JLA Geosciences, Inc.
HYDROGEOLOGIC CONSULTANTS

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November 8, 2017 **via Electronic Mail**

Mr. William Flippin
Florida Power & Light (FPL) Company
700 Universe Blvd
Juno Beach, Florida 33408

RE: FPL Okeechobee Clean Energy Center, Production Well FA-6 (SJRWMD Well ID 455803), Well Completion Report

Dear Mr. Flippin:

JLA Geosciences, Inc., is pleased to provide this letter report summarizing the construction and testing activities for Floridan Aquifer Production Well (FA-6) at the above referenced project site. Well FA-6 is designated by St. Johns River Water Management District (SJRWMD) with a well identification number of 455803. The overall project includes construction and operation of a new combined cycle natural gas fired generating unit, providing approximately 1,600 megawatts nominal of electric generation. The electric generating unit is located on a 2,341-acre site in Okeechobee County, Florida. JLA Geosciences, Inc. was tasked to provide construction management, oversight and reporting services for a component of the project that includes the construction, testing and operation of production wells completed in the Upper Floridan Aquifer (UFA) and completed in the Avon Park Producing Zone (APPZ). The wells will be used to provide makeup water for the cooling towers. A site location map is included as **Figure 1**.

Condition of Certification Requirements

This report serves to satisfy the requirements of the Conditions of Certification, PA 15-058, Part IV.N. issued by Florida Department of Environmental Protection (FDEP) to Florida Power and Light (FPL) on June 29, 2016. The conditions described in Part IV.N. of the Certification require FPL to submit the information listed below within ninety (90) days of completion of construction of any UFA or APPZ production wells.

1. The specific locations of the wells on a map with a minimum scale of one inch equals 800 feet, or by latitude/longitude

2. Detailed well specifications and drawings

3. Geophysical logging program conducted during construction of the well(s). The program must include the following: gamma, caliper, electric (sp and electrical resistivity), fluid resistivity, temperature, flow and video.

4. Downhole water quality testing program to include field-testing at 20-foot intervals upon penetration of the top of the upper portion of the UFA for specific conductivity, chlorides, temperature and pH

Construction and Data Collection Summary

Drilling activities began at Well FA-6 in August 2017. Subsurface construction and testing activities were completed at Well FA-6 on October 11, 2017 with the completion of the downhole video survey. Analytical results of the water sample collected during the step drawdown test were received on October 21, 2017. Installation of the permanent wellhead, pump and appurtenances had not yet commenced as of the date of this report. A summary of construction and testing activities are provided in **Table 1.**

Well FA-6 was completed with a 36-inch outside diameter (O.D.) casing set and cemented to 357 feet below drilling pad level (bpl) and a nominal 34-inch diameter open-hole production interval between 357 feet and 803 feet bpl. Construction details of Well FA-6 are included in **Table 2** and **Figure 2**. During well construction, data were collected and interpreted to determine the geologic and hydrogeologic characteristics of the strata intercepted by the borehole. These data were used to determine the optimal subsurface design of Well FA-6. Data also were collected to ensure the well was being constructed in accordance with the technical specifications.

Pilot Hole Drilling: Lithology

Pilot holes were drilled when constructing Well FA-6, and the data collected during the drilling and testing of the pilot holes provided information that assisted with the final design of the wells. During pilot-hole drilling, drill cuttings were collected at 5-foot depth intervals, described by an onsite geologist (JLA Geosciences, Inc.) and summarized in a lithologic log. The lithologic log for FA-6 is included in **Attachment 1**.

Reverse-Air Pilot Hole Drilling: Water Quality Sampling

During reverse-air drilling in the Floridan Aquifer, water quality samples of the formation water were collected at 10-foot intervals and field analyzed for temperature, pH, total dissolved solids (TDS), specific conductance and chloride concentrations. The field results were used to evaluate variability in water quality in the intended production zone with depth. Tabulated and graphical summaries of field water quality results are included in **Attachment 2**. Plots of field specific conductance results also are incorporated with geophysical log plots which are described in further detail below.

Reverse-Air Pilot Hole Drilling: Flow Testing

Flow tests were performed to evaluate the artesian flow rate and specific capacity of the borehole with depth. The tests were performed at every drill rod connection at approximately 45-foot intervals. At each connection, circulation continued for approximately 15 minutes to remove cuttings from the borehole. The reverse-air circulation was then terminated and the annulus valve at the wellhead was

opened to allow the well to flow under artesian conditions. Flow rates were measured by an in-line flow meter.

Under flowing conditions, water levels were monitored using a manometer tube connected to an annulus port outside the drill-pipe stem. Additional water quality samples were collected for field analyses of temperature, specific conductance, chloride, pH, TDS, turbidity, hydrogen sulfide, and iron. The flow from the annulus continued for a sufficient period of time to allow flow rates and water levels to generally stabilize (approximately 30 minutes).

Upon completion of flow testing, the annulus valve was closed and the well was shut-in. Water levels continued to be monitored for an additional 15 to 20 minutes to obtain a water level under static conditions. The flow rate and water-level drawdowns (between static and flowing conditions) were used to calculate specific capacities.

Geophysical Logging and Video Survey

Geophysical logging was performed in the pilot-hole intervals of Well FA-6 to correlate drill cuttings and water quality sample results collected during drilling, correlate vertical offsets between Well FA-6 and other onsite wells, identify formation boundaries, and obtain specific geologic and hydrogeologic data pertaining to the subsurface formations. These data were used to assist in the selection of the optimum casing setting depths and identify transmissive intervals within the production zone. Reamed-hole caliper logs were performed prior to casing installation to confirm borehole conditions are acceptable for installation of casing and provide data for use in calculating appropriate cement volumes. A summary of the geophysical logs performed in Well FA-6 is included in **Attachment 3**. Merged plots of the geophysical logs also are provided in **Attachment 3**. Electronic (PDF and LAS) copies of the logs are enclosed. A video survey was performed in the completed well on October 11, 2017. DVD copies of the video are being mailed separately.

Development

After completing the nominal 34-inch diameter open-hole production interval below the 36-inch O.D. final casing (set at 357 feet bpl) to a depth of 803 feet bpl, development activities commenced within the open-hole interval. The purpose of development is to remove loose formation material in the open hole and to maximize the performance of the well. The first phase of development consisted of high-velocity jetting for approximately 24 hours. The borehole jetting phase of development was designed to deliver a high velocity of water directly into the borehole with the use of a rotating jetting tool. The jetting tool was slowly passed up and down the open borehole from the base of the 36-inch diameter casing to the total depth (803 feet). Following jetting, a 34.5-inch diameter drill bit was installed to the bottom of the open borehole and airlift development was performed to remove any remaining sediment that accumulated at the bottom of the open hole from jetting activities.

Following airlifting, a submersible pump was installed and development resumed by pump surging. During pump development, sand content testing, silt density index (SDI) testing, field water quality testing and specific capacity testing were performed on multiple occasions. Pump development was

considered complete when sand content was below 1 part per million (ppm) at the approximate design rate (approximately 2,800 gpm), and water quality and specific capacities were generally stable. Pump surging was performed in Well FA-6 for approximately 40 hours.

Step Drawdown Testing

After development was considered complete, a step drawdown pump test was performed. The step-drawdown test in Well FA-6 was performed on October 9, 2017. The test in Well FA-6 consisted of 5 steps of increased pumping at average rates of 1,406 gpm (50% of design rate), 2,142 gpm (77%), 2,802 gpm (100%), 3,643 gpm (130%) and 4,118 gpm (147%). Each step was pumped at a nearly constant rate for approximately 2 hours. Prior to performing the test, a transducer was installed in the well to monitor water levels for 24 hours. During testing, pump rates, water levels, sand content, SDI and field water quality were regularly monitored and recorded. A summary table and chart of data collected during testing are provided in **Attachment 4**. A water quality sample was collected during the final step of the test (pumping at 4,118 gpm) for laboratory analysis. A summary of the laboratory results are included in **Attachment 4,** and the complete laboratory report is enclosed. At the end of the test, pumping was terminated and the recovery portion of the test began. During recovery, water levels were measured to observe water levels returning to near static conditions.

Please feel free to contact us if you have any questions or wish to discuss further.

Sincerely,

JLA Geosciences, Inc.

James L. Andersen, P.G.
Principal Hydrogeologist

JLA Geosciences, Inc.

Rodney J. Miller, P.G.
Senior Hydrogeologist

Figures:

1) Site Location Map

2) Well FA-6 Construction Details

Tables:

1) Summary of Construction and Testing Activities

2) Summary of Well FA-6 Construction Details

Attachments:

1) Lithologic Log

2) Reverse Air Drilling Water Quality and Flow Testing Data

3) Geophysical Log Plots

4) Step Drawdown Test Data

Enclosures:

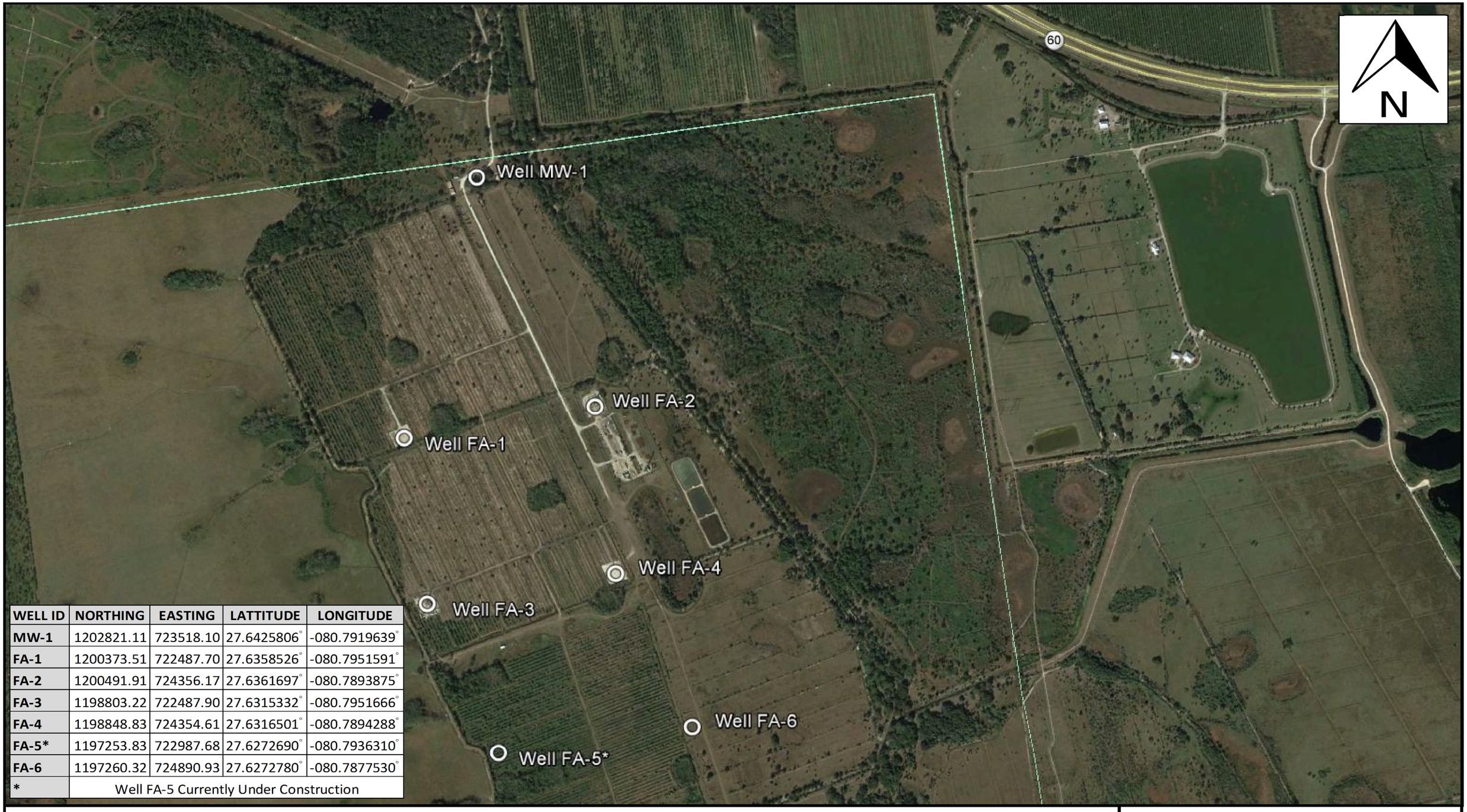
1) Geophysical Logs (PDF & LAS)

2) Final Water Quality Sample Laboratory Reports

Figures:

1) Site Location Map

2) Well FA-6 Construction Details



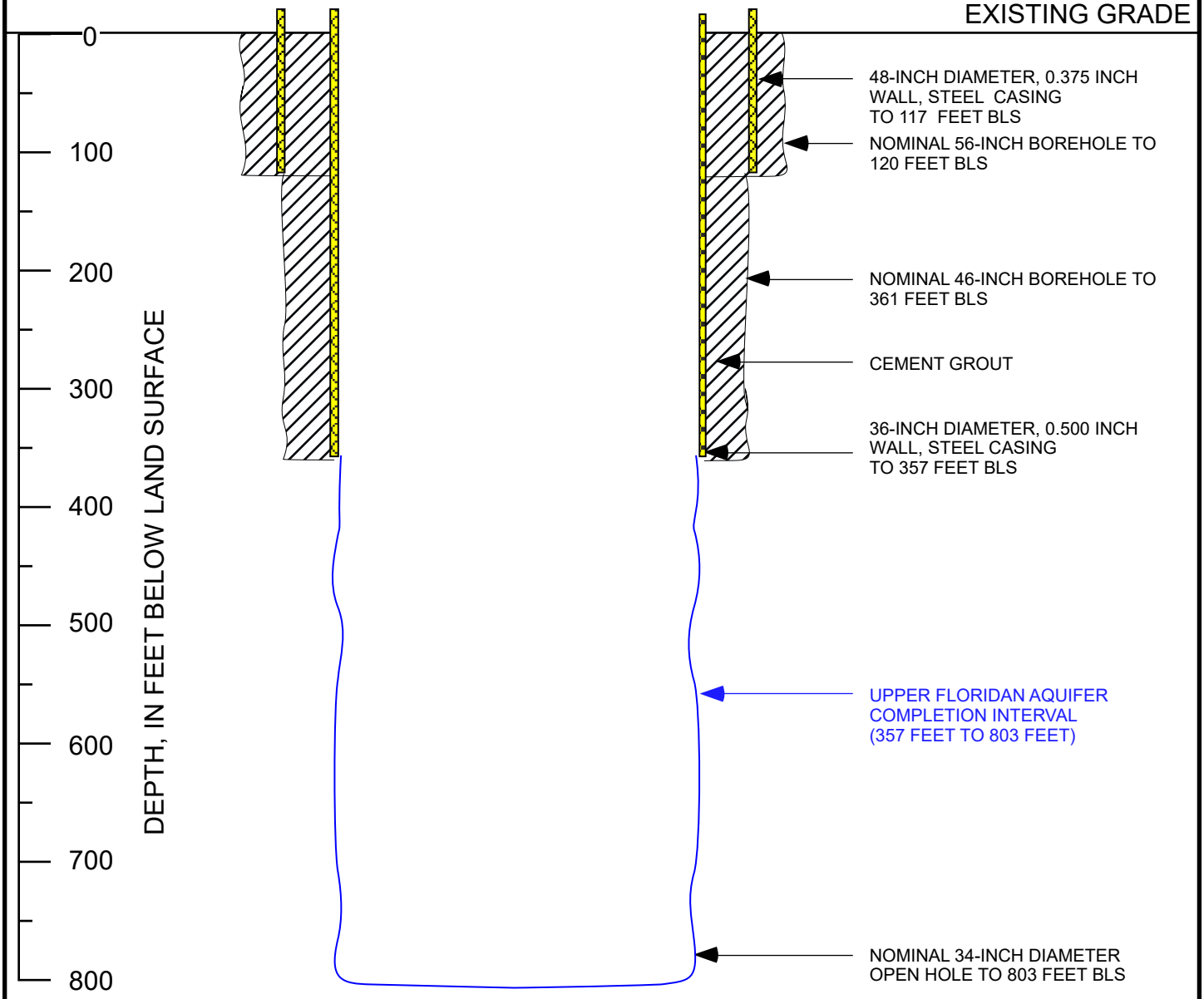
WELL ID	NORTHING	EASTING	LATTITUDE	LONGITUDE
MW-1	1202821.11	723518.10	27.6425806°	-080.7919639°
FA-1	1200373.51	722487.70	27.6358526°	-080.7951591°
FA-2	1200491.91	724356.17	27.6361697°	-080.7893875°
FA-3	1198803.22	722487.90	27.6315332°	-080.7951666°
FA-4	1198848.83	724354.61	27.6316501°	-080.7894288°
FA-5*	1197253.83	722987.68	27.6272690°	-080.7936310°
FA-6	1197260.32	724890.93	27.6272780°	-080.7877530°
*	Well FA-5 Currently Under Construction			

FIGURE TITLE:

FLORIDA POWER AND LIGHT
OKEECHOBEE CLEAN ENERGY CENTER
WELL CONSTRUCTION AND TESTING OF FA-1, FA-2 (APPZ), FA-3, FA-4, FA-5, FA-6 & MW-1
SITE LOCATION MAP

JLA Geosciences, Inc.

DATE: 10/23/2017	FIGURE NO: 1
DRAWN BY: CFS	
PROJECT NO: 16-031	



JLA Geosciences, Inc.

LEGEND: CEMENT GROUT; OPEN HOLE; STEEL WELL CASING		SCALE: AS SHOWN	DATE: 10/11/2017
		DRAWN BY: CFS	DWG #:
PROJECT SITE: FLORIDA POWER AND LIGHT OKEECHOBEE CLEAN ENERGY CENTER WELL CONSTRUCTION AND TESTING OF FA-1, FA-2 (APPZ), FA-3, FA-4, FA-5, FA-6 & MW-1			PROJECT NO: 16-031
FIGURE TITLE: FA-6 WELL CONSTRUCTION DIAGRAM			FIGURE NO: 2

Tables:

1) Summary of Construction and Testing Activities

2) Summary of Well FA-6 Construction Details

Table 1: Summary of Construction and Testing Activities, FPL OCEC Production Well FA-6

Date	Description
4/11/17	Site preparations completed at Well FA-6 site, and drilling rig and equipment remobilized.
8/20/17	
8/21/17	Begin drilling pilot hole with 12.25-inch bit from base of sump (8 feet)
8/22/17	Extend pilot hole to the total depth of 136 feet bpl
	Clean borehole and perform geophysical logging; caliper, gamma and dual induction and SP
	Begin reaming pilot hole with 58.5-inch bit
8/23/17	Continue reaming borehole with 58.5-inch bit
8/23/17	Continue reaming borehole with 58.5-inch bit
8/24/17	Extend reamed hole to total depth of 120 feet bpl; clean borehole in preparation for geophysical logging
	Perform XY caliper and gamma-ray logging
	Install 48-inch diameter casing to 117 feet bpl
8/25/17	Complete cement stage #1 (pressure grout); pump 220 bbls of neat cement; cement returns observed at surface
8/27/17	Begin drilling pilot hole drilling 12.25-inch bit from base of 48-inch casing
8/27/17	Extend pilot hole to the total depth of 406 feet bpl; clean borehole in preparation of geophysical logging
8/28/17	Perform geophysical logging in pilot hole; XY caliper, gamma and dual induction.
	Begin reaming pilot hole with 46.5-inch bit from base of 48-inch casing
8/29/17	Continue reaming pilot hole with 46.5-inch bit
8/31/17	Continue reaming pilot hole with 46.5-inch bit
9/1/17	Extend reamed hole to total depth of 361 feet bpl
	Perfom XY caliper and gamma ray logging prior to 36-inch casing installation. Based on caliper log plot, decision made to reinstall 46.5-inch casing further clean and condition borehole.
9/2/17	Perfom additional XY caliper and gamma ray logging prior to 36-inch casing installation
	Begin 36-inch casing installation; equipment breakdown occurred requiring repairs
9/3/17	Complete rig repairs
	Install the 46.5-inch bit assembly into the borehole and perform additional wiper passes.
9/4/17	Clean borehole and perform additional geophysical logging for 36-inch casing installation; caliper and gamma
	Install 36-inch O.D. diameter casing to 357 feet bpl
9/5/17	Complete cement stage #1 (pressure grout); pump 122 bbls of neat cement
	Tag top of cement inside 36-inch casing at 347 feet bpl and in annulus at 201 feet bpl
	Perform successful plumbness and alignment test
	Complete cement stage #2; pump 180 bbls of 6% bentonite cement; cement returns observed at pad level
	Make site preparations for hurricane (Hurricane Irma)
9/15/17	Remobilize to the site after hurricane.
9/18/17	Drill from top of cement plug inside 36-inch casing at 350 feet bpl to 359 feet bpl with a 34.5-inch bit
9/19/17	Haul off drilling mud and begin converting to reverse-air discharge drilling
9/24/17	Begin reverse air drilling at 361 feet bpl using 14.75-inch bit from 359 feet bpl
9/25/17	Extend pilot hole with a 14.75-inch bit to the total depth of 811 feet bpl
9/26/17	Prepare pilot hole for geophysical logging
	Perform suite of geophysical logs under static and dynamic conditions (474 gpm)
	All geophysical logs are complete (caliper, gamma, flow) except for the dual induction (DIL) and single point resistivity (SP) logs
9/27/17	DIL geophysical log successfully completed
9/28/17	Begin reaming pilot hole with 34.5-inch bit from base of 36-inch casing
9/29/17	Continue reaming pilot hole with 34.5-inch bit
9/30/17	Extend reamed hole with a 34.5-inch bit to the total depth of 803 feet bpl
10/1/17	Begin cleaning borehole and pits in preparation for jetting
10/3/17	Begin jetting procedures within open hole (357 to 803 feet bpl)

Table 1: Summary of Construction and Testing Activities, FPL OCEC Production Well FA-6

Date	Description
10/4/17	Jetting completed
	Install 34.5-inch bit and clean out fill from jetting
10/6/17	Install submersible pump and begin pump/surge development
10/7/17	Continue pump/surge development
10/8/17	Complete pump/surge development
10/8/17	Allow water levels to stabilize for 24 hours
10/9/17	Perform step rate pump test
10/10/17	Allow water levels to recovery for 24 hours
	Download SDD transducer data
10/11/17	Perform final vdeo under dynamic conditions (570 gpm)
10/12/17	Begin demobilizing from Well FA-6 site

Table 2: Well Completion Summary, FPL OCEC Production Well FA-6

Casing String	Outside Diameter (inches)	Inside Diameter (inches)	Casing Depth (feet bpl)	Date	Cement Stage	Type of Cement	Cement Quantity (cubic feet)	Remarks
Surface Casing	48.00	47.25	117	8/25/2017	1	Neat	1, 235	Pressure grout. Cement returns observed at pad level
Final Casing	36.00	35.00	357	9/5/2017	1	Neat	719	Pressure grout Tagged cement top at 201 feet bpl
				9/5/2017	2	6% Bentonite	1,011	Tremied in place. Cement returns observed at pad level
Production Interval	The production interval was completed as a nominal 34-inch diameter open hole between 357 feet and 803 feet bpl							

- Casing sections are comprised of steel in conformence with American Society for Testing and Materials (ASTM) A139, Grade B or American Petroleum Institute (API) 5L Grade B standards
- "feet bpl" denotes feet below pad level.
- Neat cement refers to Portland Type I/II cement with no additives
- 6% bentonite refers to Portland Type I/II cement with a 6% (by weight) bentonite additive

Attachment 1:

Lithologic Log

FLORIDA POWER AND LIGHT OCEC CMA: WELL FA-6 Lithologic Log	
Depth (Feet BLS)	Lithologic Description
0 – 20	SAND (100%), pale yellowish brown (10 YR 6/2) to moderate yellowish brown (10YR 5/4), unconsolidated, fine grain, primarily quartz, trace amounts of shell fragments.
20 – 25	FOSSILIFEROUS LIMESTONE (60%), medium gray (N5), moderately hard to hard, fossiliferous, abundant fossil/shell casts and molds, moderately cemented, intergranular porosity, moderately high permeability; SHELL (40%), yellowish gray (5Y 8/1) to white (N9), moderately soft, whole mollusk shells (bivalves and cephalopods).
25 – 60	SHELL AND SHELL FRAGMENTS (70%), white (N9) and very light gray (N8) to dark gray (N3), mollusk shells (bivalves and cephalopods), high permeability; LIMESTONE (25%) granular, micritic, moderate amounts of shell/fossil casts and molds, poorly cemented, moderate to well intergranular and moldic porosity, overall high permeability; CLAY (5%), dark gray (N3) to very light gray (N8), trace very fine sand sized quartz and carbonate grains, poorly cohesive clay, low permeability. Overall, sand and shell interbedded with limestone.
60 – 85	SHELL AND SHELL FRAGMENTS (80%), yellowish gray (5Y 8/1) to white (N9) to medium dark gray (N4), mollusk shells (bivalves and cephalopods), moderate permeability; FOSSILIFEROUS LIMESTONE (20%), yellowish gray (5Y 8/1), moderately hard, medium grain, quartz and carbonate grains, fossil/undifferentiated shell casts and molds, intergranular porosity, moderate to high permeability.
85 – 120	CLAY (95%), olive gray (5Y 4/1) to medium dark gray (N4), trace very fine phosphate grains, moderately cohesive, low permeability; SHELL FRAGMENTS (<5%), yellowish gray (5Y 8/1), moderately soft, mollusk shells (bivalves and cephalopods), overall low permeability.
120 – 155	CLAY (100%), olive gray (5Y 4/1) to medium dark gray (N4), minor small shell fragments, trace very fine phosphate grains, very cohesive, low permeability.
155 – 160	SANDY CLAY (90%), medium gray (N5) to olive gray (5Y 4/1) to dark green gray (5GY 4/1), very fine grain, quartz and carbonate grains, very fine phosphate grains, moderately cohesive; CLAY (10%), olive gray (5Y 4/1) to dark green gray (5GY 4/1), abundant very fine phosphate grains, moderately cohesive, low porosity.
160 – 195	SILTY CLAY (90%), medium gray (N5) to olive gray (5Y 4/1) to dark green gray (5GY 4/1), silt size grains, quartz and carbonate grains, very fine phosphate grains, moderately cohesive; CLAY (10%), olive gray (5Y 4/1) to dark green gray (5GY 4/1), abundant very fine phosphate grains, moderately cohesive, low porosity.
195 – 225	CLAYEY SAND (100%), light olive gray (5Y 6/1) to light gray (N7), very fine to

FLORIDA POWER AND LIGHT OCEC CMA: WELL FA-6 Lithologic Log	
Depth (Feet BLS)	Lithologic Description
	medium grain, quartz and carbonate grains, abundant phosphate grains, minor fossils/undifferentiated shell fragments, moderately cohesive, low permeability.
225 – 245	SANDY CLAY (100%), very light gray (N5) to light gray (N7), silt to very fine grain, quartz and carbonate grains, very fine phosphate grains, poorly cohesive, low permeability.
245 – 270	SANDY CLAY (100%), medium gray (N5) to dark green gray (5GY 4/1), very fine to medium grain quartz and carbonate grains, very fine phosphate grains, traces of very fine shell fragments, moderately cohesive.
270 – 305	CLAY (100%), olive gray (5Y 4/1) to medium dark gray (N4), trace very fine phosphate grains, very cohesive.
305 – 310	SANDY CLAY (75%), medium gray (N5) to olive gray (5Y 4/1) to dark green gray (5GY 4/1), semi consolidated, silt to very fine grained, quartz, carbonate, and phosphate grains, very cohesive; CLAY (25%), olive gray (5Y 4/1) to dark green gray (5GY 4/1), unconsolidated, very fine phosphate grains, very cohesive.
310 – 325	CLAYEY SAND (50%), light olive gray (5Y 6/1), unconsolidated, very fine to medium grain, quartz and carbonate grains, abundant phosphate grains, moderately cohesive; FOSSILIFEROUS LIMESTONE (50%), yellowish gray (5Y 8/1), moderately soft to hard, fossiliferous, abundant phosphate grains, abundant fossil/undifferentiated shell casts and molds, moldic porosity. A transition zone out of the Hawthorne into the Upper Floridan Aquifer System.
325 – 375	FOSSILIFEROUS LIMESTONE (100%) yellowish gray (5Y 8/1) to light gray (N7), moderately hard, fossiliferous, abundant fossil/shell casts and molds, moderately cemented, intergranular porosity.
375 – 395	DOLOMITIC LIMESTONE (100%), very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2), hard, coarse sand sized grained to gravel sized fragments, sub angular, minor vuggy porosity, variably crystalline.
395 – 410	LIMESTONE (100%), yellowish gray (5Y 8/1), moderately hard, very fine to medium grained, vuggy porosity.
410 – 480	FOSSILIFEROUS LIMESTONE (60%), yellowish gray (5Y 8/1) to medium light gray (N6), abundant phosphate grains, abundant fossil/undifferentiated shell casts and molds, moldic porosity; LIMESTONE (40%), yellowish gray (5Y 8/1), moderately hard, very fine to medium grained, vuggy porosity.
480 – 490	DOLOMITE (90%) pale brown (5YR 5/2) to dark yellowish brown (10YR 4/2), hard, medium grain, sub angular to sub rounded; LIMESTONE (10%), very pale orange (10YR 8/2), moderately hard, medium grain, sub angular, moderately vuggy.
490 – 575	FOSSILIFEROUS LIMESTONE (95%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), moderately hard, very fine to medium grained, carbonate grains,

FLORIDA POWER AND LIGHT OCEC CMA: WELL FA-6 Lithologic Log	
Depth (Feet BLS)	Lithologic Description
	fossil/undifferentiated shell casts and molds, intergranular porosity, lepidocyclina present; CLAY (5%), medium gray (N5), moderately cohesive. Overall, fossiliferous limestone thinly interbedded with clay.
575 – 585	LIMESTONE (100%), very pale orange (10YR 8/2) to light gray (N7), moderately hard, medium grained, sub angular to sub rounded, moderately hard.
585 – 675	FOSSILIFEROUS LIMESTONE (60%), yellowish gray (5Y 8/1) to medium light gray (N6), moderately soft to hard, abundant phosphate grains, abundant fossil/undifferentiated shell casts and molds, moldic porosity; LIMESTONE (40%), yellowish gray (5Y 8/1), moderately hard, very fine to medium grained, vuggy porosity; DOLOMITIC LIMESTONE (<5%), very pale orange (10YR 8/2), hard, fine to medium grained, sub angular, variably crystalline.
675 – 695	DOLOMITE (90%) pale brown (5YR 5/2) to dark yellowish brown (10YR 4/2), hard, medium grained, sub angular to sub rounded; LIMESTONE (10%), very pale orange (10YR 8/2), moderately hard, medium grained, sub angular, moderately vuggy.
695 – 735	LIMESTONE (100%), white (N9) to very pale orange (10YR 8/2), fine to medium grained, sub angular, moderately soft, chalky to variably crystalline, vuggy and slightly fossiliferous.
735 – 800	LIMESTONE (100%), very pale orange (10YR 8/2), medium grained, sub angular to rounded, moderately soft, variably crystalline, moderately vuggy.

Attachment 2:

Reverse Air Drilling Water Quality and Flow Testing Data

Summary of Pilot Hole Water Quality and Flow Testing Data, FPL OCEC Production Well FA-6

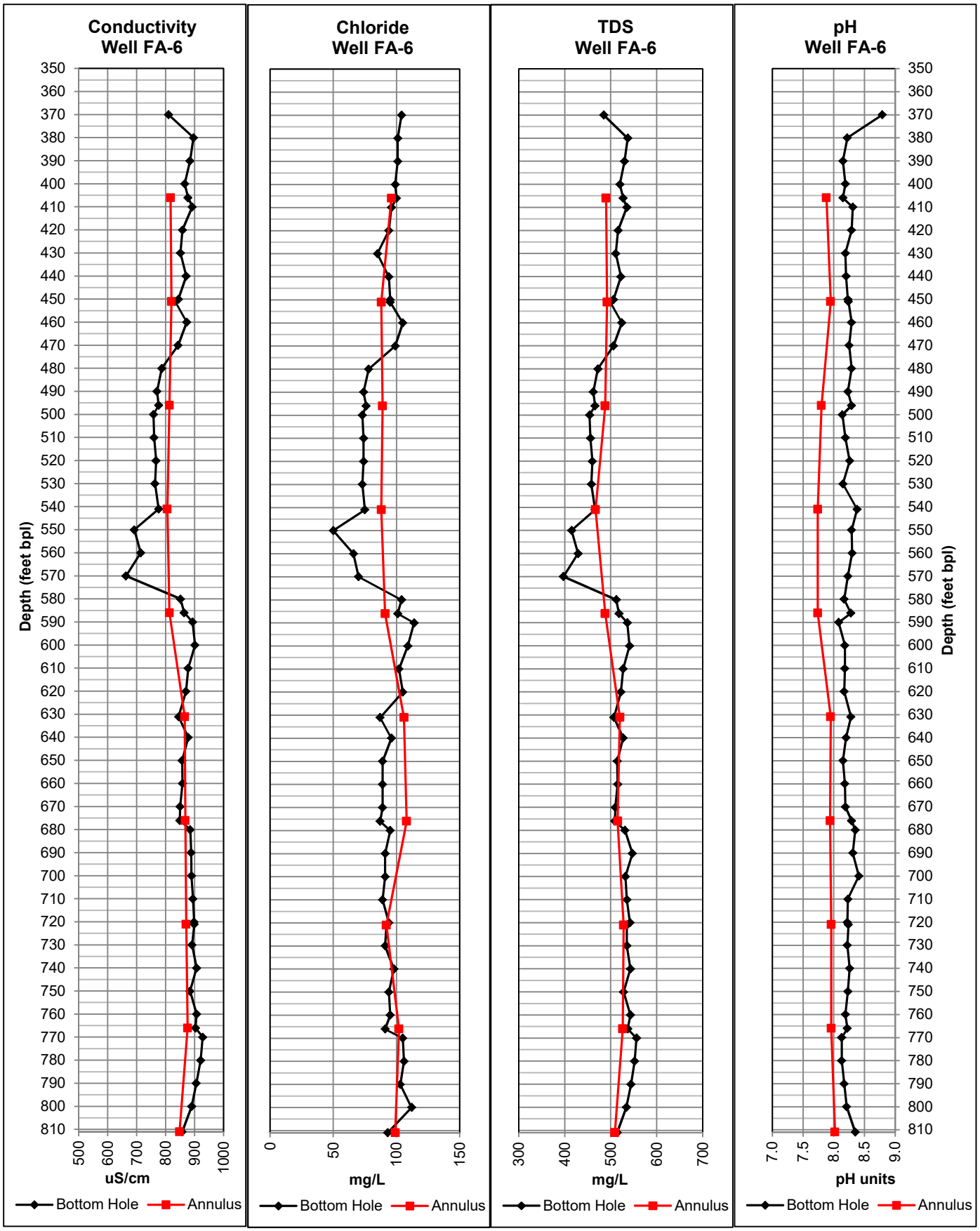
Depth	Bottom Hole (Drill Stem) WQ				Annulus WQ						Annulus Flow		
	Cond	Chloride	TDS	pH	Cond	Chloride	TDS	H2S	pH	Total Iron	Flow Rate	Drawdown	Specific Capacity
	(µS/cm)	(mg/L)	(mg/L)		(uS/cm)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(gpm)	(feet)	(gpm/ft)
370	810	104	485	8.79									
380	896	101	537	8.22									
390	884	101	530	8.15									
400	866	99	520	8.19									
406	877	100	527	8.15	817	96	490	0.10	7.9	0.6	46	3.69	12
410	892	96	535	8.31									
420	858	94	516	8.29									
430	851	85	511	8.19									
440	871	94	522	8.20									
450	844	95	506	8.23									
451	832	95	499	8.24	820	88	492	0.0	7.95	1.0	51.1	4.50	11
460	873	105	524	8.29									
470	843	99	506	8.25									
480	787	78	472	8.29									
490	770	74	462	8.23									
496	776	76	466	8.29	813	89	488	0.0	7.80	1.0	70	4.34	16
500	758	73	454	8.14									
510	760	74	456	8.19									
520	767	74	460	8.26									
530	763	73	458	8.15									
541	776	75	466	8.38	806	88	467	0.0	7.74	1.5	80	4.03	20
550	692	50	415	8.29									
560	714	66	429	8.30									
570	663	70	397	8.23									
580	851	104	512	8.17									
586	864	101	518	8.28	813	91	488	0.0	7.74	1.5	180	4.06	44
590	893	114	536	8.08									
600	901	109	541	8.18									
610	878	102	527	8.18									
620	870	105	522	8.17									
631	845	87	507	8.28	866	106	520	1.50	7.95	3.0	230	3.79	61
640	878	96	527	8.20									
650	857	89	514	8.15									
660	858	89	515	8.18									
670	850	89	510	8.19									
676	849	87	509	8.29	868	108	515	2.0	7.94	3.5	270	3.24	83
680	885	95	531	8.35									
690	888	91	547	8.31									
700	889	91	532	8.41									

Summary of Pilot Hole Water Quality and Flow Testing Data, FPL OCEC Production Well FA-6

Depth	Bottom Hole (Drill Stem) WQ				Annulus WQ						Annulus Flow		
	Cond	Chloride	TDS	pH	Cond	Chloride	TDS	H2S	pH	Total Iron	Flow Rate	Drawdown	Specific Capacity
	(µS/cm)	(mg/L)	(mg/L)		(uS/cm)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(gpm)	(feet)	(gpm/ft)
710	894	89	535	8.23									
720	898	94	542	8.22									
721	899	92	535	8.24	871	92	528	2.0	7.96	3.0	280	3.06	92
730	891	91	535	8.22									
740	907	98	543	8.26									
750	884	94	528	8.23									
760	907	95	543	8.19									
766	903	91	537	8.22	876	102	526	2.0	7.96	3.0	290	2.86	101
770	928	105	556	8.13									
780	921	106	552	8.13									
790	906	103	544	8.17									
800	890	112	534	8.21									
811	857	93	514	8.35	848	99	509	2.0	8.02	0.8	300	2.73	110

- Cond (µS/cm) denotes field conductivity measured in microsiemens per centimeter
- mg/L denotes milligrams per liter
- H_2S denotes field hydrogen sulfide
- Depth refers to the total depth of the pilot hole at the time both the drill stem and the annulus sample was collected
- gpm/ft denotes specific capacity in gallons per minute per foot of drawdown
- Reverse-air, open circulation drilling method was used during pilot hole drilling

Summary of Reverse-Air Drilling Water Quality Data, FPL OCEC Production Well FA-6



Attachment 3:

Geophysical Log Plots

Summary of Geophysical Logs Performed, FPL OCEC Production Well FA-6

Date Performed	Geophysical Survey Performed	Casing Depth (feet bpl)	Open Hole Depth (feet bpl)	Casing/Drilled Hole Diameter (inches)
08/22/17	X-Y Caliper, Gamma Ray	8	136	56 / 12
08/22/17	Dual Induction LL3 with SP	8	136	56 / 12
08/24/17	X-Y Caliper, Gamma Ray	8	120	56 / 56
08/28/17	X-Y Caliper, Gamma Ray	117	406	48 / 12
08/28/17	Dual Induction LL3 with SP	117	406	48 / 12
09/04/17	X-Y Caliper, Gamma Ray	118	361	48 / 46
09/27/17	X-Y Caliper, Gamma Ray	357	811	36 / 15
09/27/17	Dual Induction LL3 with SP	357	811	36 / 15
09/27/17	Fluid Conductivity, Temperature; static & dynamic (474 gpm)	357	811	36 / 15
09/27/17	Flowmeter; static & dynamic (474 gpm)	357	811	36 / 15
10/11/17	Video Survey; dynamic (570 gpm)	357	803	36 / 34

- "feet bpl" denotes feet below pad level

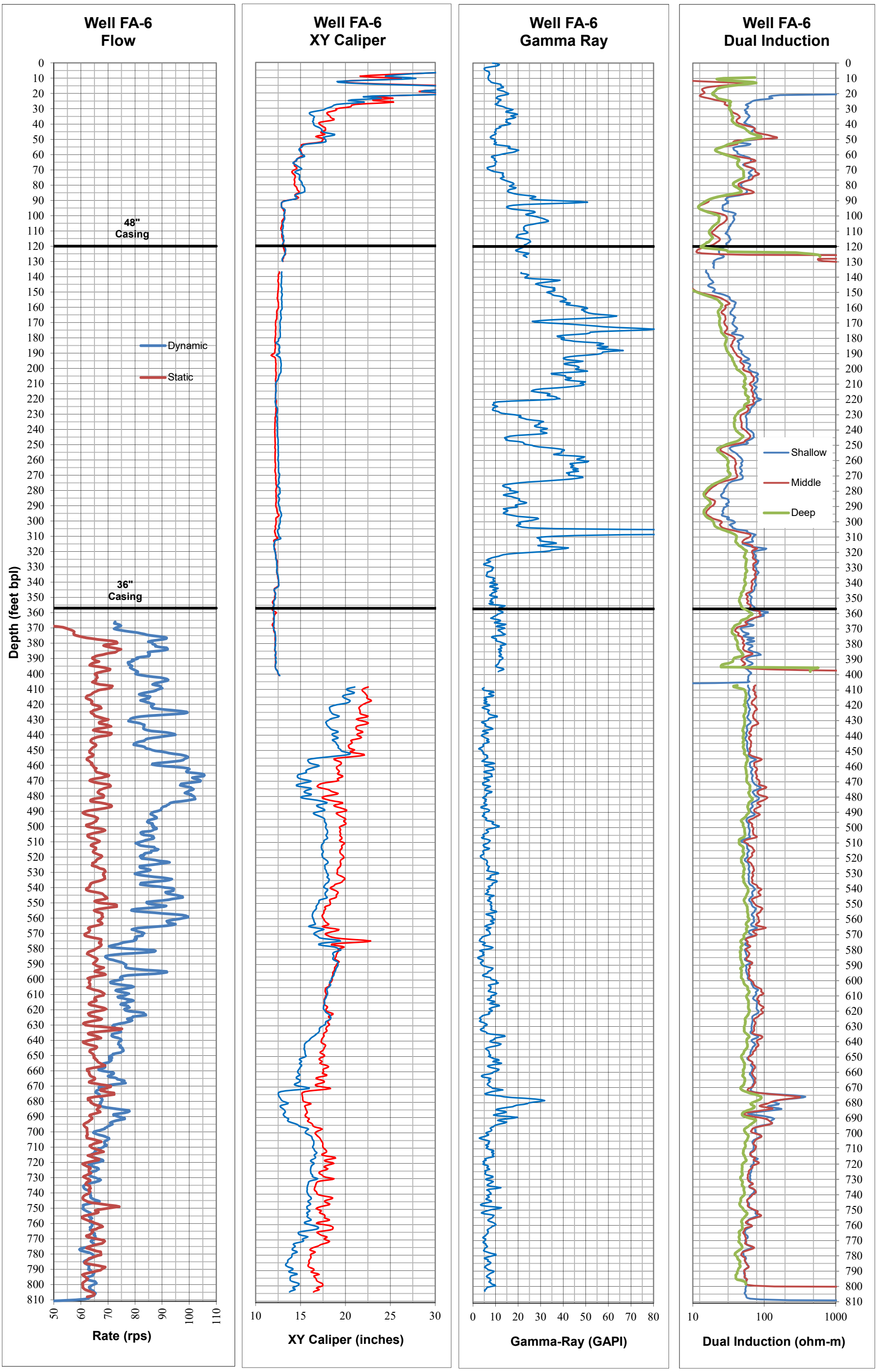
- Casing Depth refers to the depth of the innermost (deepest) casing installed at the time the geophysical log was performed

- Open Hole Depth refers to the depth of the open hole at the time the geophysical log was performed

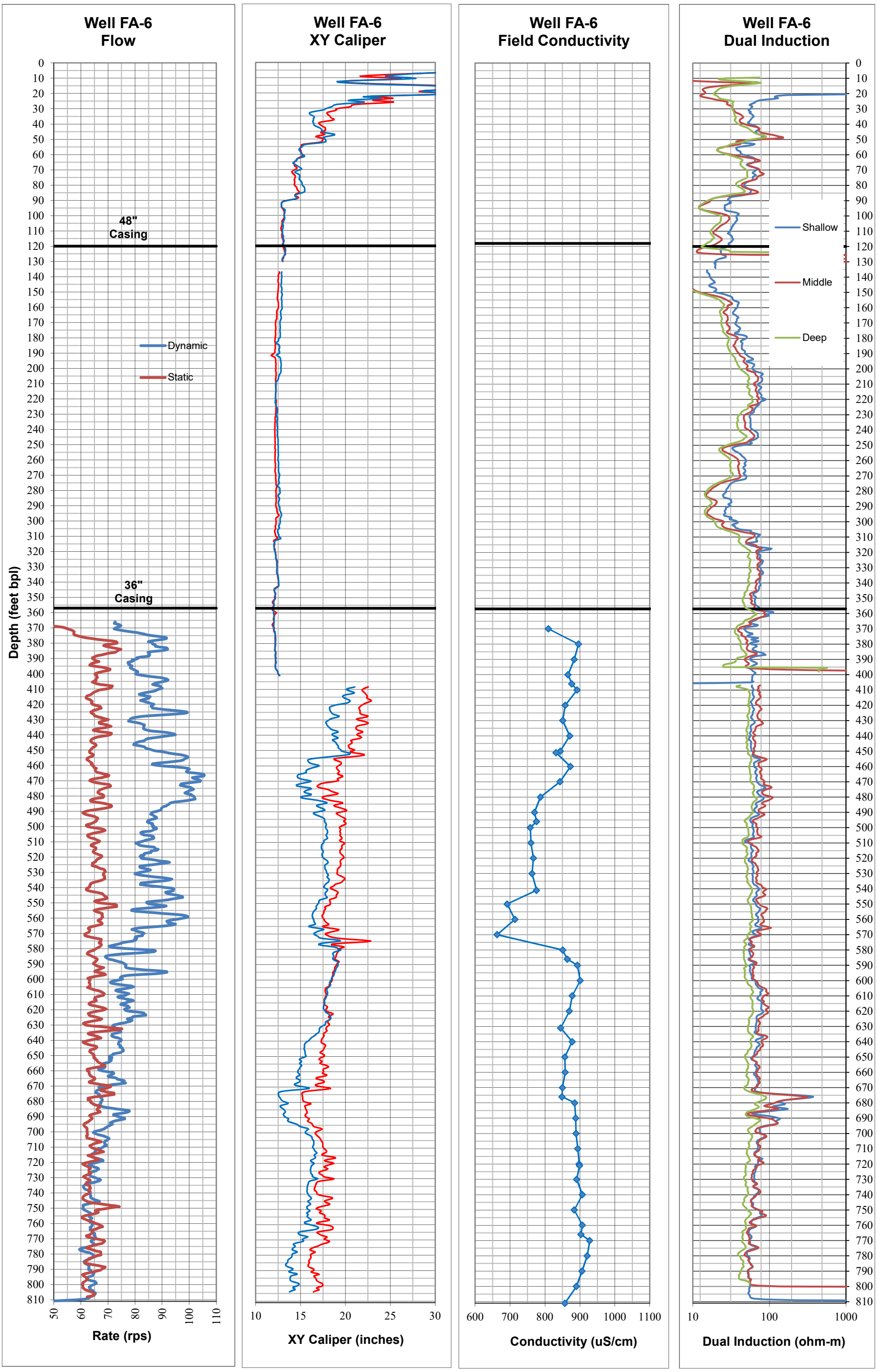
- Casing/Drilled Hole Diameter refers to outside diameter of the innermost (deepest) casing installed at the time the log was performed. The subsequent number refers to the nominal open-hole diameter at the time the log was performed.

- Flow rates in parantheses (ex: 474 gpm) refer to the rate the well was flowing or pumping during dynamic logging in gallons per minute (gpm)

Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-6

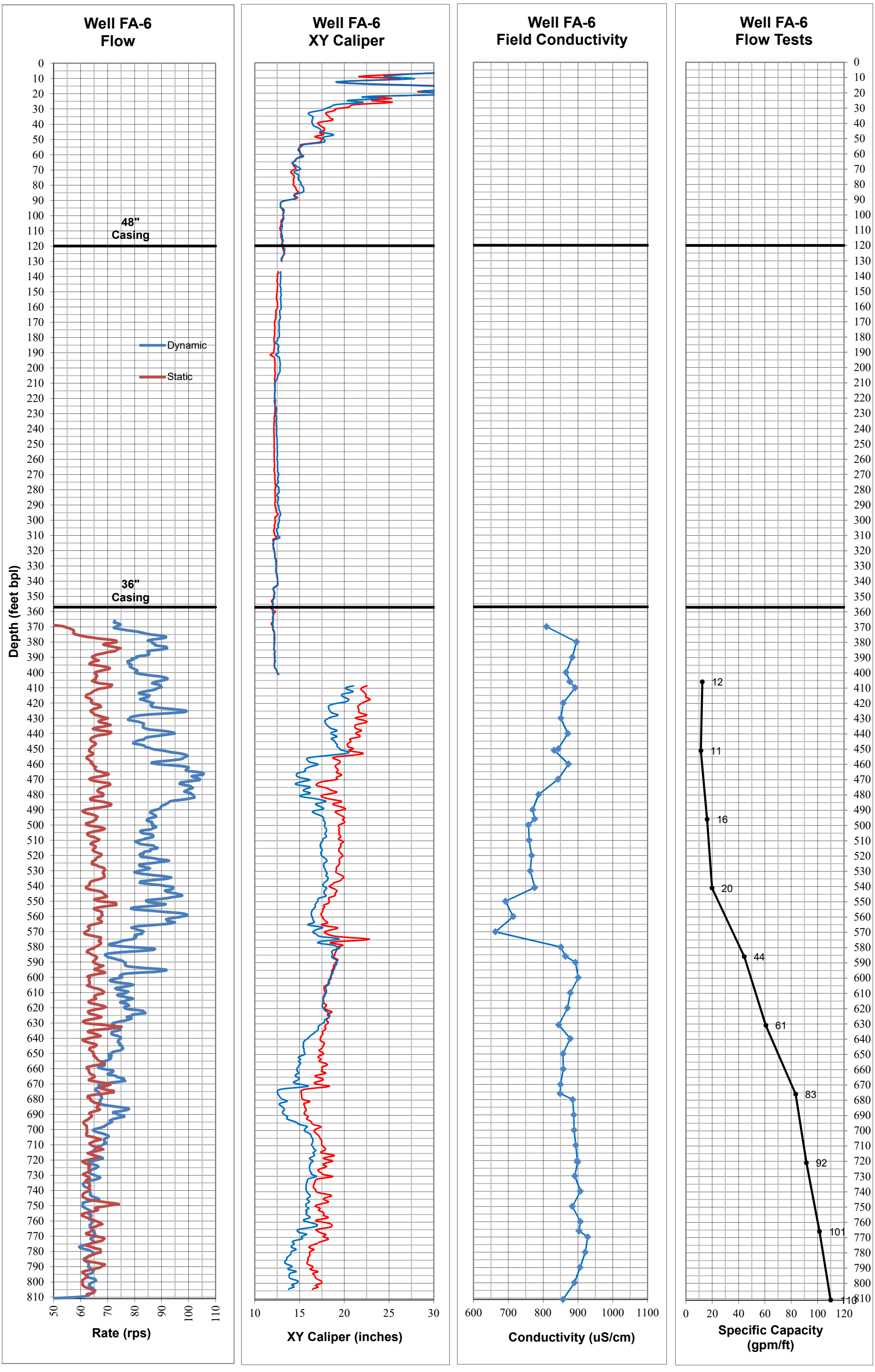


Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-6



\\JLA_BACKUP\F_JLA Backup\1 JLA Project Archive\16-031 FPL - OCEC - CMS\009 WCR\FA6 Report\Bkgrnd Files\Log Plot Data

Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-6



Attachment 4:

Step Drawdown Test Data

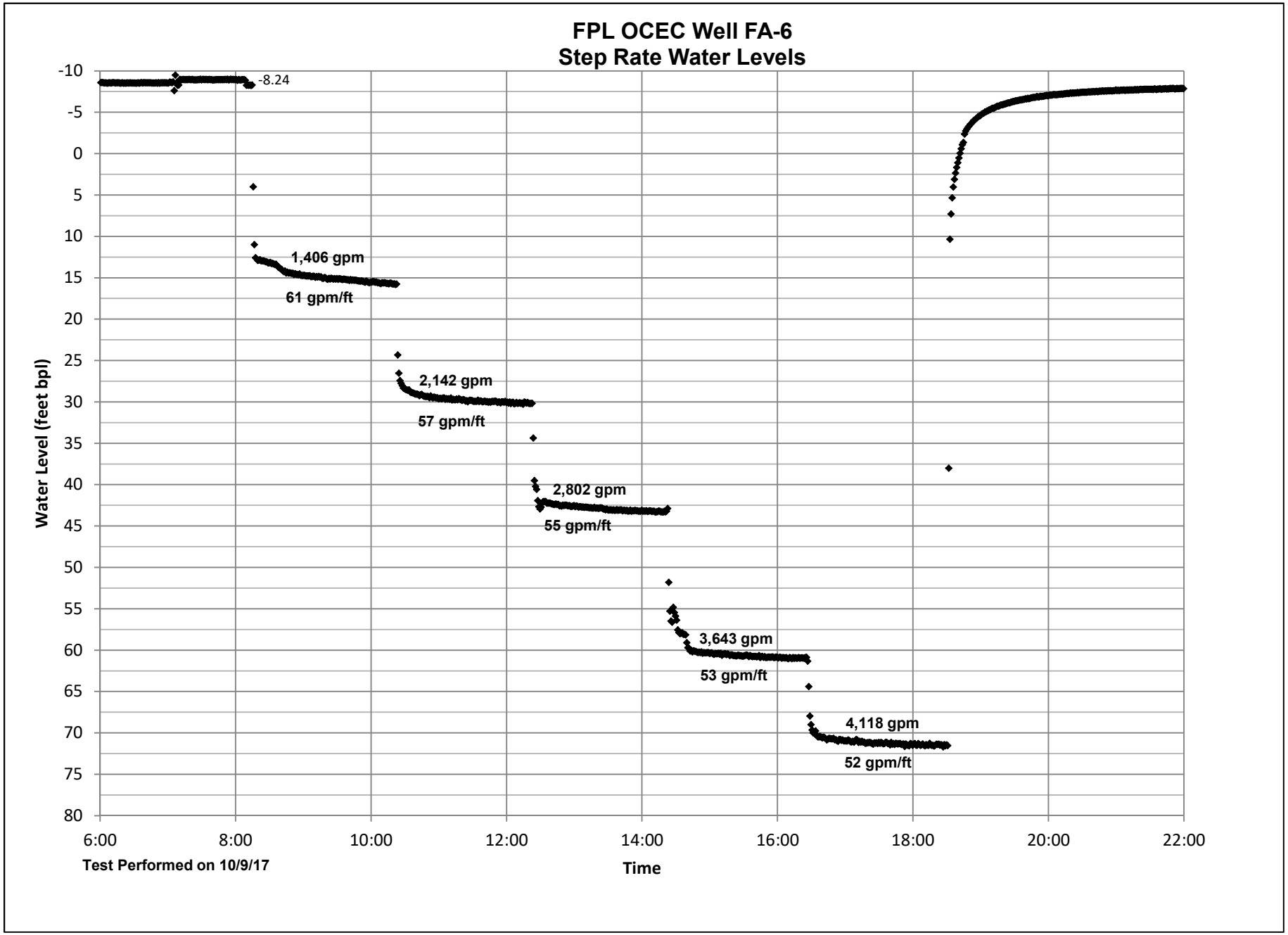
Summary of Step Rate Test Performance and Water Quality Data, FPL OCEC Production Well FA-6

PERFORMANCE DATA					
Step	**Pump Rate** (gpm)	**Duration** (minutes)	**Stabilized Water Level** (feet bpl)	**Drawdown** (feet bpl)	**Specific Capacity** (gpm/ft)
1	1406	128	14.63	22.9	61
2	2142	120	29.34	37.6	57
3	2802	120	42.70	50.9	55
4	3643	125	60.72	69.0	53
5	4118	124	71.46	79.7	52

Static water level prior to commencement of test was measured at **8.24 feet above pad level**. Drawdown and specific capacity calculatons are based on this water level.

FIELD WATER QUALITY										
Step	**Sand Concentration** (ppm)	**Silt Density Index**	**Specific Conductance** (μS/cm)	**Chloride** (mg/L)	**pH** (pH units)	**TDS** (mg/L)	**Turbidity** (NTU)	**Hydrogen Sulfide** (mg/L)	**Total Iron** (mg/L)	**Soluable Iron** (mg/L)
1	<0.1	n/a	718	77.25	7.67	466	0.93	2.0	0.1	0
2	<0.1	0.7	721	76	7.67	451	0.01	2.0	0.1	0
3	<0.1	0.44	740	75.25	7.67	481	0.12	2.0	0.1	0
4	<0.1	0.29	758	74.25	7.68	492	6.27	2.0	0.1	0
5	2.1	0.2	769	70	7.67	500	0.76	2.0	0.1	0

- gpm denotes gallons per minute
- ft bpl denotes feet below pad level
- gpm/ft denotes specific capacity in gallons per minute per foot of drawdown
- ppm denotes parts per million
- "mg/L" denotes concentration in units of milligrams per liter
- "μS/cm" denotes specific conductance in units of microSiemens per centimeter.
- '"NTU" denotes Nephelometric Turbidity Units
- Sand concentrations noted above are based on measurements excluding the first 15 minutes (or greater) of pumping at each step
- Silt Density Index (SDI) values noted above are based on SDI tests performed near the completion of each step
- On 10/9/17 the step rate pump test was performed and the final water quality sample for lab analysis was collected


FPL OCEC Well FA-6
Step Rate Water Levels
Water Level (feet bpl)
-10
-5
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
-8.24
1,406 gpm
61 gpm/ft
2,142 gpm
57 gpm/ft
2,802 gpm
55 gpm/ft
3,643 gpm
53 gpm/ft
4,118 gpm
52 gpm/ft
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Test Performed on 10/9/17
Time

Final Water Quality Sample Analytical Results, FPL OCEC Production Well FA-6

Parameter	Units	Result		Parameter	Units	Result	
Silica, Dissolved	mg/L	21.2		1,1,2-Trichloroethane	µg/L	0.500	U
Langelier_Index	LX	0.060		1,1-Dichloroethene	µg/L	0.500	U
Saturation_Index	pHs			1,2,4-trichlorobenzene	µg/L		U
Stability_Index	pHs			1,2-dichloroethane	µg/L	0.500	U
Residual Chlorine	mg/L	0.10	U	1,2-dichloropropane	µg/L	0.500	U
Turbidity	NTU	0.22		Benzene	µg/L	0.10	U
Bicarbonate Alkalinity	mg/L			Carbon Tetrachloride	µg/L	0.500	U
Carbonate CaCO3	mg/L		U	Chlorobenzene	µg/L	0.500	U
Total Alkalinity CaCO3	mg/L	141		Ethylbenzene	µg/L	0.500	U
Specific Conductance	µmhos/cm	820		Methylene chloride	µg/L	2.500	U
Color	CU	5.00	U	Para-dichlorobenzene	µg/L	0.500	U
Total Solids	mg/L	599		Styrene	µg/L	0.500	U
Chloride	mg/L	64.3		Tetrachloroethene	µg/L	0.500	U
Nitrate (as N)	mg/L	0.0250	U	Toluene	µg/L	0.500	U
Nitirite (as N)	mg/L	0.0250	U	Trichloroethene	µg/L	0.500	U
Sulfate	mg/L	149		Vinyl chloride	µg/L	0.500	U
Aluminum	mg/L	0.050	U	Xylenes (total)	µg/L	1.500	U
Aluminum, Dissolved	mg/L	0.050	U	cis-1,2-dichloroethene	µg/L	0.500	U
Arsenic	mg/L	0.0050	U	o-dichlorobenzene	µg/L	0.500	U
Barium	mg/L	0.0413		trans-1,2-dichloroethene	µg/L	0.500	U
Boron	mg/L	0.098		TDS	mg/L	474	
Chromium	mg/L	0.00250	U	BOD5day	mg/L	2.70	
Copper	mg/L	0.00250	U	TOC	mg/L	1.90	
Lead	mg/L	0.00530	I	Orthophosphate (as P)	mg/L	0.029	
Selenium	mg/L	0.00750	U	TKN (as N)	mg/L	0.33	I
Silica (SiO2)	mg/L	2.3		Total Phosphorus (as P)	mg/L	0.050	U
Silver	mg/L	0.00250	U	Lab pH	pHs	7.6	
Strontium	mg/L	18.2		Ammonia (as N)	mg/L	0.34	
Zinc	mg/L	0.010	U	Iron	mg/L	0.02	U
Magnesium	mg/L	40.4		Magnesium Hardness CaCO3	mg/L	166	
Calcium	mg/L	58.7		Manganese	mg/L	0.0025	U
Calcium Hardness (CaCO3)	mg/L	147		Potassium	mg/L	3.9	
Iron, Dissolved	mg/L	0.02	U	Sodium	mg/L	44.3	
Manganese, Dissolved	mg/L	0.0025	U	Fluoride	mg/L	0.68	
Hydrogen Sulfide (un-ionized)	mg/L	0.62		Sulfide	mg/L	2.8	
TSS	mg/L	5.0	U				
1,1,1-Trichloroethane	µg/L	0.500	U				

-"TKN" denotes Total Kjeldahl Nitrogen

-"TDS" denotes Total Dissolved Solids

-"mg/L" denotes concentration in units of milligrams per liter

-"µmhos/cm" denotes specific conductance in units of micromhos per centimeter

- '"NTU" denotes Nephelometric Turbidity Units

-"µg/L" denotes concentration units of micrograms per liter

-"U" indicates compound was analyzed for but not detected

-"I" indicates reported value between the laboratory method detection limit and the laboratory pratical quantitation limit