MEMORANDUM

April 3, 2023

RE: **1st Quarter 2023 Status Report, Boeing Field Chevron, 10805 East Marginal Way South, Tukwila, Washington, Agreed Order DE-10947**

To: **Mr. Dale Myers, Washington State Department of Ecology**
Cc: Mr. Russ Shropshire, Leidos; Mr. Nathan Blomgren, Chevron Environmental Management and Real Estate Company; and Mr. Raj Sandhu, Boeing Field Chevron

From: **Thomas Cammarata**

This status report is related to the ongoing environmental remediation effort for the Boeing Field Chevron facility at 10805 East Marginal Way South, Tukwila, Washington (facility). The status report is developed to inform stakeholders of project progress in the First Quarter of 2023 and to comply with reporting requirements for the facility under Agreed Order DE-10947 with the Washington State Department of Ecology. The project progress in the First Quarter of 2023 was performed in accordance with *Final Pilot Test Workplan Boeing Field Chevron 10805 East Marginal Way South Tukwila, Washington*, prepared by G-Logics and dated June 21, 2022 (the Pilot Test Workplan).

Efforts completed during the First Quarter of 2023 included conducting extraction events, an injection event, and a progress groundwater sampling event.

FIRST QUARTER 2023 TASKS AND MILESTONES

Between December 15, 2022, and March 30, 2023, the following efforts were completed and milestones were reached on the project:

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- On December 16, 2022, G-Logics performed the second round of total liquid extraction events as per Section 4.2 of the Pilot Test Workplan. Northern Environmental, using a truck-mounted vacuum, removed light nonaqueous-phase liquid (LNAPL) when present in the wells. Water and LNAPL levels were evaluated at each well in the pilot test monitoring program prior to the initiation of total liquids extraction implementing the event. LNAPL was only observed in monitoring well IP-7, with a thickness of 2.14 feet. A total of approximately 500 gallons of combined water and LNAPL was removed from the well. A trace amount of LNAPL was extracted, based on the volume of the product observed at the time of disposal.
- On December 19, 2022, G-Logics performed the third round of injections at three temporary injection points as per Section 4.1 and Figure 3 of the Pilot Test Workplan. Cascade Drilling, under the direction of G-Logics, used a direct-push drilling rig to push hollow stainless steel drill rods with a retractable 4-foot slotted screen to the target depth of the injection borings of 13 feet. The rods were then pulled back 3 feet to expose 3 feet of slotted screen. The annular space around the upper 5 feet of the rod (the void from utility check excavation) was filled with lean bentonite cement grout as an additional seal. Under the direction of G-Logics, Cascade Drilling injected approximately 375 gallons of the reagent PetroCleanze into each boring at a sustained injection pressure of approximately 20 to 25 pounds per square inch. No daylighting of the reagent was observed during the injection event. G-Logics measured water levels at all the pilot test target monitoring wells before and after the injection event. Using an oil/water interface probe, G-Logics measured product levels in pilot test target monitoring wells IP-4 and IP-7. Product was only observed in the pilot test target monitoring well IP-7. The monitoring well contained approximately 0.17 feet of product.
- On January 20, 2023, G-Logics performed the third round of total liquid extraction events as per Section 4.2 of the Pilot Test Workplan. Northern Environmental, using a truck-mounted vacuum, removed LNAPL when present in the wells. Water and LNAPL levels were evaluated at each well in the pilot test monitoring program prior to the initiation of total liquids extraction implementing the event. LNAPL was only observed in monitoring well IP-7, with a thickness of 0.35 feet. A total of 600 gallons of combined water and LNAPL was removed from the well. A trace amount of LNAPL was extracted, based on the volume of the product observed at the time of disposal.
- On February 22 and 23, 2023, G-Logics performed the one-month post-injection progress groundwater sampling, in accordance with Section 4.3 of the Pilot Test Workplan. Groundwater samples were collected from pilot test target monitoring wells AS-1, IP-3, IP-4, IP-5, IP-7, and TW-1 to TW-5. G-Logics did not collect a groundwater sample from the pilot test target monitoring well SVE-1, as per the Pilot Test Workplan, because the monitoring well was dry. G-Logics measured water levels at all the pilot test target monitoring wells. Using an oil/water interface probe, G-Logics

measured product levels in the pilot test target monitoring wells. Product was only observed in the pilot test target monitoring well IP-7. The monitoring well contained approximately 0.84 feet of product. Analytical results for groundwater samples collected from pilot test target monitoring wells are presented in Table 1.

PROBLEMS ENCOUNTERED

G-Logics encountered no problems in the First Quarter regarding the implementation.

SCHEDULE EVALUATION

The provisional schedule for the pilot test program and the remaining tasks under the Agreed Order is included in attached Table 2. G-Logics plans to establish June 23, 2022, as "Day Zero" for the attached schedule.

There are no conditions that G-Logics is currently aware of that will require adjustment of the provisional schedule. Tasks in the Second Quarter of 2023 are currently expected to be executed within the parameters of the schedule provided in Table 2.

PLANNED LATE SECOND QUARTER 2023 TASKS AND MILESTONES

The following tasks are expected to be completed in the remainder of the Second Quarter of 2023. (March 15, 2022, to June 15, 2023):

- April 24, 2023 – 3-Month Progress Groundwater Sampling Event per Task 4.3 of the Pilot Test Workplan.

TABLE 1
Groundwater Sample Analytical Results
Boeing Field Chevron
10805 East Marginal Way South
Tukwila, Washington

		Total Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L)				Total Organic Carbon (mg/L)
Sample Identification	Sample Date	Gasoline Range Organics	Diesel Range Organics	Heavy Oil Range Organics	Benzene	Toluene	Ethylbenzene	Total Xylenes [1]	
MTCA Method A Cleanup Level [2]		1,000/800 [3]	500	500	5	1,000	700	1,000	NE
AS-1	8/15/2022	474	617	478	5.98	<0.750	31.8	26.7	---
	9/27/2022	5,780 D	3,610	<93.0	104 D	14.8 D	464 D	240 D	---
	2/23/2023	6,000	2,900 M	620	32	36	310	710	---
IP-3	8/15/2022	4,450 D	277	612	1,080 DE	21.9	43.1 D	92.1 D	8.43
	2/23/2023	29,000	2,100 M	480	3,100	4,700	1,200	3,410	---
IP-4	8/15/2022	126,000 DE	9,500	<1,110	54.6 D	2,140 DE	5,100 DE	14,500 DE	---
	9/27/2022	114,000 D	17,300	<92.7	47.2 JD	2,420 D	4,110 D	17,600 D	---
	2/23/2023	63,000	3,300 M	530	27	81	1,600	6,600	---
IP-5	8/15/2022	13,200 D	625	<95.7	1,940 D	346 D	358 D	916 D	7.94
	2/22/2023	21,000	3,400 M	550	3,000	350	1,100	2,990	---
IP-7	8/16/2022	111,000 D	49,300 D	<93.9	1,040 D	3,620 D	2,920 D	15,300 D	20.7
	2/23/2023	82,000	16,000 M	680	850	6,700	2,600	13,600	---
TW-1	2/22/2023	<100	130	350	<0.20	<1.0	<0.20	<0.40	---
TW-2	2/22/2023	100	110 M	310	220	9	8	42	---
TW-3	2/22/2023	14,000	4,800 M	620	2,800	<100	1,500	1,200	---
TW-4	8/15/2022	139	561	<94.7	<0.440	4.25	0.811	4.88	---
	9/27/2022	133	381	<91.9	<0.440	6.35	0.978	4.20	---
	2/22/2023	<100	<120	310	<0.20	1.1	0.30	1.28	
TW-5	8/15/2022	214,000 DE	8,850	<94.2	351 D	38,400 DE	6,000 DE	23,800 DE	---
	9/27/2022	178,000 D	8,520	<94.2	258 JD	30,600 D	3,890 D	20,900 D	---
	2/22/2023	140,000	9,200 MQ	540 Q	220	24,000	4,200	21,000	---

Notes:

Only those analytes detected or specifically targeted for evaluation are included in the table.

[1] Results for Xylenes is the sum of m,p-xylenes and o-xylenes, as indicated in the laboratory analytical package.

[2] MTCA Standard Method A Groundwater Cleanup Levels for Unrestricted Land Uses.

[3] Lower cleanup level applies to groundwater with detectable benzene.

mg/L = milligrams per liter

µg/L = micrograms per liter

--- Sample not analyzed.

<5.02 The analyte was not detected at a concentration above the indicated reporting limit.

139.0 Bold value indicates contaminant detected.

21,000 Bold value and yellow shading indicates concentration exceeds applicable cleanup level.

D The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

E Value is above the quantitation range.

J Analyte detected below the Reporting Limit.

M Hydrocarbons in the gasoline range are impacting the diesel range result.

MTCA Model Toxics Control Act

NE Not established

Q Surrogate recovery is out of the control limits.

Table 2
Project Schedule
ISCO/Total Liquids Extraction Pilot Test and FS/CAP Development
Boeing Field Chevron, 10805 East Marginal Way South
Tukwila, Washington

Task/Milestone	Duration	Week Beginning	Week Ending
ISCO/Total Liquids Extraction Pilot Test			
Workplan approval	Day 0	1	1
Field planning and coordination, health and safety plan development, procurement	3 weeks	1	4
BASELINE CONDITIONS EVALUATION			
Monitoring well installation and initial groundwater monitoring	1 week	4	5
Soil and groundwater sample analysis and results review	2 weeks	5	7
PILOT TEST IMPLEMENTATION AND MONITORING			
Reagent Injection Event #1	2 days	8	8
Progress Groundwater Monitoring Event #1	2 days	11	11
Total Liquids Extraction Event #1	1 day	12	12
Reagent Injection Event #2	1 day	13	13
Total Liquids Extraction Event #2	1 day	16	16
Reagent Injection Event #2	1 day	18	18
Total Liquids Extraction Event #2	1 day	21	21
Progress Groundwater Monitoring Event #2 (One Month)	2 days	25	25
Progress Groundwater Monitoring Event #3 (Three Months)	2 days	34	34
Progress Groundwater Monitoring Event #4 (Six Months)	2 days	47	47
REPORTING			
Report Development and Draft Report Submittal	4 weeks	47	51
Review, Response to Comments, and Final Report Submittal	6 weeks	51	57
Feasibility Study Development			
Development and Agency Review Draft Feasibility Study Report Submittal	6 weeks	57	63
Agency Review and Public Comment Draft Feasibility Study Report Submittal	7 weeks	63	70
Public Review of Draft Feasibility Study Report	5 weeks	70	75
Final Feasibility Study Report Development and Submittal	4 weeks	75	79
Cleanup Action Plan Development			
Development and Agency Review Draft Cleanup Action Plan Submittal	6 weeks	79	85
Agency Review and Public Comment Draft Cleanup Action Plan Submittal	7 weeks	85	92
Public Review of Draft Cleanup Action Plan	5 weeks	92	97
Final Cleanup Action Plan Development and Submittal	4 weeks	97	101

Notes:
FS/CAP = Feasibility Study/Cleanup Action Plan
ISCO = In situ chemical oxidation