Attachment 1

Sampling Calibration, Redevelopment and Field Sampling Logbooks

United States Environmental Protection Agency
Region 4
Laboratory Services and Applied Science Division
980 College Station Road
Athens, Georgia 30605-2720

Flash Cleaners

4131 North Federal Highway
Pompano Beach, FL

LSASD Project ID# **24-0006**

Project Leader: **Paula Whiting**

Field Instrument Calibration Logbook

Book 1 of 1

Inclusive Dates: **January 8-12, 2024**

List of personnel:

Name/Affiliation	Initials
Lydia Williams/ESAT	LW
Don Fortson/ESAT	DF
Nick Blabaugh/ESAT	NB

Date 1/8/24

Instruments

Instrument Field #	1/11/23 (pb) LSASD ID #	pH	µS	°C	NTU	DO	ORP
1	~~072216-01~~ GP6303	X	X	X			
2	092718-03				X		
3	1/11 ~~072216-01~~ 013114-03					X	X
4	020314-05	X	X	X			
5	090310-06				X		
6	013114-04					X	X
7		X	X	X			
8					X		
9						X	X
10		X	X	X			
11					X		
12						X	X

Calibration Standards

Standard	Value	Manufacturer	Lot #	Expiration
pH	4	Fisher	BW2	4-25
pH	7	Fisher	BU1	8-25
pH	10	Fisher	222368	10-24
Conductivity	1413 µS	Pine	3QP350	4-24
Turbidity Standard Set #	10	Hach	A3079	0624
	20	Hach	A3079	0624
	100	Hach	A3080	0624
Turbidity Standard Set #	10			
	20			
	100			
NIST Thermometer	-	Fisher	251721-03	3-01-24
NIST Thermometer	-			
ORP – Zobell Solution	-	YSI	22F100175	6-7-27
ORP – Zobell Solution	-	YSI	22F100175	6-7-27

Notes:
Stor Mor Buffer Set:

pH	Manufacturer	Lot#	Expiration Date
4			
7			
10			

$T_{AMB} = 21.9°C$ $T_{AMB} = 22.6°C$

Calibration Date 1/8/24 Time 08:15 End Check Time 17:55

Instrument #	Parameter	Standard Value	Pre-Cal Reading	Calibration/ Verification	Post-Cal Reading	End of Day Check	Initials
1	pH	4					
1	pH	7					
1	pH	10					
1	Spec Cond	1413 µS		1413 µS			
1	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
2	Turbidity	0		0.05		0.11	LW
2	Turbidity	10		9.55		9.44	observed by DF
2	Turbidity	20		18.5		18.9	
2	Turbidity	100		97.8		96.9	
3	DO	100		100			
3	ORP@ °C					ORP STD: Meter:	
4	pH	4					
4	pH	7					
4	pH	10					
4	Spec Cond	1413 µS		1413 µS			
4	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
5	Turbidity	0					
5	Turbidity	10					
5	Turbidity	20					
5	Turbidity	100					
6	DO	100		100			
6	ORP@ °C					ORP STD: Meter:	
7	pH	4					
7	pH	7					
7	pH	10					
7	Spec Cond	1413 µS		1413 µS			
7	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
8	Turbidity	0					
8	Turbidity	10					
8	Turbidity	20					
8	Turbidity	100					
9	DO	100		100			
9	ORP@ °C					ORP STD: Meter:	

TAMB= 24.9°C

Calibration Date 1/9/24 Time 06:03 End Check Time 18:06

Instrument #	Parameter	Standard Value	Pre-Cal Reading	Calibration/ Verification	Post-Cal Reading	End of Day Check	Initials
1	pH	4					
1	pH	7					
1	pH	10					
1	Spec Cond	1413 µS		1413 µS			
1	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
2	Turbidity	0		0.09		0.09	LW
2	Turbidity	10		9.54		9.38	
2	Turbidity	20		19.1		18.6	
2	Turbidity	100		98.3		96.3	
3	DO	100		100			
3	ORP@ °C					ORP STD: Meter:	
4	pH	4					
4	pH	7					
4	pH	10					
4	Spec Cond	1413 µS		1413 µS			
4	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
5	Turbidity	0					
5	Turbidity	10					
5	Turbidity	20					
5	Turbidity	100					
6	DO	100		100			
6	ORP@ °C					ORP STD: Meter:	
7	pH	4					
7	pH	7					
7	pH	10					
7	Spec Cond	1413 µS		1413 µS			
7	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
8	Turbidity	0					
8	Turbidity	10					
8	Turbidity	20					
8	Turbidity	100					
9	DO	100		100			
9	ORP@ °C					ORP STD: Meter:	

Calibration Date 1/12/24 Time 0800 End Check Time _____

Instrument #	Parameter	Standard Value	Pre-Cal Reading	Calibration/ Verification	Post-Cal Reading	End of Day Check	Initials
1	pH	4	4.02	4.01	4.03	4.03	
1	pH	7 NB 1-12	~~7.10~~ 7.02	7.00	7.01	6.99	
1	pH	10	9.93	10.03	10.02	9.95	
1	Spec Cond	1413 µS	1401	1413 µS	1415	1409	
1	Temp	NIST: 23.5 °C		Meter: 23.6 °C		NIST: 27.3 °C Meter: 27.3 °C	
2	Turbidity	0		0.21		0.11	
2	Turbidity	10		9.45		9.63	
2	Turbidity	20		19.2		19.1	
2	Turbidity	100		99.1		98.5	
3	DO	100	95.4	100	100.0	99.3	
3	ORP@ 23.5°C	224.47	225.5	224.4	224.4	ORP STD: 215.65 Meter: 224.3	
4	pH	4	4.10	4.01	4.00	4.00	
4	pH	7	7.10	7.00	6.98	7.00	
4	pH	10	10.15	SLP 99.3	10.00	1-12 NB 10.05	
4	Spec Cond	1413 µS	1431	1413 µS	~~1413~~ 1416	1414	
4	Temp	NIST: 23.3 °C		Meter: 23.4 °C		NIST: 27.3 °C Meter: 27.3 °C	
5	Turbidity	0		0.50		0.12	
5	Turbidity	10		9.57		9.61	
5	Turbidity	20		19.4		19.2	
5	Turbidity	100		97.8		98.0	
6	DO	100	100.2	100	100.1	99.6	
6	ORP@ 24.3 °C	224.47	221.0	224.4	224.4	ORP STD: 215.65 Meter: 213.4	
7	pH	4					
7	pH	7					
7	pH	10					
7	Spec Cond	1413 µS		1413 µS			
7	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
8	Turbidity	0					
8	Turbidity	10					
8	Turbidity	20					
8	Turbidity	100					
9	DO	100		100			
9	ORP@ °C					ORP STD: Meter:	

Calibration Date _____ Time _____ End Check Time _____

Instrument #	Parameter	Standard Value	Pre-Cal Reading	Calibration/ Verification	Post-Cal Reading	End of Day Check	Initials
1	pH	4					
1	pH	7					
1	pH	10					
1	Spec Cond	1413 µS		1413 µS			
1	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
2	Turbidity	0					
2	Turbidity	10					
2	Turbidity	20					
2	Turbidity	100					
3	DO	100		100			
3	ORP@ °C					ORP STD: Meter:	
4	pH	4					
4	pH	7					
4	pH	10					
4	Spec Cond	1413 µS		1413 µS			
4	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
5	Turbidity	0					
5	Turbidity	10					
5	Turbidity	20					
5	Turbidity	100					
6	DO	100		100			
6	ORP@ °C					ORP STD: Meter:	
7	pH	4					
7	pH	7					
7	pH	10					
7	Spec Cond	1413 µS		1413 µS			
7	Temp	NIST: °C		Meter: °C		NIST: °C Meter: °C	
8	Turbidity	0					
8	Turbidity	10					
8	Turbidity	20					
8	Turbidity	100					
9	DO	100		100			
9	ORP@ °C					ORP STD: Meter:	

END OF LOG
1-12-24
NB

United States Environmental Protection Agency
Region 4
Laboratory Services and Applied Science Division
Hazardous Waste Section
980 College Station Road
Athens, Georgia 30605-2720

Project Name: Flash Cleaners
Project Location: Pompano Beach, Florida
Project ID Number: 24-0006
Project Leader: Paula Whiting

Field Measurement and Groundwater ~~Sampling~~ Redevelopment PAW Logbook

Book 1 **of** 1

Inclusive Dates: January 8 – 1/9/24, 2024

List of personnel in logbook:

Name	Initials	Organization/Duties
Paula Whiting	PAW	Project Lead, Scribe, Sampler
~~Kevin Simmons~~ PAW 1/8/24		
Don Fortson	DF	
Nick Blubaugh	NB	
Lydia Williams	LW	

The following field procedures will be used unless otherwise stated in the field logbooks:

SESDPROC-011-R5, Field Sampling Quality Control
SESDPROC-100-R5, Field pH Measurement
SESDPROC-101-R7, Field Specific Conductance Measurement
SESDPROC-102-R5, Field Temperature Measurement
SESDPROC-103-R4, Field Turbidity Measurement
SESDPROC-105-R4, Groundwater Level and Well Depth Measurement
SESDPROC-106-R4, Field Dissolved Oxygen Measurement
SESDPROC-113-R2, Oxidation-Reduction Potential Measurement
SESDPROC-202-R4, Management of Investigation Derived Waste
SESDPROC-205-R4, Field Equipment Cleaning and Decontamination
SESDPROC-209-R4, Packing, Marking, Labeling & Shipping of Environmental & Waste Samples
SESDPROC-301-R4, Groundwater Sampling

Notes:

- Groundwater samples were not filtered.
- Groundwater samples were collected using the "tubing-in-screened-interval" method as described in SESDPROC-301-R4, Section 3.5 unless otherwise noted in this logbook.

Existing tubing used if present and in good condition, otherwise new tubing will be used.

- **GPS coordinates and analyses are listed in Table 1, see page 4**

- **Well construction information is listed in Table 1, see page 4.**

- **Site map is Figure 1, see page 5.**

- **Sample ID is Station ID plus "-0124".**

Well Development
Because of the depth of most wells selected, some aspects of well development may not be possible by hand because of length and weight of downhole apparatus. Where possible, the development of the wells will begin by surging the screen intervals with an appropriately sized swab attached to pipe. The swabbing action will loosen any sediment obstructing the screen and sand pack. After the entire length of the screen has been sufficiently swabbed, if physically possible, based on well depth, a Waterra hydrolift 2 pump with surge block will pump and surge the screen interval starting from the bottom and gradually adjusted at regular intervals until the entirety of the screen has been surged and pumped. The main method of development, and possibly the only means of development, for the deeper wells will be using a Grundfos Rediflo II to pump and surge the well, forcing water in and out through the sand pack and screen to clear any remaining sediment from the screen and well.

Depths to water will be recorded just prior to commencing well development. During development a turbidity meter will be used to periodically measure the turbidity as a gauge for progress of development. The team leader will determine when enough time and effort has been spent of individual wells.

All investigation derived waste (IDW) water will be containerized in 55-gallon drums and stored for later disposal.

Instrument calibration information is recorded in a separate instrument calibration logbook. Record instrument # (e.g. 1, 2, 3…) from the calibration logbook below:

Dates Used	Conductivity/pH	DO/ORP	Turbidity
01/08/24			2

Notes:

Water Level: 072908-02

Table 1: Monitoring Well Information

Station ID	Latitude	Longitude	Well Depth (ft)	Screen Length (ft)	Screen Interval (ft bgs)	Well Diameter (in)	Analyses
FCMW03	26.28240623	-80.09693237	15	10	5-15	1	PFAS
FCMW06	26.28240002	-80.09668674	25	10	15-25	2	PFAS, VOC
FCMW07	26.28239869	-80.09666939	100	5	95-100	2	PFAS
FCMW10	26.28241860	-80.09666880	68	5	63-68	2	PFAS
FCMW23	26.28245300	-80.09662500	45	5	40-45	1	PFAS, VOC

ft bgs - Feet Below Ground Surface

Figure 1: Monitoring Well Locations

Notes:

1/8/24
Peristaltic pump power switch internal connection was broken.
Call LSASD to ship a replacement pump.

Date: 1/8/24 Station ID: FCMW03 Sample ID: N/A

Team Members
D. Fortson, N. Blubaugh
L. Williams, P. Whating

Duties
Surging, purging
" "

15.03

Well Diameter (in) 1"
Well Depth (ft) 14.94 + 0.09
Water Level (ft) 5.92
Water Column (ft) ~~10.02~~ PAW ~~9.02~~ 9.11 PAW 1/8/24

14.86
.09
14.95

Well screen length (ft) 10
Tubing intake (ft above bottom)
Total well volume = 0.1632 gal/ft * Water Column
Purge Volume (gal)

Purge Start Time 850 / 940

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
945		1.5						260
957		2.5						39.5
1005		3.5						18.8
1019		5.25						9.23
1031		6.7						6.46
1050		13.2						3.85
1106		15.7						3.01
1121		18.7						2.63
1142		21.7						2.04

1.75
3.2 PAW
3.5+3
3.5
3.5

Sample Collection Time [ ]

MS/MSD? [ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: Peristaltic pump purging

Plunging/Surging/Screen Swabbing: ☑

Date / Time

PAW 1/8/24
~~[ ] All samples placed on ice/cooler checked for ice/water~~

Environmental conditions:
warm, overcast

Sample media description (odor, color, etc.):
Brown mud groundwater, light sheen on surface, sandy sediment

Procedure deviations/Comments/Notes: peristatic pump purging start @ 940
Scrubber added to HDPE Grundfos poly purge tubing
1" OWD-100 - using up and down motion to scrub sides.
@915 Waterra used for surging. @5min intervals tubing pulled up.

Date: 1/8/24 Station ID: FCMW23 Sample ID: N/A

Team Members	Duties
D. Fortson, L. Williams	Surging, Purging
P. Whiting, N. Blubaugh	" "

Well Diameter (in): 1"

Well Depth (ft): 44.22 + .10 = 44.32

Water Level (ft): 5.39

Water Column (ft): 38.93

Well screen length (ft): 5

Tubing intake (ft above bottom):

Total well volume = 0.1632 gal/ft * Water Column

Purge Volume (gal)

Purge Start Time 1105

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
1140		Gallons						463/937 new tubing on bottom
1146		2.0						353
1150		2.75						230
1157		3.5						489
1225		4.75						497 367
3.5+2.5 1255		10.75						392
13:15		13.75						523
PMW 6.0 3.5 3.5 1415	At WL	~~23~~ 23.25						379
1503		30.25						206
1510		33.75						99.9

Sample Collection Time | | MS/MSD? | | |

Continue next page →

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: peristaltic pump - purging

Plunging/Surging/Screen Swabbing: ☑

Date / Time

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
warm, overcast

Sample media description (odor, color, etc.):
tan GW w/ sandy sediment, soapy foam on top, slight odor, film layer on GW

Procedure deviations/Comments/Notes:
@ 10:18 start surging w/ Waterra and scrubber
@ 1105 started peristaltic pump for purging, geopump has a bad power switch
1116 running, changed to new HDPE tubing

Date: 1/8/24 1/9/24 Station ID: FCMW23 cont. Sample ID: N/A

Date: Station ID: Sample ID:

Team Members D. Fortson, N Blubaugh, L Williams, P Whiting

Duties Surging, purging " "

Well Diameter (in) 1"

Well Depth (ft) 44.32

Water Level (ft) 5.39

Water Column (ft) 38.93

Well screen length (ft) 5

Tubing intake (ft above bottom)

Total well volume = 0.1632 gal/ft * Water Column

Purge Volume (gal)

Purge Start Time 1105

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
1520								48.0
1625		42.75						32.9
1700		~~47.25~~ PAW	47.25					33.1
1/9/24 0841		1.75						19.2
0903		5.25						8.92
0938		8.75						5.55
1000		11.75						~~3.91~~ PAW
1035		14.75						3.91

540 change battery 520 change battery 1/9/24 0841 start

70

Sample Collection Time		MS/MSD?		

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: peristaltic pump purging **Plunging/Surging/Screen Swabbing:** ☑

Date / Time

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
overcast, windy/breezy, slightly cool

Sample media description (odor, color, etc.):
clear tan color, odor

Procedure deviations/Comments/Notes:
peristaltic pumping to purge well to turbidity under 10 NTU. 1/9/24 - restart pumping @ 831

Date: 1/8/24 Station ID: FCMW06 Sample ID: N/A

Team Members: N. Blubaugh, P Whiting, D. Fortson, L. Williams

Duties: Surging and Pursging

Well Diameter (in): 2"

Well Depth (ft): 24.3+0.09

Water Level (ft): 5.4

Water Column (ft): 18.99

Well screen length (ft): 10

Tubing intake (ft above bottom):

Total well volume = 0.1632 gal/ft * Water Column

Purge Volume (gal)

Purge Start Time 1330 / 1545

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
~~1520~~ PMW								~~48.0~~ PMW
1605		12.0						43.2
1610		15.5						32.1
1615		18.0						30.0
1.0 1620		21.0						208
1632		25.0						2.92
1648		28.5						5.11 ✓

Sample Collection Time: [ ]

MS/MSD? [ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: Grundfos

Plunging/Surging/Screen Swabbing: ☑

Date / Time

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
overcast, windy, slightly cool

Sample media description (odor, color, etc.):
Soapy feel, gray GW, odor, gray sediment, oily film on surface

Procedure deviations/Comments/Notes:
Using grundfos pump/hdpe tubing to purge, sandy silt clogging pump

Date:_____ **Station ID:**_____ **Sample ID:**_____

Team Members **Duties**

_____ _____

_____ _____

Well Diameter (in) _____ Well screen length (ft) _____

Well Depth (ft) _____ Tubing intake (ft above bottom) _____

Water Level (ft) _____ Total well volume = 0.1632 gal/ft * Water Column _____

Water Column (ft) _____ Purge Volume (gal) _____

Purge Start Time _____

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU

1/08/24

DAW

Sample Collection Time [ ] **MS/MSD?** [ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☐Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: **Plunging/Surging/Screen Swabbing:** ☐

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:

Sample media description (odor, color, etc.):

Procedure deviations/Comments/Notes:

Date: 1/8/24 **Station ID:** FCMW10 **Sample ID:** N/A

Team Members D. Fortson, N. Blubaugh, L. Williams, P. Whiting

Duties Surging, Purging

Well Diameter (in) 2

Well Depth (ft) 68.28+0.09 68.37

Water Level (ft) 4.96

Water Column (ft) 63.41

Well screen length (ft) 5

Tubing intake (ft above bottom)

Total well volume = 0.1632 gal/ft * Water Column

Purge Volume (gal)

Purge Start Time 1640

99.4 ntu

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU	
1655		—						3.47	
1700		—						23.05	pump lowered
1706		—						3.72	
1711		—						3.46	1706 lowered pump, Stowed pump 3.46
1720								7.75	

Sample Collection Time [ ] **MS/MSD?** [ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: Grundfos pump for purging @1640, pumping directly into 55 gal drum **Plunging/Surging/Screen Swabbing:** ☑

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions: Overcast, windy

Sample media description (odor, color, etc.): pumped 64 gal in 30 min. gray GW w/odor

Procedure deviations/Comments/Notes: Stopped Waterra pump @ 1400 because IDW drums full. Restarted @ 1500. 0948 started Waterra; 1145 waterra stopped - for FCMW07 @1215 waterra started for FCMW10. @ 1535 Waterra stopped

Date:_____ **Station ID:**_____ **Sample ID:**_____

Team Members **Duties**

_____ _____

_____ _____

Well Diameter (in) _____ Well screen length (ft) _____

Well Depth (ft) _____ Tubing intake (ft above bottom) _____

Water Level (ft) _____ Total well volume = 0.1632 gal/ft * Water Column _____

Water Column (ft) _____ Purge Volume (gal) _____

Purge Start Time _____

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU

Sample Collection Time [ ] **MS/MSD?** [ ]

PMN 1/08/24

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☐Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: **Plunging/Surging/Screen Swabbing:** ☐

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:

Sample media description (odor, color, etc.):

Procedure deviations/Comments/Notes:

Date: 01/09/24 Station ID: FCMW07 Sample ID: N/A

Date: _____ Station ID: _____ Sample ID: _____

Team Members	Duties
D. Fortson, N. Blubaugh	Scrub, Surge
L. Williams, P. Whiting	Surge, Purge

Well Diameter (in)	2	Well screen length (ft) = 102.27	5
Well Depth (ft)	102.18+0.09	Tubing intake (ft above bottom)	
Water Level (ft)	5.1	Total well volume = 0.1632 gal/ft * Water Column	
Water Column (ft)	97.09	Purge Volume (gal)	

Purge Start Time ~~1215~~ / ~~1239~~ 1312 PMW 1/9/24

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
1317		—						17.8
1330		—						2.97
dropped 3ft 1350		—						0.66
1520		—						1.03
1550		—						0.54 ✓

Sample Collection Time		MS/MSD?	[ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☑Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: Grundfos pump used grundfos pump/controller w/125' of hose, pump directly to 55gal drum. no volume documented.

Plunging/Surging/Screen Swabbing: ☑

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions: Windy, warm, overcast

Pump ~~ed~~ stopped @ 1400 because drums were full and being emptied @ Broward Co. Restart @ 1500

Sample media description (odor, color, etc.): gray GW, silty

Procedure deviations/Comments/Notes: 0948 waterra started, 1145 waterra stopped. Using scrubber to loosen sediment from screen, then waterra to surge sediment and gray GW up. @1215 waterra started for FCMW10

Flash Cleaners Grundfos pump red tagged - stopped working

Date:_____ **Station ID:**_____ **Sample ID:**_____

Team Members **Duties**

_____ _____

_____ _____

Well Diameter (in) _____ Well screen length (ft) _____

Well Depth (ft) _____ Tubing intake (ft above bottom) _____

Water Level (ft) _____ Total well volume = 0.1632 gal/ft * Water Column _____

Water Column (ft) _____ Purge Volume (gal) _____

Purge Start Time _____

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU

1-9-24 NB END OF LOG

Sample Collection Time [ ] **MS/MSD?** [ ]

Type Pump(s) Used: ☐Grundfos Redi Flo ☐Mega-Monsoon ☐Waterra Inertial ☐Other ☐Surge Block

Other Equipment and Techniques Used: **Plunging/Surging/Screen Swabbing:** ☐

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:

Sample media description (odor, color, etc.):

Procedure deviations/Comments/Notes:

United States Environmental Protection Agency
Region 4
Laboratory Services and Applied Science Division
Hazardous Waste Section
980 College Station Road
Athens, Georgia 30605-2720

Project Name: Flash Cleaners
Project Location: Pompano Beach, Florida
Project ID Number: 24-0006
Project Leader: Paula Whiting

Field Measurement and Groundwater Sampling Logbook

Book 1 **of** 1

Inclusive Dates: January ~~8~~ PAW 12, 2024

List of personnel in logbook:

Name	Initials	Organization/Duties
Paula Whiting	PAW	Project Lead, Scribe, Sampler
~~Kevin Simmons~~ PAW 1/11/24		
Don Fortson	DF	
Nick Blubaugh	NB	
Lydia Williams	LW	

The following field procedures will be used unless otherwise stated in the field logbooks:

SESDPROC-011-R5, Field Sampling Quality Control
SESDPROC-100-R5, Field pH Measurement
SESDPROC-101-R7, Field Specific Conductance Measurement
SESDPROC-102-R5, Field Temperature Measurement
SESDPROC-103-R4, Field Turbidity Measurement
SESDPROC-105-R4, Groundwater Level and Well Depth Measurement
SESDPROC-106-R4, Field Dissolved Oxygen Measurement
SESDPROC-113-R2, Oxidation-Reduction Potential Measurement
SESDPROC-202-R4, Management of Investigation Derived Waste
SESDPROC-205-R4, Field Equipment Cleaning and Decontamination
SESDPROC-209-R4, Packing, Marking, Labeling & Shipping of Environmental & Waste Samples
SESDPROC-301-R4, Groundwater Sampling

Notes:

- Groundwater samples were not filtered.
- Groundwater samples were collected using the "tubing-in-screened-interval" method as described in SESDPROC-301-R4, Section 3.5 unless otherwise noted in this logbook.

Existing tubing used if present and in good condition, otherwise new tubing will be used.

- **GPS coordinates and analyses are listed in Table 1, see page 4**

- **Well construction information is listed in Table 1, see page 4.**

- **Site map is Figure 1, see page 5.**

- **Sample ID is Station ID plus "-0124".**

Well Development

Because of the depth of most wells selected, some aspects of well development may not be possible by hand because of length and weight of downhole apparatus. Where possible, the development of the wells will begin by surging the screen intervals with an appropriately sized swab attached to pipe. The swabbing action will loosen any sediment obstructing the screen and sand pack. After the entire length of the screen has been sufficiently swabbed, if physically possible, based on well depth, a Waterra hydrolift 2 pump with surge block will pump and surge the screen interval starting from the bottom and gradually adjusted at regular intervals until the entirety of the screen has been surged and pumped. The main method of development, and possibly the only means of development, for the deeper wells will be using a Grundfos Rediflo II to pump and surge the well, forcing water in and out through the sand pack and screen to clear any remaining sediment from the screen and well.

Depths to water will be recorded just prior to commencing well development. During development a turbidity meter will be used to periodically measure the turbidity as a gauge for progress of development. The team leader will determine when enough time and effort has been spent of individual wells.

All investigation derived waste (IDW) water will be containerized in 55-gallon drums and stored for later disposal.

Instrument calibration information is recorded in a separate instrument calibration logbook. Record instrument # (e.g. 1, 2, 3…) from the calibration logbook below:

Dates Used	Conductivity/pH	DO/ORP	Turbidity
01/12/24	1	3	2
01/12/24	4	6	5

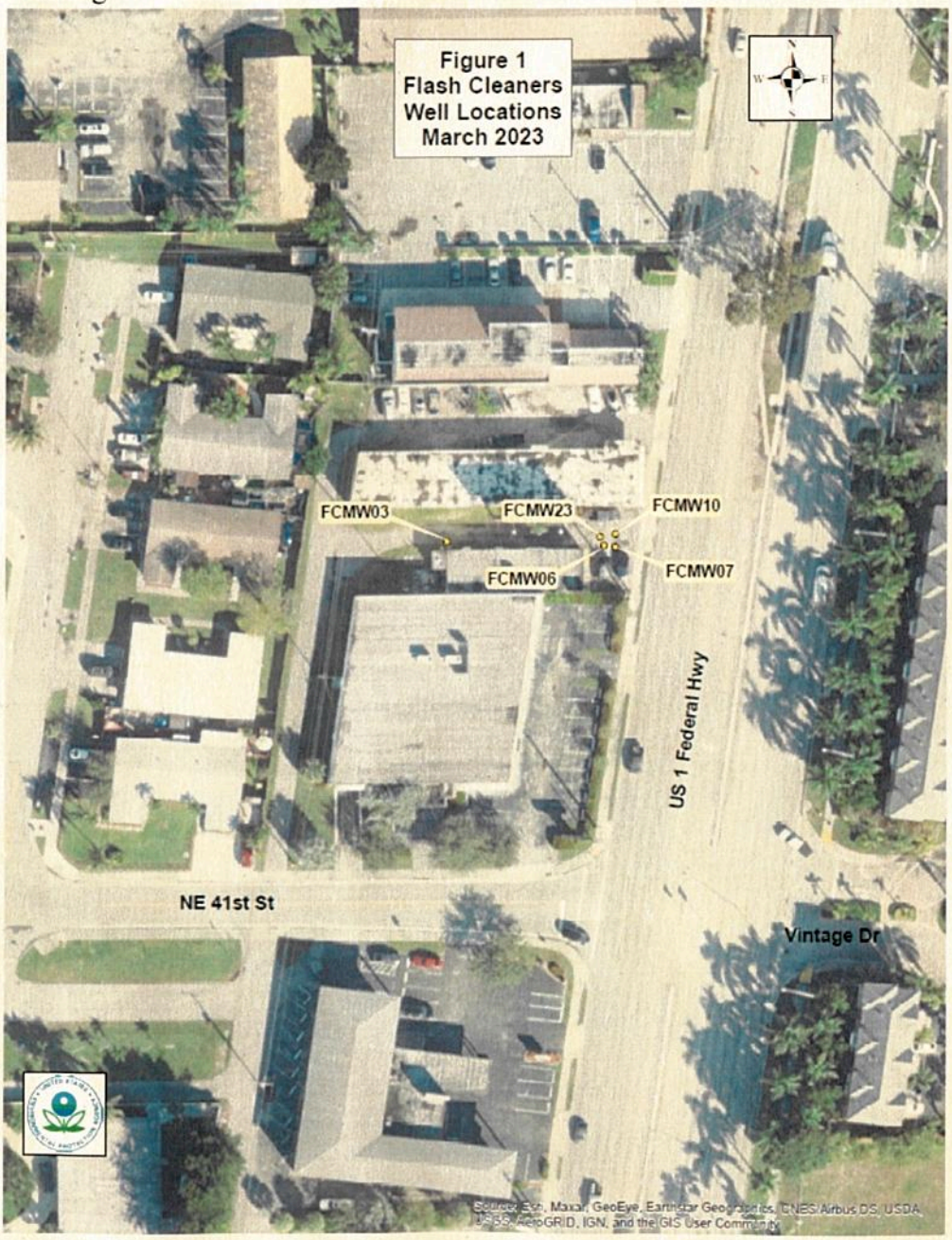
Notes:

Table 1: Monitoring Well Information

Station ID	Latitude	Longitude	Well Depth (ft)	Screen Length (ft)	Screen Interval (ft bgs)	Well Diameter (in)	Analyses
FCMW03	26.28240623	-80.09693237	15	10	5-15	1	PFAS
FCMW06	26.28240002	-80.09668674	25	10	15-25	2	PFAS, VOC
FCMW07	26.28239869	-80.09666939	100	5	95-100	2	PFAS
FCMW10	26.28241860	-80.09666880	68	5	63-68	2	PFAS
FCMW23	26.28245300	-80.09662500	45	5	40-45	1	PFAS, VOC

ft bgs - Feet Below Ground Surface

Figure 1: Monitoring Well Locations



Notes:

Date: 1/12/24 Station ID: FCMW03 Sample ID: FCMW03-0124

Team Members	Duties
P. Whiting	Sampler
N. Blubaugh	Sampler

Well Diameter (in): 1"

Well Depth (ft): 14.85+0.09 (14.94)

Water Level (ft): 5.83

Water Column (ft): 9.11

Well screen length (ft): 10

Tubing intake (ft above bottom): 5

Total well volume = 0.1632 gal/ft * Water Column

Purge Volume (gal)

Purge Start Time 0825

initial turbidity = 171 NTU

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
0850	5.85	2.30	6.67	26.6	473.4	—	—	7.06
0900	5.89	3.40	6.60	26.5	444.0	0.44	—	166
0915	5.89	4.75	6.65	26.7	468.1	0.32	-10	8.13
0925	5.85	5.85	6.64	26.7	465.9	0.35	-20	2.74
0937	5.85	~~6.00~~ PAW 7.00	6.63	26.7	465.5	0.35	-30	3.30
0952	5.88	8.00	6.64	26.7	464.1 PAW	0.36	-90	1.93

Sample Collection Time: 0955

MS/MSD? ~~N~~ PAW 1/12/24

Analyses	Container Type	Collected	Preservation	Samples Iced?
PFAS	250 ml poly – 2	[ ]	Ice + HCl	[ ]
~~VOC~~	~~40 ml vial – 3~~	~~[ ]~~	~~Ice + HCl~~	~~[ ]~~ PAW 1/12/24

If Duplicate Sample:

Sample ID

Date / Time

[✓] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
overcast, humid, sunny w/ clouds

Sample media description (odor, color, etc.):
Clear GW, brown color, reddish sediment, silty

Procedure deviations/Comments/Notes:
using peristaltic pump for low flow purge

Date: 1/12/24 Station ID: FCMW23 Sample ID: FCMW23-0124

Team Members	Duties
D. Fortson	Sampler
L. Williams	Sampler

Well Diameter (in)	1"	Well screen length (ft)	5
Well Depth (ft)	44.32	Tubing intake (ft above bottom)	2.5
Water Level (ft)	5.28	Total well volume = 0.1632 gal/ft * Water Column	
Water Column (ft)	39.04	Purge Volume (gal)	

Purge Start Time 0934

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
0941	5.32	1.0	7.01	—	641.0	0.04	30	14.5
0946	5.32	1.6	7.01	—	644.9	0.02	10	5.57
0951	5.32	2.2	7.02	—	644.1	0.02	-30	6.13
0956	5.32	2.9	7.03	—	634.7	0.01	-60	4.20
1001	5.32	3.5	7.03	27.6	632.6	0.01	-100	3.95

Sample Collection Time 1010 MS/MSD? ☑

Analyses	Container Type	Collected	Preservation	Samples Iced?
PFAS	250 ml poly – ~~2~~ 4	[ ]	Ice + HCl	[ ]
VOC	40 ml vial – ~~3~~ 6	[ ]	Ice + HCl	[ ]

If Duplicate Sample:

Sample ID_____

Date / Time_____

[✓] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
humid, overcast, sunny

Sample media description (odor, color, etc.):
tan clear GW,

Procedure deviations/Comments/Notes:
peristaltic pump for low flow purging

Date: 1/12/24 Station ID: FCMW10 Sample ID: FCMW10-0124

Team Members	Duties
D. Fortson	Sampler
L. Williams	Sampler

Well Diameter (in)	2	Well screen length (ft)	5
Well Depth (ft)	68.37	Tubing intake (ft above bottom)	2.5
Water Level (ft)	4.83	Total well volume = 0.1632 gal/ft * Water Column	
Water Column (ft)	63.54	Purge Volume (gal)	

Purge Start Time 1056

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
10:58	4.88	0.5	7.32	27.8	399.8	0.13	-210	62.4
11:08	4.88	1.6	7.21	27.9	444.0	0.06	-240	18.3
11:13	4.88	2.2	7.22	27.9	437.0	0.06	-260	13.1
11:18	4.88	2.5	7.23	27.9	432.2	0.06	-280	10.3
11:23	4.88	3.3	7.24	27.9	426.6	0.06	-280	7.82
11:28	4.88	3.7	7.24	28.0	421.4	0.06	-290	6.32

Sample Collection Time 11:35 MS/MSD? [ ]

Analyses	Container Type	Collected	Preservation	Samples Iced?
PFAS	250 ml poly – 2	[✓]	Ice + HCl	[✓]
~~VOC~~	~~40 ml vial – 3~~	[ ]	~~Ice + HCl~~	[ ]

If Duplicate Sample:

Sample ID PMW 1/12/24

Date / Time

[✓] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
overcast, humid, light wind, sunny intermittent

Sample media description (odor, color, etc.):
gray groundwater w/sediment, silty

Procedure deviations/Comments/Notes:
peristaltic pump ~~for~~ low flow purging

Date: 1/12/24 Station ID: FCMW06 Sample ID: FCMW06-0124

Team Members	Duties
P Whiting	Sampler
N. Blabaugh	Sampler

Well Diameter (in)	2	Well screen length (ft)	10
Well Depth (ft)	24.39	Tubing intake (ft above bottom)	5
Water Level (ft)	5.20	Total well volume = 0.1632 gal/ft * Water Column	
Water Column (ft)	19.19	Purge Volume (gal)	

Purge Start Time 1055

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
1102	5.5	1.10	6.08	28.7	506.3	0.12	-130	4.48
1115	5.5	3.15	6.08	28.5	518.2	0.05	-140	4.47
1120	5.5	4.25	6.16	28.8	586.9	0.05	-160	4.66
1125	5.5	5.25	6.20	28.9	627.8	0.05	-160	3.93
1130	5.51	6.25	6.20	28.9	643.6	0.05	-160	3.60
1135	5.52	7.25	6.23	28.9	673.3	0.04	-170	3.09

Sample Collection Time 1140 MS/MSD? [ ]

Analyses	Container Type 4	Collected	Preservation	Samples Iced?
PFAS	250 ml poly ~~2~~	[✓]	Ice + HCl	[✓]
VOC	40 ml vial ~~3~~ 6	[ ]	Ice + HCl	[ ]

If Duplicate Sample:

Sample ID FCMW06D-0124

Date / Time 1145

[✓] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
Overcast, humid, sunny

Sample media description (odor, color, etc.):
yellow clear ground water, odor, soapy bubbles on water surface, GW has slick feeling

Procedure deviations/Comments/Notes:
peristaltic pump for low flow pursing

Date: 1/12/24 Station ID: FCMW07 Sample ID: FCMW07-0124

Team Members	Duties
D Fortson	Sampler
L Williams	Sampler

Well Diameter (in): 2

Well Depth (ft): 100

Water Level (ft): 5.09

Water Column (ft): 94.91

Well screen length (ft): 5

Tubing intake (ft above bottom): 2.5

Total well volume = 0.1632 gal/ft * Water Column _____

Purge Volume (gal) _____

Purge Start Time 11:57

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU
12:00	5.09	0.7	7.32	28.0	315.0	4.16	-200	23.5
12:05	5.09	1.4	7.20	27.9	343.0	4.08	-220	16.5
12:10	5.09	2.2	7.05	27.9	364.8	4.01	-250	12.4
12:15	5.06	2.9	7.03	27.9	366.4	3.05	-260	10.1
12:20	5.06	3.5	7.03	27.9	369.1	3.10	-260	10.1
12:25	5.06	~~0.5~~ 4.0	7.01	27.9	370.6	0.06	-270	10.3
12:30	5.06	4.5	7.02	27.8	373.3	0.09	-270	8.56
12:35	5.06	5.1	7.04	27.8	377.5	0.06	-270	6.55

N 12/24

Sample Collection Time: 12:40

MS/MSD? [ ]

Analyses	Container Type	Collected	Preservation	Samples Iced?
PFAS	250 ml poly – 2	[✓]	Ice + HCl	[✓]
~~VOC~~	~~40 ml vial – 3~~	[ ]	~~Ice + HCl~~	[ ]

If Duplicate Sample:

Sample ID _____

PAW 1/12/24

Date / Time _____

[✓] All samples placed on ice/cooler checked for ice/water

Environmental conditions:
Overcast, sunny, humid

Sample media description (odor, color, etc.):
Clear groundwater, brown color

Procedure deviations/Comments/Notes:
Peristatic pump for low flow purging

Date:_____ **Station ID:**_____ **Sample ID:**_____

Team Members **Duties**

_____ _____

_____ _____

Well Diameter (in) _____ Well screen length (ft) _____

Well Depth (ft) _____ Tubing intake (ft above bottom) _____

Water Level (ft) _____ Total well volume = 0.1632 gal/ft * Water Column _____

Water Column (ft) _____ Purge Volume (gal) _____

Purge Start Time ~~11:57~~

Time	Depth to Water	Cumulative Volume	pH (S.U.)	Temp (°C)	Spec Cond (µS/cm)	DO (mg/L)	ORP (mV)	NTU

NB 1-12-2024 END OF LOG

Sample Collection Time [ ] **MS/MSD?** [ ]

Analyses	Container Type	Collected	Preservation	Samples Iced?
PFAS	250 ml poly – 2	[ ]	Ice + HCl	[ ]
VOC	40 ml vial – 3	[ ]	Ice + HCl	[ ]

If Duplicate Sample:

Sample ID_____

Date / Time_____

[ ] All samples placed on ice/cooler checked for ice/water

Environmental conditions:

Sample media description (odor, color, etc.):

Procedure deviations/Comments/Notes: