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WELL MEASUREMENT LOG

MPL#3 - Wells

Date 8-29-13 Personnel: Brad Davis, Georgo Esqueda, Rustin Baca

Well ID		DTW(toc)	TD(toc)	Time	Notes
MW-009	ms/msd	220.09	~~230.3~~ 230.25	1140	
MW-010		200.71	215.70	1207	
MW-011		197.35	215.72	1216	
MW-012	QC	~~195~~ 194.65	210.83	1234	

Non-Dedicated Pumps.

Use 1 foot length - 1 ¾ inch diameter Sample Pro Pump w/disposable bladders.

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WELL SAMPLING FIELD LOG

Date: 8-29-13 Personnel: Brad Davis George Esquela Rustin Baca

Well ID: MW-012 MPL#3

Air Temp: 72°F Water Quality Meter: YSI MPS, s/n 06E2472

Weather: overcast Water Level Indicator: Solinst # 18

Pump #: 11287 Turbidity Meter: Lutron TU2016 # 34074

Drum: Comp. Poly 30gl

Well TD: 210.83 ft. Well Size: (4") 2" 5"

DTW (TOC): 194.80 ~~195.65~~ ft. DTW (bgs): 192.05 ft.

LOC: 2.60 ft.

Date: 8-29-13 Well ID: MW-012

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
194.88	1309	In.	24.45	0.684	0.449	7.52	7.31	87.0	4.24
194.95	1314	600	24.23	0.673	0.444	7.65	7.27	61.7	2.19
195.00	1319	1200	24.40	0.672	0.442	7.62	7.26	56.8	1.84
195.05	1325	1800	24.74	0.677	0.442	7.55	7.26	55.1	1.61
195.12	1330	2400	24.81	0.678	0.442	7.52	7.25	54.8	1.71
			final	195.48					

Sample Parameters

Temp: 24.81 ORP: 54.8

Cond: 0.678 Turbidity: 1.71

TDS: 0.442 CO_2:

pH: 7.25 Fe^{2+}:

Sample Date: 8-29-13 Time: 1335

ID: 0065-MW-012-0813 : Field Duplicate: 0065-MW-112-0813

Notes: Pump set @ 198 ,Start Purge @ 1248 ,1st Water @ 1302 ,ml's ,
Recharge @ 20 ,Discharge @ 10 ,PSI @ 100,
TIME START @ 1248 ,TIME FINISH @ 1450 ,TOTAL TIME 2:02

Sampler Signature: [signature]

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WELL SAMPLING FIELD LOG

Date: 9-3-13 Personnel: Brad Davis Rustin Baca

Well ID: MW-11 MPL# 3

Air Temp: 90°F Water Quality Meter: YSI MPS, s/n 06E 2472

Weather: P. Cloudy Water Level Indicator: Solinst # 18

Pump #: 11287 Turbidity Meter: Lutron TU2016 # 34074

Drum: Comp. Poly ~~30gl~~ 6gal

Well TD: 215.72 Well Size: 4" 2" 5"

DTW (TOC): 197.38 ft. DTW (bgs): 195.13 ft.

LOC: 2.25 ft.

Date: 9-3-13 Well ID: MW-11

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
197.55	1151	In.	27.44	0.789	0.490	8.55	7.26	85.8	1.82
197.64	1156	500	27.01	0.783	0.490	8.75	7.24	49.3	1.33
197.71	1201	1000	26.61	0.776	0.489	8.92	7.26	42.8	1.66
197.76	1206	1500	26.43	0.773	0.489	9.04	7.24	42.5	1.42
197.82	~~1212~~ 1211	2000	26.54	0.774	0.489	9.01	7.24	43.9	1.38
~~TD~~ BD									

Sample Parameters

Temp: 26.54°C ORP: 43.9 mV

Cond: 0.774 ms/cm Turbidity: 1.38 NTU

TDS: 0.489 g/L ~~CO_2~~:

pH: 7.24 ~~Fe^{2+}~~:

Sample Date: 9-3-13 Time: 1215

ID: 0065-MW-011-0913

Notes: Pump set @ 203, Start Purge @ 1128, 1st Water @ 1145, ml's, 50 mL/min
Recharge @ 20, Discharge @ 10, PSI @ 110,
TIME START @ 1140, TIME FINISH @ 1336, TOTAL TIME 1:56
Final Drawdown = 198.05 ft.

Sampler Signature: Brad T. Davis

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WELL SAMPLING FIELD LOG

Date: 9-3-13 Personnel: Brad Davis Rustin Baca

Well ID: MW-11

Air Temp: Water Quality Meter: YSI MPS, s/n

Weather: Water Level Indicator: Solinst #

Pump #: 11287 Turbidity Meter: Lutron TU2016 #

Drum: Comp. Poly 30gl

Well TD: Well Size: 4" 2"

DTW (TOC): DTW (bgs):

LOC:

Date: 9-3-13 Well ID: MW-11

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
		In.							

Sample Parameters

Temp: ORP:

Cond: Turbidity:

TDS: CO_2:

pH: Fe^{2+}:

Sample Date: 9-3-13 Time: 1400

ID: 0065-RB-001-0813

Notes: Pump set @ ,Start Purge @ ,1st Water @ ,ml's ,

Recharge @ ,Discharge @ ,PSI @ ,

TIME START @ ,TIME FINISH @ ,TOTAL TIME

Equipment Blank - After MW-11 was Sampled.

Sampler Signature: Brad Davis

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WELL SAMPLING FIELD LOG

Date: 9-3-13

Personnel: Brad Davis Rustin Baca

Well ID: MW-11

Air Temp:

Water Quality Meter: YSI MPS, s/n

Weather:

Water Level Indicator: Solinst #

Pump #:

Turbidity Meter: Lutron TU2016 #

Drum: Comp. Poly 30gl

Well TD:

Well Size: 4" 2"

DTW (TOC):

DTW (bgs):

LOC:

Date: 9-3-13

Well ID: MW-11

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
		In.							

Sample Parameters

Temp:

ORP:

Cond:

Turbidity:

TDS:

CO_2:

pH:

Fe^{2+}:

Sample Date: 9-3-13

Time: 1215

ID: 0065-FB-001-0913

Notes: Pump set @ ,Start Purge @ ,1st Water @ ,ml's ,
Recharge @ ,Discharge @ ,PSI @ ,
TIME START @ ,TIME FINISH @ ,TOTAL TIME
Field Blank

Sampler Signature: Brady T. Davis

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WELL SAMPLING FIELD LOG

Date: 9-4-13 Personnel: Brad Davis George Esqueda

Well ID: MW-9 MPL#3

Air Temp: 90°F Water Quality Meter: YSI 556 MPS, s/n 06E2472

Weather: Clear Water Level Indicator: Solinst # 18

Pump #: 11287 Turbidity Meter: Lutron TU2016 # 34074

Drum: Comp. Poly ~~30gl~~ 6gal

Well TD: 230.25 ft. Well Size: ~~4"~~ ~~2"~~ 5"

DTW (TOC): ~~221.00~~ BTD 220.00 DTW (bgs): 217.40 ft.

LOC: 2.60 ft.

Date: 9-4-13 Well ID: MW-9

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
220.15	09:49	In.	25.57	0.590	0.379	8.03	7.31	94.3	1.92
220.20	0954	500	25.36	0.586	0.378	8.01	6.92	62.2	1.95
220.20	1000	1000.	25.44	0.586	0.377	7.96	7.07	55.2	1.74
220.23	1005	1500	25.51	0.586	0.377	7.86	6.78	54.0	2.07
220.22	1011	2000	25.70	0.587	0.377	7.79	7.06	53.3	1.57
220.25	1016	2500	25.71	0.586	0.376	7.84	6.94	53.3	1.58
	final	= 220.35							

Sample Parameters

Temp: 25.71 ORP: 53.3

Cond: 0.586 Turbidity: 1.58

TDS: 0.376 ~~CO_2~~:

pH: 7.84 ~~Fe^{2+}~~:

Sample Date: 9-4-13 Time: 1025

ID: 0065-MW-009-0913 ; 0065-MW-009-0913-ms/msd

Notes: Pump set @ 225 ,Start Purge @ 0928 ,1st Water @ 0942 ,ml's 50 ,
Recharge @ 15 ,Discharge @ 15 ,PSI @ 100-110
TIME START @ 0928 ,TIME FINISH @ 1208 ,TOTAL TIME 3:00

Sampler Signature: Brad T. Davis

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WELL SAMPLING FIELD LOG

Date: 9-4-13 Personnel: Brad Davis George Esqueda

Well ID: MW-10 MPL#3

Air Temp: 90°F Water Quality Meter: YSI 556 MPS, s/n 06E2472

Weather: P. Cloudy Water Level Indicator: Solinst # 18

Pump #: 11287 Turbidity Meter: Lutron TU2016 # 34074

Drum: Comp. Poly 30gl

Well TD: 215.70 ft. Well Size: ~~4"~~ ~~2"~~ 5"

DTW (TOC): 200.70 ft. DTW (bgs): 198.3 ft.

LOC: 2.40 ft.

Date: 9-4-13 Well ID: MW-10

DTW TOC (ft)	TIME	VOL mL	TEMP °C	COND ms/cm	TDS g/l	DO mg/l	pH	ORP mV	TURB NTU
200.86	1304	In.	26.20	0.657	0.418	7.38	6.97	98.6	2.70
200.91	1309	750	25.45	0.642	0.414	7.57	6.96	53.9	2.30
200.94	1314	1500	25.36	0.637	0.411	7.54	6.97	48.7	2.73
200.95	1319	2250	25.48	0.636	0.410	7.52	6.87	47.8	2.56
200.97	1324	3000	25.45	0.635	0.409	7.57	6.88	48.6	2.63
	200.98 final								

Sample Parameters

Temp: 25.45 ORP: 48.6

Cond: 0.635 Turbidity: 2.63

TDS: 0.409 ~~CO_2~~:

pH: 6.88 ~~Fe^{2+}~~:

Sample Date: 9-4-13 Time: 1325

ID: 0065-MW-010-0913

Notes: Pump set @ 204, Start Purge @ 1242, 1st Water @ 1258, ml's ~~50~~ 75, DE
Recharge @ ~~20~~ 15 DE, Discharge @ ~~10~~ 15 DE, PSI @ 100,
TIME START @ , TIME FINISH @ 1400, TOTAL TIME 1:18

Sampler Signature: Brad J. Davis

Task Improvement Process	
General	
TIP ID	
Observed Company	Zia Engineering
Observation Type	
TIP Form	
Task Observed	Changing Nitrogen Cylinder MPL #3
Observee Name	George Esqueda
Observer Name	Brad Davis
Observation Date	9-4-13
Project Number	
Project Name	MPL #3
Supervisor	Brad Davis
Equipment On Site	Trailer, Nitrogen Cylinder, Low flow pump
Pertinent Information	

Observations

Task	Correct	Questionable	Comments
H&S - Groundwater Sampling			
Equipment Care and Maintenance			
PPE worn according to HASP/JLA specifications and inspected before use	☑	☐	
Spill kit, absorbent pads, or other materials available to contain spills. Storm drains or surface water drainage areas protected	☐	☑	Have paper towels to dry minor GW spills.
Required monitoring equipment calibrated and used	☑	☐	
Right tools for the job are identified, available, inspected and in good condition	☑	☐	
Electrical systems: a) Grounded b) Lock out / tag out performed	☐	☐	N/A
Battery powered equipment properly connected and disconnected (connect positive then negative, disconnect negative then positive)	☑	☐	
Corded portable power tool or other cord connected equipment is plugged into a GFCI whip and the GFCI whip is plugged directly into the power source (electrical outlet)	☐	☐	N/A
GFCI whip has been inspected and tested, and is appropriate size for the equipment	☐	☐	N/A
Battery posts protected from short circuit	☐	☐	N/A

Observations

Task	Correct	Questionable	Comments
Air monitoring equipment is on site, calibrated according to manufacturer instructions	☐	☐	N/A
STOP work authority used where appropriate	☑	☐	
Work Environment			
Exclusion zone set up properly with correct type and number of barricades, warning devices, delineators	☐	☐	N/A
Site specific traffic hazards addressed	☑	☐	
Well manhole/vault inspected for hazards	☐	☐	N/A
Proper tools or equipment used to remove well manhole/vault covers	☐	☐	N/A
Standing water in well manholes/vaults adequately removed prior to opening well	☐	☐	N/A
Observee not directly over well equipped with water tight cap when removing cap	☑	☐	
Vapors in well allowed to ventilate after opening well	☑	☐	
Well headspace vapor concentration measured when required by HASP or work plan	☐	☐	N/A
Work areas and pathways designated and clear of trip/slip hazards; uneven surfaces addressed	☑	☐	
Work Procedures: Well Gauging/Purging/Sampling			
Knee pads used when kneeling for extended periods of time	☐	☐	N/A
Proper lifting/pushing/pulling techniques	☐	☑	lifting cylinder - use leverage
Correct body positioning (e.g., not bending at waist to gauge wells)	☑	☐	
Proper handling of sample bottles (for example, hand positioning, PPE, not over tightening lids and avoiding glass bottle contact with other objects)	☑	☐	
Dedicated bailers, disposable bailers or properly decontaminated sampling equipment placed in well, water level indicators and oil/water interface probes properly decontaminated	☑	☐	
Purge water containerized or disposed of per the HASP/JLA	☑	☐	
Purge water is containerized, observee is using the proper labeling and marking requirements as required by the project work plan and/or shipping determination	☑	☐	
DOT HazMat #1 trained person collecting samples	☐	☐	N/A
Work Procedures: Free Product Purg/Bail/Samp/Coll			
PPE as specified in HASP/JLA is donned	☑	☐	
Ensured vehicles and structures adequately ventilated to minimize organic vapor levels	☐	☐	N/A

Observations

Task	Correct	Questionable	Comments
Free product is managed for shipment in accordance with the project shipping determination	☐	☐	N/A
Purge water, product, decontamination rinsate water, and other wastes properly stored and secured; disposable equipment containerized or disposed of properly	☑	☐	
Work Procedures: End of Job			
All well caps/plugs and well/vault lids secure and locked	☑	☐	
Housekeeping/site left in proper condition and secured	☑	☐	
Materials of Trade (e.g., compressed gas cylinders, preservatives, calibration solutions) properly secured during transport	☑	☐	
Items stowed in vehicle properly	☑	☐	
Any additional safety issues identified?	☑	☐	

TIP Summary

Enter the details of the TIP and follow-up discussion. Provide details on how any questionable items were resolved.

Discussion following the TIP led by	Brad Davis
Date of follow-up discussion	
Positive Comments	All equipment and work area well organized
Discussion Summary Completed	☑ Supervisor Led ☑ Peer to Peer ☐ ARCADIS Employee to Subcontractor
Summary of Questionable Items	Putting new Nitrogen Cylinder in trailer - Need to use leverage with cylinder rather than trying to pick up.

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item No.	Action Item	Responsible Person	Due Date	Completed Date
1	Use Leverage to get Nitrogen Cylinder into trailer	Brad Davis	9-5-13	9-5-13
2				
3				

Standard Review

Reviewed By	Position / Title	Completed Date

Standard Review		
Reviewed By	Position / Title	Completed Date

Quality Review		
Reviewed By	Position / Title	Completed Date

Field Validation and Verification Review		
Reviewed By	Position / Title	Completed Date

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FarrWest Environmental Supply

www.farrwesteny.com

Calibration Reference Number
101222

Certificate of Calibration

Company: ZIA ENGINEERING
Contact: EMMA JONES
Model Name: YSI 556
Manufacturer: YSI
Serial Number: 06E2472

Calibration Date: 8/13/2013
Calibration Tech: JONATHAN MARTIN

Comments
TX2

Calibration Standards Used

Calibration Standard	Manufacturer	Lot Number	Exp. Date
Buffer Solution pH 4	AquaSolutions	3032294	3/30/2015
Buffer Solution pH 7	AquaSolutions	3011582	1/30/2015
Buffer Solution pH 10	AquaSolutions	2111572	11/30/2014
Conductivity 1,413 µmhos	AquaSolutions	3052442	5/30/2014
Redox Buffer (Zobell's) +229 mV	AquaSolutions	3043023	5/30/2014

Sensor Information/Readings

Sensor:	pH	pH	pH	COND	TEMP	D.O.	ORP
Reading:	4.01	7.0	10.0	1413	24.3 C	8.50	229

Calibration Result: **PASSED**

Inventory

Adapters	C Batteries	Carrying Case	Carrying Strap
Flow Thru Cell	Probe	Quick Start Guide	Stnd. Solution

FarrWest Environmental Supply certifies that the above instrument has been calibrated according to manufacturers instructions and by comparison to laboratory standards traceable to the National Institute of Standards and Technology (NIST).

Signature

8/13/13
Date