TRANSMITTAL LETTER

ARCADIS

To:
Jeanne Schlaufman
Michigan Department of Environment, Great Lakes & Energy
27700 Donald Court
Warren, MI 48092

From:
Kris Hinskey

Arcadis U.S., Inc.
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Suite 500
Novi
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Copies:

Date:
July 31, 2024

Subject:
ResAp-Interim Response Activity Plan ZVI Injections Quarterly Update Letter

Arcadis Project No.:
30206169

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1	7/31/2024			ResAP-Interim Response Activity Plan ZVI Injections Quarterly Update Letter	

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SUBJECT
ResAP-Interim Response Activity Plan ZVI Injections Quarterly Update Letter

TO
Ms. Jeanne Schlaufman, EGLE

DATE
July 31, 2024

OUR REF
30206169

COPIES TO
Mr. Todd Walton, Ford
Mr. Chuck Pinter, Ford

NAME
Kris Hinskey – Arcadis of Michigan, LLC

On behalf of Ford Motor Company (Ford), this letter has been prepared by Arcadis of Michigan, LLC (Arcadis) for the Livonia Transmission Plant (LTP) site (the site), located on **Figure 1**. This letter complies with the following Response Activity Plan (ResAP) and EGLE approval letter:

- ResAP for Interim Response Activities – Property Boundary Zero Valent Iron, date June 30, 2023
- *Notice of Conditional Approval of Response Activity Pan – Interim Response Activities for Zero Valent Iron Injections at the Ford – Livonia Transmission Plant*, dated July 20, 2023

The performance groundwater sampling outlined below was completed in accordance with the approved ResAP for Interim Response Activities (IRA).

Performance Groundwater Sampling

Quarterly zero valent iron (ZVI) performance groundwater sampling was completed on May 21st, 2024, during the second quarter 2024 (2Q 2024) on site and off site groundwater sampling event. Groundwater samples were collected from monitoring wells MW-35, MW-43, MW-52, MW-211S, MW-212S, MW-213S, MW-234 and MW-235 (collectively referred to as the ZVI performance monitoring network; **Figure 2**)

Each monitoring well was sampled using a peristaltic pump and low-flow sampling techniques in accordance with the project Quality Assurance Project Plan. Groundwater samples were collected into laboratory-supplied bottles and were submitted on ice to Eurofins Laboratories (Eurofins) in Barberton, Ohio for laboratory analysis. All samples were analyzed for the seven constituents of concern (COCs) for the Site: 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride (VC) via United States Environmental Protection Agency (USEPA) Method 8260D and 1,4-dioxane via USEPA Method 8260D-Selected Ion Monitoring (SIM).

Groundwater analytical results and low-flow sampling parameters are provided in **Table 1,** with the data compared to Michigan Part 201 Non-Residential Generic Cleanup Criteria (EGLE 2023). Monitoring data collected from the ZVI performance monitoring well network during the third quarter 2023 groundwater sampling event were used for the baseline data included in **Table 1**. Low-flow groundwater sampling logs are included in **Attachment 1**. Vinyl chloride was detected at concentrations exceeding Part 201 Non-residential Generic Cleanup Criteria at

monitoring well MW-235, which is consistent with previous sampling events. All other site-specific compounds (1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, and 1,4-dioxane) either were not detected at concentrations above the reporting limits or were detected at concentrations below Part 201 Non-Residential Generic Cleanup Criteria for 2Q 2024.

During 2Q 2024, vinyl chloride concentrations at monitoring wells MW-35 (0.90 J µg/L) and MW-235 (4.5 µg/L) were the lowest historically observed. All other monitoring well concentrations from the 2Q 2024 ZVI performance groundwater sampling event were below the objective of 1.0 µg/L vinyl chloride, with the exception of MW-52 (1.2 µg/L).

Proposed Schedule

Future performance monitoring will be completed in accordance with the ResAP IRA. The third quarter 2024 performance monitoring event is scheduled to be completed in August 2024. The next quarterly update letter will summarize the results of the third quarter 2024 sampling event and will be submitted by October 31st, 2024.

Enclosures:
Table 1 – ZVI Performance Monitoring Groundwater Analytical Data
Figure 1 – Site Location Map
Figure 2 – Site Layout
Attachment 1 – Groundwater Sampling Logs

Table

Table 1
ZVI Performance Monitoring Groundwater Analytical Data
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Location:		Michigan Non-Residential Drinking Water Criteria	MW-35				MW-43				MW-52				MW-211S				
Date:	Unit		8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023
Semi-volatile Organic Compounds (SVOCs)																			
1,4-Dioxane	µg/L	350	3.4	4.0	3.0	4.5 B	2.5	3.4	2.5	4.7 B	1.8 J	2.6	2.7	3.3 B	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Volatile Organic Compounds (VOCs)																			
1,1-Dichloroethene	µg/L	7.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	µg/L	70	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.6
Tetrachloroethene	µg/L	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	µg/L	100	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/L	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	0.52 J	< 1.0	< 1.0	< 1.0
Vinyl chloride	µg/L	2.0	1.6	1.5	**2.2**	0.90 J	< 1.0	< 1.0	< 1.0	< 1.0	1.5	1.5	0.90 J	1.2	< 1.0	< 1.0	< 1.0	< 1.0	0.82 J

See Notes on Last Page.

Table 1
ZVI Performance Monitoring Groundwater Analytical Data
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Location:		Michigan Non-Residential Drinking Water Criteria	MW-212S			MW-213S				MW-234				MW-	
Date:	Unit		11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	9/18/2023	11/14/2023	3/7/2024	5/21/2024	9/18/2023	11/14/2023
Semi-volatile Organic Compounds (SVOCs)															
1,4-Dioxane	µg/L	350	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	<2.0	1.0 J B	< 2.0	0.89 J
Volatile Organic Compounds (VOCs)															
1,1-Dichloroethene	µg/L	7.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	µg/L	70	2.8	1.9	0.89 J	0.58 J	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.6	2.0
Tetrachloroethene	µg/L	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	µg/L	100	0.53 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/L	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl chloride	µg/L	2.0	1.0	0.84 J	< 1.0	0.48 J	1.1	0.73 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**11**	**12**

See Notes on Last Page.

Table 1
ZVI Performance Monitoring Groundwater Analytical Data
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Location:		MW-35				MW-43				MW-52				MW-211S				MW-	
Date:	Unit	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	8/15/2023	11/14/2023
Low Flow Sampling Parameters																			
Dissolved Oxygen	mg/L	0.15	3.30	0.10	0.05	1.19	0.10	1.57	0.21	0.00	0.26	0.98	0.24	0.14	0.25	0.28	1.24	1.48	0.16
ORP	mV	-243.9	-168.3	93	85.2	-152.7	-142.4	-106.9	-185.0	-132.1	-120.7	-75.4	103.3	31.3	64.8	185.7	-43.7	-2.2	-167.3
pH	s.u.	7.73	7.61	7.72	7.65	7.62	7.74	7.69	7.65	7.22	7.27	7.27	7.18	7.40	7.34	7.38	7.36	7.19	7.12
Temperature	°C	16.7	14.0	12.9	15.6	17.0	16.1	11.2	17.6	16.5	16.1	11.2	20.0	19.4	16.2	9.6	23.7	19.4	15.8
Specific Conductivity	mS/cm	4.74	2.95	5.3	8.75	9.62	7.52	7.61	7.10	7.00	6.14	6.65	0.05	7.29	5.56	7.08	8.78	7.48	8.32
Turbidity	NTU	11.28	8.93	24.3	27.90	8.30	21.30	42.70	3.08	4.06	3.23	63.60	34.00	2.28	2.99	1.74	9.20	0.02	1.67

See Notes on Last Page.

Table 1
ZVI Performance Monitoring Groundwater Analytical Data
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Location:		212S		MW-213S				MW-234				MW-2	
Date:	Unit	3/7/2024	5/21/2024	8/15/2023	11/14/2023	3/7/2024	5/21/2024	9/18/2023	11/14/2023	3/7/2024	5/21/2024	9/18/2023	11/14/2023
Low Flow Sampling Parameters													
Dissolved Oxygen	mg/L	0.54	1.23	0.18	0.36	0.21	0.64	0.06	0.06	2.22	1.13	0.14	5.00
ORP	mV	90.5	-29.4	-20.7	-201.0	79.8	39.4	-255.2	-323.3	-274.3	-277.3	-61.9	-119.6
pH	s.u.	7.27	7.13	7.12	7.11	7.23	7.11	10.04	10.03	10.01	9.93	7.10	7.16
Temperature	°C	10.9	21.0	20.4	17.6	11.9	21.5	18.7	17.2	11.3	16.5	17.6	17.2
Specific Conductivity	mS/cm	7.06	6.93	7.76	7.05	8.06	8.89	8.09	8.12	10.52	7.08	7.86	7.32
Turbidity	NTU	2.19	28.60	0.40	3.86	1.65	27.10	5.21	2.30	0.55	0.02	1.22	62.10

See Notes on Last Page.

Table 1
ZVI Performance Monitoring Groundwater Analytical Data
Ford Livonia Transmission Plant
36200 Plymouth Road
Livonia, Michigan

Notes:

Results are compared to EGLE Part 201 Generic Cleanup Criteria, October 2023.

Bold	Result denotes exceedance of EGLE Non-Residential Drinking Water Criteria.
<	Denotes not detected above reporting limit.

Abbreviations:

°C	degrees Celsius
µg/L	micrograms per liter
Bold	Compound was found in the blank and sample
EGLE	Michigan Department of Environment, Great Lakes, and Energy
J	estimated result
mg/L	milligrams per liter
MW	monitoring well
mS/cm	millisiemens per centimeter
mV	millivolts
NTU	nephelometric turbidity units
s.u.	standard units

Analytical Methods:

8260D for Volatile Organic Compounds (VOCs)

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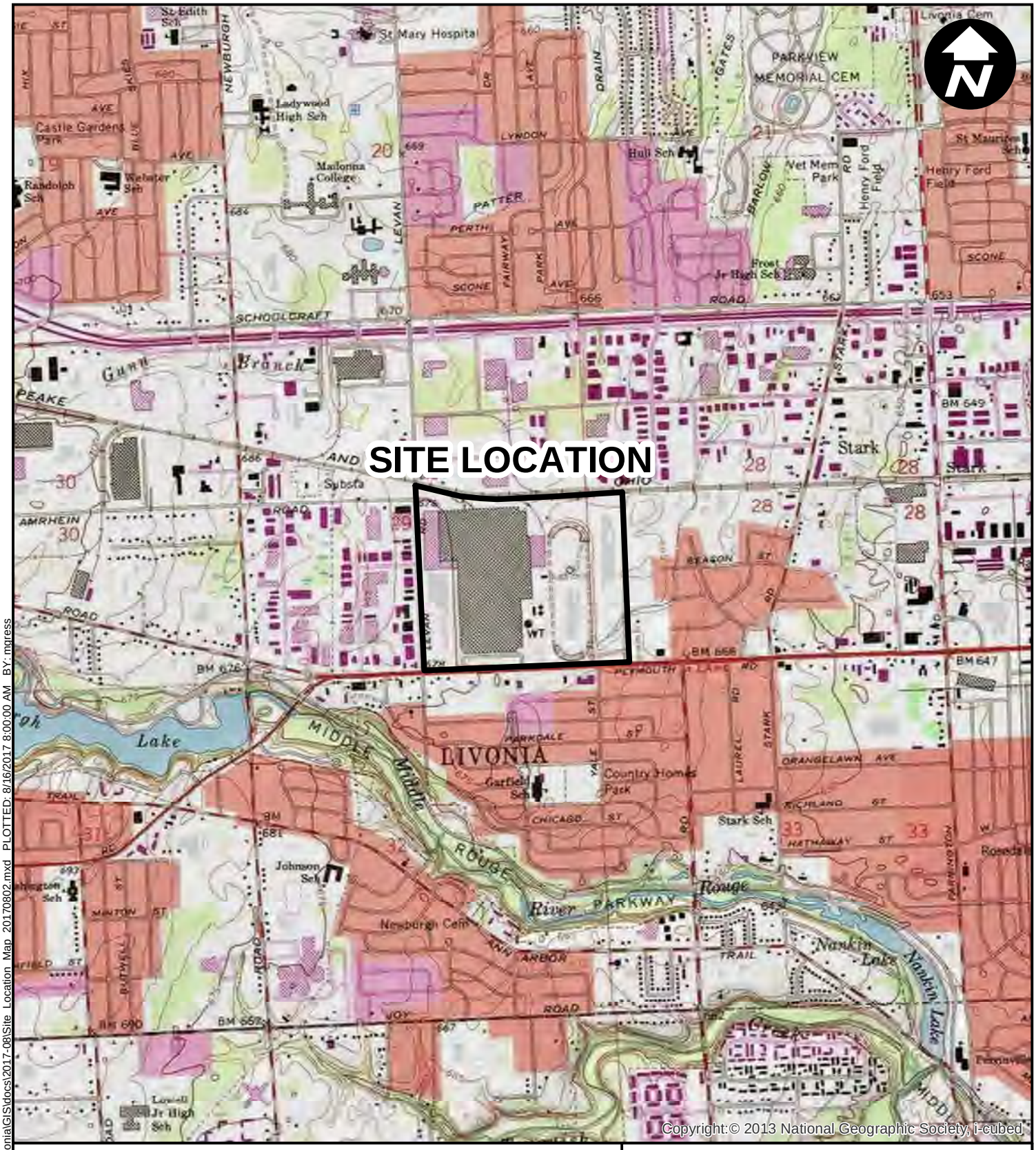
Figures



0 2,000 4,000

SCALE IN FEET

SOURCE:

USGS 7.5 MINUTE TOPOGRAPHIC MAP
NORTHVILLE AND WAYNE QUADRANGLES

FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

SITE LOCATION MAP

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FIGURE
1

CITY: Novi DIV: ENV DB: MG PROJECT NUMBER: MI001322.0001 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
Z:\GISProjects\ ENV\NoviBrighton MIFord\LivoniaGIS\docs\2017-08\Site Location Map 20170802.mxd PLOTTED: 8/16/2017 8:00:00 AM BY: mgress

This document is a DRAFT document that has not received approval from EGLE. This document was prepared pursuant to a court Consent Decree. The opinions, findings, and conclusions expressed are those of the authors and not those of EGLE.

VAULT V-ESD-1

VAULT V-ESD-2

TEST TRACK

ATNPC BUILDING

OFF-SITE AREA

BELDEN CT

MW-52

MW-234

MW-43

MW-213S

MW-212S

MW-235

MW-35

MW-211S

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

LEGEND

- MONITORING WELL
- VAULT
- ZERO VALENCE IRON (ZVI) INJECTION POINTS
- LOCATION OF CROSS SECTION A-A
- HYDRAULIC CONTROL SYSTEM WELL SCREEN
- WELL BLANK CASING
- FORD PROPERTY BOUNDARY
- COMMERCIAL/RESIDENTIAL PROPERTY BOUNDARY

NOTES:

THE RADIUS OF INFLUENCE (ROI) OF EACH POINT IS 15FT

EACH INJECTION POINT ARE 30 FT AWAY

ATNPC = AUTOMATIC TRANSMISSION NEW PRODUCT CENTER

EGLE = MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

ESD = EASTERN STORM DRAIN

0 100 200

SCALE IN FEET

FORD MOTOR COMPANY
LIVONIA TRANSMISSION PLANT
LIVONIA, MICHIGAN

SITE LAYOUT

ARCADIS

FIGURE 2

CITY: Novi DIV: ENV DB: MG PIC: R. ELLIS PM: K. HINSKEY PROJECT NUMBER: 30080642 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
T:_ENV\NoviBrighton_MI\Ford\Livonia_Pro\2023\Ford_LivoniaMI_Report\Ford_LivoniaMI_Report.aprx PLOTTED: 5/2/2024 4:05 PM BY: AKENS

Attachment A

Groundwater Sampling Logs

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite, E

Prepared By: Lottie Jay

Date	Time	Description of Activities
05-21-2024	10:56	Arrive onsite
05-21-2024	10:59	Record static depth to water
05-21-2024	11:07	Begin purging well
05-21-2024	11:55	Collect sample MW-35_052124
05-21-2024	12:00	End purge and turn off pump, begin decon of equipment
05-21-2024	12:08	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-35	Date	05-21-2024
Project Name/Location	Ford LTP	Weather	75.0 degrees F and Partly Cloudy. The wind is blowing W at 5.8 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	19.5-24.5	Casing Diameter (in.)	2
Well Material	PVC				
Static Water Level (ft-bmp)	7.70	Total Depth (ft-bmp)	24.11	Water Column (ft.)	16.41
Gallons in Well	2.67				
		Pump Intake (ft-bmp)	22.00	Purge Method	Low-Flow
Sample Method	Grab				
		Well Volumes Purged	0.57		
Sample Time: Label	11:55	Volume Purged	1.51 gallons	Replicate/Code No.	--
Sampled by	Lottie Jay				
Purge Start	11:07				
Purge End	12:00				

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance: Color	Appearance: Odor
11:10	0	130	8.09	0.00	7.53	9.32	12.60	0.75	15.6	125.0	Small Black Particulates, Small White Particulates	Strong Odor
11:15	5	130	8.32	0.17	7.52	9.28	20.20	0.37	15.6	108.7	Small White Particulates	Strong Odor
11:20	5	130	8.51	0.34	7.64	9.25	23.10	0.26	15.6	102.1	Small White Particulates	Strong Odor
11:25	5	130	8.58	0.51	7.66	9.13	25.30	0.21	15.3	97.4	Small White Particulates	Strong Odor
11:30	5	130	8.62	0.68	7.66	9.07	28.30	0.17	15.1	93.5	Small White Particulates	Strong Odor
11:35	5	130	8.67	0.85	7.57	9.01	28.10	0.12	15.1	91.0	Small White Particulates	Strong Odor
11:40	5	120	8.63	1.02	7.67	8.98	26.60	0.09	15.4	89.3	Small White Particulates	Strong Odor
11:45	5	130	8.61	1.18	7.65	8.92	29.80	0.08	15.4	88.1	Clear	Strong Odor
11:50	5	120	8.54	1.35	7.65	8.80	28.30	0.07	15.4	86.8	Small White Particulates	Strong Odor
11:55	5	120	8.51	1.51	7.65	8.75	27.90	0.05	15.6	85.2	Small White Particulates	Strong Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot	1" = 0.04 1.25" = 0.06	1.5" = 0.09 2" = 0.16	2.5" = 0.26 3" = 0.37	3.5" = 0.50 4" = 0.65	6" = 1.47

Well Information

Well Location:	Onsite, E	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite, on the east side of E Rd.

Prepared By: Kent Kasper

Date	Time	Description of Activities
05-21-2024	09:53	Arrive onsite
05-21-2024	09:58	Record static depth to water
05-21-2024	10:04	Begin purging well
05-21-2024	10:55	Collect sample MW-43_052124
05-21-2024	11:01	End purge and turn off pump, begin decon of equipment
05-21-2024	11:07	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-43			Date	05-21-2024
Project Name/Location			Ford LTP	Weather	72.0 degrees F and Mostly Cloudy. The wind is blowing W/SW at 5.8 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	17.0-22.0	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	7.19	Total Depth (ft-bmp)	21.75	Water Column (ft.)	14.56	Gallons in Well	2.37
		Pump Intake (ft-bmp)	19.50	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	0.50				
Sample Time: Label	10:55	Volume Purged	1.18 gallons	Replicate/Code No.	--	Sampled by	Kent Kasper
Purge Start	10:04						
Purge End	11:01						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance Color	Appearance Odor
10:05	0	100	7.42	0.00	7.66	7.15	9.89	1.22	16.9	-136.8	Clear	No Odor
10:10	5	108	7.41	0.13	7.64	7.06	6.81	0.49	17.1	-167.6	Clear	No Odor
10:15	5	100	7.42	0.27	7.64	7.01	3.51	0.28	17.1	-177.9	Clear	No Odor
10:20	5	100	7.41	0.40	7.66	6.95	5.06	0.24	16.9	-181.2	Clear, Small Red Particulates	No Odor
10:25	5	100	7.33	0.53	7.65	6.90	4.47	0.22	17.8	-182.2	Clear, Small Red Particulates	No Odor
10:30	5	100	7.35	0.66	7.66	6.94	6.54	0.22	18.0	-182.7	Clear, Small White Particulates	No Odor
10:35	5	100	7.37	0.79	7.66	6.98	5.38	0.22	17.9	-183.3	Clear, Small White Particulates	No Odor
10:40	5	100	7.38	0.92	7.66	7.04	4.28	0.21	17.8	-183.9	Clear, Small White Particulates	No Odor
10:45	5	100	7.38	1.05	7.65	7.04	4.12	0.20	17.6	-184.5	Clear	No Odor
10:50	5	100	7.38	1.18	7.65	7.10	3.08	0.21	17.6	-185.0	Clear	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot	***1" = 0.04*** ***1.25" = 0.06***	***1.5" = 0.09*** ***2" = 0.16***	***2.5" = 0.26*** ***3" = 0.37***	***3.5" = 0.50*** ***4" = 0.65***	***6" = 1.47***

Well Information

Well Location:	Onsite, on the east side of E Rd.	Well Locked at Arrival:	n/a
Condition of Well:	Fair,Missing bolts	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite, gate 1

Prepared By: Noah Downie

Date	Time	Description of Activities
05-21-2024	10:26	Arrive onsite
05-21-2024	10:33	Record static depth to water
05-21-2024	10:41	Begin purging well
05-21-2024	11:52	Collect sample MW-52_052124
05-21-2024	11:57	End purge and turn off pump, begin decon of equipment
05-21-2024	11:59	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-52		Date	05-21-2024	
Project Name/Location	Ford LTP		Weather	75.0 degrees F and Partly Cloudy. The wind is blowing W at 5.8 mph.			
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	15.0-20.0	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	7.45	Total Depth (ft-bmp)	22.30	Water Column (ft.)	14.85	Gallons in Well	2.41
		Pump Intake (ft-bmp)	17.50	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	1.00		--		
Sample Time: Label	11:52	Volume Purged	2.40 gallons	Replicate/Code No.		Sampled by	Noah Downie
Purge Start	10:41						
Purge End	11:57						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance	
											Color	Odor
10:45	0	150	7.54	0.00	7.15	0.05	370.00	0.48	17.6	112.3	Brown	No Odor
10:50	5	150	7.54	0.20	7.18	0.05	180.00	0.31	17.4	110.8	Brown	No Odor
10:55	5	150	7.54	0.40	7.18	0.05	141.00	0.26	17.2	110.8	Brown	No Odor
11:00	5	150	7.55	0.60	7.18	0.05	116.00	0.20	17.3	110.2	Clear	No Odor
11:05	5	150	7.55	0.80	7.18	0.06	107.00	0.19	17.6	108.9	Clear	No Odor
11:10	5	150	7.55	1.00	7.18	0.06	95.30	0.17	17.3	108.4	Clear	No Odor
11:15	5	150	7.55	1.20	7.18	0.06	93.10	0.14	7.5	107.3	Clear	No Odor
11:20	5	150	7.55	1.40	7.18	0.07	97.50	0.12	17.2	106.5	Clear	No Odor
11:25	5	150	7.55	1.60	7.18	0.07	78.30	0.11	17.5	105.8	Clear	No Odor
11:30	5	150	7.55	1.80	7.16	0.08	66.90	0.11	17.1	105.8	Clear	No Odor
11:35	5	150	7.55	2.00	7.16	0.12	50.50	0.21	18.2	106.2	Clear	No Odor
11:40	5	150	7.55	2.20	7.19	0.12	42.80	0.22	19.1	102.5	Clear	No Odor
11:45	5	150	7.55	2.40	7.18	0.05	34.00	0.24	20.0	103.3	Clear	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot					
	1" = 0.04	*1.5" = 0.09*	*2.5" = 0.26*	*3.5" = 0.50*	*6" = 1.47*
	1.25" = 0.06	*2" = 0.16*	*3" = 0.37*	*4" = 0.65*	

Well Information

Well Location:	Onsite, gate 1	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite E

Prepared By: Alaina Pitera

Date	Time	Description of Activities
05-21-2024	15:21	Arrive onsite
05-21-2024	15:32	Record static depth to water
05-21-2024	15:33	Begin purging well
05-21-2024	16:10	Collect sample MW-211S_052124
05-21-2024	16:16	End purge and turn off pump, begin decon of equipment
05-21-2024	16:26	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-211S			Date	05-21-2024
Project Name/Location	Ford LTP			Weather	84.9 degrees F and Mostly Cloudy. The wind is blowing SW at 11.4 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	0.5-12.0	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	8.20	Total Depth (ft-bmp)	11.83	Water Column (ft.)	3.63	Gallons in Well	0.59
		Pump Intake (ft-bmp)	9.70	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	1.63				
Sample Time: Label	16:10	Volume Purged	0.96 gallons	Replicate/Code No.	--	Sampled by	Alaina Pitera
Purge Start	15:33						
Purge End	16:16						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance Color	Appearance Odor
15:35	0	120	8.20	0.00	7.46	8.89	44.70	3.56	22.5	-42.5	Clear	No Odor
15:40	5	120	8.20	0.16	7.24	8.78	39.70	1.98	22.2	-43.9	Clear	No Odor
15:45	5	120	8.20	0.32	7.23	8.81	22.90	1.78	23.3	-42.9	Clear	No Odor
15:50	5	120	8.20	0.48	7.21	8.80	19.80	1.79	23.4	-42.7	Clear	No Odor
15:55	5	120	8.20	0.64	7.36	8.81	10.10	1.24	23.9	-43.0	Clear	No Odor
16:00	5	120	8.20	0.80	7.36	8.79	9.98	1.22	23.8	-43.5	Clear	No Odor
16:05	5	120	8.20	0.96	7.36	8.78	9.20	1.24	23.7	-43.7	Clear	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments

none

Well Casing Volumes

Gallons/Foot	***1" = 0.04*** ***1.25" = 0.06***	***1.5" = 0.09*** ***2" = 0.16***	***2.5" = 0.26*** ***3" = 0.37***	***3.5" = 0.50*** ***4" = 0.65***	***6" = 1.47***

Well Information

Well Location:	Onsite E	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite E

Prepared By: Alaina Pitera

Date	Time	Description of Activities
05-21-2024	14:25	Arrive onsite
05-21-2024	14:25	Record static depth to water
05-21-2024	14:27	Begin purging well
05-21-2024	15:05	Collect sample MW-212S_052124
05-21-2024	15:08	End purge and turn off pump, begin decon of equipment
05-21-2024	15:16	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-212S			Date	05-21-2024
Project Name/Location			Ford LTP	Weather	84.9 degrees F and Mostly Cloudy. The wind is blowing SW at 11.4 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	6.5-11.5	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	7.26	Total Depth (ft-bmp)	11.15	Water Column (ft.)	3.89	Gallons in Well	0.63
		Pump Intake (ft-bmp)	8.76	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	1.52				
Sample Time: Label	15:05	Volume Purged	0.96 gallons	Replicate/Code No.	--	Sampled by	Alaina Pitera
Purge Start	14:27						
Purge End	15:08						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance Color	Odor
14:30	0	120	7.26	0.00	7.23	5.57	110.00	4.51	23.1	-30.3	Cloudy	No Odor
14:35	5	120	7.26	0.16	7.24	5.53	76.50	2.76	23.6	-30.4	Cloudy	No Odor
14:40	5	120	7.26	0.32	7.24	5.52	49.90	0.86	23.9	-30.7	Clear	No Odor
14:45	5	120	7.26	0.48	7.18	5.53	27.30	0.76	23.5	-30.8	Clear	No Odor
14:50	5	120	7.26	0.64	7.12	6.93	30.20	1.23	21.0	-23.1	Clear	No Odor
14:55	5	120	7.26	0.80	7.13	6.93	29.80	1.26	20.9	-27.0	Clear	No Odor
15:00	5	120	7.26	0.96	7.13	6.93	28.60	1.23	21.0	-29.4	Clear	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot	***1" = 0.04*** ***1.25" = 0.06***	***1.5" = 0.09*** ***2" = 0.16***	***2.5" = 0.26*** ***3" = 0.37***	***3.5" = 0.50*** ***4" = 0.65***	***6" = 1.47***

Well Information

Well Location:	Onsite E	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP Onsite E

Prepared By: Alaina Pitera

Date	Time	Description of Activities
05-21-2024	13:24	Arrive onsite
05-21-2024	13:26	Record static depth to water
05-21-2024	13:28	Begin purging well
05-21-2024	14:10	Collect sample MW-213S_052124
05-21-2024	14:14	End purge and turn off pump, begin decon of equipment
05-21-2024	14:19	Offsite
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Page 1 of 1

Project No.	30167538.401.01	Well ID	MW-213S	Date	05-21-2024
Project Name/Location	Ford LTP	Weather	80.1 degrees F and . The wind is blowing W/SW at 9.2 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	6.0-11.0	Casing Diameter (in.)	2
Well Material	PVC				
Static Water Level (ft-bmp)	7.01	Total Depth (ft-bmp)	10.82	Water Column (ft.)	3.81
Gallons in Well	0.62				
		Pump Intake (ft-bmp)	8.51	Purge Method	Low-Flow
Sample Method	Grab				
		Well Volumes Purged	1.92		
Sample Time: Label	14:10	Volume Purged	1.19 gallons	Replicate/Code No.	--
Sampled by	Alaina Pitera				
Purge Start	13:28				
Purge End	14:14				

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance Color	Appearance Odor
13:30	0	130	7.01	0.00	7.15	9.76	45.40	7.26	20.4	75.4	Clear	No Odor
13:35	5	130	7.01	0.17	7.12	9.83	39.40	1.29	20.7	50.8	Clear	No Odor
13:40	5	130	7.01	0.34	7.11	9.81	39.80	0.82	21.4	49.1	Clear	No Odor
13:45	5	130	7.01	0.51	7.11	9.86	33.60	0.84	21.4	41.4	Clear	No Odor
13:50	5	130	7.01	0.68	7.12	9.87	29.40	0.65	21.9	39.3	Clear	No Odor
13:55	5	130	7.01	0.85	7.11	8.87	28.70	0.62	21.7	39.3	Clear	No Odor
14:00	5	130	7.01	1.02	7.11	8.87	26.70	0.63	21.5	39.3	Clear	No Odor
14:05	5	130	7.01	1.19	7.11	8.89	27.10	0.64	21.5	39.4	Clear	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot	*1" = 0.04* *1.25" = 0.06*	*1.5" = 0.09* *2" = 0.16*	*2.5" = 0.26* *3" = 0.37*	*3.5" = 0.50* *4" = 0.65*	*6" = 1.47*

Well Information

Well Location:	Onsite E	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP On-site, NE

Prepared By: Garrett Link

Date	Time	Description of Activities
--	--	Arrive onsite
--	--	Record static depth to water
05-21-2024	11:22	Begin purging well
05-21-2024	12:25	Collect sample undefined_052124
05-21-2024	12:35	End purge and turn off pump, begin decon of equipment
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-234		Date	05-21-2024	
Project Name/Location		Ford LTP		Weather	75.0 degrees F and Partly Cloudy. The wind is blowing W at 5.8 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	12.0-17.0	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	6.86	Total Depth (ft-bmp)	15.78	Water Column (ft.)	8.92	Gallons in Well	1.45
		Pump Intake (ft-bmp)	14.50	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	1.43		--		Garrett Link
Sample Time: Label	12:25	Volume Purged	2.08 gallons	Replicate/Code No.		Sampled by	
Purge Start	11:22						
Purge End	12:35						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance	
											Color	Odor
11:24	0	135	6.92	0.00	7.52	9.41	2.70	0.37	16.0	-37.0	Clear	No Odor
11:29	5	130	6.92	0.18	7.51	9.50	2.88	0.19	16.0	-59.9	Small Black Particulates	No Odor
11:34	5	130	6.92	0.35	8.03	9.50	0.02	0.08	16.2	-102.8	Small Black Particulates	No Odor
11:39	5	145	6.92	0.52	9.66	7.88	0.02	0.01	15.1	-228.5	Orange	No Odor
11:44	5	130	6.92	0.71	9.78	7.04	0.02	1.91	16.0	-125.7	Orange	No Odor
11:49	5	130	6.92	0.88	9.83	7.10	0.02	2.37	15.4	-154.4	Orange	No Odor
11:54	5	135	6.93	1.05	9.91	7.08	0.02	1.35	15.0	-188.4	Orange	No Odor
11:59	5	130	6.93	1.23	9.91	7.01	0.02	1.48	15.4	-210.2	Orange	No Odor
12:04	5	130	6.92	1.40	9.89	7.00	0.02	1.24	15.7	-231.1	Orange	No Odor
12:09	5	130	6.92	1.57	9.89	7.07	0.02	1.44	15.8	-245.1	Orange	No Odor
12:14	5	130	6.92	1.74	9.85	7.10	0.02	0.78	16.4	-256.0	Orange	No Odor
12:19	5	130	6.92	1.91	9.90	7.13	0.02	0.83	15.8	-266.7	Orange	No Odor
12:24	5	130	6.92	2.08	9.93	7.08	0.02	1.13	16.5	-277.3	Orange	No Odor
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* Turbidity < 50 NTU and ±10% \or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
1,4-dioxane	40 mL Glass	3	HCL

Comments none

Well Casing Volumes

Gallons/Foot					
	1" = 0.04	*1.5" = 0.09*	*2.5" = 0.26*	*3.5" = 0.50*	*6" = 1.47*
	1.25" = 0.06	*2" = 0.16*	*3" = 0.37*	*4" = 0.65*	

Well Information

Well Location:	On-site, NE	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a

ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.: 30167538.401.01 Page: 1 of 1

Site Location: Ford LTP On-site, NE

Prepared By: Garrett Link

Date	Time	Description of Activities
--	--	Arrive onsite
--	--	Record static depth to water
05-21-2024	12:54	Begin purging well
05-21-2024	14:00	Collect sample undefined_052124
05-21-2024	14:04	End purge and turn off pump, begin decon of equipment
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ARCADIS

SHALLOW LOW-FLOW GROUNDWATER SAMPLING FORM

Project No.	30167538.401.01	Well ID	MW-235		Date	05-21-2024	
Project Name/Location		Ford LTP		Weather	75.0 degrees F and Partly Cloudy. The wind is blowing W at 5.8 mph.		
Measuring Pt. Description	Top of Casing	Screen Setting (ft-bmp)	14.0-19.0	Casing Diameter (in.)	2	Well Material	PVC
Static Water Level (ft-bmp)	7.18	Total Depth (ft-bmp)	17.77	Water Column (ft.)	10.59	Gallons in Well	1.72
		Pump Intake (ft-bmp)	16.50	Purge Method	Low-Flow	Sample Method	Grab
		Well Volumes Purged	1.19		--		Garrett Link
Sample Time: Label	14:00	Volume Purged	2.04 gallons	Replicate/Code No.		Sampled by	
Purge Start	12:54						
Purge End	14:04						

Time	Minutes Elapsed between Readings	Flow Rate (mL/min) [100-300 mL/min]	Depth to Water (ft) [± 0.3]	Total Gallons Purged	pH [± 0.1]	Cond. (mS/cm) [± 3%]	Turbidity (NTU) [± 10%*]	DO (mg/L) [± 10%]	Temp. (°C) [± 3%]	Redox (mV) [± 10mV]	Appearance	
											Color	Odor
12:56	0	125	7.21	0.00	7.16	9.78	49.50	0.83	16.4	-39.3	Small White Particulates	No Odor
13:01	5	125	7.21	0.17	7.14	9.56	71.10	0.23	16.6	-58.5	Small White Particulates	No Odor
13:06	5	125	7.21	0.34	7.13	9.50	57.80	0.17	16.9	-70.4	Small White Particulates	No Odor
13:11	5	125	7.21	0.51	7.14	9.20	39.50	0.12	15.6	-75.6	Small White Particulates	No Odor
13:16	5	125	7.21	0.68	7.13	9.13	22.00	0.11	16.3	-79.2	Small White Particulates	No Odor
13:21	5	125	7.21	0.85	7.13	9.14	21.00	0.13	16.4	-82.0	Small White Particulates	No Odor
13:26	5	125	7.21	1.02	7.14	9.03	15.80	0.09	16.0	-83.3	Clear	No Odor
13:31	5	125	7.21	1.19	7.14	9.03	6.48	0.12	16.5	-85.2	Clear	No Odor
13:36	5	125	7.21	1.36	7.14	9.02	6.44	0.10	15.6	-86.1	Clear	No Odor
13:41	5	125	7.21	1.53	7.14	8.96	1.76	0.06	16.3	-87.3	Clear	No Odor
13:46	5	125	7.21	1.70	7.14	8.89	0.28	0.08	16.4	-88.3	Clear	No Odor
13:51	5	125	7.21	1.87	7.14	8.96	0.02	0.06	15.4	-88.3	Clear	No Odor
13:56	5	125	7.21	2.04	7.14	8.90	0.02	0.05	16.0	-89.1	Clear	No Odor
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Constituents Sampled	Container	Number	Preservative
1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, VC	40 mL Glass	3	HCL
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Comments none

Well Casing Volumes

Gallons/Foot					
	1" = 0.04	*1.5" = 0.09*	*2.5" = 0.26*	*3.5" = 0.50*	*6" = 1.47*
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Well Information

Well Location:	On-site, NE	Well Locked at Arrival:	n/a
Condition of Well:	Good	Well Locked at Departure:	n/a
Well Completion:	Flush mount	Lock Functioning:	n/a