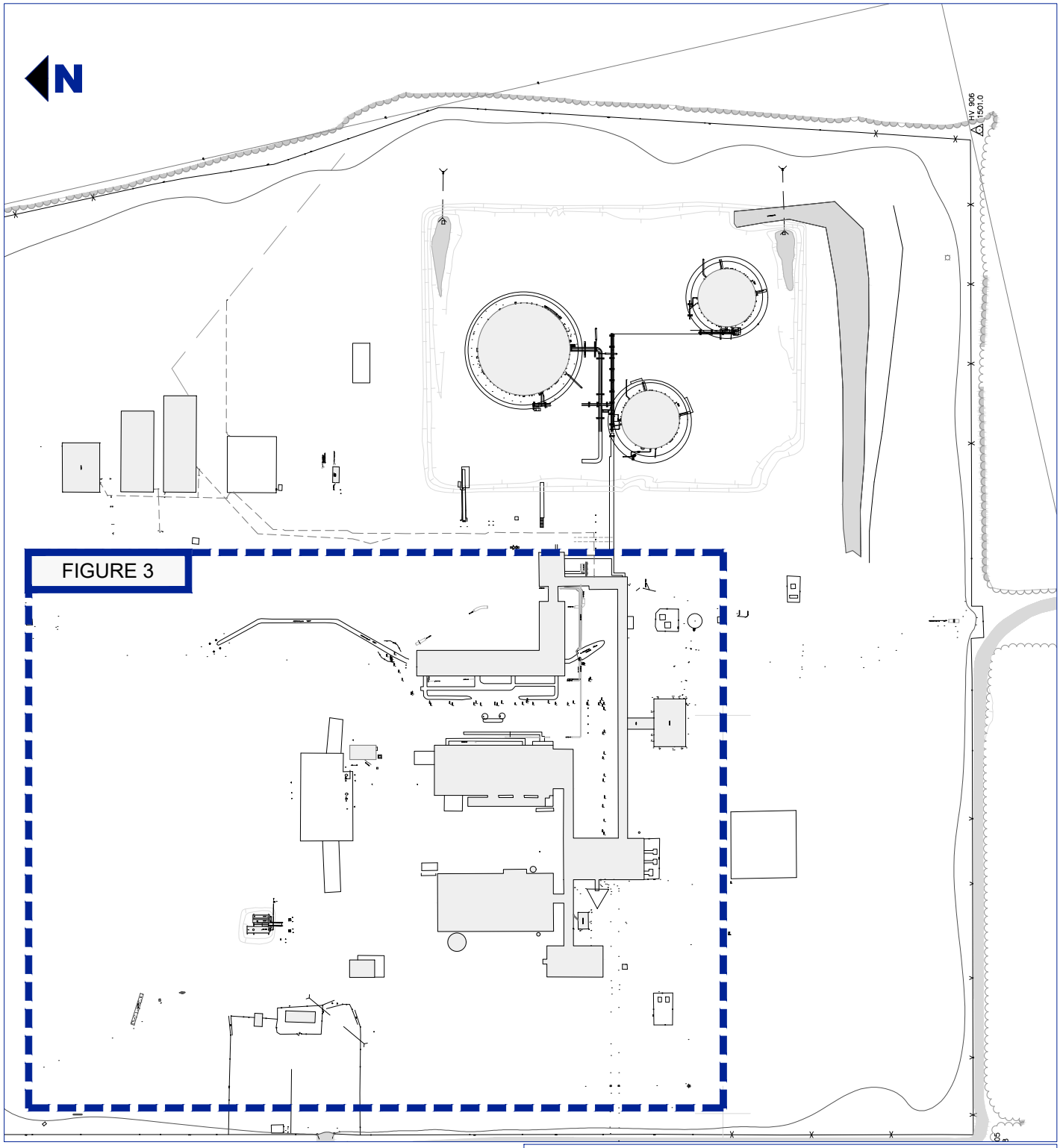

SCALE: 1" = 100 FEET
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE
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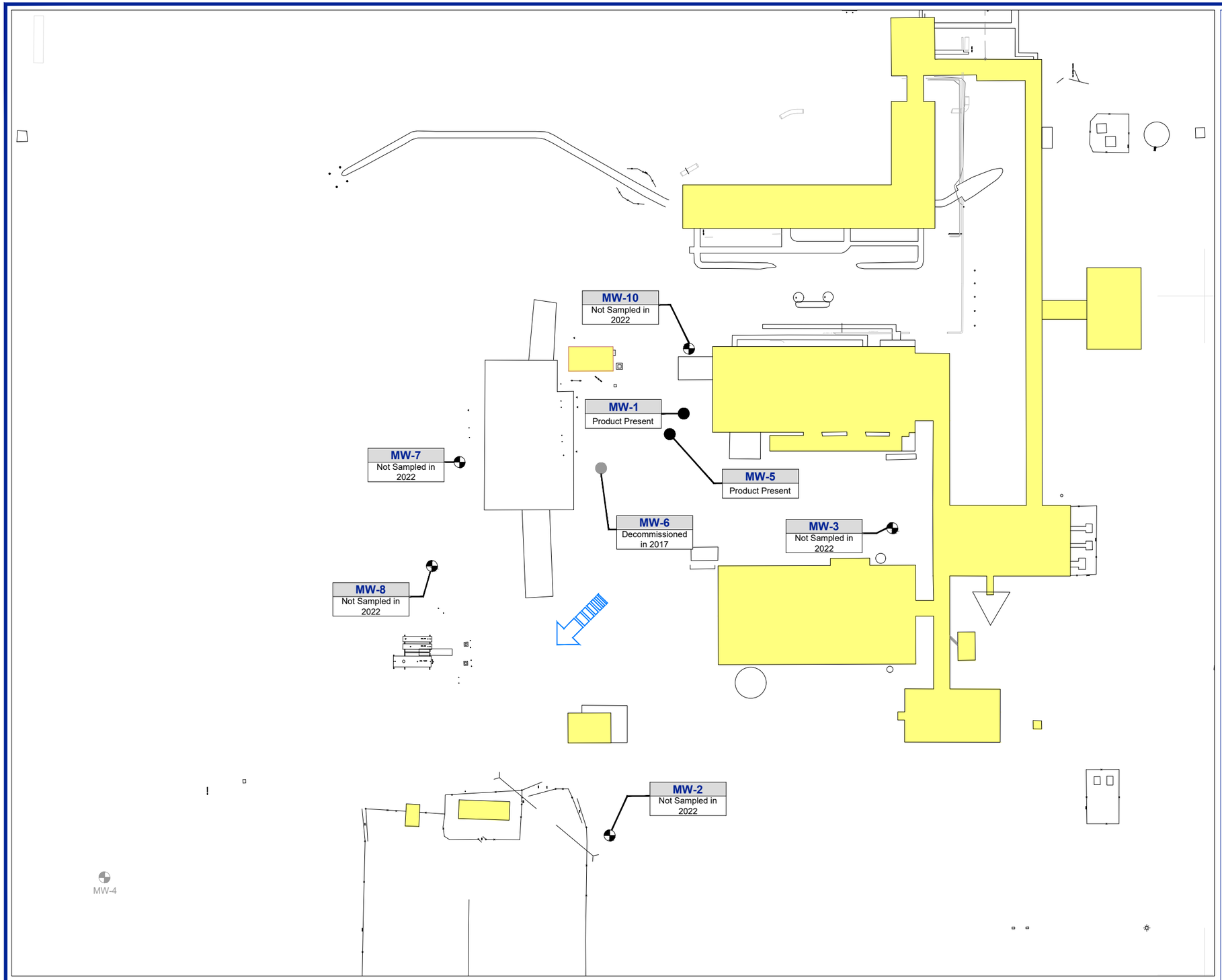
Site
ALYESKA PIPELINE SERVICE COMPANY
PUMP STATION 9
PIPELINE MILEPOST 548.7

Report
2022 PRODUCT RECOVERY REPORT

Drawing
SITE VICINITY MAP

Date November 2022	Scale 1" = 100 Feet	Fig. No. 2
File Name F2 PS09 MLT RPT_22	Project No. 105.01288.22012	



LEGEND

MW-3	MONITORING WELL LOCATION
MW-4	DESTROYED MONITORING WELL
MW-1	RECOVERY WELL LOCATION
MW-6	RECOVERY WELL (DECOMMISSIONED)
	APPARENT GROUNDWATER FLOW DIRECTION

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE: 1" = 75'
WHEN PLOTTED AT 11 x 17 PAGE SIZE
0 75' 150' 225'

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Site
ALYESKA PIPELINE SERVICE COMPANY
PUMP STATION 9
PIPELINE MILEPOST 548.7

Report
2022 PRODUCT RECOVERY REPORT

Drawing
GROUNDWATER MONITORING WELL LOCATIONS

Date November 2022	Scale 1" = 75 Feet	Fig. No. 3
File Name F3 PS09 MLT RPT_22	Project No. 105.01288.22012	

SLR

TABLES

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1	11/7/1997	1504.98	114.77	1390.21	NM	NM	NM
	4/1/1998	1504.98	114.61	1390.37	NM	NM	NM
	11/22/1998	1504.98	114.73	1390.25	114.54	1390.44	0.19
	12/1/1998	1504.98	114.78	1390.20	114.59	1390.39	0.19
	6/8/1999	1504.98	116.03	1388.95	115.13	1389.85	0.90
	9/16/1999	1504.98	115.93	1389.05	115.58	1389.40	0.35
	10/7/1999	1504.98	116.71	1388.27	115.48	1389.50	1.23
	11/11/1999	1504.98	116.66	1388.32	115.51	1389.47	1.15
	5/17/2000	1504.98	115.52	1389.46	114.52	1390.46	1.00
	12/28/2000	1504.98	112.00	1392.98	104.80	1400.18	7.20
	7/19/2001	1501.23	106.40	1394.83	101.92	1399.31	4.48
	9/19/2001	1501.23	104.25	1396.98	103.65	1397.58	0.60
	6/10/2002	1501.23	108.90	1392.33	108.56	1392.67	0.34
	10/2/2002	1501.23	109.58	1391.65	109.37	1391.86	0.21
	6/3/2003	1501.23	111.07	1390.16	110.12	1391.11	0.95
	6/23/2003	1501.23	110.52	1390.71	110.20	1391.03	0.32
	7/24/2003	1501.23	110.88	1390.35	110.41	1390.82	0.47
	8/28/2003	1501.23	111.36	1389.87	110.71	1390.52	0.65
	9/15/2003	1501.23	111.56	1389.67	110.89	1390.34	0.67
	10/3/2003	1501.23	111.37	1389.86	110.72	1390.51	0.65
	6/2/2004	1501.23	111.89	1389.34	110.99	1390.24	0.90
	6/3/2004	1501.23	111.44	1389.79	111.15	1390.08	0.29
	6/10/2004	1501.23	110.90	1390.33	110.81	1390.42	0.09
	7/8/2004	1501.23	110.46	1390.77	110.44	1390.79	0.02
	7/20/2004	1501.23	110.22	1391.01	110.22	1391.01	0.00
	8/12/2004	1501.23	110.14	1391.09	110.08	1391.15	0.06
	9/2/2004	1501.23	109.83	1391.40	109.82	1391.41	0.01
	10/19/2004	1501.23	109.88	1391.35	109.84	1391.39	0.04
	6/20/2005	1501.23	110.74	1390.49	110.74	1390.49	0.00
	6/28/2005	1501.23	109.52	1391.71	109.52	1391.71	0.00
	10/17/2005	1501.23	109.19	1392.04	109.19	1392.04	0.00
	11/3/2005	1501.23	109.18	1392.05	109.15	1392.08	0.03
	5/31/2006	1501.23	111.41	1389.82	110.70	1390.53	0.71
	7/13/2006	1501.23	111.02	1390.21	110.79	1390.44	0.23
	10/5/2006	1501.23	108.54	1392.69	108.02	1393.21	0.52
	5/30/2007	1501.23	109.54	1391.69	108.78	1392.45	0.76
	7/18/2007	1501.23	109.74	1391.49	109.32	1391.91	0.42
	8/3/2007	1501.23	110.05	1391.18	109.57	1391.66	0.48
	8/17/2007	1501.23	109.51	1391.72	N/A	N/A	0.00
	9/13/2007	1501.23	109.69	1391.54	109.685	1391.55	0.005
	9/21/2007	1501.23	109.67	1391.56	N/A	N/A	0.00
	10/5/2007	1501.23	109.29	1391.94	N/A	N/A	0.00
	10/12/2007	1501.23	109.33	1391.90	N/A	N/A	0.00
	11/2/2007	1501.23	109.25	1391.98	N/A	N/A	0.00
	6/2/2008	1501.23	110.22	1391.01	109.80	1391.43	0.42
	7/1/2008	1501.23	110.35	1390.88	N/A	N/A	0.00
	7/18/2008	1501.23	110.43	1390.80	110.38	1390.85	0.05
	7/23/2008	1501.23	110.59	1390.64	110.50	1390.73	0.09
	7/25/2008	1501.23	110.60	1390.63	110.54	1390.69	0.06
	8/12/2008	1501.23	110.41	1390.82	110.40	1390.83	0.01
	9/3/2008	1501.23	109.70	1391.53	N/A	N/A	0.00
	9/12/2008	1501.23	109.33	1391.90	109.19	1392.04	0.14
	10/8/2008	1501.23	107.67	1393.56	106.68	1394.55	0.99
	7/17/2009	1501.23	108.36	1392.87	104.48	1396.75	3.88
	8/7/2010	1501.23	110.27	1390.96	109.95	1391.28	0.32
	9/25/2010	1501.23	108.28	1392.95	107.63	1393.60	0.65
	10/8/2010	1501.23	108.25	1392.98	107.43	1393.80	0.82
	10/12/2010	1501.23	107.88	1393.35	107.28	1393.95	0.60
	6/24/2011	1501.23	108.94	1392.29	107.94	1393.29	1.00
	7/18/2011	1501.23	109.02	1392.21	108.34	1392.89	0.68
	7/26/2011	1501.23	108.64	1392.59	108.45	1392.78	0.19
	8/8/2011	1501.23	108.75	1392.48	108.69	1392.54	0.06
	8/22/2011	1501.23	108.54	1392.69	108.53	1392.70	0.01
	9/9/2011	1501.23	108.86	1392.37	108.84	1392.39	0.02
	9/19/2011	1501.23	108.61	1392.62	108.6	1392.63	0.01
	10/6/2011	1501.23	108.52	1392.71	108.51	1392.72	0.01
	10/26/2011	1501.23	108.57	1392.66	108.56	1392.67	0.01

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1 Continued	6/5/2012	1501.23	NM	NM	NM	NM	NM
	6/20/2012	1501.23	NM	NM	NM	NM	NM
	7/5/2012	1501.23	NM	NM	NM	NM	NM
	7/20/2012	1501.23	NM	NM	NM	NM	NM
	8/3/2012	1501.23	NM	NM	NM	NM	NM
	8/9/2012	1501.23	110.06	1391.17	109.70	1391.53	0.36
	8/23/2012	1501.23	109.78	1391.45	109.58	1391.65	0.20
	9/6/2012	1501.23	109.90	1391.33	109.75	1391.48	0.15
	9/21/2012	1501.23	109.83	1391.40	109.69	1391.54	0.14
	10/8/2012	1501.23	109.88	1391.35	109.75	1391.48	0.13
	10/22/2012	1501.23	109.89	1391.34	109.78	1391.45	0.11
	6/19/2013	1501.23	NM	NM	NM	NM	NM
	6/27/2013	1501.23	NM	NM	NM	NM	NM
	7/19/2013	1501.23	NM	NM	NM	NM	NM
	8/2/2013	1501.23	NM	NM	NM	NM	NM
	8/14/2013	1501.23	NM	NM	NM	NM	NM
	8/29/2013	1501.23	112.62	1388.61	111.41	1389.82	1.21
	9/12/2013	1501.23	112.39	1388.84	111.60	1389.63	0.79
	10/4/2013	1501.23	112.43	1388.80	111.69	1389.54	0.74
	10/17/2013	1501.23	112.01	1389.22	111.68	1389.55	0.33
	6/3/2014	1501.23	114.28	1386.95	112.57	1388.66	1.71
	7/9/2014	1501.23	114.67	1386.56	112.61	1388.62	2.06
	7/28/2014	1501.23	113.63	1387.60	112.85	1388.38	0.78
	8/7/2014	1501.23	113.35	1387.88	112.74	1388.49	0.61
	8/26/2014	1501.23	113.48	1387.75	112.53	1388.70	0.95
	9/23/2014	1501.23	112.97	1388.26	112.29	1388.94	0.68
	10/9/2014	1501.23	112.43	1388.80	112.00	1389.23	0.43
	7/3/2015	1501.23	111.60	1389.63	111.11	1390.12	0.49
	7/14/2015	1501.23	112.06	1389.17	111.48	1389.75	0.58
	7/21/2015	1501.23	112.00	1389.23	111.51	1389.72	0.49
	8/12/2015	1501.23	112.14	1389.09	111.72	1389.51	0.42
	8/25/2015	1501.23	112.11	1389.12	111.82	1389.41	0.29
	9/13/2015	1501.23	112.09	1389.14	111.86	1389.37	0.23
	10/1/2015	1501.23	112.28	1388.95	112.08	1389.15	0.20
	6/1/2016	1501.23	NM	NM	NM	NM	NM
	6/2/2016	1501.23	112.23	1389.00	111.64	1389.59	0.59
	6/7/2016	1501.23	112.54	1388.69	111.78	1389.45	0.76
	6/11/2016	1501.23	112.27	1388.96	111.78	1389.45	0.49
	6/27/2016	1501.23	112.25	1388.98	111.93	1389.30	0.32
	7/10/2016	1501.23	112.24	1388.99	112.03	1389.20	0.21
	8/5/2016	1501.23	112.26	1388.97	112.19	1389.04	0.07
	8/18/2016	1501.23	112.34	1388.89	112.24	1388.99	0.10
	9/5/2016	1501.23	112.29	1388.94	112.18	1389.05	0.11
	9/16/2016	1501.23	112.33	1388.90	112.22	1389.01	0.11
	10/3/2016	1501.23	112.59	1388.64	112.33	1388.90	0.26
	10/13/2016	1501.23	112.42	1388.81	112.25	1388.98	0.17
	5/25/2017	1501.23	NM	NM	NM	NM	NM
	5/26/2017	1501.23	114.03	1387.20	112.78	1388.45	1.25
	6/7/2017	1501.23	114.17	1387.06	112.76	1388.47	1.41
	6/27/2017	1501.23	113.33	1387.90	112.99	1388.24	0.34
	7/24/2017	1501.23	113.43	1387.80	113.14	1388.09	0.29
	9/14/2017	1501.23	113.61	1387.62	113.20	1388.03	0.41
	9/28/2017	1501.23	113.45	1387.78	113.16	1388.07	0.29
	10/19/2017	1501.23	113.35	1387.88	113.16	1388.07	0.19
	6/4/2018	1501.23	114.97	1386.26	113.31	1387.92	1.66
	6/8/2018	1501.23	113.84	1387.39	113.55	1387.68	0.29
	6/25/2018	1501.23	NM	NM	NM	NM	NM
	7/19/2018	1501.23	113.77	1387.46	113.52	1387.71	0.25
	8/2/2018	1501.23	113.59	1387.64	113.31	1387.92	0.28
	8/16/2018	1501.23	113.71	1387.52	113.21	1388.02	0.50
	9/4/2018	1501.23	113.90	1387.33	113.22	1388.01	0.68
	9/18/2018	1501.23	113.31	1387.92	113.10	1388.13	0.21
	10/1/2018	1501.23	113.14	1388.09	112.82	1388.41	0.32
	5/24/2019	1501.23	110.8	1390.43	110.55	1390.68	0.25
	5/31/2019	1501.23	110.68	1390.55	110.45	1390.78	0.23
	6/14/2019	1501.23	110.67	1390.56	110.55	1390.68	0.12
	6/28/2019	1501.23	110.94	1390.29	110.77	1390.46	0.17

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-1 Continued	7/12/2019	1501.23	110.95	1390.28	110.79	1390.44	0.16
	7/31/2019	1501.23	111.1	1390.13	110.94	1390.29	0.16
	8/9/2019	1501.23	111.2	1390.03	111.04	1390.19	0.16
	8/30/2019	1501.23	111.35	1389.88	111.19	1390.04	0.16
	9/13/2019	1501.23	111.1	1390.13	110.98	1390.25	0.12
	9/27/2019	1501.23	111.5	1389.73	111.30	1389.93	0.20
	10/14/2019	1501.23	111	1390.23	110.93	1390.30	0.07
	10/30/2019	1501.23	110.81	1390.42	110.77	1390.46	0.04
	7/1/2020	1501.23	NM	NM	NM	NM	NM
	7/29/2020	1501.23	105.52	1395.71	104.91	1396.32	0.61
	8/11/2020	1501.23	104.88	1396.35	104.58	1396.65	0.30
	8/24/2020	1501.23	104.28	1396.95	104.04	1397.19	0.24
	9/15/2020	1501.23	103.8	1397.43	103.55	1397.68	0.25
	9/29/2020	1501.23	104.2	1397.03	103.91	1397.32	0.29
	10/14/2020	1501.23	103.97	1397.26	103.68	1397.55	0.29
	11/11/2020	1501.23	103.15	1398.08	103.00	1398.23	0.15
	6/15/2021	1501.23	105.55	1395.68	104.58	1396.65	0.97
	7/9/2021	1501.23	105.2	1396.03	104.97	1396.26	0.23
	7/21/2021	1501.23	105.17	1396.06	105.06	1396.17	0.11
	8/12/2021	1501.23	105.56	1395.67	105.43	1395.80	0.13
	8/26/2021	1501.23	105.8	1395.43	105.65	1395.58	0.15
	10/1/2021	1501.23	106.06	1395.17	105.89	1395.34	0.17
	5/19/2022	1501.23	NM	NM	NM	NM	NM
	6/7/2022	1501.23	108.39	1392.84	108.18	1393.05	0.21
	7/8/2022	1501.23	107.11	1394.12	106.96	1394.27	0.15
	7/26/2022	1501.23	107.02	1394.21	106.92	1394.31	0.10
	8/16/2022	1501.23	106.38	1394.85	106.28	1394.95	0.10
	8/25/2022	1501.23	106.45	1394.78	106.31	1394.92	0.14
	9/8/2022	1501.23	106.15	1395.08	106.10	1395.13	0.05
	9/20/2022	1501.23	106.50	1394.73	106.37	1394.86	0.13
	10/17/2022	1501.23	106.25	1394.98	106.16	1395.07	0.09
MW-2	11/7/1997	1504.59	NM	NM	N/A	N/A	N/A
	4/1/1998	1504.59	114.76	1389.83	N/A	N/A	0.00
	11/22/1998	1504.59	113.90	1390.69	N/A	N/A	0.00
	12/1/1998	1504.59	114.32	1390.27	N/A	N/A	0.00
	6/9/1999	1504.59	115.40	1389.19	N/A	N/A	0.00
	9/17/1999	1504.59	113.28	1391.31	N/A	N/A	0.00
	11/11/1999	1504.59	114.00	1390.59	N/A	N/A	0.00
	5/17/2000	1504.59	115.31	1389.28	N/A	N/A	0.00
	7/14/2000	1504.59	115.09	1389.50	N/A	N/A	0.00
	10/13/2000	1504.59	112.16	1392.43	N/A	N/A	0.00
	3/27/2001	1504.58	105.95	1398.63	N/A	N/A	0.00
	7/12/2001	1504.58	105.49	1399.09	N/A	N/A	0.00
	9/20/2001	1504.58	106.49	1398.09	N/A	N/A	0.00
	11/16/2001	1504.58	107.48	1397.10	N/A	N/A	0.00
	6/11/2002	1504.58	111.70	1392.88	N/A	N/A	0.00
	10/4/2002	1504.58	112.26	1392.32	N/A	N/A	0.00
	6/24/2003	1504.58	115.46	1389.12	N/A	N/A	0.00
	10/1/2003	1504.58	114.38	1390.20	N/A	N/A	0.00
	6/10/2004	1504.58	115.78	1388.80	N/A	N/A	0.00
	10/18/2004	1504.58	114.87	1389.71	N/A	N/A	0.00
	6/27/2005	1504.58	113.44	1391.14	N/A	N/A	0.00
	10/16/2005	1504.58	113.98	1390.60	N/A	N/A	0.00
	6/1/2006	1504.58	113.36	1391.22	N/A	N/A	0.00
	10/5/2006	1504.58	103.40	1401.18	N/A	N/A	0.00
	7/17/2006	1504.58	114.44	1390.14	N/A	N/A	0.00
	10/4/2007	1504.58	112.82	1391.76	N/A	N/A	0.00
	7/25/2008	1504.58	116.78	1387.80	N/A	N/A	0.00
	7/18/2009	1504.58	107.60	1396.98	N/A	N/A	0.00
	8/11/2010	1504.58	111.89	1392.69	N/A	N/A	0.00
	9/8/2011	1504.58	113.22	1391.36	N/A	N/A	0.00
	7/20/2012	1504.58	113.56	1391.02	N/A	N/A	0.00
	8/22/2013	1504.58	116.18	1388.40	N/A	N/A	0.00
	9/19/2013	1504.58	116.30	1388.28	N/A	N/A	0.00
	6/5/2014	1504.58	116.79	1387.79	N/A	N/A	0.00
	7/15/2015	1504.58	116.51	1388.07	N/A	N/A	0.00
	6/6/2016	1504.58	116.68	1387.90	N/A	N/A	0.00

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-2 Continued	6/7/2017	1504.58	121.90	1382.68	N/A	N/A	0.00
	5/30/2019	1504.58	116.15	1388.43	N/A	N/A	0.00
	6/1/2021	1504.58	107.24	1397.34	N/A	N/A	0.00
MW-3	11/7/1997	1508.38	117.94	1390.44	N/A	N/A	0.00
	4/1/1998	1508.38	117.83	1390.55	N/A	N/A	0.00
	11/21/1998	1508.38	117.89	1390.49	N/A	N/A	0.00
	12/1/1998	1508.38	118.04	1390.34	N/A	N/A	0.00
	6/9/1999	1508.38	116.49	1391.89	N/A	N/A	0.00
	9/16/1999	1508.38	116.88	1391.50	N/A	N/A	0.00
	11/11/1999	1508.38	116.93	1391.45	N/A	N/A	0.00
	5/16/2000	1508.38	115.90	1392.48	N/A	N/A	0.00
	7/16/2000	1508.38	115.54	1392.84	N/A	N/A	0.00
	10/11/2000	1508.38	113.85	1394.53	N/A	N/A	0.00
	3/27/2001	1506.36	106.30	1400.06	N/A	N/A	0.00
	7/11/2001	1506.36	107.87	1398.49	N/A	N/A	0.00
	9/20/2001	1506.36	108.94	1397.42	N/A	N/A	0.00
	11/16/2001	1506.36	110.21	1396.15	N/A	N/A	0.00
	6/10/2002	1506.36	113.63	1392.73	N/A	N/A	0.00
	10/3/2002	1506.36	114.19	1392.17	N/A	N/A	0.00
	6/24/2003	1506.36	115.07	1391.29	N/A	N/A	0.00
	10/2/2003	1506.36	115.73	1390.63	N/A	N/A	0.00
	6/11/2004	1506.36	115.61	1390.75	N/A	N/A	0.00
	10/19/2004	1506.36	114.64	1391.72	N/A	N/A	0.00
	6/28/2005	1506.36	114.32	1392.04	N/A	N/A	0.00
	10/17/2005	1506.36	114.04	1392.32	N/A	N/A	0.00
	6/1/2006	1506.36	115.73	1390.63	N/A	N/A	0.00
	10/5/2006	1506.36	112.82	1393.54	N/A	N/A	0.00
	7/18/2007	1506.36	114.23	1392.13	N/A	N/A	0.00
	10/4/2007	1506.36	114.42	1391.94	N/A	N/A	0.00
	7/24/2008	1506.36	115.54	1390.82	N/A	N/A	0.00
	7/18/2009	1506.36	110.21	1396.15	N/A	N/A	0.00
	8/12/2010	1506.36	114.87	1391.49	N/A	N/A	0.00
	9/8/2011	1506.36	114.04	1392.32	N/A	N/A	0.00
	7/20/2012	1506.36	114.59	1391.77	N/A	N/A	0.00
	8/22/2013	1506.36	116.51	1389.85	N/A	N/A	0.00
	9/19/2013	1506.36	116.63	1389.73	N/A	N/A	0.00
	6/3/2014	1506.36	117.82	1388.54	N/A	N/A	0.00
	7/15/2015	1506.36	112.89	1393.47	N/A	N/A	0.00
	6/7/2016	1506.36	113.16	1393.20	N/A	N/A	0.00
	6/7/2017	1506.36	114.54	1391.82	N/A	N/A	0.00
	5/30/2019	1506.36	111.8	1394.56	N/A	N/A	0.00
	6/1/2021	1506.36	105.95	1400.41	N/A	N/A	1.00
MW-4	11/21/1998	1497.70	109.38	1388.32	N/A	N/A	0.00
	12/1/1998	1497.70	109.52	1388.18	N/A	N/A	0.00
	6/9/1999	1497.70	110.68	1387.02	N/A	N/A	0.00
	9/16/1999	1497.70	111.24	1386.46	N/A	N/A	0.00
	11/11/1999	1497.70	111.42	1386.28	N/A	N/A	0.00
	5/16/2000	1497.70	111.66	1386.04	N/A	N/A	0.00
	7/14/2000	1497.70	111.59	1386.11	N/A	N/A	0.00
	10/13/2000	1497.70	110.10	1387.60	N/A	N/A	0.00
	3/27/2001	1497.69	107.30	1390.39	N/A	N/A	0.00
	7/12/2001	1497.69	106.58	1391.11	N/A	N/A	0.00
	9/20/2001	1497.69	105.61	1392.08	N/A	N/A	0.00
	11/16/2001	1497.69	105.62	1392.07	N/A	N/A	0.00
	6/10/2002	1497.69	107.48	1390.21	N/A	N/A	0.00
	10/4/2002	1497.69	107.69	1390.00	N/A	N/A	0.00
	6/24/2003	1497.69	110.74	1386.95	N/A	N/A	0.00
	10/2/2003	1497.69	111.90	1385.79	N/A	N/A	0.00
	6/11/2004	1497.69	113.15	1384.54	N/A	N/A	0.00
	10/18/2004	1497.69	112.47	1385.22	N/A	N/A	0.00
	Well Destroyed in 2005		N/A	N/A	N/A	N/A	N/A
MW-5	11/21/1998	1501.22	111.31	1389.91	110.78	1390.44	0.53
	12/1/1998	1501.22	111.62	1389.60	110.83	1390.39	0.79
	9/16/1999	1501.22	113.56	1387.66	111.51	1389.71	2.05
	10/7/1999	1501.22	113.23	1387.99	111.44	1389.78	1.79
	11/11/1999	1501.22	113.52	1387.70	111.55	1389.67	1.97
	5/17/2000	1501.22	111.78	1389.44	111.69	1389.53	0.09

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-5 Continued	7/16/2000	1501.22	111.37	1389.85	110.36	1390.86	1.01
	12/29/2000	1501.22	109.20	1392.02	100.90	1400.32	8.30
	7/19/2001	1501.22	109.30	1391.92	101.30	1399.92	8.00
	9/20/2001	1501.22	104.75	1396.47	103.47	1397.75	1.28
	6/10/2002	1501.22	109.60	1391.62	108.53	1392.69	1.07
	10/2/2002	1501.22	109.57	1391.65	109.29	1391.93	0.28
	6/3/2003	1501.22	110.85	1390.37	110.10	1391.12	0.75
	6/23/2003	1501.22	110.40	1390.82	110.14	1391.08	0.26
	7/24/2003	1501.22	110.48	1390.74	110.42	1390.80	0.06
	8/28/2003	1501.22	110.99	1390.23	110.72	1390.50	0.27
	9/15/2003	1501.22	111.12	1390.10	110.92	1390.30	0.20
	10/3/2003	1501.22	110.84	1390.38	110.78	1390.44	0.06
	6/2/2004	1501.22	111.72	1389.50	110.94	1390.28	0.78
	6/3/2004	1501.22	111.34	1389.88	111.09	1390.13	0.25
	6/10/2004	1501.22	110.89	1390.33	110.78	1390.44	0.11
	7/8/2004	1501.22	110.60	1390.62	110.36	1390.86	0.24
	7/20/2004	1501.22	110.26	1390.96	110.16	1391.06	0.10
	8/12/2004	1501.22	110.04	1391.18	110.00	1391.22	0.04
	9/2/2004	1501.22	109.79	1391.43	109.75	1391.47	0.04
	10/19/2004	1501.22	109.85	1391.37	109.76	1391.46	0.09
	6/20/2005	1501.22	111.65	1389.57	109.40	1391.82	2.25
	6/28/2005	1501.22	109.47	1391.75	109.47	1391.75	0.00
	10/17/2005	1501.22	109.12	1392.10	109.12	1392.10	0.00
	11/3/2005	1501.22	109.21	1392.01	109.15	1392.07	0.06
	5/31/2006	1501.22	111.15	1390.07	110.64	1390.58	0.51
	7/13/2006	1501.22	111.02	1390.20	110.70	1390.52	0.32
	10/5/2006	1501.22	108.35	1392.87	107.98	1393.24	0.37
	5/30/2007	1501.22	108.94	1392.28	108.72	1392.50	0.22
	7/18/2007	1501.22	109.52	1391.70	109.30	1391.92	0.22
	8/3/2007	1501.22	109.57	1391.65	109.56	1391.66	0.01
	8/17/2007	1501.22	109.61	1391.61	109.46	1391.76	0.15
	8/24/2007	1501.22	109.63	1391.59	109.51	1391.71	0.12
	9/13/2007	1501.22	109.70	1391.52	109.64	1391.58	0.06
	9/21/2007	1501.22	109.56	1391.66	109.53	1391.69	0.03
	10/5/2007	1501.22	109.25	1391.97	N/A	N/A	0.00
	10/12/2007	1501.22	109.33	1391.89	109.30	1391.92	0.03
	11/2/2007	1501.22	109.20	1392.02	109.14	1392.08	0.06
	6/2/2008	1501.22	109.86	1391.36	109.77	1391.45	0.09
	7/1/2008	1501.22	110.49	1390.73	110.27	1390.95	0.22
	7/18/2008	1501.22	110.49	1390.73	110.31	1390.91	0.18
	7/23/2008	1501.22	110.63	1390.59	110.43	1390.79	0.20
	7/25/2008	1501.22	110.50	1390.72	110.49	1390.73	0.01
	8/12/2008	1501.22	110.49	1390.73	110.37	1390.85	0.12
	9/3/2008	1501.22	109.63	1391.59	109.61	1391.61	0.02
	9/12/2008	1501.22	109.14	1392.08	109.12	1392.10	0.02
	10/8/2008	1501.22	106.58	1394.64	106.56	1394.66	0.02
	7/18/2009	1501.22	108.25	1392.97	104.42	1396.80	3.83
	8/6/2010	1501.22	110.17	1391.05	109.83	1391.39	0.34
	9/25/2010	1501.22	108.20	1393.02	107.57	1393.65	0.63
	10/8/2010	1501.22	108.20	1393.02	107.32	1393.90	0.88
	10/12/2010	1501.22	108.12	1393.10	107.12	1394.10	1.00
	6/24/2011	1501.22	NM	NM	NM	NM	NM
	7/18/2011	1501.22	NM	NM	NM	NM	NM
	7/26/2011	1501.22	NM	NM	NM	NM	NM
	8/8/2011	1501.22	108.80	1392.42	108.61	1392.61	0.19
	8/22/2011	1501.22	108.60	1392.62	108.42	1392.80	0.18
	9/9/2011	1501.22	108.86	1392.36	108.80	1392.42	0.06
	9/19/2011	1501.22	108.61	1392.61	108.54	1392.68	0.07
	10/6/2011	1501.22	108.46	1392.76	108.44	1392.78	0.02
	10/26/2011	1501.22	108.43	1392.79	108.40	1392.82	0.03
	6/5/2012	1501.22	110.05	1391.17	109.68	1391.54	0.37
	6/20/2012	1501.22	110.13	1391.09	109.77	1391.45	0.36
	7/5/2012	1501.22	110.04	1391.18	109.70	1391.52	0.34
	7/20/2012	1501.22	109.94	1391.28	109.67	1391.55	0.27
	8/3/2012	1501.22	110.03	1391.19	109.71	1391.51	0.32
	8/9/2012	1501.22	109.92	1391.30	109.68	1391.54	0.24
	8/23/2012	1501.22	109.71	1391.51	109.51	1391.71	0.20

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-5 Continued	9/6/2012	1501.22	109.87	1391.35	109.67	1391.55	0.20
	9/21/2012	1501.22	109.79	1391.43	109.59	1391.63	0.20
	10/8/2012	1501.22	109.85	1391.37	109.66	1391.56	0.19
	10/22/2012	1501.22	109.85	1391.37	109.75	1391.47	0.10
	6/19/2013	1501.22	111.66	1389.56	111.00	1390.22	0.66
	6/27/2013	1501.22	112.07	1389.15	111.10	1390.12	0.97
	7/19/2013	1501.22	NM	NM	NM	NM	NM
	8/2/2013	1501.22	111.94	1389.28	111.22	1390.00	0.72
	8/14/2013	1501.22	112.38	1388.84	111.52	1389.70	0.86
	8/29/2013	1501.22	112.50	1388.72	111.62	1389.60	0.88
	9/12/2013	1501.22	112.48	1388.74	111.55	1389.67	0.93
	10/4/2013	1501.22	112.50	1388.72	111.61	1389.61	0.89
	10/17/2013	1501.22	112.40	1388.82	111.68	1389.54	0.72
	6/3/2014	1501.22	114.43	1386.79	112.48	1388.74	1.95
	7/9/2014	1501.22	114.67	1386.55	112.61	1388.61	2.06
	7/28/2014	1501.22	114.21	1387.01	112.64	1388.58	1.57
	8/7/2014	1501.22	113.87	1387.35	112.59	1388.63	1.28
	8/26/2014	1501.22	113.02	1388.20	112.52	1388.70	0.50
	9/23/2014	1501.22	112.54	1388.68	112.29	1388.93	0.25
	10/9/2014	1501.22	112.23	1388.99	111.94	1389.28	0.29
	6/4/2015	1501.22	NM	NM	NM	NM	NM
	7/3/2015	1501.22	NM	NM	NM	NM	NM
	7/14/2015	1501.22	112.44	1388.78	111.31	1389.91	1.13
	7/21/2015	1501.22	112.26	1388.96	111.38	1389.84	0.88
	8/12/2015	1501.22	112.82	1388.40	111.60	1389.62	1.22
	8/25/2015	1501.22	111.68	1389.54	111.57	1389.65	0.11
	9/13/2015	1501.22	112.98	1388.24	111.58	1389.64	1.40
	10/1/2015	1501.22	113.22	1388.00	111.79	1389.43	1.43
	6/1/2016	1501.22	112.20	1389.02	111.46	1389.76	0.74
	6/2/2016	1501.22	112.23	1388.99	111.64	1389.58	0.59
	6/7/2016	1501.22	113.06	1388.16	111.58	1389.64	1.48
	6/11/2016	1501.22	112.85	1388.37	111.60	1389.62	1.25
	6/27/2016	1501.22	113.05	1388.17	111.81	1389.41	1.24
	7/10/2016	1501.22	113.00	1388.22	111.89	1389.33	1.11
	8/5/2016	1501.22	112.93	1388.29	111.97	1389.25	0.96
	8/18/2016	1501.22	113.09	1388.13	112.12	1389.10	0.97
	9/5/2016	1501.22	112.62	1388.60	112.10	1389.12	0.52
	9/16/2016	1501.22	112.49	1388.73	112.09	1389.13	0.40
	10/3/2016	1501.22	112.56	1388.66	112.25	1388.97	0.31
	10/13/2016	1501.22	112.38	1388.84	112.17	1389.05	0.21
	5/25/2017	1501.22	NM	NM	NM	NM	NM
	5/26/2017	1501.22	113.83	1387.39	112.72	1388.50	1.11
	6/7/2017	1501.22	114.03	1387.19	112.70	1388.52	1.33
	6/27/2017	1501.22	113.75	1387.47	112.84	1388.38	0.91
	7/24/2017	1501.22	113.86	1387.36	113.05	1388.17	0.81
	9/14/2017	1501.22	114.02	1387.20	113.12	1388.10	0.90
	9/28/2017	1501.22	113.38	1387.84	112.93	1388.29	0.45
	10/19/2017	1501.22	113.48	1387.74	113.05	1388.17	0.43
	6/4/2018	1501.22	114.80	1386.42	113.28	1387.94	1.52
	6/8/2018	1501.22	114.29	1386.93	113.49	1387.73	0.80
	6/25/2018	1501.22	NM	NM	NM	NM	NM
	7/19/2018	1501.22	114.15	1387.07	113.33	1387.89	0.82
	8/2/2018	1501.22	113.67	1387.55	113.16	1388.06	0.51
	8/16/2018	1501.22	113.71	1387.51	113.21	1388.01	0.50
	9/4/2018	1501.22	113.55	1387.67	113.11	1388.11	0.44
	9/18/2018	1501.22	113.16	1388.06	112.98	1388.24	0.18
	10/1/2018	1501.22	112.85	1388.37	112.72	1388.50	0.13
	5/24/2019	1501.22	110.78	1390.44	110.45	1390.77	0.33
	5/31/2019	1501.22	NM	NM	NM	NM	NM
	6/14/2019	1501.22	110.78	1390.44	110.46	1390.76	0.32
	6/28/2019	1501.22	111.03	1390.19	110.65	1390.57	0.38
	7/12/2019	1501.22	111.02	1390.20	110.64	1390.58	0.38
	7/31/2019	1501.22	111.20	1390.02	110.80	1390.42	0.40
	8/9/2019	1501.22	111.28	1389.94	110.92	1390.30	0.36
	8/30/2019	1501.22	111.47	1389.75	111.07	1390.15	0.40
	9/13/2019	1501.22	111.15	1390.07	110.89	1390.33	0.26
	9/27/2019	1501.22	111.60	1389.62	111.15	1390.07	0.45

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-5 Continued	10/14/2019	1501.22	111.03	1390.19	110.84	1390.38	0.19
	10/30/2019	1501.22	110.75	1390.47	110.62	1390.60	0.13
	7/1/2020	1501.22	106.54	1394.68	106.24	1394.98	0.30
	7/29/2020	1501.22	106.02	1395.20	104.70	1396.52	1.32
	8/11/2020	1501.22	105.10	1396.12	104.42	1396.80	0.68
	8/24/2020	1501.22	104.51	1396.71	103.89	1397.33	0.62
	9/15/2020	1501.22	104.29	1396.93	103.34	1397.88	0.95
	9/29/2020	1501.22	104.41	1396.81	103.83	1397.39	0.58
	10/14/2020	1501.22	104.23	1396.99	103.59	1397.63	0.64
	11/11/2020	1501.01	103.93	1397.08	102.47	1398.54	1.46
	6/1/2021	1501.22	108.10	1393.12	103.50	1397.72	4.60
	6/15/2021	1501.22	108.06	1393.16	103.82	1397.40	4.24
	7/9/2021	1501.22	107.58	1393.64	104.20	1397.02	3.38
	7/1/2021	1501.22	105.56	1395.66	104.66	1396.56	0.90
	8/12/2021	1501.22	106.19	1395.03	104.99	1396.23	1.20
	8/26/2021	1501.22	106.05	1395.17	105.30	1395.92	0.75
	10/1/2021	1501.22	106.94	1394.28	105.35	1395.87	1.59
	5/19/2022	1501.22	108.83	1392.39	108.70	1392.52	0.13
	6/7/2022	1501.22	108.08	1393.14	107.95	1393.27	0.13
	7/8/2022	1501.22	107.90	1393.32	106.48	1394.74	1.42
	7/26/2022	1501.22	107.50	1393.72	106.51	1394.71	0.99
	8/16/2022	1501.22	106.45	1394.77	105.97	1395.25	0.48
	8/25/2022	1501.22	106.25	1394.97	106.05	1395.17	0.20
	9/8/2022	1501.22	106.07	1395.15	105.80	1395.42	0.27
	9/20/2022	1501.22	106.36	1394.86	106.08	1395.14	0.28
	10/17/2022	1501.22	106.32	1394.90	105.81	1395.41	0.51
MW-6	11/21/1998	1501.21	112.66	1388.55	110.52	1390.69	2.14
	12/1/1998	1501.21	113.55	1387.66	110.45	1390.76	3.10
	6/9/1999	1501.21	115.92	1385.29	110.59	1390.62	5.33
	9/16/1999	1501.21	111.82	1389.39	111.79	1389.42	0.03
	10/7/1999	1501.21	111.97	1389.24	111.69	1389.52	0.28
	11/11/1999	1501.21	112.53	1388.68	111.73	1389.48	0.80
	5/17/2000	1501.21	110.85	1390.36	NM	NM	NM
	12/29/2000	1501.21	103.00	1398.21	102.15	1399.06	0.85
	7/19/2001	1501.32	104.50	1396.82	102.23	1399.09	2.27
	9/20/2001	1501.32	106.10	1395.22	103.20	1398.12	2.90
	6/11/2002	1501.32	110.49	1390.83	108.45	1392.87	2.04
	10/2/2002	1501.32	109.56	1391.76	109.38	1391.94	0.18
	6/4/2003	1501.32	116.13	1385.19	109.19	1392.13	6.94
	6/23/2003	1501.32	110.33	1390.99	110.18	1391.14	0.15
	7/24/2003	1501.32	110.53	1390.79	110.42	1390.90	0.11
	8/28/2003	1501.32	110.92	1390.40	110.78	1390.54	0.14
	9/15/2003	1501.32	111.12	1390.20	110.97	1390.35	0.15
	10/3/2003	1501.32	110.96	1390.36	110.81	1390.51	0.15
	6/2/2004	1501.32	111.87	1389.45	110.99	1390.33	0.88
	6/3/2004	1501.32	111.20	1390.12	111.18	1390.14	0.02
	6/10/2004	1501.32	110.86	1390.46	NM	NM	NM
	7/8/2004	1501.32	110.47	1390.85	110.43	1390.89	0.04
	7/20/2004	1501.32	110.30	1391.02	110.22	1391.10	0.08
	8/12/2004	1501.32	110.03	1391.29	109.96	1391.36	0.07
	9/2/2004	1501.32	109.94	1391.38	109.86	1391.46	0.08
	10/19/2004	1501.32	110.16	1391.16	109.80	1391.52	0.36
	6/20/2005	1501.32	111.65	1389.67	109.40	1391.92	2.25
	6/28/2005	1501.32	109.51	1391.81	109.51	1391.81	0.00
	10/17/2005	1501.32	109.22	1392.10	109.21	1392.11	0.01
	5/31/2006	1501.32	113.28	1388.04	110.36	1390.96	2.92
	7/13/2006	1501.32	111.23	1390.09	110.77	1390.55	0.46
	10/5/2006	1501.32	110.02	1391.30	107.72	1393.60	2.30
	5/30/2007	1501.32	112.79	1388.53	108.09	1393.23	4.70
	7/18/2007	1501.32	109.81	1391.51	109.28	1392.04	0.53
	8/3/2007	1501.32	109.64	1391.68	109.62	1391.70	0.02
	8/17/2007	1501.32	109.53	1391.79	N/A	N/A	0.00
	9/13/2007	1501.32	109.71	1391.61	N/A	N/A	0.00
	9/21/2007	1501.32	109.65	1391.67	N/A	N/A	0.00
	10/5/2007	1501.32	109.71	1391.61	N/A	N/A	0.00
	10/12/2007	1501.32	109.38	1391.94	109.32	1392.00	0.06
	11/2/2007	1501.32	109.56	1391.76	109.20	1392.12	0.36

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-6 Continued	4/16/2008	1501.32	111.79	1389.53	109.10	1392.22	2.69
	6/2/2008	1501.32	112.23	1389.09	109.39	1391.93	2.84
	7/1/2008	1501.32	110.36	1390.96	110.30	1391.02	0.06
	7/18/2008	1501.32	110.42	1390.90	110.38	1390.94	0.04
	7/23/2008	1501.32	110.54	1390.78	110.51	1390.81	0.03
	8/12/2008	1501.32	110.10	1391.22	N/A	N/A	0.00
	9/3/2008	1501.32	110.00	1391.32	109.65	1391.67	0.35
	9/12/2008	1501.32	109.55	1391.77	109.15	1392.17	0.40
	10/8/2008	1501.32	108.43	1392.89	106.25	1395.07	2.18
	7/17/2009	1501.32	108.12	1393.20	104.46	1396.86	3.66
	8/7/2010	1501.32	112.59	1388.73	109.48	1391.84	3.11
	8/23/2010	1501.32	110.10	1391.22	109.44	1391.88	0.66
	9/25/2010	1501.32	108.49	1392.83	107.59	1393.73	0.90
	10/8/2010	1501.32	108.30	1393.02	107.40	1393.92	0.90
	10/12/2010	1501.32	107.78	1393.54	107.29	1394.03	0.49
	6/24/2011	1501.32	NM	NM	N/A	N/A	N/A
	7/18/2011	1501.32	NM	NM	N/A	N/A	N/A
	7/26/2011	1501.32	NM	NM	N/A	N/A	N/A
	8/8/2011	1501.32	NM	NM	N/A	N/A	N/A
	8/22/2011	1501.32	110.90	1390.42	108.09	1393.23	2.81
	9/9/2011	1501.32	108.91	1392.41	108.90	1392.42	0.01
	9/19/2011	1501.32	108.62	1392.70	108.61	1392.71	0.01
	10/6/2011	1501.32	108.53	1392.79	108.52	1392.80	0.01
	10/26/2011	1501.32	108.53	1392.79	108.52	1392.80	0.01
	6/5/2012	1501.32	110.09	1391.23	109.71	1391.61	0.38
	6/20/2012	1501.32	110.20	1391.12	109.82	1391.50	0.38
	7/5/2012	1501.32	110.12	1391.20	109.75	1391.57	0.37
	7/20/2012	1501.32	110.10	1391.22	109.62	1391.70	0.48
	8/3/2012	1501.32	110.15	1391.17	109.77	1391.55	0.38
	8/9/2012	1501.32	110.05	1391.27	109.69	1391.63	0.36
	8/23/2012	1501.32	109.62	1391.70	109.59	1391.73	0.03
	9/6/2012	1501.32	109.77	1391.55	109.75	1391.57	0.02
	9/21/2012	1501.32	109.71	1391.61	109.70	1391.62	0.01
	10/8/2012	1501.32	109.79	1391.53	109.78	1391.54	0.01
	10/22/2012	1501.32	109.83	1391.49	109.82	1391.50	0.01
	6/19/2013	1501.32	112.26	1389.06	110.96	1390.36	1.30
	6/27/2013	1501.32	112.41	1388.91	111.12	1390.20	1.29
	7/19/2013	1501.32	112.51	1388.81	111.20	1390.12	1.31
	8/2/2013	1501.32	111.41	1389.91	111.40	1389.92	0.01
	8/14/2013	1501.32	111.55	1389.77	111.55	1389.77	0.00
	8/29/2013	1501.32	111.62	1389.70	111.60	1389.72	0.02
	9/12/2013	1501.32	111.73	1389.59	111.72	1389.60	0.01
	10/4/2013	1501.32	111.77	1389.55	111.76	1389.56	0.01
	10/17/2013	1501.32	111.79	1389.53	111.78	1389.54	0.01
	6/3/2014	1501.32	113.11	1388.21	112.80	1388.52	0.31
	7/9/2014	1501.32	113.14	1388.18	112.90	1388.42	0.24
	7/28/2014	1501.32	113.07	1388.25	112.94	1388.38	0.13
	8/7/2014	1501.32	112.89	1388.43	112.80	1388.52	0.09
	8/26/2014	1501.32	112.68	1388.64	112.64	1388.68	0.04
	9/23/2014	1501.32	112.41	1388.91	112.40	1388.92	0.01
	10/9/2014	1501.32	112.01	1389.31	N/A	N/A	0.00
	6/4/2015	1501.32	NM	NM	NM	NM	NM
	7/3/2015	1501.32	NM	NM	NM	NM	NM
	7/14/2015	1501.32	111.65	1389.67	111.54	1389.78	0.11
	7/21/2015	1501.32	111.65	1389.67	111.56	1389.76	0.09
	8/12/2015	1501.32	111.94	1389.38	N/A	N/A	0.00
	8/25/2015	1501.32	111.85	1389.47	N/A	N/A	0.00
	9/13/2015	1501.32	111.91	1389.41	N/A	N/A	0.00
	10/1/2015	1501.32	112.07	1389.25	N/A	N/A	0.00
	6/1/2016	1501.32	111.69	1389.63	111.61	1389.71	0.08
	6/2/2016	1501.32	111.74	1389.58	111.66	1389.66	0.08
	6/7/2016	1501.32	NM	NM	NM	NM	NM
	6/11/2016	1501.32	111.95	1389.37	111.85	1389.47	0.10
	6/27/2016	1501.32	112.02	1389.30	112.01	1389.31	0.01
	7/10/2016	1501.32	112.05	1389.27	112.04	1389.28	0.01
	8/5/2016	1501.32	112.20	1389.12	112.18	1389.14	0.02
	8/18/2016	1501.32	112.27	1389.05	112.22	1389.10	0.05

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-6 Continued	9/5/2016	1501.32	112.22	1389.10	112.21	1389.11	0.01
	9/16/2016	1501.32	112.21	1389.11	N/A	N/A	0.00
	10/3/2016	1501.32	112.38	1388.94	112.37	1388.95	0.01
	10/13/2016	1501.32	112.26	1389.06	112.25	1389.07	0.01
	Well Decomissioned in 2017		NM	NM	NM	NM	NM
MW-7	11/21/1998	1498.75	112.83	1385.92	N/A	N/A	0.00
	12/1/1998	1498.75	112.95	1385.80	N/A	N/A	0.00
	9/16/1999	1498.75	116.86	1381.89	N/A	N/A	0.00
	11/11/1999	1498.75	116.87	1381.88	N/A	N/A	0.00
	5/17/2000	1498.75	116.55	1382.20	N/A	N/A	0.00
	7/14/2000	1498.75	116.56	1382.19	N/A	N/A	0.00
	3/27/2001	1502.44	NM	NM	N/A	N/A	0.00
	7/12/2001	1502.44	103.82	1398.62	N/A	N/A	0.00
	9/21/2001	1502.44	112.66	1389.78	N/A	N/A	0.00
	11/19/2001	1502.44	113.53	1388.91	N/A	N/A	0.00
	6/12/2002	1502.44	115.12	1387.32	N/A	N/A	0.00
	10/4/2002	1502.44	114.77	1387.67	N/A	N/A	0.00
	6/24/2003	1502.44	114.71	1387.73	N/A	N/A	0.00
	10/1/2003	1502.44	114.99	1387.45	N/A	N/A	0.00
	6/11/2004	1502.44	114.88	1387.56	N/A	N/A	0.00
	10/18/2004	1502.44	114.50	1387.94	N/A	N/A	0.00
	6/27/2005	1502.44	114.26	1388.18	N/A	N/A	0.00
	10/17/2005	1502.44	114.04	1388.40	N/A	N/A	0.00
	6/2/2006	1502.44	114.73	1387.71	N/A	N/A	0.00
	10/5/2006	1502.44	113.52	1388.92	N/A	N/A	0.00
	7/17/2007	1502.44	114.06	1388.38	N/A	N/A	0.00
	10/4/2007	1502.44	114.37	1388.07	N/A	N/A	0.00
	7/24/2008	1502.44	114.76	1387.68	N/A	N/A	0.00
	7/17/2009	1502.44	111.38	1391.06	N/A	N/A	0.00
	8/11/2010	1502.44	115.50	1386.94	N/A	N/A	0.00
	9/8/2011	1502.44	115.18	1387.26	N/A	N/A	0.00
	7/20/2012	1502.44	115.09	1387.35	N/A	N/A	0.00
	8/22/2013	1502.44	115.75	1386.69	N/A	N/A	0.00
	9/19/2013	1502.44	115.69	1386.75	N/A	N/A	0.00
	6/5/2014	1502.44	116.02	1386.42	N/A	N/A	0.00
	7/15/2015	1502.44	115.44	1387.00	N/A	N/A	0.00
	6/6/2016	1502.44	114.00	1388.44	N/A	N/A	0.00
	6/7/2017	1502.44	114.97	1387.47	N/A	N/A	0.00
	5/30/2019	1502.44	114.81	1387.63	N/A	N/A	0.00
	6/1/2021	1502.44	112.57	1389.87	N/A	N/A	0.00
MW-8	11/22/1998	1498.64	113.34	1385.30	N/A	N/A	0.00
	12/1/1998	1498.64	113.67	1384.97	N/A	N/A	0.00
	6/9/1999	1498.64	113.98	1384.66	N/A	N/A	0.00
	9/17/1999	1498.64	114.52	1384.12	N/A	N/A	0.00
	5/17/2000	1498.64	115.02	1383.62	N/A	N/A	0.00
	7/14/2000	1498.64	115.24	1383.40	N/A	N/A	0.00
	10/13/2000	1498.64	112.60	1386.04	N/A	N/A	0.00
	3/27/2001	1498.37	NM	NM	N/A	N/A	0.00
	7/12/2001	1498.37	99.45	1398.92	N/A	N/A	0.00
	9/21/2001	1498.37	100.39	1397.98	N/A	N/A	0.00
	11/19/2001	1498.37	NM	NM	N/A	N/A	0.00
	6/12/2002	1498.37	106.21	1392.16	N/A	N/A	0.00
	10/4/2002	1498.37	108.68	1389.69	N/A	N/A	0.00
	6/25/2003	1498.37	114.64	1383.73	N/A	N/A	0.00
	10/1/2003	1498.37	114.77	1383.60	N/A	N/A	0.00
	6/11/2004	1498.37	115.16	1383.21	N/A	N/A	0.00
	10/18/2004	1498.37	115.28	1383.09	N/A	N/A	0.00
	6/27/2005	1498.37	114.49	1383.88	N/A	N/A	0.00
	10/16/2005	1498.37	114.77	1383.60	N/A	N/A	0.00
	6/2/2006	1498.37	NM	NM	N/A	N/A	0.00
	10/5/2006	1498.37	113.55	1384.82	N/A	N/A	0.00
	7/17/2007	1498.37	114.67	1383.70	N/A	N/A	0.00
	10/4/2007	1498.37	114.70	1383.67	N/A	N/A	0.00
	7/24/2008	1498.37	114.89	1383.48	N/A	N/A	0.00
	7/18/2009	1498.37	101.56	1396.81	N/A	N/A	0.00
	8/11/2010	1498.37	109.79	1388.58	N/A	N/A	0.00
	9/8/2011	1498.37	110.10	1388.27	N/A	N/A	0.00

Table 1 - Groundwater and Free Product Elevations
PS09 Mainline Turbine Sump

Well Name	Date	Well Elevation (feet above MSL)[A]	Depth to Groundwater (feet)	Groundwater Elevation[B] (feet above MSL)	Depth to Free Product (feet)	Free Product Elevation (feet above MSL)	Apparent Free Product Thickness (feet)
MW-8 Continued	7/20/2012	1498.37	111.38	1386.99	N/A	N/A	0.00
	8/22/2013	1498.37	114.46	1383.91	N/A	N/A	0.00
	9/19/2013	1498.37	114.67	1383.70	N/A	N/A	0.00
	6/5/2014	1498.37	114.89	1383.48	N/A	N/A	0.00
	7/15/2015	1498.37	114.17	1384.20	N/A	N/A	0.00
	6/7/2016	1498.37	114.60	1383.77	N/A	N/A	0.00
	6/7/2017	1498.37	115.31	1383.06	N/A	N/A	0.00
	5/30/2019	1498.37	113.38	1384.99	N/A	N/A	0.00
	6/1/2021	1498.37	101.12	1397.25	N/A	N/A	1.00
MW-10	12/1/1998	1501.01	110.61	1390.40	N/A	N/A	0.00
	6/9/1999	1501.01	111.12	1389.89	N/A	N/A	0.00
	9/16/1999	1501.01	111.49	1389.52	N/A	N/A	0.00
	11/11/1999	1501.01	111.62	1389.39	N/A	N/A	0.00
	5/17/2000	1501.01	110.53	1390.48	N/A	N/A	0.00
	7/16/2000	1501.01	110.19	1390.82	N/A	N/A	0.00
	10/11/2000	1501.01	108.60	1392.41	N/A	N/A	0.00
	3/27/2001	1501.01	101.05	1399.96	N/A	N/A	0.00
	7/12/2001	1501.01	102.54	1398.47	N/A	N/A	0.00
	9/20/2001	1501.01	103.50	1397.51	N/A	N/A	0.00
	11/19/2001	1501.01	104.71	1396.30	N/A	N/A	0.00
	6/12/2002	1501.01	108.42	1392.59	N/A	N/A	0.00
	10/3/2002	1501.01	108.82	1392.19	N/A	N/A	0.00
	6/24/2003	1501.01	109.67	1391.34	N/A	N/A	0.00
	10/2/2003	1501.01	110.26	1390.75	N/A	N/A	0.00
	6/10/2004	1501.01	110.33	1390.68	N/A	N/A	0.00
	10/19/2004	1501.01	109.21	1391.80	N/A	N/A	0.00
	6/28/2005	1501.01	109.02	1391.99	N/A	N/A	0.00
	10/16/2005	1501.01	108.80	1392.21	N/A	N/A	0.00
	6/1/2006	1501.01	110.41	1390.60	N/A	N/A	0.00
	10/6/2006	1501.01	107.60	1393.41	N/A	N/A	0.00
	7/17/2007	1501.01	108.80	1392.21	N/A	N/A	0.00
	10/4/2007	1501.01	108.70	1392.31	N/A	N/A	0.00
	7/24/2008	1501.01	110.13	1390.88	N/A	N/A	0.00
	7/17/2009	1501.01	104.74	1396.27	N/A	N/A	0.00
	8/12/2010	1501.01	109.47	1391.54	N/A	N/A	0.00
	9/8/2011	1501.01	102.88	1398.13	N/A	N/A	0.00
	7/20/2012	1501.01	109.20	1391.81	N/A	N/A	0.00
	8/22/2013	1501.01	111.10	1389.91	N/A	N/A	0.00
	9/19/2013	1501.01	111.23	1389.78	N/A	N/A	0.00
	6/3/2014	1501.01	112.44	1388.57	N/A	N/A	0.00
	7/15/2015	1501.01	111.30	1389.71	N/A	N/A	0.00
	6/7/2016	1501.01	111.42	1389.59	N/A	N/A	0.00
	6/6/2017	1501.01	112.50	1388.51	N/A	N/A	0.00
	5/30/2019	1501.01	109.89	1391.12	N/A	N/A	0.00
	6/1/2021	1501.01	104.02	1396.99	N/A	N/A	0.00

Notes:

A 2001 and later elevation data based on December 2001 survey

B Recovery well groundwater elevations have not been corrected to account for presence of free product

Abbreviations:

MSL mean sea level

N/A not applicable; no measurable free product

NM not measured

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
1998 to 2010 Maximum Apparent Thickness[A]	11/22/1998	--	N/A	114.54	114.73	**0.19**
	10/7/1999	--	N/A	115.48	116.71	**1.23**
	12/28/2000	--	N/A	104.80	112.00	**7.20**
	7/19/2001	--	N/A	101.92	106.40	**4.48**
	6/10/2002	--	N/A	108.56	108.90	**0.34**
	6/3/2003	--	N/A	110.12	111.07	**0.95**
	6/2/2004	--	N/A	110.99	111.89	**0.90**
	5/31/2006	--	N/A	110.70	111.41	**0.71**
	6/2/2008	--	N/A	109.80	110.22	**0.42**
	7/17/2009	--	N/A	104.48	108.36	**3.88**
	10/8/2010	--	N/A	107.43	108.25	**0.82**
2011	6/24/2011	Initial Measurement	N/A	107.94	108.94	1.00
		Deployment 1	0.1875	108.03	108.3	0.27
		Deployment 2	0.025	108.03	108.25	0.22
		Deployment 3	0.125	108.08	108.1	0.02
	7/18/2011	Initial Measurement	N/A	108.34	109.02	**0.68**
		Deployment 1	0.0625	108.39	108.61	0.22
		Deployment 2	0.125	108.41	108.44	0.03
	7/26/2011	Initial Measurement	N/A	108.45	108.64	0.19
		Deployment 1	sheen	108.5	108.53	0.03
	8/8/2011	Initial Measurement	0.0825	108.69	108.75	0.06
		Deployment 1	0.0125	108.7	108.71	0.01
	8/22/2011	Initial Measurement	0.0625	108.53	108.54	0.01
	9/9/2011	Initial Measurement	0.0625	108.84	108.86	0.02
	9/19/2011	Initial Measurement	sheen	108.6	108.61	0.01
	10/6/2011	Initial Measurement	sheen	108.51	108.52	0.01
	10/26/2011	Initial Measurement	0.025	108.56	108.57	0.01
2012	8/9/2012	Initial Measurement	N/A	109.70	110.06	**0.36**
	8/23/2012	Initial Measurement	0.0625	109.58	109.78	0.2
	9/6/2012	Initial Measurement	sheen	109.75	109.90	0.15
		Deploy 2" Rigid Sorbent	0.162	109.75	109.90	0.15
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	109.78	109.80	0.02
	9/21/2012	Initial Measurement	0.031	109.69	109.83	0.14
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.081	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.081	109.70	109.73	0.03
	10/8/2012	Initial Measurement	0.005	109.75	109.88	0.13
		Deploy 2" Rigid Sorbent	0.162	NM	NM	NM
		Deploy 2" Rigid Sorbent	0.162	109.78	109.81	0.03
		Deploy 2" Rigid Sorbent	0.162	109.80	109.81	0.01
	10/22/2012	Initial Measurement	0.005	109.78	109.89	0.11
		Deploy 2" Rigid Sorbent	0.162	109.82	109.83	0.01
2013	6/19/2013	Frozen	N/A[B]	NM	NM	NM
	6/27/2013	Frozen	N/A[B]	NM	NM	NM
	7/19/2013	Frozen	N/A[B]	NM	NM	NM
	8/2/2013	Frozen	N/A[B]	NM	NM	NM
	8/14/2013	Frozen	N/A[B]	NM	NM	NM
	8/29/2013	Initial Measurement	N/A	111.41	112.62	**1.21**
		2" SoakEase deployment 1	0.17	111.44	112.45	1.01
		2" SoakEase deployment 2	0.17	111.45	112.40	0.95
		2" SoakEase deployment 3	0.25	111.49	112.32	0.83
		2" SoakEase deployment 4	0.25	111.50	112.20	0.70
		2" SoakEase (2 socks)	0.12	111.52	112.16	0.64
		1.66" Product bailer	0.06	NM	NM	NM
		2" SoakEase (2 socks)	0.12	111.56	112.04	0.48
		2" SoakEase (2 socks)	0.12	111.55	111.95	0.40
	9/12/2013	Initial Measurement	0.00	111.60	112.39	0.79
		2" SoakEase deployment 1	0.12	111.62	112.24	0.62
		2" SoakEase deployment 2	0.25	111.64	112.15	0.51
		2" SoakEase deployment 3	0.25	111.65	112.10	0.45
		2" SoakEase deployment 4	0.25	111.66	112.04	0.38
		2" SoakEase deployment 5	0.25	111.67	112.04	0.37
	10/4/2013	Initial Measurement	0.25	111.69	112.43	0.74
		2" SoakEase deployments 1-2	0.50	111.73	112.23	0.50
		2" SoakEase deployments 3-4	0.50	111.74	112.15	0.41
		2" SoakEase deployments 5-6	0.50	111.78	111.96	0.18
		2" SoakEase deployments 7-8	0.50	111.79	111.88	0.09
		2" SoakEase deployments 9-10	0.50	111.79	111.80	0.01
	10/17/2013	Initial Measurement	0.12	111.68	112.01	0.33
		2" SoakEase deployment 1	0.12	111.72	111.84	0.12
		2" SoakEase deployment 2	0.25	111.74	111.80	0.06
		2" SoakEase deployment 3	0.06	111.74	111.76	0.02
2014	5/8/2014	Initial Measurement	N/A[B]	112.43	114.15	**1.72**
	6/3/2014	Initial Measurement	N/A[B]	112.57	114.28	1.71

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2014 Continued	6/4/2014[D]	Initial Measurement	N/A	112.60	114.32	1.72
		Submersible pump	1.50	112.83	112.96	0.13
		2" SoakEase deployment 1	0.20	112.81	113.12	0.31
		2" SoakEase deployment 2	0.13	112.80	113.10	0.30
		2" SoakEase deployment 3	0.07	112.83	113.00	0.17
		2" SoakEase deployment 4	0.03	112.83	112.96	0.13
	6/5/2014[D]	Final Measurement	N/A	112.73	113.19	0.46
	7/9/2014	Initial Measurement	N/A	112.81	113.80	0.99
		1.66" Product bailer	0.38	112.88	113.35	0.47
	7/28/2014	Initial Measurement	N/A	112.85	113.63	0.78
		1.66" Product bailer	0.38	112.91	113.18	0.27
		2" SoakEase deployment 1	0.15	112.93	113.07	0.14
		2" SoakEase deployment 2	0.15	112.94	112.96	0.02
	8/7/2014	Initial Measurement	N/A	112.74	113.55	0.81
		1.66" Product bailer	0.20	112.80	113.13	0.33
	8/26/2014	Initial Measurement	N/A	112.53	113.48	0.95
		1.66" Product bailer	0.40	112.62	113.05	0.43
		2" SoakEase deployment 1	0.10	112.68	112.69	0.01
	9/23/2014	Initial Measurement	N/A	112.29	112.93	0.64
		1.66" Product bailer	0.25	112.32	112.72	0.40
		2" SoakEase (3 socks)	0.25	112.38	112.39	0.01
	10/9/2014	Initial Measurement	N/A	112.00	112.43	0.43
		2" SoakEase (3 socks)	0.55[C]	112.01	112.43	0.42
2015	6/4/2015	Initial Measurement	N/A[B]	N/A	N/A	N/A
	7/3/2015	Initial Measurement	N/A[B]	N/A	N/A	N/A
	7/14/2015	Initial Measurement	N/A	111.48	112.06	**0.58**
	7/22/2015[D]	Initial Measurement	N/A	111.44	111.92	0.48
		1.66" Product bailer	0.26	111.43	111.70	0.27
		2" SoakEase (2 socks)		111.43	111.72	0.29
	8/12/2015	Initial Measurement[C]	N/A	111.72	112.14	0.42
		1.66" Product bailer	0.26	111.76	111.99	0.23
	8/25/2015	Initial Measurement[C]	0.12	111.82	112.11	0.29
		2" SoakEase (2 socks)	0.13	111.82	111.84	0.02
	9/13/2015	Initial Measurement[C]	N/A	111.82	112.11	0.29
		2" SoakEase (2 socks)	0.21	111.82	111.84	0.02
	10/1/2015	Initial Measurement[C]	N/A	112.08	112.28	0.20
		1.66" Product bailer	0.1	NM	NM	NM
		2" Soakease (2 socks)	0.25	NM	NM	NM
2016	6/1/2016	Frozen	N/A[B]	NM	NM	NM
	6/2/2016	Initial Measurement	N/A	111.64	112.23	0.59
	6/7/2016	1.66" Product bailer	0.14	111.78	112.54	**0.76**
	6/11/2016	Initial 2" SoakEase Recovery[C]	0.08	111.78	112.27	0.49
		2" Soakease (4 socks)	0.50	111.85	111.86	0.01
	6/27/2016	Initial 2" SoakEase Recovery[C]	0.13	111.93	112.25	0.32
		2" Soakease (2 socks)	0.25	112.01	112.14	0.13
	7/10/2016	Initial Measurement	N/A	112.03	112.24	0.21
		2" Soakease (2 socks)	0.17	112.05	112.09	0.04
	8/5/2016	Initial 2" SoakEase Recovery[C]	0.20	112.19	112.26	0.07
		2" Soakease (1 sock)	0.06	112.19	112.24	0.05
	8/18/2016	Initial 2" SoakEase Recovery[C]	0.17	112.24	112.34	0.10
		2" Soakease (1 sock)	0.08	112.25	112.26	0.01
	9/5/2016	Initial 2" SoakEase Recovery[C]	0.13	112.18	112.29	0.11
		1.66" Product bailer	0.09	112.20	112.21	0.01
	9/16/2016	Initial Measurement	N/A	112.22	112.33	0.11
		2" Soakease (2 socks)	0.15	112.22	112.23	0.01
	10/3/2016	Initial Measurement	N/A	112.33	112.59	0.26
		1.66" Product bailer	0.06	112.36	112.49	0.13
		2" Soakease (2 socks)	0.17	NM	112.39	0.00
	10/13/2016	Initial Measurement	N/A	112.25	112.42	0.17
		2" Soakease (2 socks)	0.26	112.28	112.28	0.00
2017	5/25/2017	Frozen	N/A[B]	NM	NM	NM
	5/26/2017	Initial Measurement	N/A	112.78	114.03	1.25
	6/5/2017 to 6/7/2017	Initial Measurement	N/A	112.76	114.17	**1.41**
		1.66" Product bailer	0.92	NM	NM	0.20
		1.66" Product bailer	0.26	NM	NM	NM
		2" Soakease (2 socks)	0.25	NM	NM	NM
		2" Soakease (1 sock)	0.06	112.96	113.11	0.15
	6/27/2017	Initial 2" SoakEase Recovery[C]	0.13	112.99	113.33	0.34
		2" Soakease (2 socks)	0.38	NM	113.01	NM
	7/24/2017	Initial 2" SoakEase Recovery[C]	0.13	113.14	113.43	0.29
		2" Soakease (3 socks)	0.44	113.17	113.20	0.03
	9/14/2017	Initial 2" SoakEase Recovery[C]	0.25	113.2	113.61	0.41
		1.66" Product bailer	0.08	NM	NM	NM
		2" Soakease (3 socks)	0.50	113.24	113.29	0.05
	9/28/2017	Initial 2" SoakEase Recovery[C]	0.25	113.16	113.45	0.29
		2" Soakease (3 socks)	0.18	113.10	113.14	0.04

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2017 Continued	10/19/2017	Initial 2" SoakEase Recovery[C]	0.13	113.16	113.35	0.19
		2" Soakease (3 socks)	0.25	113.18	113.19	0.01
2018	6/2/2018 to 6/4/2018	Initial Measurement	N/A	113.31	114.97	**1.66**
		1.66" Product bailer	1.45	113.45	113.82	0.37
		2" Soakease (3 socks)	0.31	113.50	113.69	0.19
	6/8/2018	Initial 2" SoakEase Recovery[C]	0.17	113.55	113.84	0.29
		1.66" Product bailer	0.02	NM	NM	NM
		2" Soakease (3 socks)	0.23	113.56	113.64	0.08
	6/25/2018	1.66" Product bailer	0.33	NM	NM	NM
		2" Soakease (3 socks)	0.17	NM	NM	NM
	7/19/2018	Initial Measurement	N/A	113.52	113.77	0.25
		1.66" Product bailer	0.13	NM	NM	NM
		2" Soakease (3 socks)	0.11	113.53	113.64	0.11
	8/2/2018	Initial Measurement	N/A	113.31	113.59	0.28
		1.66" Product bailer	0.26	NM	NM	NM
		2" Soakease (3 socks)	0.25	113.34	113.45	0.11
	8/16/2018	Initial Measurement	N/A	113.29	113.99	0.70
		1.66" Product bailer	0.20	NM	NM	NM
		2" Soakease (8 socks)	0.96	113.28	113.41	0.13
	9/4/2018	Initial Measurement	N/A	113.22	113.90	0.68
		1.66" Product bailer	0.26	NM	NM	NM
		2" Soakease (10 socks)	0.78	113.30	113.39	0.09
	9/18/2018	Initial Measurement	N/A	113.10	113.31	0.21
		1.66" Product bailer	0.06	NM	NM	NM
		2" Soakease (3 socks)	0.12	113.14	113.15	0.01
	10/1/2018	Initial Measurement	N/A	112.82	113.14	0.32
		2" Soakease (2 socks)	0.20	112.88	112.90	0.02
2019	5/24/2019	Initial Measurement	N/A[B]	110.55	110.80	**0.25**
	5/31/2019	Initial Measurement	N/A	110.45	110.68	0.23
		2" Pig (5 socks)	0.50	ND	110.49	0.00
	6/14/2019	Initial Measurement	N/A	110.55	110.67	0.12
		2" Pig (4 socks)	0.26	110.56	110.57	0.01
	6/28/2019	Initial Measurement	N/A	110.77	110.94	0.17
		2" Soakease (5 socks)	0.53	ND	110.70	0.00
	7/12/2019	Initial Measurement	N/A	110.79	110.95	0.16
		2" Soakease (5 socks)	0.38	ND	110.82	0.00
	7/31/2019	Initial Measurement	N/A	110.94	111.10	0.16
		2" Soakease (4 socks)	0.38	ND	110.95	0.00
	8/9/2019	Initial Measurement	N/A	111.04	111.20	0.16
		2" Soakease (3 socks)	0.33	ND	111.07	0.00
	8/30/2019	Initial Measurement	N/A	111.19	111.35	0.16
		2" Soakease (3 socks)	0.25	ND	111.20	0.00
	9/13/2019	Initial Measurement	N/A	110.98	111.10	0.12
		2" Soakease (2 socks)	0.25	ND	111.03	0.00
	9/27/2019	Initial Measurement	N/A	111.30	111.50	0.20
		2" Soakease (2 socks)	0.19	ND	111.33	0.00
	10/14/2019	Initial Measurement	N/A	110.93	111.00	0.07
		2" Soakease (2 socks)	0.08	ND	110.94	0.00
	10/30/2019	Initial Measurement	N/A	110.77	110.81	0.04
		2" Soakease (2 socks)	0.06	ND	110.77	0.00
2020	7/1/2020	Well Thawing Trip	N/A[B]	NM[B]	NM[B]	NM[B]
	7/29/2020	Initial Measurement	N/A	104.91	105.52	**0.61**
		2" Soakease (5 socks)	1.09	104.98	105.00	0.02
	8/11/2020	Initial Measurement	N/A	104.58	104.88	0.30
		2" Soakease (4 socks)	0.59	ND	104.60	0.00
	8/24/2020	Initial Measurement	N/A	104.04	104.28	0.24
		2" Soakease (3 socks)	0.44	ND	104.07	0.00
	9/15/2020	Initial Measurement	N/A	103.55	103.80	0.25
		2" Soakease (3 socks)	0.53	ND	103.58	0.00
	9/29/2020	Initial Measurement	N/A	103.91	104.20	0.29
		2" Soakease (3 socks)	0.38	ND	103.99	0.00
	10/14/2020	Initial Measurement	N/A	103.68	103.97	0.29
		2" Soakease (3 socks)	0.40	ND	103.78	0.00
	11/11/2020	Initial Measurement	N/A	103.00	103.15	0.15
		2" Soakease (3 socks)	0.50	ND	103.03	0.00
2021	6/15/2021	Initial Measurement	N/A	104.58	105.55	**0.97**
		1.66" Product bailer	0.25	NM	NM	NM
		2" Soakease (6 socks)	0.96	104.70	104.71	0.01
	7/9/2021	Initial Measurement	N/A	104.97	105.20	0.23
		2" Soakease (4 socks)	0.50	ND	104.99	0.00
	7/21/2021	Initial Measurement	N/A	105.06	105.17	0.11
		2" Soakease (3 socks)	0.44	ND	105.05	0.00
	8/12/2021	Initial Measurement	N/A	105.43	105.56	0.13
		2" Soakease (2 socks)	0.25	ND	105.45	0.00
	8/26/2021	Initial Measurement	N/A	105.65	105.80	0.15
		2" Soakease (3 socks)	0.31	ND	105.68	0.00
	10/1/2021	Initial Measurement	N/A	105.89	106.06	0.17
		2" Soakease (3 socks)	0.44	105.95	105.96	0.01

Table 2 - 1998-2022 MW-1 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal), Unadjusted	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2022	5/19/2022	Initial Measurement	N/A	NM	NM	NM
	6/7/2022	Initial Measurement	N/A	108.18	108.39	**0.21**
		2" Soakease (2 socks)	0.19	108.21	108.21	0.00
	7/8/2022	Initial Measurement	N/A	106.96	107.11	0.15
		2" Soakease (2 socks)	0.19	107.00	107.00	0.00
	7/26/2022	Initial Measurement	N/A	106.92	107.02	0.10
		2" Soakease (2 socks)	0.19	106.93	106.93	0.00
	8/16/2022	Initial Measurement	N/A	106.28	106.38	0.10
		2" Soakease (2 socks)	0.13	106.31	106.31	0.00
	8/25/2022	Initial Measurement	N/A	106.31	106.45	0.14
		2" Soakease (2 socks)	0.13	106.32	106.32	0.00
	9/8/2022	Initial Measurement	N/A	106.10	106.15	0.05
		2" Soakease (2 socks)	0.00	106.12	106.12	0.00
	9/20/2022	Initial Measurement	N/A	106.37	106.50	0.13
		2" Soakease (2 socks)	0.13	106.36	106.38	0.02
	10/17/2022	Initial Measurement	N/A	106.16	106.25	0.09
		2" Soakease (5 socks)	0.00	106.18	106.18	0.00

Product Recovery Summary	Year	Gallons	Percent of 2011-2022 Total Recovered Volume
	1998-2010[A]	**N/A**	**N/A**
	2011	**0.8**	**2%**
	2012	**1.7**	**5%**
	2013	**8.2**	**24%**
	2014	**4.7**	**14%**
	2015	**1.3**	**4%**
	2016	**2.6**	**8%**
	2017	**4.2**	**12%**
	2018	**6.0**	**18%**
	2019 (Adjusted)[E]	**1.2**	**3%**
	2020 (Adjusted)[E]	**1.4**	**4%**
	2021 (Adjusted)[E]	**1.3**	**4%**
	2022 (Adjusted)[E]	**0.3**	**1%**
	Total 2011 to 2022	**33.7**	--

Notes:

0.01 BOLD values indicate the maximum measured product thickness for each year.

A Product recovery cannisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.

B Ice plug above product depth prevented canister from being deployed for recovery.

C Product measurement following removal of sorbent sock.

D Product measurements during baildown test.

E Total volume of recovered product from visual assessment of 2" Soak Ease™ 2" socks is corrected using correction factor of 0.36 based on results of wringing 2" socks in 2020.

Pig ® 2" down-well socks absorb approximately 0.13 gallon of product each

Soak Ease™ 2" down-well socks absorb approximately 0.25 gallon of product each

Soak Ease™ 4" down-well socks absorb approximately 0.75 gallon of product each

Abbreviations:

ft	feet	N/A	not applicable	ND	non detect
gal	gallons	NM	not measured		

Table 3 - 1998-2022 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
1998 to 2010 Maximum Apparent Thickness[A]	12/1/1998	--	--	110.83	111.62	**0.79**
	9/16/1999	--	--	111.51	113.56	**2.05**
	12/29/2000	--	--	100.90	109.20	**8.30**
	7/19/2001	--	--	101.30	109.30	**8.00**
	6/10/2002	--	--	108.53	109.60	**1.07**
	6/3/2003	--	--	110.10	110.85	**0.75**
	6/2/2004	--	--	110.94	111.72	**0.78**
	6/20/2005	--	--	109.40	111.65	**2.25**
	5/31/2006	--	--	110.64	111.15	**0.51**
	5/30/2007	--	--	108.72	108.94	**0.22**
	7/1/2008	--	--	110.27	110.49	**0.22**
	7/18/2009	--	--	104.42	108.25	**3.83**
	10/12/2010	--	--	107.12	108.12	**1.00**
2011	6/24/2011	Frozen	N/A	NM	NM	N/A
	7/18/2011	Frozen	N/A	NM	NM	N/A
	7/26/2011	Frozen	N/A	NM	NM	N/A
	8/8/2011	Initial Measurement	N/A	108.61	108.8	**0.19**
		Deployment 1	0.75	108.63	108.75	0.12
		Deployment 2	0.75	108.64	108.7	0.06
		Deployment 3	0.25	108.63	108.66	0.03
	8/22/2011	Initial Measurement	N/A	108.42	108.6	0.18
		Deployment 1	0.33	108.45	108.53	0.08
		Deployment 2	0.33	108.46	108.49	0.03
	9/9/2011	Initial Measurement	1	108.8	108.86	0.06
		Deployment 1	0.75	108.84	108.87	0.03
	9/19/2011	Initial Measurement	1	108.54	108.61	0.07
		Deployment 1	0.5	108.55	108.56	0.01
	10/6/2011	Initial Measurement	sheen	108.44	108.46	0.02
	10/26/2011	Initial Measurement	1	108.4	108.43	0.03
2012	6/5/2012	Initial Measurement	N/A[B]	109.68	110.05	**0.37**
	6/20/2012	Initial Measurement	N/A[B]	109.77	110.13	0.36
	7/5/2012	Initial Measurement	N/A[B]	109.70	110.04	0.34
	7/20/2012	Initial Measurement	N/A	109.67	109.94	0.27
		Deployment 1	0.00	109.63	109.93	0.3
	8/3/2012	Initial Measurement	0.00	109.71	110.03	0.32
		Deployment 1	0.00	109.71	110.03	0.32
	8/9/2012	Initial Measurement	1	109.68	109.92	0.24
		Deployment 1	0.00	109.68	109.92	0.24
	8/23/2012	Initial Measurement	1	109.51	109.71	0.2
	9/6/2012	Initial Measurement	1	109.67	109.87	0.2
	9/21/2012	Initial Measurement	1	109.59	109.79	0.2
	10/8/2012	Initial Measurement	1	109.66	109.85	0.19
	10/22/2012	Initial Measurement	1	109.75	109.85	0.1
2013	6/19/2013	Initial Measurement	N/A[B]	111.00	111.66	0.66
	6/27/2013	Initial Measurement	N/A[B]	111.10	112.07	**0.97**
	7/19/2013	Frozen	N/A[B]	NM	NM	NM
	8/2/2013	Initial Measurement	N/A	111.22	111.94	0.72
	8/14/2013	Initial Measurement	0.03	111.52	112.38	0.86
	8/29/2013	Initial Measurement	0.01	111.62	112.50	0.88
		2" SoakEase (3 socks)	0.75	111.50	112.21	0.71
		2" SoakEase (4 socks)	0.75	111.55	112.02	0.47
		2" SoakEase (3 socks)	0.75	111.56	111.95	0.39
		2" SoakEase (3 socks)	0.75	111.58	111.85	0.27
		2" SoakEase (3 socks)	0.75	111.62	111.77	0.15
		2" SoakEase (2 socks)	0.50	111.60	111.71	0.11
	9/12/2013	Initial Measurement	0.50	111.55	112.48	0.93
		2" SoakEase (3 socks)	0.75	111.57	112.33	0.76
		2" SoakEase (3 socks)	0.75	111.61	112.18	0.57
		2" SoakEase (3 socks)	0.75	111.64	112.01	0.37
		2" SoakEase (3 socks)	0.75	111.67	111.85	0.18
		2" SoakEase (3 socks)	0.75	111.72	111.81	0.09
	10/4/2013	Initial Measurement	0.75	111.61	112.50	0.89
		4" SoakEase (2 socks)	1.50	111.76	112.22	0.46
		4" SoakEase (2 socks)	1.50	111.80	112.11	0.31
		4" SoakEase (2 socks)	1.50	111.75	112.00	0.25
		4" SoakEase (2 socks)	1.50	111.80	111.90	0.10
		4" SoakEase (2 socks)	1.50	111.90	111.92	0.02
	10/17/2013	Initial Measurement	0.75	111.66	112.40	0.74
		4" SoakEase (1 sock)	0.75	111.74	112.36	0.62
		2" SoakEase (3 socks)	0.75	111.79	112.19	0.40
		2" SoakEase (3 socks)	0.75	111.85	112.05	0.20
		2" SoakEase (2 socks)	0.34	111.80	111.95	0.15

Table 3 - 1998-2022 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2014	5/8/2014	Initial Measurement	N/A	112.32	114.30	1.98
	6/3/2014	Initial Measurement	N/A[B]	112.48	114.43	1.95
	6/4/2014[D]	Initial Measurement	N/A	112.48	114.45	1.97
		Submersible pump	3.49	112.41	113.35	0.94
		4" SoakEase (1 sock)	0.26	112.90	112.92	0.02
	6/5/2014[D]	Final Measurement	N/A	112.59	113.24	0.65
	7/9/2014	Initial Measurement	N/A[B]	112.61	114.67	**2.06**
	7/28/2014	Initial Measurement	N/A	112.64	114.21	1.57
		3.33" Product bailer	2.25	112.95	113.52	0.57
		4" SoakEase (1 sock)	0.66	112.92	113.04	0.12
	8/7/2014	Initial Measurement	N/A	112.59	113.87	1.28
		3.33" Product bailer	1.90	112.75	113.04	0.29
	8/26/2014	Initial Measurement	N/A	112.52	113.02	0.50
		3.33" Product bailer	1.00	112.64	112.77	0.13
		4" SoakEase (1 sock)	0.10	112.68	112.70	0.02
	9/23/2014	Initial Measurement	N/A	112.29	112.54	0.25
		3.33" Product bailer	0.33	112.34	112.46	0.12
		4" SoakEase (1 sock)	0.07	112.43	112.44	0.01
	10/9/2014	Initial Measurement	N/A	111.94	112.23	0.29
		3.33" Product bailer	0.5	112.00	112.05	0.05
		Initial Measurement	N/A	112.01	112.01	0.00
		4" SoakEase (2 socks)	0.25	112.02	112.03	0.01
2015	6/4/2015	Initial Measurement	N/A[B]	111.04	111.70	0.66
	7/3/2015	Initial Measurement	N/A[B]	N/A	N/A	N/A
		4" SoakEase (1 sock)	0.16[C]	N/A	N/A	N/A
	7/14/2015	Initial Measurement	N/A	111.31	112.44	1.13
	7/21/2015[D]	Initial Measurement	N/A	111.41	112.31	0.90
		Submersible pump	1.9	111.62	111.70	0.08
	8/12/2015	Initial Measurement[C]	0.5	111.60	112.82	1.22
		3.33" Product bailer	2.1	111.71	112.05	0.34
	8/25/2015	Initial Measurement[C]	0.5	111.57	112.68	1.11
		3.33" Product bailer, 4" SoakEase	2.0	111.21	111.84	0.63
	9/13/2015	Initial Measurement[C]	N/A	111.58	112.98	**1.40**
		3.33" Product bailer, 4" SoakEase	2.1	111.90	112.33	0.43
	10/1/2015	Initial Measurement[C]	N/A	111.79	113.22	1.43
		3.33" Product bailer, 4" SoakEase	4.25	112.11	112.18	0.07
2016	6/1/2016	Initial Measurement	N/A	111.46	112.20	0.74
	6/2/2016	Initial Measurement	N/A	111.50	112.43	0.93
	6/7/2016	Initial Measurement	N/A	111.58	113.06	**1.48**
	6/11/2016	Initial Measurement	N/A	111.60	112.85	1.25
		1.66" bailer, 4" SoakEase (3 socks)	1.60	NM	NM	NM
	6/27/2016	Initial 4" SoakEase Recovery[C]	0.26	111.81	113.05	1.24
		4" SoakEase (6 sock)	2.00	not recorded	not recorded	0.23
	7/10/2016	Initial 4" SoakEase Recovery[C]	0.26	111.89	113.00	1.11
		3.33" bailer, 4" SoakEase	2.05	111.97	112.38	0.41
	8/5/2016	Initial 4" SoakEase Recovery[C]	0.26	111.97	112.93	0.96
		3.33" bailer	2.20	NM	NM	NM
		4" SoakEase (1 sock)	0.40	111.26	111.49	0.23
	8/18/2016	Initial 4" SoakEase Recovery[C]	0.40	112.12	113.09	0.97
		3.33" bailer	1.50	NM	NM	NM
		4" SoakEase (1 sock)	0.40	112.28	112.48	0.20
	9/5/2016	Initial 4" SoakEase Recovery[C]	0.40	112.10	112.62	0.52
		4" SoakEase (1 sock)	0.40	NM	NM	NM
		3.33" bailer	0.31	112.14	112.33	0.19
	9/16/2016	Initial Measurement	N/A	112.09	112.49	0.40
		3.33" bailer	0.50	112.14	112.36	0.22
		4" SoakEase (2 socks)	0.30	112.22	112.25	0.03
	10/3/2016	Initial Measurement	N/A	112.25	112.56	0.31
		3.33" bailer	0.50	112.33	112.38	0.05
		4" SoakEase (1 sock)	0.10	112.39	112.39	0.00
	10/13/2016	Initial Measurement	N/A	112.17	112.38	0.21
		3.33" bailer	0.50	112.22	112.31	0.09
		4" SoakEase (1 sock)	0.26	112.26	112.26	0.00
2017	5/25/2017	Frozen	N/A[B]	NM	NM	NM
	5/26/2017	Initial Measurement	N/A	112.72	113.83	1.11
	6/5/2017 to 6/7/2017	Initial Measurement	N/A	112.70	114.03	**1.33**
		3.33" bailer	1.18	112.70	114.02	1.32
		4" SoakEase (1 sock)	0.25	NM	NM	NM
		4" SoakEase (1 sock)	0.25	112.89	113.22	0.33
	6/27/2017	Initial 4" SoakEase Recovery[C]	0.3	112.84	113.75	0.91
		3.33" bailer	1.58	NM	NM	NM
		4" SoakEase (2 socks)	1.50	113.08	113.12	0.04
	7/24/2017	Initial 4" SoakEase Recovery[C]	0.6	113.05	113.86	0.81
		3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (1 sock)	0.56	113.67	113.83	0.16

Table 3 - 1998-2022 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2017 Continued	9/14/2017	Initial 4" SoakEase Recovery[C]	0.38	113.12	114.02	0.90
		3.33" bailer	0.80	NM	NM	NM
		4" SoakEase (1 sock)	0.56	113.24	113.29	0.05
	9/28/2017	Initial Measurement	N/A	112.93	113.38	0.45
		3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (2 socks)	0.50	113.10	113.18	0.08
	10/19/2017	Initial 4" SoakEase Recovery[C]	0.25	113.05	113.48	0.43
		3.33" bailer	0.38	113.12	113.25	0.13
		4" SoakEase (1 sock)	0.06	113.14	113.16	0.02
2018	6/2/2018 to 6/4/2018	Initial Measurement	N/A	113.28	114.80	**1.52**
		3.33" bailer	1.45	NM	NM	NM
		4" SoakEase (3 socks)	0.56	113.44	113.74	0.30
	6/8/2018	Initial 2" SoakEase Recovery[C]	0.38	113.49	114.29	0.80
		3.33" bailer	0.50	NM	NM	NM
		4" SoakEase (6 socks)	0.93	113.55	113.63	0.08
	6/25/2018	3.33" bailer	1.00	NM	NM	NM
		4" SoakEase (4 socks)	0.50	NM	NM	NM
	7/19/2018	Initial Measurement	N/A	113.33	114.15	0.82
		3.33" bailer	0.86	NM	NM	NM
		4" SoakEase (4 socks)	0.68	113.55	113.63	0.08
	8/2/2018	Initial Measurement	N/A	113.16	113.67	0.51
		3.33" bailer	0.80	NM	NM	NM
		4" SoakEase (2 socks)	0.30	113.32	113.42	0.10
	8/16/2018	Initial Measurement	N/A	113.21	113.71	0.50
		3.33" bailer	0.53	NM	NM	NM
		4" SoakEase (4 socks)	0.55	113.36	113.42	0.06
	9/4/2018	Initial Measurement	N/A	113.11	113.55	0.44
		3.33" bailer	0.46	NM	NM	NM
		4" SoakEase (4 socks)	0.65	113.26	113.32	0.06
	9/18/2018	Initial Measurement	N/A	112.98	113.16	0.18
		3.33" bailer	0.25	NM	NM	NM
		4" SoakEase (2 socks)	0.25	113.04	113.05	0.01
	10/1/2018	Initial Measurement	N/A	112.72	112.85	0.13
		4" SoakEase (2 socks)	0.38	112.78	112.79	0.01
2019	5/24/2019	Initial Measurement	N/A[B]	110.45	110.78	0.33
	5/31/2019	Well Thawing Trip	N/A[B]	NM[B]	NM[B]	NM[B]
	6/14/2019	Initial Measurement	N/A	110.46	110.78	0.32
		4" SoakEase (4 socks)	1.62	110.48	110.62	0.14
	6/28/2019	Initial Measurement	N/A	110.65	111.03	0.38
		4" SoakEase (8 socks)	4.56	110.74	110.82	0.08
	7/12/2019	Initial Measurement	N/A	110.64	111.02	0.38
		4" SoakEase (7 socks)	3.75	110.78	110.81	0.03
	7/31/2019	Initial Measurement	N/A	110.80	111.20	0.40
		4" SoakEase (7 socks)	2.85	110.95	110.96	0.01
	8/9/2019	Initial Measurement	N/A	110.92	111.28	0.36
		4" SoakEase (6 socks)	2.63	111.11	111.16	0.05
	8/30/2019	Initial Measurement	N/A	111.07	111.47	0.40
		4" SoakEase (6 socks)	2.91	111.20	111.24	0.04
	9/13/2019	Initial Measurement	N/A	110.89	111.15	0.26
		4" SoakEase (3 socks)	0.94	ND	111.04	0.00
	9/27/2019	Initial Measurement	N/A	111.15	111.60	**0.45**
		4" SoakEase (4 socks)	2.03	111.39	111.42	0.03
	10/14/2009	Initial Measurement	N/A	110.84	111.03	0.19
		4" SoakEase (2 socks)	0.71	110.90	110.93	0.03
	10/30/2019	Initial Measurement	N/A	110.62	110.75	0.13
		4" SoakEase (2 socks)	0.56	ND	110.66	0.00
2020	7/1/2020	Initial Measurement	N/A[B]	106.24	106.54	0.30
		Well Thawing Trip	N/A[B]	NM[B]	NM[B]	NM[B]
	7/29/2020	Initial Measurement	N/A	104.70	106.02	1.32
		4" SoakEase (6 socks)	3.69	104.91	104.92	0.01
	8/11/2020	Initial Measurement	N/A	104.42	105.10	0.68
		4" SoakEase (3 socks)	1.69	104.53	104.54	0.01
	8/24/2020	Initial Measurement	N/A	103.98	104.51	0.53
		4" SoakEase (3 socks)	1.73	ND	104.03	0.00
	9/15/2020	Initial Measurement	N/A	103.34	104.29	0.95
		4" SoakEase (3 socks)	1.50	103.50	103.51	0.01
	9/29/2020	Initial Measurement	N/A	103.83	104.41	0.58
		4" SoakEase (3 socks)	1.60	ND	103.97	0.00
	10/14/2020	Initial Measurement	N/A	103.59	104.23	0.64
		4" SoakEase (3 socks)	1.20	ND	103.74	0.00
	11/11/2020	Initial Measurement	N/A	102.47	103.93	**1.46**
		4" SoakEase (3 socks)	1.88	ND	102.73	0.00

Table 3 - 1998-2022 MW-5 Summary of Product Gauging and Recovery
PS09 Mainline Turbine Sump

Year	Date	Description	Amount Recovered (gal)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
2021	6/15/2021	Initial Measurement	N/A	103.82	108.06	**4.24**
		3.33" Product bailer	5.00	NM	NM	NM
		4" SoakEase (5 socks)	2.25	104.55	104.57	0.02
	7/9/2021	Initial Measurement	N/A	104.20	107.58	3.38
		3.33" Product bailer	3.75	NM	NM	NM
		4" SoakEase (2 socks)	0.75	104.76	104.77	0.01
	7/21/2021	Initial Measurement	N/A	104.66	105.56	0.90
		4" SoakEase (2 socks)	0.75	ND	104.85	0.00
	8/12/2021	Initial Measurement	N/A	104.99	106.19	1.20
		4" SoakEase (4 socks)	1.69	ND	105.22	0.00
	8/26/2021	Initial Measurement	N/A	105.30	106.05	0.75
		4" SoakEase (3 socks)	0.94	105.44	105.45	0.01
	10/1/2021	Initial Measurement	N/A	105.35	106.94	1.59
		4" SoakEase (4 socks)	1.50	105.75	105.76	0.01
2022	5/19/2022	Initial Measurement	N/A	108.70	108.83	0.13
		4" Soakease (2 socks)	0.38	108.72	108.72	0.00
	6/7/2022	Initial Measurement	N/A	107.95	108.08	0.13
		4" Soakease (2 socks)	0.38	107.95	107.96	0.01
	7/8/2022	Initial Measurement	N/A	106.48	107.90	**1.42**
		4" Soakease (5 socks)	2.25	106.78	106.79	0.01
	7/26/2022	Initial Measurement	N/A	106.51	107.50	0.99
		4" Soakease (4 socks)	1.50	106.71	106.71	0.00
	8/16/2022	Initial Measurement	N/A	105.97	106.45	0.48
		4" Soakease (2 socks)	0.56	106.06	106.06	0.00
	8/25/2022	Initial Measurement	N/A	106.05	106.25	0.20
		4" Soakease (2 socks)	0.75	106.09	106.09	0.00
	9/8/2022	Initial Measurement	N/A	105.80	106.07	0.27
		4" Soakease (4 socks)	0.30	105.88	105.90	0.02
	9/20/2022	Initial Measurement	N/A	106.08	106.36	0.28
		4" Soakease (2 socks)	0.75	106.15	106.16	0.01
	10/17/2022	Initial Measurement	N/A	105.81	106.32	0.51
		4" Soakease (5 socks)	0.75	106.18	106.18	0.00

Product Recovery Summary	Year	Gallons	Percent of 2011-2022 Total Recovered Volume
	1998-2010[D]	**N/A**	**N/A**
	2011	**6.7**	**5%**
	2012	**6.0**	**5%**
	2013	**20.1**	**15%**
	2014	**10.8**	**8%**
	2015	**13.5**	**10%**
	2016	**14.6**	**11%**
	2017	**10.1**	**8%**
	2018	**11.0**	**8%**
	2019 (Adjusted)[E]	**13.5**	**10%**
	2020 (Adjusted)[E]	**8.0**	**6%**
	2021 (Adjusted)[E]	**13.5**	**10%**
	2022 (Adjusted)[E]	**4.6**	**3%**
	Total 2011 to 2022	**132.3**	--

Notes:

0.01 BOLD values indicate the maximum measured product thickness for each year.

A Product recovery cannisters were operated for recovery of product during this period, recovery volumes were not noted for individual wells.

B Ice plug above product depth prevented canister or sock from being deployed for recovery.

C Product measurement following removal of sorbent sock.

D Product measurements during baildown test.

E Total volume of recovered product from visual assessment of 4" Soak Ease™ socks is corrected using correction factor of 0.60 based on results of wringing 4" socks in 2020.

Notes Continued:

Soak Ease™ 2" down-well socks absorb approximately 0.25 gallon of product each

Soak Ease™ 4" down-well socks absorb approximately 0.75 gallon of product each

Abbreviations:

ft	feet	N/A	not applicable	ND	non detect
gal	gallons	NM	not measured		

Table 4 - 1998-2022 Annual Product Recovery Summary
PS09 Mainline Turbine Sump

	Period	Volume Recovered (gallons)	Percent of Total Recovered Volume[A] (gallons)	Number of Recovery Events	Recovery Volume per Event (gallons)
Product Recovery Summary	1998-2010[B]	1,085	86%	N/A	N/A
	2011[C]	11.2	0.9%	4	2.8
	2012[D]	8.7	0.7%	4	2.2
	2013[D]	30.8	2.4%	4	7.7
	2014[E, F]	16.2	1.3%	7	2.3
	2015[E, F]	15.1	1.2%	5	3.0
	2016[E, F]	17.8	1.4%	10	1.8
	2017[E, F]	14.3	1.1%	6	2.4
	2018[E, F]	17.0	1.3%	9	1.9
	2019[G, H]	14.7	1.2%	11	1.3
	2020[H, I]	9.4	0.7%	7	1.3
	2021[E, H]	14.8	1.2%	6	2.5
	2022[H, I]	4.9	0.4%	9	0.5
	Grand Total	**1,260**	**100%**	**82**	**--**

Notes:

-- Not applicable

A Total annual recovery for Monitoring wells MW-1, MW-5, and MW-6 1998 though 2016, monitoring wells MW-1 and MW-5 from 2017 to 2022.

B Product recovery using oil skimmer pump and pneumatically-driven pumps for 1998 through 2009 and product bailers in 2010.

C Product Recovery using Keck® Product Recovery Canisters as an active recovery system.

D Product Recovery using bailers and Keck® Product Recovery Canisters as passive recovery systems.

E Product recovery using Durham Geo Slope Indicator SoakEase™ sorbent socks and product-selective bailers.

F Total volume of recovered product is considered biased-high due to separate-phase water recovered with product using sorbent socks.

G Product recovery using Durham Geo Slope Indicator SoakEase™ and Pig® sorbent socks.

H Product and water cut determined through wringing socks and measuring water/product volumes and weighing residual product in wrung socks. Correction factor applied to visually-determined volume.

I Product recovery using only Durham Geo Slope Indicator SoakEase™ sorbent socks.

APPENDIX A

PHOTOGRAPH LOG

2022 Product Recovery Report
Pump Station 9 Mainline Turbine Sump

Alyeska Pipeline Service Company
P.O. Box 196660
3700 Centerpoint Drive
Anchorage, Alaska 99519-6660

November 2022

Photo 1: Thawing at MW-1 using two heat traces powered by a portable generator (June 7, 2022).

Photo 2: Recovering product at MW-5 after gauging depth to water and depth to product (June 7, 2022).

Photo 3: 4-inch sorbent recovered from MW-5. Product was recovered in the lower portion of the sorbent and an emulsion of water and product was recovered in the upper portion of the sorbent (September 20, 2022).

Photo 4: Product recovery at MW-1. Note sorbent socks saturated with an emulsion of water and product contained in the oily waste bag (September 8, 2022).

APPENDIX B

FIELD NOTES

2022 Product Recovery Report
Pump Station 9 Mainline Turbine Sump

Alyeska Pipeline Service Company
P.O. Box 196660
3700 Centerpoint Drive
Anchorage, Alaska 99519-6660

November 2022

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P509 Product Recovery

2022

105.01288.22012

5/19/2022 PS09 Prod. Rec. Carl Barton, Cloudy 60°F Calm

0600 Pick up truck 120-1026 @ ASRC
Battery Dead & jump started. Belts
chirping, but mechanic said would
charge by PS09 & will order new
pulleys (all) and install 2 new
batteries upon return.

0700 leave for PS09.

0900 Arrive @ PS09 & sign permit.

0915 Connect heat trace to generator.
MW-01 is frozen, MW-05 can
move heat trace, will gauge
after running trace briefly.

1200 Checking for product accumulation

Well	DTP	DTW	Product thickness
MW-1	N/A	N/A	Cannot open - frozen
MW-5	108.70	108.83	0.13'

Heat trace in MW-1 does not appear
to be drawing any load on the generator.

Product Recovery using 4" socks @ MW-5

MW-5: 0.5 + Trace (Almost all H_2O)

Product measurement after recovery:

Well	DTP	DTW	Product Thickness
MW-5	N/A	108.72	Ø"

MW-1 Heat trace now removable but
Ice plug remains.

1520 Dispose oily waste, close out permit &
leaving PS09.

5/19/2022 PS09 product Recovery Carl Barton

Mileage out = 95,705

Mileage In = 95,921

1730 Arrive @ office after unpacking
gear at storage unit.

End of Day

Rite in the Rain

6/7/2022 PS09 Prod Recov Carl Benson — Clear Sunny Calm 60°F

0630 Arrive @ ABRC pick up 120-1026. Fuel truck & depart for PS09 after calling security

0915 Arrive @ PS09 and check in with Operator Bernard Hildebrand to sign permit.

1000 Set up at MW-5 & MW-1 to check on flow @ MW-1 & MW-5.

Well	DTP	DTW	Product Column
MW-5	107.95	108.08	0.13'

MW-1 Ice plug @ 4.50' BTOC.

Starting product recovery @ MW-5 and plugged both heat trace sections into generator and operating in MW-1.

Product Recovery using 4" Socks @ MW-5:

MW-5 : 0.5 + trace (all H_2O)

MW-1 : 0.75+ Trace - 2" Socks @ MW-1

1300: MW-1 clear of ice plug;

Well	DTP	DTW	Column
MW-1	108.18	108.39	0.21'

Recovery of product for MW-1 noted above.

Readings after Product Recovery:

Well	DTP	DTW	Product Column
MW-5	107.95	107.96	0.01'
MW-1	N/A	108.21	0.00

6/7/2022 MLT Prod. Recovery PS09 — Clear Calm Sunny 70°F

1445 Waste disposed in oily waste Conex. Closing out permit and leaving PS09, work site cleaned up & wells closed.

1730 Returned to Prudhoe & unpacked Gear.

End of Day

Carl B

7/8/2022 PS09 product Recovery. Clear, Sunny Calm, 70°F

0700 leave Fairbanks

0915 Arrive PS09 & sign permit. Discuss project with EC Mike Knabe.

1015 - Gauging product @ wells

Well	Depth to product	DTW	Product Column
MW-1	106.96'	107.11	0.15'
MW-5	106.48'	107.90'	1.38'

1030 - Product Recovery @ Both wells

MW-1: (2" sorbents used)

0.75 + Trace

MW-5. (4" Sorbents used)

1 + 1 + 0.75 + 0.25 + Trace

Product Measurements after recovery:

Well	DTP	DTW	Product Column
MW-1	N/A	107.00'	0.00'
MW-5	106.78	106.79	0.01'

1200 Site picked up, waste disposed in oily waste Conex, Closing out Unit Work permit.

1220 Leaving PS09.

1500 Arrive in Fairbanks

1530 Fuel truck

1545 Arrive @ office

End of Day

7/26/2022 PS09 Product Recovery 50°F Cloudy Calm

0758 leave Fairbanks for PS09

1015 Arrive @ PS09 & Sign permit

Scrap & gauge wells.

Well	DTP	DTW	Product (Column) Ft
MW-1	106.92'	107.02'	0.10'
MW-5	106.51'	107.50'	0.99'

1100 Product recovery in both wells:

MW-1: (2" Sorbent Socks)

0.75 + Trace

MW-5: (4" Sorbent Socks).

1 + 0.75 + 0.25 + trace

Product Measurements after recovery:

Well	DTP	DTW	Product Column (Ft)
MW-1	N/A	106.93	0.00'
MW-5	N/A	106.71'	0.00'

1330 Site picked up, waste disposed as oily waste and Permit Closed.

1345 Returning to Fairbanks

1645 Return to Fairbanks and demobe Gear. Calling PS09 Security to close out trip.

1700 End of Day 100039 miles on O.D.

8/16/2022 Carl Brown PS09 prod recovery 60°F Colum

0700 Prepare gear for drive to PS09.
0800 Depart Fairbanks
1030 Arrive @ PS09 & hand off PS10 & MV clear to PS10 PCB crew
1045 Find Brad Rogers for permit signature.

– Product Initial Measurements –

Well	DTP	DTW	Column (ft)
MW-1	106.28	106.38	0.10'
MW-5	105.97	106.45	0.48'

Product Recovery Results:

MW-1: 2" Sorbents,
~~0.5+~~ 0.5 + trace

MW-5: 4" Sorbents,
~~0.5+~~ 0.75+ trace

Product measurements after recovery:

Well	DTP	DTW	Column (ft)
MW-1	N/A	106.34	0.00'
MW-5	N/A	106.06	0.00'

1325 Site cleaned up, waste disposed & closing permit. Picking up bucket for screen test @ CV-76.
1330 Leave PS09
1500 Arrive @ PS08 to inspect CV76
1730 Leave PS08
1830 Arrive Fairbanks & handle gear
1900 End of Day

8/25/2022 Carl Brown PS09 Prod. Recov. clear 60°F

0700 Pick gear and fuel truck, Call Security & leave Fairbanks.
0935 Arrive PS09 and sign permit.
1000 Initial product Gauging:

Well	DTP	DTW	Product Column (ft)
MW-1	106.31	106.45	0.14'
MW-5	106.05	106.25	0.20'

Product Recovery Results:

MW-1: 2" Sorbents
0.5 + trace Ø

MW-5: 4" Sorbents
1 + trace Ø

Product Measurements after recovery:

Well	DTP	DTW	Product Recovery (ft)
MW-1	N/A	106.32	0.00'
MW-5	N/A	106.09	0.00'

1240 Site pickedup & waste disposed
1250 Permit closed & returning to Fairbanks.
1530 Return to Fairbanks, store gear & go to office. End of Day mileage = 101257.

 9/8/2022 PS09 Product Recovery B. Woelber

0800 Arrive office. Pack gear. Tailgate.

0900 Drive to warehouse, SGS for sample submission of PS08 samples.

0930 Depart Fairbanks.

1000 Arrive North Pole. Break for personal conference call.

1130 Depart North Pole.

1300 Arrive PS09. Obtain permit.

1330 Set up to recover product at MW-1 and MW-5.

1339 MW-5 DTP = 105.80, DTW = 106.07
After bailing DTP = 105.88, DTW = 105.90
Used 4X sorbent socks. Each sock ½ partially saturated and ½ fully saturated. Color and feel of saturation indicates mixture of water and product.

1419 MW-1 initial DTP = 106.10, DTW = 106.15
After bailing DTW = 106.12, no product.
Used 2X sorbent socks. First sock 100% saturated. Second sock 75% saturated. Recovered fluid appeared to consist mostly of water. Clear and no sheen in oily waste bag.

1500 Dispose of oily waste bag.

1515 Close permit.

1520 Depart PS09.

1710 Arrive Fairbanks. Drop gear at warehouse and office.

1808 End field day.

BH Woelber
9/8/2022

9/20/2022

1300 Depart Fairbanks for PS09

1530 Arrive PS09 & Sign Permit

1545 Complete Tailgate Safety meeting form & start taking Product measurements.

- Initial Product Measurements -

Well	DTP	DTW	Product Column
MW-1	106.37	106.50	0.13'
MW-5	106.08	106.36	0.28'

Product Recovery Results:

MW-1 (2" Sorbents)
0.5 + Trace

MW-5 (4" Sorbents)
1 + trace

- Final Product Measurements -

Well	DTP	DTW	Product Column
MW-1	106.36	106.38	0.02'
MW-5	106.15	106.16	0.01'

1645 Disposing sorbents @ oily waste Conex and closing out Work Permit.

1700 Permit closed. Even opening PS10 & MW Permits.

1715 Leaving PS09 for Delta junction

End of Day

10/17/2022 PS09 Product Recovery B. Wheelbarger

0930 Depart Fairbanks.

1130 Arrive PS09. Obtain permit.

1200 Set up on wells

1215 Initial at MW-5
DTP = 105.81, DTW = 106.32

1245 Final at MW-5
4" socks = $\frac{9}{5} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5}$ + trace
5 socks deployed
DTW = 105.95, no product
Recovered product clearly emulsion of water + product in final 4 socks, all product in first sock.

1250 Set up at MW-1
Initial = DTP = 106.16, DTW = 106.25
Deploy 5 socks = $\frac{9}{10}, \frac{9}{10}, \frac{9}{10}, \frac{9}{10}, \frac{1}{2}$. All socks recovered mixture of mostly water, clear color.
Final = DTW = 106.18, no product

1330 Deploy heat trace in both wells. Pack up equipment. Dispose of sorbies in oily waste connex.

1400 Depart PS09.

1600 Arrive Fairbanks. End field day.

10/17/2022