FPL

April 5, 2017

Ms. Cindy Mulky, Program Administrator
Office of Siting Coordination
Florida Depattment of Environmental Protection
2600 Blairstone Road, MS 5500
Tallahassee, FL 32399-2400

RE: Florida Power & Light Company
Okeechobee Clean Energy Center
Power Plant Site Certification No. PA 15-58
Post-Certification Submittal- Well Completion Report (FA-3)
Condition of Certificaiton No. B.IV.N

Dear Ms. Mulkey,

Pursuant to Condition B.IV.N of the Conditions of Certification, FPL is providing the "Well Completion Report" for FA-3 at Okeechobee Clean Energy Center (OCEC). The condition states:

"Within 90 days of completion of construction of any Upper Floridan Aquifer (UFA) or Avon Park Producing Zone (APPZ) production wells, Licensee shall submit to the FDEP SCO and SJRWMD:
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."

A copy of the submittal and a disc of the final video of FA-3 will be sent to SJRWMD. If you have any questions regarding this submittal, please do not hesitate to contact Adrienne Charbonneau at (561)691-7510

Sincerely,
Florida Power & Light Company

Adrienne Charbonneau
Senior Environmental Specialist

cc: Callie Register, SJRWMD

JLA Geosciences, Inc.
HYDROGEOLOGIC CONSULTANTS
1907 Commerce Lane, Suite 104
Jupiter, Florida 33458
(561) 746-0228
fax (561) 746-0119

March 29, 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-3 (SJRWMD Well ID 455800), 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-3) at the above referenced project site. Well FA-3 is designated by St. Johns River Water Management District (SJRWMD) with a well identification number of 455800. 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-3 in December 2016. Subsurface construction and testing activities were completed at Well FA-3 on February 21, 2016 with the completion of the downhole video survey. Analytical results of the water sample collected during the step drawdown test were received on March 16, 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-3 was completed with a 36-inch outside diameter (O.D.) casing set and cemented to 358 feet below drilling pad level (bpl) and a nominal 34-inch diameter open-hole production interval between 358 feet and 603 feet bpl. Construction details of Well FA-3 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-3. 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-3, 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 (JLA Geosciences, Inc.) geologist and summarized in a lithologic log. The lithologic log for FA-3 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 40-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-3 to correlate drill cuttings and water quality sample results collected during drilling, correlate vertical offsets between Well FA-3 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-3 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 February 21, 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 358 feet bpl) to a depth of 603 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 (603 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-3 for approximately 6 days.

Step Drawdown Testing

After development was considered complete, a step drawdown pump test was performed. The step-drawdown test in Well FA-3 was performed on February 19, 2017. The test in Well FA-3 consisted of 5 steps of increased pumping at average rates of 1,330 gpm (48% of design rate), 2,063 gpm (74%), 2,744 gpm (98%), 3,531 gpm (126%) and 3,926 gpm (140%). 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 42 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 3,926 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-3 Construction Details

Tables:

1) Summary of Construction and Testing Activities

2) Summary of Well FA-3 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:

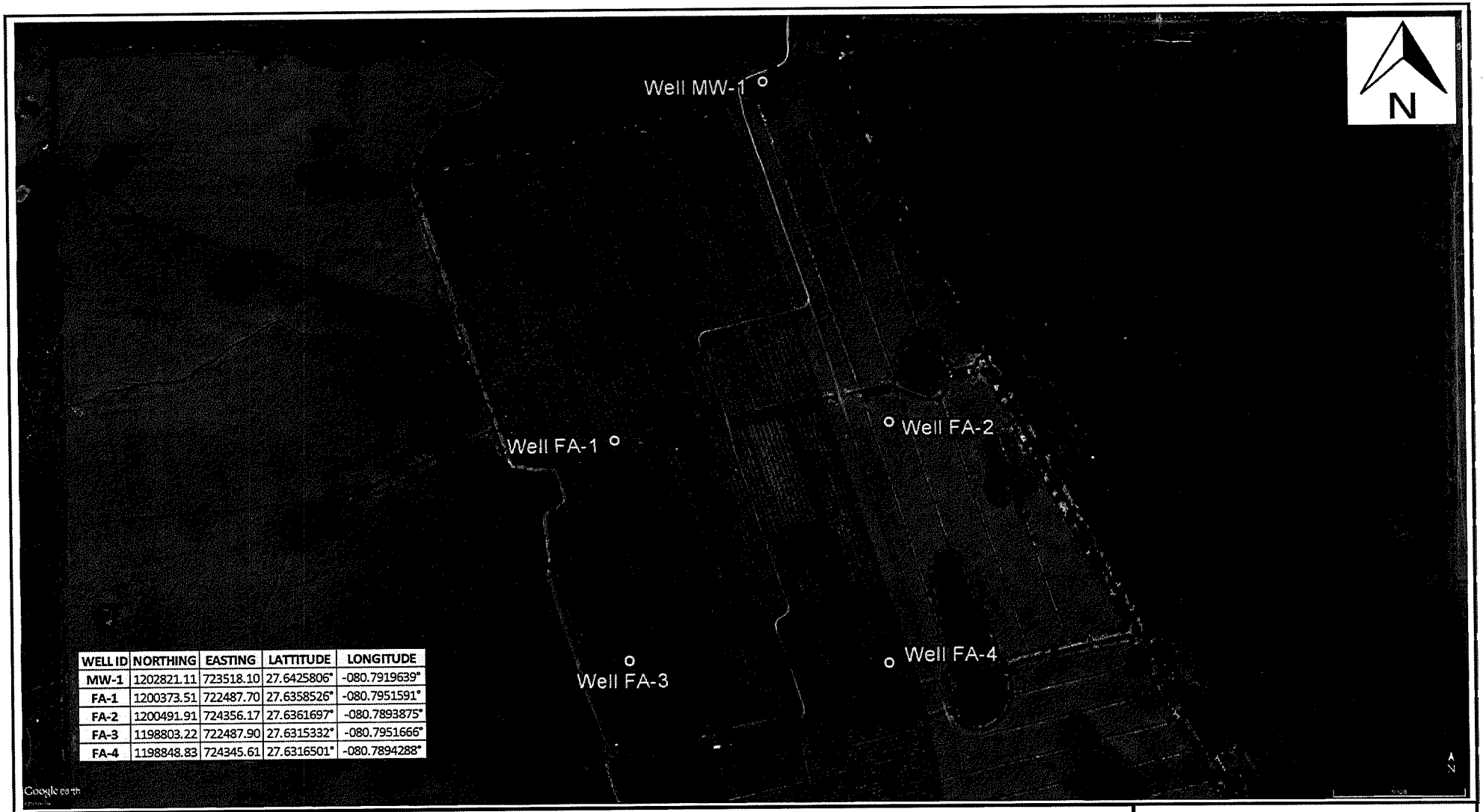
1) Geophysical Logs (PDF & LAS)

2) Final Water Quality Sample Laboratory Reports

Figures:

1) Site Location Map

2) Well FA-3 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	724345.61	27.6316501°	-080.7894288°

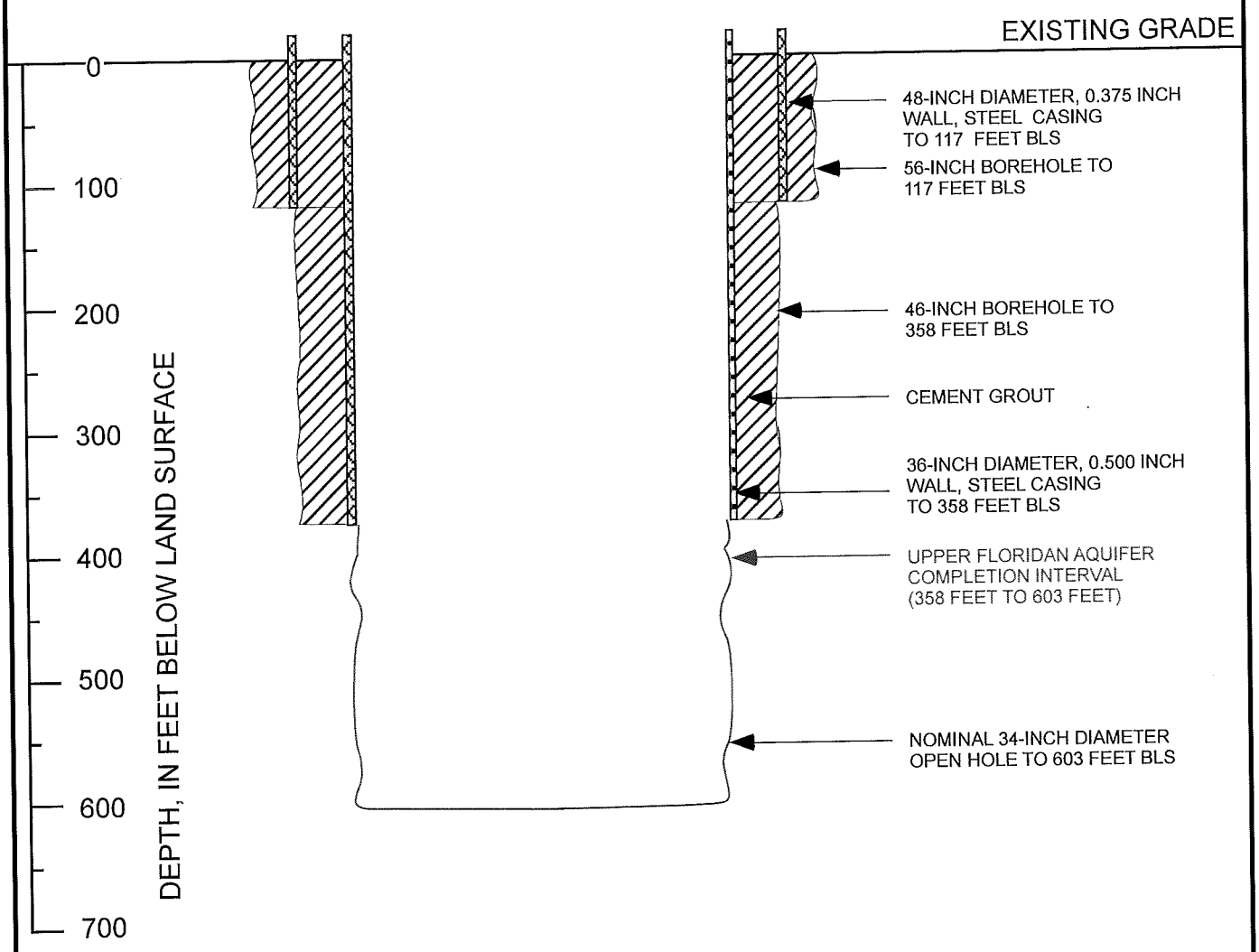
FIGURE TITLE:

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

JLA Geosciences, Inc.

DATE:	02/08/2017
DRAWN BY:	RKS
PROJECT NO:	16-031

FIGURE NO: 1



JLA Geosciences, Inc.

LEGEND: CEMENT GROUT; OPEN HOLE; STEEL WELL CASING		SCALE: AS SHOWN	DATE: 02/05/2017
		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, & MW-1			PROJECT NO: 16-031
FIGURE TITLE: FA-3 WELL CONSTRUCTION DIAGRAM			FIGURE NO: 2

Tables:

1) Summary of Construction and Testing Activities

2) Summary of Well FA-3 Construction Details

Table 1: Summary of Construction and Testing Activities, FPL OCEC Production Well FA-3

Date	Description
12/23/16	Setup Rig
12/31/16	Begin drilling pilot hole with 12.25-inch bit from base of sump (8 feet)
1/1/17	Extend pilot hole to total depth of 140 feet bpl
1/1/17	Clean borehole and perform geophysical logging; caliper, gamma, dual induction and SP
1/2/17	Begin reaming pilot hole with 54.5-inch bit
1/3/17	Extend reamed hole to a total depth of 118 feet bpl; perform XY caliper and gamma-ray logging
1/3/17	Install 48-inch O.D. casing to 117 feet bpl
1/5/17	Drill from top of cement plug inside 48-inch casing to 120 feet bpl with a 46.5-inch bit
1/5/17	Replace 46.5-inch bit with 12.25-inch bit and resume drilling at 120 feet bpl
1/6/17	Continue pilot hole drilling with 14.75-inch bit
1/7/17	Extend pilot hole to total depth of 420 feet bpl
1/7/17	Perform XY caliper, gamma and dual induction and SP logging
1/7/17	Begin reaming pilot hole with 46.5-inch bit from base of 48-inch casing set at 117 feet bpl
1/8/17	Continue reaming with 46.5-inch bit
1/9/17	Continue reaming with 46.5-inch bit
1/10/17	Continue reaming with 46.5-inch bit
1/11/17	Extend reamed hole to total depth 366 feet bpl when mud circulation was lost into formation (permeable zone); begin backfilling with large rock (rip rap) followed by small bags of sand in efforts to seal permeable zone and regain circulation
1/12/17	Continue attempts to regain circulation
1/13/17	Backfill to 357 feet bpl with sand bags; reinstall bit to compress backfill and extend hole to 360 feet bpl; circulation was reestablished
1/14/17	Perfom XY caliper and gamma ray logging
1/14/17	Install 36-inch O.D. casing to 358 feet bpl
1/14/17	Complete cement stage #1 (pressure grout); pump 32.5 bbls of neat cement
1/15/16	Tag top of cement in annulus at 304 feet bpl; complete cement stage #2, pump 85 bbls of neat cement
1/16/17	Tagged top of cement at 216 feet bpl
1/16/17	Perform successful plumbness and alignment test
1/16/17	Complete cement stage #3; pump 177 bbls of 6% bentonite cement; cement returns observed at pad level
1/18/17	Install 34.5-inch and begin drilling out cement plug, sand bags and rock at base of 36-inch O.D. casing
1/19/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/20/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/21/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/22/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/23/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/24/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/25/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/26/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/27/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/28/17	Continue drilling out cement plug and backfill material; dredging below base of casing
1/29/17	Complete drilling out cement plug and backfill material to a depth of 470 feet bpl
1/30/17	Replace 34.5-inch bit with 14.75-inch bit and resume pilot hole drilling
1/31/17	Continue drilling pilot hole with 14.75-inch bit
1/31/17	Extend pilot hole to total depth of 604 feet bpl
1/31/17	Perform suite of geophysical logs under static and dynamic conditions (530 gpm)
2/1/17	Complete suite of geophysical logs under static and dynamic conditions (530 gpm)
2/2/17	Begin reaming pilot hole with 34.5-inch bit

Table 1: Summary of Construction and Testing Activities, FPL OCEC Production Well FA-3

Date	Description
2/3/17	Extend reamed hole with a 34.5-inch bit to the total depth of 603 feet bpl
2/4/17	Begin cleaning borehole and pits in preparation for jetting
2/5/17	Continue cleaning borehole and pits in preparation for jetting
2/6/17	Continue cleaning borehole and pits in preparation for jetting
2/7/17	Continue cleaning borehole and pits in preparation for jetting
2/8/17	Begin jetting procedures within open hole (358 to 603 feet bpl)
2/9/17	Jetting completed
2/10/17	Begin installing submersible pump to begin pump/surge development
2/11/17	Begin pump/surge development
2/12/17	Continue pump/surge development
2/13/17	Continue pump/surge development
2/14/17	Continue pump/surge development
2/15/17	Continue pump/surge development
2/16/17	Continue pump/surge development
2/17/17	Complete pump/surge development, begin background period prior to step rate test
2/18/17	Allow water levels to stabilize for 24 hours
2/19/17	Perform step rate pump test, collect final water quality sample for lab analysis
2/20/17	Begin demobilizing drill rig
2/21/17	Perform final video survey at a pumping rate of 925 gpm
3/10/17	Complete demobilizing drill rig

Table 2: Well Completion Summary, FPL OCEC Production Well FA-3

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	1/4/2017	1	Neat	674	Pressure grout. Cement returns observed at pad level
Final Casing	36.00	35.00	358	1/14/2017	1	Neat	182	Pressure grout Tagged cement top at 304 feet bpl.
				1/15/2017	2	Neat	477	Tremied in place. Tagged cement top at 216 feet bpl.
				1/16/2017	3	6% Bentonite	994	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 358 feet and 603 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-3
Lithologic Log

Depth (Feet BLS)	Lithologic Description
0 – 5	LIMESTONE FILL (100%), yellowish gray (5Y 7/2), well graded gravel, not native.
5 – 15	LIMESTONE (50%), to medium gray (N5), hard, abundant fossil/shell casts and molds, moderately cemented, intergranular porosity; SAND (40%), pale yellowish brown (10 YR 6/2), unconsolidated, fine grain, primarily quartz, trace amounts of shell fragments; CLAY (10%), medium gray (N5) to medium light gray (N6), poorly cohesive.
15 – 20	CLAYEY SAND (95%), light brownish gray (5YR 6/1), semi consolidated, very fine grain, poorly cohesive; LIMESTONE (5%), medium gray (N5), medium grain, sub angular to sub rounded, moderately hard, fossils present.
20 – 25	SHELL AND SHELL FRAGMENTS (90%), very light gray (N8) and dark gray (N3) to pale yellowish brown (10 YR 6/2), mollusk shells (bivalves and cephalopods); CLAY (10%), medium gray (N5) poorly cohesive.
25 – 40	SHELL AND SHELL FRAGMENTS (85%), white (N9) and very light gray (N8) to dark gray (N3), mollusk shells (bivalves and cephalopods); LIMESTONE (10%), moderate amounts of shell/fossil casts and molds, poorly cemented; CLAY (5%), dark gray (N3) to very light gray (N8), trace very fine grain, quartz and carbonate grains, poorly cohesive clay.
40 – 50	FOSSILIFEROUS LIMESTONE (60%), very light gray (N8) to medium gray (N5), hard, abundant fossil/shell casts and molds, moderately cemented, intergranular porosity; SHELL (40%), yellowish gray (5Y 8/1) to white (N9), mollusk shells (bivalves and cephalopods), intergranular porosity.
50 – 60	CLAYEY SAND (90%), white (N9) to light olive gray (5Y 6/1), fine to medium grain, quartz and carbonate grains, minor fossils/undifferentiated shell fragments, poorly cohesive; FOSSILIFEROUS LIMESTONE (10%), white (N9) to light olive gray (5Y 6/1), moderately soft, abundant fossil/undifferentiated shell casts and molds, moldic porosity. A transition zone from clay with shell fragments to fossiliferous limestone.
60 – 65	FOSSILIFEROUS LIMESTONE (90%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), moderately hard, medium grain, quartz and carbonate grains, fossil/undifferentiated shell casts and molds, intergranular porosity.
65 – 75	CLAYEY SAND (100%), white (N9) to light olive gray (5Y 6/1) to black (N2), fine to medium grain, quartz and carbonate grains, abundant fossils/undifferentiated shell fragments, moderately cohesive.
75 – 95	CLAY (95%), olive gray (5Y 4/1) to medium dark gray (N4), trace very fine phosphate grains, moderately cohesive; SHELL FRAGMENTS (<5%), yellowish gray (5Y 8/1), mollusk shells (bivalves and cephalopods).
95 – 140	CLAY (100%), olive gray (5Y 4/1) to medium dark gray (N4), minor small shell fragments, trace very fine phosphate grains, very cohesive.

FLORIDA POWER AND LIGHT OCEC CMA: WELL FA-3 Lithologic Log	
Depth (Feet BLS)	Lithologic Description
140 – 145	SANDY CLAY (100%), medium gray (N5), very fine grain, quartz and carbonate grains, very fine phosphate grains, poorly cohesive.
145 – 180	CLAY (100%), olive gray (5Y 4/1) to medium dark gray (N4), minor small shell fragments, trace very fine phosphate grains, very cohesive.
180 – 185	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.
185 – 200	SANDY CLAY (60%), same as above; LIMESTONE (40%), yellowish gray (5Y 8/1), moderately hard, fine to medium grain, moldic porosity.
200 – 205	CLAYEY SAND (100%), white (N9) to light olive gray (5Y 6/1), fine to medium grain, quartz and carbonate grains, abundant phosphate grains, minor fossils/undifferentiated shell fragments, moderately cohesive.
205 – 245	SANDY CLAY (100%), medium gray (N5) to dark green gray (5GY 4/1), semi consolidated, very fine to medium grain, quartz and carbonate grains, very fine phosphate grains, moderately cohesive.
245 – 270	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; CLAYEY SAND (40%), light gray (N7) to yellowish gray (5Y 8/1) to light olive gray (5Y 8/2), very fine grain, carbonate and quartz grains, abundant phosphate grains, poorly cohesive.
270 – 320	CLAY (100%), olive gray (5Y 4/1) to medium dark gray (N4), minor small shell fragments, trace very fine phosphate grains, very cohesive.
325 – 330	CLAY (50%), same as above; FOSSILIFEROUS LIMESTONE (50%), light gray (N7), fine to medium grain, sub angular to sub rounded, moderately hard. A transition zone from clay to fossiliferous limestone.
330 – 365	FOSSILIFEROUS LIMESTONE (100%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), hard, very fine to medium grain, carbonate grains, sub angular, fossil/undifferentiated shell casts and molds, intergranular porosity, lepidocyclina and echinoderms present.
365 – 405	FOSSILIFEROUS LIMESTONE (90%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), moderately hard, fine to medium grain, carbonate grains, fossil/undifferentiated shell casts and molds, intergranular porosity, lepidocyclina present; CLAY (10%), medium gray (N5), moderately cohesive. Overall, fossiliferous limestone thinly interbedded with clay.
405 – 420	DOLOMITIC LIMESTONE (100%), very pale orange (10YR 8/2) to medium gray (N5), hard, fine to medium grain, sub angular, minor vuggy porosity, variably

FLORIDA POWER AND LIGHT OCEC CMA: WELL FA-3 Lithologic Log	
Depth (Feet BLS)	Lithologic Description
	crystalline.
420 – 440	LIMESTONE (95%), white (N9) to light gray (N7), medium grain, sub angular to rounded, moderately soft, chalky to variably crystalline, moderately vuggy and fossiliferous; MARL (≤5%), yellowish gray (5Y 8/1), unconsolidated, moderately cohesive.
440 – 460	LIMESTONE (100%), yellowish gray (5Y 8/1), moderately hard, fine to medium grain, vuggy porosity.
460 – 490	FOSSILIFEROUS LIMESTONE (100%), medium gray (N5) to yellowish gray (5Y 8/1), moderately soft to hard, abundant fossil/undifferentiated shell casts and molds, moldic porosity.
490 – 495	DOLOMITIC LIMESTONE (70%), very pale orange (10YR 8/2) to pale brown (5YR 5/2), hard, medium to coarse grain, sub angular, low porosity; LIMESTONE (30%), same as above.
495 – 500	LIMESTONE (80%), light gray (N7), medium to coarse grain, sub angular to sub rounded, moderately hard, moderately vuggy, variably fossiliferous (molds and casts); MARL (20%), light olive gray (5Y 6/1), unconsolidated, moderately cohesive.
500 – 520	LIMESTONE (100%), very pale orange (10YR 8/2) to very light gray (N8), fine to medium grain, sub angular to sub rounded, moderately hard, medium grain phosphate, trace fossiliferous limestone.
520 – 525	LIMESTONE (60%), very pale orange (10YR 8/2) to light gray (N7), medium to coarse grain, sub angular to sub rounded, moderately hard, moderately crystalline and vuggy, variably fossiliferous (molds and casts); MARL (40%), light gray (N7), semi consolidated, moderately cohesive.
525 – 585	FOSSILIFEROUS LIMESTONE (100%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), hard, fine to medium grain, carbonate grains, sub angular, fossil/undifferentiated shell casts and molds, intergranular porosity.
585 – 590	LIMESTONE (100%), light gray (N7) to medium gray (N5), moderately hard, sub angular to sub rounded, medium grain.
590 – 603	LIMESTONE (50%), very light gray (N8) to light gray (N7), fine to medium grain, sub angular to sub rounded, moderately hard, vuggy, moderate amounts of phosphate, trace shell casts and molds; FOSSILIFEROUS LIMESTONE (50%), yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), very hard, very fine to medium grain, carbonate grains, sub angular, fossil/undifferentiated shell casts and molds, intergranular porosity.

Attachment 2:

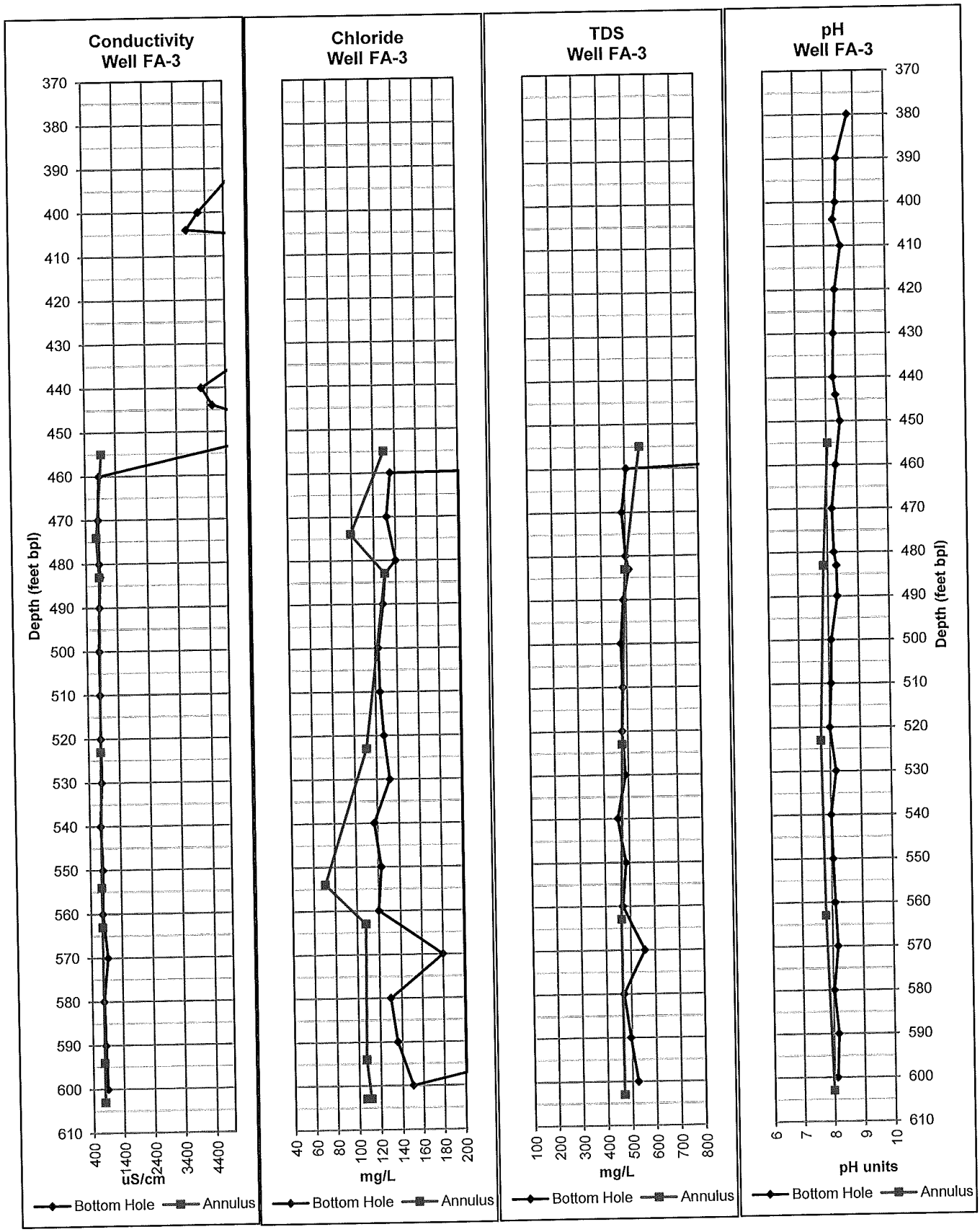
Reverse Air Drilling Water Quality and Flow Testing Data

Summary of Pilot Hole Water Quality and Flow Testing Data, FPL OCEC Production Well FA-3

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
	(uS/cm)	(mg/L)	(mg/L)		(uS/cm)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(gpm)	(feet)	(gpm/ft)
380	9963	4080	5984	8.81									
390	5459	2300	3270	8.43									
400	4172	1600	2515	8.39									
404	3785	1450	2272	8.30									
410	13438	5700	8048	8.55									
420	7697	3100	4614	8.34									
430	6395	2525	3823	8.28									
440	4214	1575	2527	8.25									
444	4561	1750	2737	8.33									
450	7225	2800	4334	8.47									
455					935	130	563	3.00	8.05	0.3	560	1.04	538
460	851	136	508	8.31									
470	811	132	488	8.16									
480	834	140	500	8.21									
483	858	130	514	8.29	830	130	499	3.50	7.86	0.4	490	0.87	563
490	822	128	490	8.31									
500	795	123	477	8.09									
510	801	124	483	8.07									
520	797	127	478	8.00									
523					794	111	478	3.50	7.70	1	480	0.58	828
530	816	132	490	8.19									
540	759	117	455	8.01									
550	811	123	486	8.05									
560	788	120	471	8.10									
563					774	108	465	3.50	7.79	0.8	460	0.58	793
570	929	180	557	8.18									
580	785	130	471	8.03									
590	825	136	496	8.16									
600	877	150	524	8.10									
603					778	111	468	3.00	7.99	0.8	530	0.37	1432

- Cond (uS/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-3



Attachment 3:

Geophysical Log Plots

Summary of Geophysical Logs Performed, FPL OCEC Production Well FA-3

Date Performed	Geophysical Survey Performed	Casing Depth (feet bpl)	Open Hole Depth (feet bpl)	Casing/Drilled Hole Diameter (inches)
01/01/17	X-Y Caliper, Gamma Ray	8	140	56 / 12
01/01/17	Dual Induction LL3 with SP	8	140	56 / 12
01/03/17	X-Y Caliper, Gamma Ray	8	120	56 / 56
01/07/17	X-Y Caliper, Gamma Ray	117	420	48 / 12
01/07/17	Dual Induction LL3 with SP	117	420	48 / 12
01/14/17	X-Y Caliper, Gamma Ray	117	361	48 / 46
01/31/17	X-Y Caliper, Gamma Ray	358	603	36 / 15
01/31/17	Dual Induction LL3 with SP	358	603	36 / 15
01/31/17	Fluid Conductivity, Temperature; static & dynamic (530 gpm)	358	603	36 / 15
01/31/17	Flowmeter; static & dynamic (530 gpm)	358	603	36 / 15
02/21/17	Video Survey; dynamic (925 gpm)	358	603	36 / 34

- "feet bpl" denotes feet below pad level

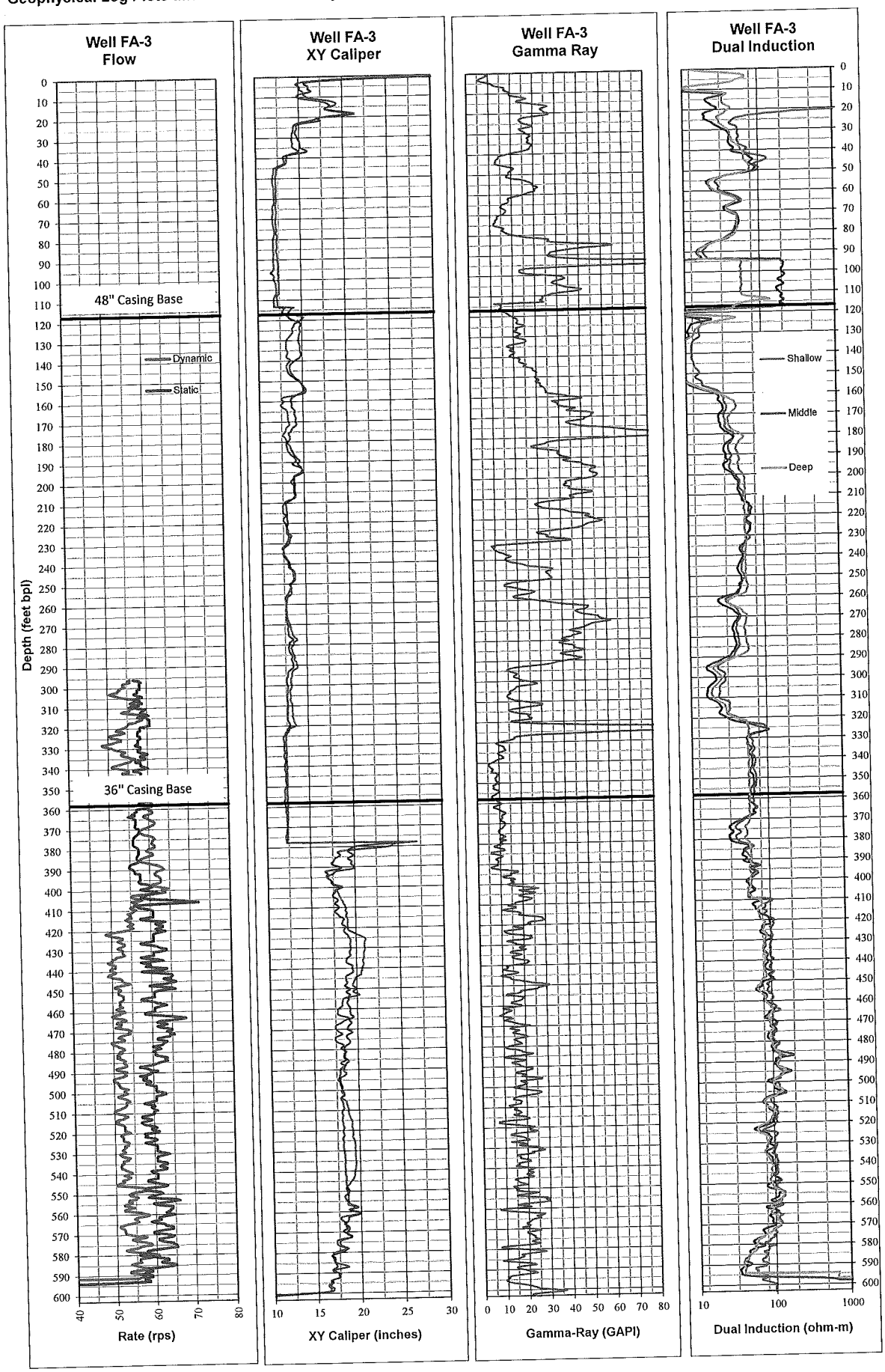
- Casing Depth refers to the depth of the innermost (deepest) casing installed at the time the geophysical log was performed

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

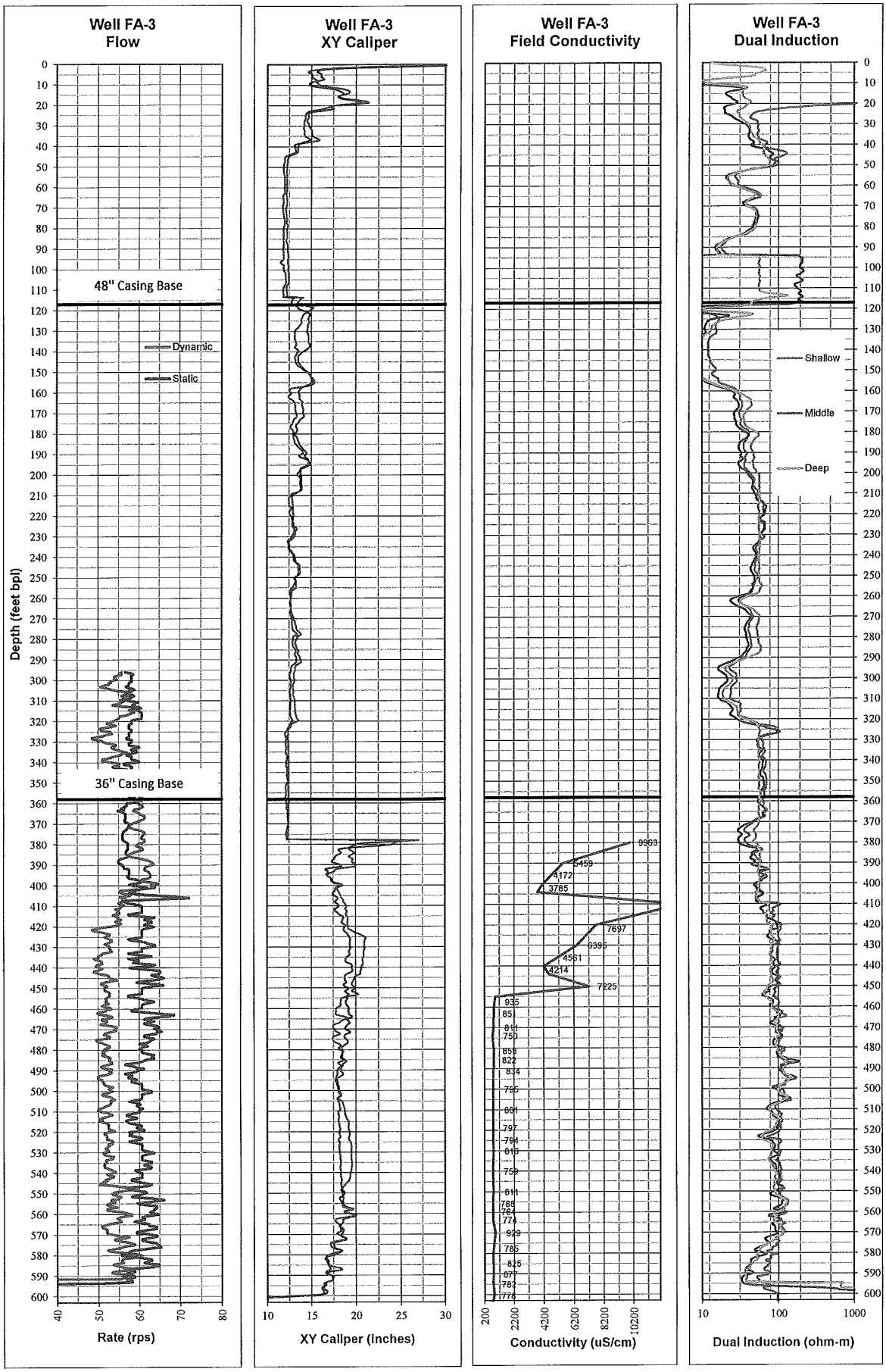
- Casing/Drilled Hole Diameter refers to outside diameter of the innermost (deepest) casing installed at the time the log was performed. The subsequent number refers to the nominal open-hole diameter at the time the log was performed.

- Flow rates in parantheses (ex: 530 gpm) refer to the rate the well was flowing or pumping during dynamic logging in gallons per minute (gpm)

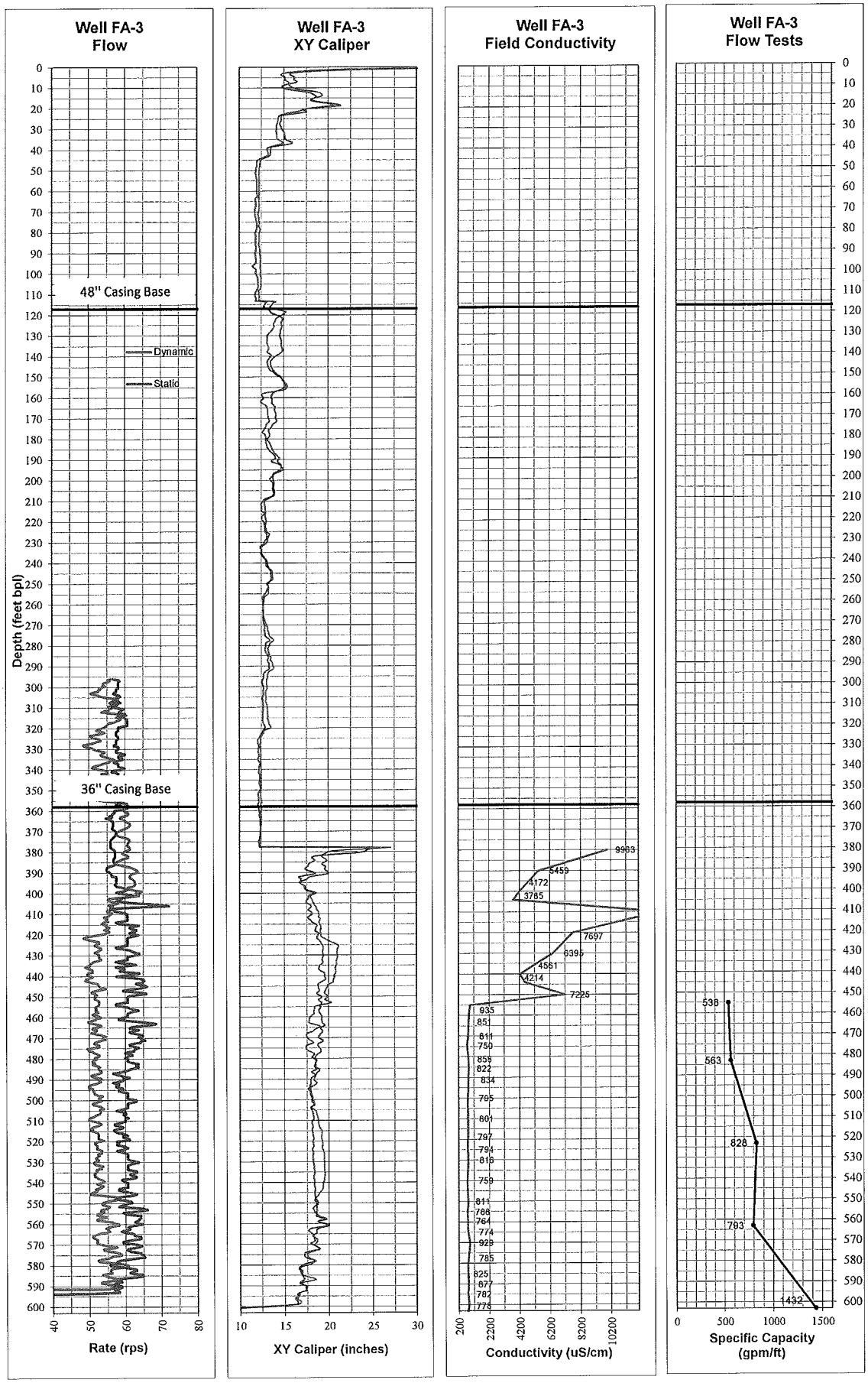
Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-3



Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-3



Geophysical Log Plots and Field Water Quality Data, FPL OCEC Production Well FA-3



Attachment 4:

Step Drawdown Test Data

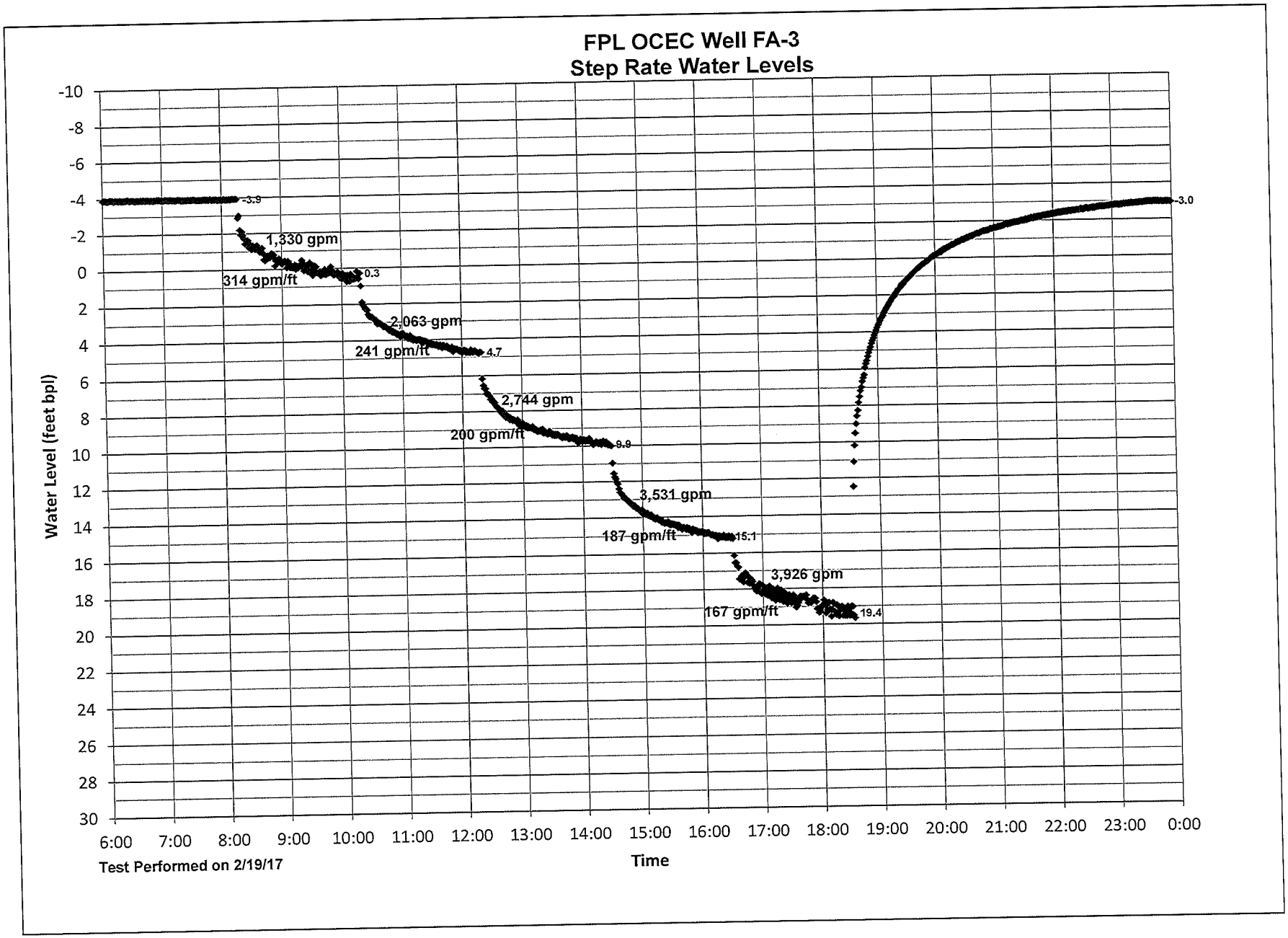
Summary of Step Rate Test Performance and Water Quality Data, FPL OCEC Production Well FA-3

PERFORMANCE DATA					
Step	Pump Rate (gpm)	Duration (minutes)	Stabilized Water Level (feet bpl)	Drawdown (feet bpl)	Specific Capacity (gpm/ft)
1	1330	124	0.35	4.2	314
2	2063	120	4.68	8.6	241
3	2744	130	9.85	13.7	200
4	3531	121	15.03	18.9	187
5	3926	122	19.69	23.6	167

Static water level prior to commencement of test was measured at **3.88 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	1.0	1028	200	7.55	617	1.06	1.0	0.4	0.2
2	<0.1	1.9	968	195	7.55	581	1.14	1.5	0.1	0.1
3	0.16	3.6	942	180	7.55	565	1.13	2.0	0.1	0.1
4	1.59	5.7	929	175	7.53	557	4.86	2.0	0.2	0.1
5	3.24	9.5*	917	155	7.55	550	15.20	2.0	0.1	0.1

- 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
- *SDI value for Step 5 is based on a 10 minute (SDI-10) measurement; 100% pluggage was achieved prior to the 15 minute (SDI-15) measurement
- On 2/19/17 the step rate pump test was performed and the final water quality sample for lab analysis was collected


FPL OCEC Well FA-3
Step Rate Water Levels
Water Level (feet bpl)
-10
-8
-6
-4
-2
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
-3.9
1,330 gpm
314 gpm/ft
-0.3
2,063 gpm
241 gpm/ft
-4.7
2,744 gpm
200 gpm/ft
-9.9
3,531 gpm
187 gpm/ft
-15.1
3,926 gpm
167 gpm/ft
-19.4
-3.0
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
0:00
Test Performed on 2/19/17
Time

Final Water Quality Sample Analytical Results, FPL OCEC Production Well FA-3

Parameter	Units	Result		Parameter	Units	Result	
Silica, Dissolved	mg/L	38.5		1,1,2-Trichloroethane	µg/L	0.500	U
Langelier_Index	LX	0.590		1,1-Dichloroethene	µg/L	0.500	U
Saturation_Index	pHs	7.3		1,2,4-trichlorobenzene	µg/L	0.500	U
Stability_Index	pHs	9.06		1,2-dichloroethane	µg/L	0.500	U
Residual Chlorine	mg/L	0.0100	U	1,2-dichloropropane	µg/L	0.500	U
Turbidity	NTU	12		Benzene	µg/L	0.500	U
Bicarbonate Alkalinity	mg/L	193		Carbon Tetrachloride	µg/L	0.500	U
Carbonate CaCO3	mg/L	0.100	U	Chlorobenzene	µg/L	0.500	U
Total Alkalinity CaCO3	mg/L	193		Ethylbenzene	µg/L	0.500	U
Specific Conductance	µmhos/cm	1010		Methylene chloride	µg/L	0.500	U
Color	CU	5.00	U	Para-dichlorobenzene	µg/L	0.500	U
Total Solids	% Wt	0.074		Styrene	µg/L	0.500	U
Chloride	mg/L	147		Tetrachloroethene	µg/L	0.500	U
Nitrate (as N)	mg/L	0.0100	U	Toluene	µg/L	0.500	U
Nitirite (as N)	mg/L	0.0200	U	Trichloroethene	µg/L	0.500	U
Sulfate	mg/L	115		Vinyl chloride	µg/L	0.500	U
Aluminum	mg/L	0.0861	I	Xylenes	µg/L	0.500	U
Aluminum, Dissolved	mg/L	0.0100	U	cis-1,2-dichloroethene	µg/L	0.200	U
Arsenic	mg/L	0.00100	U	o-dichlorobenzene	µg/L	0.500	U
Barium	mg/L	0.0522		trans-1,2-dichloroethene	µg/L	0.500	U
Boron	mg/L	0.116		TDS	mg/L	568	
Chromium	mg/L	0.00100	U	BOD5day	mg/L	2.00	U
Copper	mg/L	0.00100	U	TOC	mg/L	1.90	I
Lead	mg/L	0.00100	U	Orthophosphate (as P)	mg/L	0.01080	U
Selenium	mg/L	0.00200	U	TKN (as N)	mg/L		I
Silica (SiO2)	mg/L	41.2		Total Phosphorus (as P)	mg/L	0.0715	I
Silver	mg/L	0.000500	U	Lab pH	pHs	7.89	Q
Strontium	mg/L	12.7		Ammonia (as N)	mg/L	1.9	
Zinc	mg/L	0.0100	U	Iron	mg/L	0.0513	
Magnesium	mg/L	45.4	U	Magnesium Hardness CaCO3	mg/L	187	
Calcium	mg/L	60.5		Manganese	mg/L	0.0100	U
Calcium Hardness (CaCO3)	mg/L	151		Potassium	mg/L	5.39	
Iron, Dissolved	mg/L	0.0100	U	Sodium	mg/L	81.9	
Manganese, Dissolved	mg/L	0.0100	U	Fluoride	mg/L	0.922	
Hydrogen Sulfide	mg/L	0.559					
TSS	mg/L	11.3	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

-"Q" indicates sample held beyond the accepted holding time

Submittal Data
FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Rd.
Ft. Myers, FL. 33908
239-489-4444 Fax: 239-489-4545

Project

FPL Okeechobee Clean Energy Center Production and Monitor Wells

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: March 16, 2017 Number of Copies: 1 Via Email

Submittal Number: 046-01

Specification Section Number: Exhibit A Attachement 12 – 02780 1.02

Item Submitted: Water Quality Report FA-3 (02/19/2017) w/amended Narrative for missing parameter.

New Submittal: _____ Resubmitted: X

Youngquist Brothers, Inc. Representative:

X

Charles A. Reynolds
Project Controls

Youngquist Brothers, Inc.
Has Reviewed & Approved
this Shop Drawing / Submittal

- ☐ Approved
- ☐ Approved with changes
- ☐ Rejected, Revise & Resubmit
- ☐ Not Reviewed

By: _____

Firm: _____

Date: _____

FLOWERS CHEMICAL LABORATORIES INC.

P.O. Box 150597, Altamonte Springs, FL 32715-0597
571 NW Mercantile Pl, Suite 111, Port St. Lucie, FL 34986
812 SW Harvey Green Dr, Madison, FL 32340
3980 Overseas Hwy, Suite 103, Marathon, FL 33050

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Phone: 772-343-8006 E86562 (South Lab)
Phone: 850-973-6878 E82405 (North Lab)
Phone: 305-743-8598 E35834 (Keys Lab)

Youngquist Brothers,Inc.
15465 Pine Ridge Road
Ft. Myers,FL 33908

PO #: Revised 03/16/17
Client Project #: FPL OCEC
Date Sampled: Feb 19, 2017
Mar 11, 2017; Invoice: 323915

Report Summary

Date Received: Feb 20, 2017

FCL Project Manager: William J. Rogers

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
323915GW1	Well FA-3 step test	EPA120.1	JEB	Main Lab	Ground Water
		EPA180.1	PLB	Main Lab	
		EPA350.1	PCW	Main Lab	
		EPA353.2	PCW	Main Lab	
		EPA365.1	PCW	Main Lab	
		EPA365.4	VLB	Main Lab	
		EPA375.2	PCW	Main Lab	
		EPA524.2	CTH	Main Lab	
		EPA6010	EVB	Main Lab	
		EPA6020	EVB	Main Lab	
		SM2120 B	PLB	Main Lab	
		SM2320 B	JEB	Main Lab	
		SM2330			
		SM2540 B	PLB	Main Lab	
		SM2540 C	PLB	Main Lab	
		SM2540 D	PLB	Main Lab	
		SM4500-Cl E	VLB	Main Lab	
		SM4500-Cl G			
		SM4500-F C	JEB	Main Lab	
		SM4500-H B	JEB	Main Lab	
		SM4500-S H	TRB	Main Lab	
		SM5210 B	JEB	Main Lab	
		SM5310 C	PCW	Main Lab	

Certificate of Results

Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

NELAP ACCREDITED TNI LABORATORY

Jefferson S. Flowers, Ph.D.
President/Technical Director

FLOWERS CHEMICAL LABORATORIES INC.

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Youngquist Brothers,Inc.
15465 Pine Ridge Road
Ft. Myers,FL 33908

PO #: Revised 03/16/17
Client Project #: FPL OCEC
Date Sampled: Feb 19, 2017
Mar 11, 2017; Invoice: 323915

Analysis Report

Lab #: 323915GW1 **Sampled:** 02/19/17 05:45 PM **Desc:** Well FA-3 step test

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed	
Langelier_Index	0.590		0				SM2330			
Saturation_Index	7.30		0				SM2330			
Stability_Index	9.06		0				SM2330			
Residual Chlorine	0.0100 U	mg/L	1.00	0.0100	0.0200		SM4500-Cl G		02/21/17	02:18 PM
Aluminum,Dissolved	0.0100 U	mg/L	1.00	0.0100	0.00200	10334089	EPA6020		02/20/17	
Aluminum	0.0861	mg/L	1.00	0.0100	0.0200	10334097	EPA6020	7429-90-5	02/20/17	
Arsenic	0.00100 U	mg/L	1.00	0.00100	0.00200	10334097	EPA6020	7440-38-2	02/20/17	
Barium	0.0522	mg/L	1.00	0.00200	0.00400	10334097	EPA6020	7440-39-3	02/20/17	
Boron	0.116	mg/L	1.00	0.0100	0.0200	10334097	EPA6020	7637-07-2	02/20/17	
Chromium	0.00100 U	mg/L	1.00	0.00100	0.00200	10334097	EPA6020	7440-47-3	02/20/17	
Copper	0.00100 U	mg/L	1.00	0.00100	0.00200	10334097	EPA6020	7440-50-8	02/20/17	
Lead	0.00100 U	mg/L	1.00	0.00100	0.00200	10334097	EPA6020	7439-92-1	02/20/17	
Selenium	0.00200 U	mg/L	1.00	0.00200	0.00400	10334097	EPA6020	7782-49-2	02/20/17	
Silica (SiO2)	41.2	mg/L	1.00	0.0100	0.0200	10334097	EPA6020		02/20/17	
Silica, Dissolved	38.5	mg/L	1.00	0.0100	0.0200	10334097	EPA6020		02/20/17	
Silver	0.000500 U	mg/L	1.00	0.000500	0.00100	10334097	EPA6020	7440-22-4	02/20/17	
Strontium	12.7	mg/L	1.00	0.00200	0.00400	10334097	EPA6020		02/20/17	
Zinc	0.0100 U	mg/L	1.00	0.0100	0.0200	10334097	EPA6020	7440-66-6	02/20/17	
Color	5.00 U	CU	1.00	5.00	10.0	10334135	SM2120 B		02/21/17	12:00 PM
Turbidity	12.0	NTU	1.00	0.200	0.400	10334136	EPA180.1	G-019	02/21/17	11:35 AM
Orthophosphate(as P)	0.0108	mg/L	1.00	0.00200	0.00400	10334153	EPA365.1	14265-44-2	02/21/17	04:46 PM
Bicarbonate Alkalinity	193	mg/L	1.00	0.100	0.200	10334171	SM2320 B	E1640226	02/20/17	
Carbonate CaCO3	0.100 U	mg/L	1.00	0.100	0.200	10334171	SM2320 B	471-34-1	02/20/17	
Total Alkalinity CaCO3	193	mg/L	1.00	1.00	4.00	10334171	SM2320 B	T-005	02/20/17	
Specific_Conductance	1010	umhos/cm	1.00	1.00	2.00	10334172	EPA120.1	10-34-4	02/20/17	
Lab pH (units)	7.89 Q	pH	1.00	0.0100	0.0200	10334175	SM4500-H B	39-38-4	02/20/17	12:41 PM
Iron	0.0513	mg/L	1.00	0.0100	0.0200	10334202	EPA6010	7439-89-6	02/21/17	

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Youngquist Brothers,Inc.
15465 Pine Ridge Road
Ft. Myers,FL 33908

PO #: Revised 03/16/17
Client Project #: FPL OCEC
Date Sampled: Feb 19, 2017
Mar 11, 2017; Invoice: 323915

Lab #: 323915GW1 **Sampled:** 02/19/17 05:45 PM **Desc:** Well FA-3 step test

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed	
Manganese	0.0100 U	mg/L	1.00	0.0100	0.0200	10334202	EPA6010	7439-96-5	02/21/17	
Calcium	60.5	mg/L	1.00	0.100	0.200	10334205	EPA6010	7440-70-2	02/21/17	
Iron,Dissolved	0.0100 U	mg/L	1.00	0.0100	0.0200	10334205	EPA6010		02/21/17	
Magnesium	45.4	mg/L	1.00	0.0100	0.0200	10334205	EPA6010	7439-95-4	02/21/17	
Manganese,Dissolved	0.0100 U	mg/L	1.00	0.0100	0.0200	10334205	EPA6010		02/21/17	
Potassium	5.39	mg/L	1.00	0.500	1.00	10334205	EPA6010	7440-09-7	02/21/17	
Sodium	81.9	mg/L	1.00	0.500	1.00	10334205	EPA6010	7440-23-5	02/21/17	
Nitrate(as N)	0.0100 U	mg/L	1.00	0.0100	0.0200	10334247	EPA353.2	14797-55-8	02/21/17	11:45 AM
Nitrite(as N)	0.0200 U	mg/L	1.00	0.0200	0.0400	10334247	EPA353.2	14797-65-0	02/21/17	11:45 AM
TSS	11.3	mg/L	1.00	1.00	2.00	10334265	SM2540 D	E1642818	02/22/17	
1,1,1-Trichloroethane	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	71-55-6	02/22/17	
1,1,2-Trichloroethane	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	79-00-5	02/22/17	
1,1-Dichloroethene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	75-35-4	02/22/17	
1,2,4-trichlorobenzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	120-82-1	02/22/17	
1,2-dichloroethane	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	107-06-2	02/22/17	
1,2-dichloropropane	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	78-87-5	02/22/17	
Benzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	71-43-2	02/22/17	
Carbon Tetrachloride	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	56-23-5	02/22/17	
Chlorobenzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	108-90-7	02/22/17	
Ethylbenzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	100-41-4	02/22/17	
Methylene chloride	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	75-09-2	02/22/17	
Para-dichlorobenzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	106-46-7	02/22/17	
Styrene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	100-42-5	02/22/17	
Tetrachloroethene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	127-18-4	02/22/17	
Toluene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	108-88-3	02/22/17	
Trichloroethene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	79-01-6	02/22/17	
Vinyl chloride	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	75-01-4	02/22/17	
Xylenes	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	1330-20-7	02/22/17	
cis-1,2-dichloroethene	0.200 U	ug/L	1.00	0.200	0.400	10334269	EPA524.2	156-59-2	02/22/17	

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Date Sampled: Feb 19, 2017
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Lab #: 323915GW1 **Sampled:** 02/19/17 05:45 PM **Desc:** Well FA-3 step test

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed	
o-dichlorobenzene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	95-50-1	02/22/17	
trans-1,2-dichloroethene	0.500 U	ug/L	1.00	0.500	1.00	10334269	EPA524.2	156-60-5	02/22/17	
Total Solids	0.0740	%Wt	1.00	0.000250	0.000500	10334332	SM2540 B	C-008	02/21/17	
Chloride	147	mg/L	1.00	4.00	8.00	10334484	SM4500-Cl E	16887-00-6	02/25/17	
Hydrogen Sulfide	0.559	mg/L	1.00	0.00100	0.00200	10334561	SM4500-S H	7783-06-4	02/22/17	
BOD5day	2.00 U	mg/L	1.00	2.00	2.00	10334598	SM5210 B	E1640606	02/22/17	11:00 AM
Fluoride	0.922	mg/L	1.00	0.0500	0.100	10334930	SM4500-F C	16984-48-8	03/01/17	
Total Phosphorus(as P)	0.0715 I	mg/L	1.00	0.0400	0.100	10334988	EPA365.4	7723-14-0	03/02/17	
TDS	568	mg/L	1.00	2.50	5.00	10334991	SM2540 C	10-33-3	02/25/17	
Sulfate	115	mg/L	1.00	5.00	10.0	10335018	EPA375.2	14808-79-8	03/03/17	
Ammonia (as N)	0.171	mg/L	1.00	0.0100	0.0200	10335170	EPA350.1	7664-41-7	03/06/17	
TOC	1.90 I	mg/L	1.00	1.00	2.00	10335660	SM5310 C	E701250	03/03/17	

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Quality Report

Quality Control Batch: 10334089 **Analyst:** EVB

Blank	**Result**	**Units**
Aluminum,Dissolved	0.0100U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Aluminum,Dissolved	0.0953	mg/L	0.100	95.30	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Aluminum,Dissolved	0.175	mg/L	0.200	87.30	75.00-125.00	0.0100U

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Aluminum,Dissolved	0.174	mg/L	0.200	87.20	75.00-125.00	0.0100U	0.11	20.00

Quality Control Batch: 10334097 **Analyst:** EVB

Blank	**Result**	**Units**
Aluminum	0.0100U	mg/L
Arsenic	0.00100U	mg/L
Barium	0.00200U	mg/L
Boron	0.0100U	mg/L
Chromium	0.00100U	mg/L
Copper	0.00100U	mg/L
Lead	0.00100U	mg/L
Selenium	0.00200U	mg/L
Silica (SiO2)	0.0100U	mg/L
Silver	0.000500U	mg/L
Strontium	0.00200U	mg/L
Zinc	0.0100U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**

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Quality Control Batch: 10334097 **Analyst:** EVB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Aluminum	0.0953	mg/L	0.100	95.30	80.00-120.00
Arsenic	0.0996	mg/L	0.100	99.60	80.00-120.00
Barium	0.109	mg/L	0.100	108.90	80.00-120.00
Boron	0.106	mg/L	0.100	105.60	80.00-120.00
Chromium	0.0905	mg/L	0.100	90.50	80.00-120.00
Copper	0.0954	mg/L	0.100	95.40	80.00-120.00
Lead	0.104	mg/L	0.100	103.80	80.00-120.00
Selenium	0.0869	mg/L	0.100	86.90	80.00-120.00
Silver	0.0930	mg/L	0.100	93.00	80.00-120.00
Strontium	0.0980	mg/L	0.100	98.00	80.00-120.00
Zinc	0.100	mg/L	0.100	100.00	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Aluminum	0.175	mg/L	0.200	87.30	75.00-125.00	0.0100U
Arsenic	0.206	mg/L	0.200	102.90	75.00-125.00	0.00100U
Barium	0.186	mg/L	0.200	93.10	75.00-125.00	0.00200U
Boron	0.200	mg/L	0.200	90.80	75.00-125.00	0.0185
Chromium	0.184	mg/L	0.200	92.05	75.00-125.00	0.00100U
Copper	0.193	mg/L	0.200	85.60	75.00-125.00	0.0217
Lead	0.190	mg/L	0.200	91.95	75.00-125.00	0.00650
Selenium	0.230	mg/L	0.200	114.75	75.00-125.00	0.00200U
Silver	0.145	mg/L	0.200	72.30	75.00-125.00	0.000500U
Strontium	0.239	mg/L	0.200	97.35	75.00-125.00	0.0445
Zinc	0.849	mg/L	0.200	71.60	75.00-125.00	0.706

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Aluminum	0.174	mg/L	0.200	87.20	75.00-125.00	0.0100U	0.11	20.00
Arsenic	0.178	mg/L	0.200	89.20	75.00-125.00	0.00100U	14.26	20.00
Barium	0.164	mg/L	0.200	81.75	75.00-125.00	0.00200U	12.98	20.00

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Quality Control Batch: 10334097 **Analyst:** EVB

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Boron	0.172	mg/L	0.200	76.50	75.00-125.00	0.0185	15.39	20.00
Chromium	0.154	mg/L	0.200	76.85	75.00-125.00	0.00100U	18.00	20.00
Copper	0.171	mg/L	0.200	74.40	75.00-125.00	0.0217	12.33	20.00
Lead	0.192	mg/L	0.200	92.65	75.00-125.00	0.00650	0.73	20.00
Selenium	0.197	mg/L	0.200	98.65	75.00-125.00	0.00200U	15.09	20.00
Silver	0.144	mg/L	0.200	72.05	75.00-125.00	0.000500U	0.35	20.00
Strontium	0.212	mg/L	0.200	83.90	75.00-125.00	0.0445	11.92	20.00
Zinc	0.842	mg/L	0.200	67.85	75.00-125.00	0.706	0.89	20.00

Quality Control Batch: 10334135 **Analyst:** PLB

Blank	**Result**	**Units**
Color	5.00U	CU

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Color	20.0	CU	20.0	100.00	50.00-150.00

Quality Control Batch: 10334136 **Analyst:** PLB

Blank	**Result**	**Units**
Turbidity	0.200U	NTU

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Turbidity	5.20	NTU	5.00	104.00	50.00-150.00

Quality Control Batch: 10334153 **Analyst:** PCW

Blank	**Result**	**Units**
Orthophosphate(as P)	0.00878	mg/L

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Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Orthophosphate(as P)	1.04	mg/L	1.00	104.04	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**		
Orthophosphate(as P)	0.552	mg/L	0.500	108.24	80.00-120.00	0.0108		
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Orthophosphate(as P)	0.504	mg/L	0.500	98.64	80.00-120.00	0.0108	9.09	20.00

Quality Control Batch: 10334171 **Analyst:** JEB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Total Alkalinity CaCO3	100	mg/L	100	100.09	80.00-120.00

Quality Control Batch: 10334172 **Analyst:** JEB

Blank	**Result**	**Units**
Specific_Conductance	1.00U	umhos/cm

Quality Control Batch: 10334202 **Analyst:** EVB

Blank	**Result**	**Units**				
Iron	0.0100U	mg/L				
Manganese	0.0100U	mg/L				
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	
Iron	5.46	mg/L	5.00	109.21	80.00-120.00	
Manganese	5.39	mg/L	5.00	107.76	80.00-120.00	
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Iron	5.48	mg/L	5.00	103.82	75.00-125.00	0.286

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Quality Control Batch: 10334202 **Analyst:** EVB

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Manganese	5.39	mg/L	5.00	107.71	75.00-125.00	0.0100U

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Iron	5.83	mg/L	5.00	110.81	75.00-125.00	0.286	6.18	20.00
Manganese	5.74	mg/L	5.00	114.71	75.00-125.00	0.0100U	6.29	20.00

Quality Control Batch: 10334205 **Analyst:** EVB

Blank	**Result**	**Units**
Calcium	0.100U	mg/L
Iron,Dissolved	0.0100U	mg/L
Magnesium	0.0100U	mg/L
Manganese,Dissolved	0.0100U	mg/L
Potassium	0.500U	mg/L
Sodium	0.500U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Calcium	5.51	mg/L	5.00	110.10	80.00-120.00
Iron,Dissolved	5.46	mg/L	5.00	109.21	80.00-120.00
Magnesium	5.32	mg/L	5.00	106.36	80.00-120.00
Manganese,Dissolved	5.39	mg/L	5.00	107.76	80.00-120.00
Potassium	5.52	mg/L	5.00	110.41	80.00-120.00
Sodium	5.18	mg/L	5.00	103.60	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Calcium	69.6	mg/L	5.00	118.15	75.00-125.00	63.7
Iron,Dissolved	5.48	mg/L	5.00	103.82	75.00-125.00	0.286
Magnesium	19.7	mg/L	5.00	104.83	75.00-125.00	14.4
Manganese,Dissolved	5.39	mg/L	5.00	107.71	75.00-125.00	0.0100U
Potassium	8.69	mg/L	5.00	104.13	75.00-125.00	3.49

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Quality Control Batch: 10334205 **Analyst:** EVB

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Sodium	86.8	mg/L	5.00	116.94	75.00-125.00	81.0

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Calcium	68.4	mg/L	5.00	94.59	75.00-125.00	63.7	1.71	20.00
Iron,Dissolved	5.83	mg/L	5.00	110.81	75.00-125.00	0.286	6.18	20.00
Magnesium	19.6	mg/L	5.00	104.30	75.00-125.00	14.4	0.13	20.00
Manganese,Dissolved	5.74	mg/L	5.00	114.71	75.00-125.00	0.0100U	6.29	20.00
Potassium	8.98	mg/L	5.00	109.87	75.00-125.00	3.49	3.25	20.00
Sodium	85.6	mg/L	5.00	93.11	75.00-125.00	81.0	1.38	20.00

Quality Control Batch: 10334247 **Analyst:** PCW

Blank	**Result**	**Units**
Nitrate(as N)	0.0100U	mg/L
Nitrite(as N)	0.0200U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Nitrate(as N)	1.00	mg/L	1.00	100.20	85.00-115.00
Nitrite(as N)	0.968	mg/L	1.00	96.80	85.00-115.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Nitrite(as N)	4.30	mg/L	4.00	107.50	85.00-115.00	0.0200U

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Nitrite(as N)	4.32	mg/L	4.00	108.00	85.00-115.00	0.0200U	0.46	20.00

Quality Control Batch: 10334265 **Analyst:** PLB

Blank	**Result**	**Units**
TSS	1.00U	mg/L

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Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
TSS	90.0	mg/L	97.2	92.57	50.00-150.00

Quality Control Batch: 10334269 **Analyst:** CTH

Blank	Result	Units
1,1,1-Trichloroethane	0.500U	ug/L
1,1,2-Trichloroethane	0.500U	ug/L
1,1-Dichloroethene	0.500U	ug/L
1,2,4-trichlorobenzene	0.500U	ug/L
1,2-dichloroethane	0.500U	ug/L
1,2-dichloropropane	0.500U	ug/L
Benzene	0.500U	ug/L
Carbon Tetrachloride	0.500U	ug/L
Chlorobenzene	0.500U	ug/L
Ethylbenzene	0.500U	ug/L
Methylene chloride	0.500U	ug/L
Para-dichlorobenzene	0.500U	ug/L
Styrene	0.500U	ug/L
Tetrachloroethene	0.500U	ug/L
Toluene	0.500U	ug/L
Trichloroethene	0.500U	ug/L
Vinyl chloride	0.500U	ug/L
Xylenes	0.500U	ug/L
cis-1,2-dichloroethene	0.200U	ug/L
o-dichlorobenzene	0.500U	ug/L
trans-1,2-dichloroethene	0.500U	ug/L

Laboratory Control Sample	Result	Units	Spike	%REC	%REC Lim
1,1,1-Trichloroethane	48.9	ug/L	40.0	122.22	50.00-170.00
1,1,2-Trichloroethane	48.4	ug/L	40.0	120.97	50.00-170.00

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Quality Control Batch: 10334269 **Analyst:** CTH

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
1,1-Dichloroethene	48.8	ug/L	40.0	122.10	50.00-170.00
1,2,4-trichlorobenzene	47.4	ug/L	40.0	118.43	50.00-170.00
1,2-dichloroethane	46.8	ug/L	40.0	117.08	50.00-170.00
1,2-dichloropropane	46.4	ug/L	40.0	116.10	50.00-170.00
Benzene	45.9	ug/L	40.0	114.67	50.00-170.00
Carbon Tetrachloride	50.7	ug/L	40.0	126.72	50.00-170.00
Chlorobenzene	46.3	ug/L	40.0	115.78	50.00-170.00
Ethylbenzene	48.6	ug/L	40.0	121.48	50.00-170.00
Methylene chloride	46.1	ug/L	40.0	115.12	50.00-170.00
Para-dichlorobenzene	47.1	ug/L	40.0	117.70	50.00-170.00
Styrene	54.1	ug/L	40.0	135.35	50.00-170.00
Tetrachloroethene	47.7	ug/L	40.0	119.27	50.00-170.00
Toluene	46.0	ug/L	40.0	114.97	50.00-170.00
Trichloroethene	46.6	ug/L	40.0	116.50	50.00-170.00
Vinyl chloride	52.3	ug/L	40.0	130.83	50.00-170.00
Xylenes	146	ug/L	120	121.97	50.00-170.00
cis-1,2-dichloroethene	45.5	ug/L	40.0	113.67	50.00-170.00
o-dichlorobenzene	46.7	ug/L	40.0	116.72	50.00-170.00
trans-1,2-dichloroethene	45.4	ug/L	40.0	113.52	50.00-170.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
1,1,1-Trichloroethane	21.5	ug/L	20.0	107.65	50.00-170.00	0.500U
1,1,2-Trichloroethane	19.9	ug/L	20.0	99.50	50.00-170.00	0.500U
1,1-Dichloroethene	21.6	ug/L	20.0	107.80	50.00-170.00	0.500U
1,2,4-trichlorobenzene	17.7	ug/L	20.0	88.30	50.00-170.00	0.500U
1,2-dichloroethane	20.4	ug/L	20.0	101.80	50.00-170.00	0.500U
1,2-dichloropropane	20.5	ug/L	20.0	102.65	50.00-170.00	0.500U
Benzene	20.2	ug/L	20.0	101.00	50.00-170.00	0.500U
Carbon Tetrachloride	22.7	ug/L	20.0	113.25	50.00-170.00	0.500U

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PO #: Revised 03/16/17
Client Project #: FPL OCEC
Date Sampled: Feb 19, 2017
Mar 11, 2017; Invoice: 323915

Quality Control Batch: 10334269 **Analyst:** CTH

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Chlorobenzene	19.7	ug/L	20.0	98.45	50.00-170.00	0.500U
Ethylbenzene	20.4	ug/L	20.0	101.80	50.00-170.00	0.500U
Methylene chloride	21.8	ug/L	20.0	109.15	50.00-170.00	0.500U
Para-dichlorobenzene	20.1	ug/L	20.0	100.45	50.00-170.00	0.500U
Styrene	22.3	ug/L	20.0	111.30	50.00-170.00	0.500U
Tetrachloroethene	20.3	ug/L	20.0	101.25	50.00-170.00	0.500U
Toluene	19.6	ug/L	20.0	97.90	50.00-170.00	0.500U
Trichloroethene	20.7	ug/L	20.0	103.30	50.00-170.00	0.500U
Vinyl chloride	20.2	ug/L	20.0	100.90	50.00-170.00	0.500U
Xylenes	61.4	ug/L	60.0	102.32	50.00-170.00	0.500U
cis-1,2-dichloroethene	20.2	ug/L	20.0	101.20	50.00-170.00	0.200U
o-dichlorobenzene	19.9	ug/L	20.0	99.45	50.00-170.00	0.500U
trans-1,2-dichloroethene	20.5	ug/L	20.0	102.65	50.00-170.00	0.500U

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
1,1,1-Trichloroethane	31.9	ug/L	20.0	159.30	50.00-170.00	0.500U	38.70	30.00
1,1,2-Trichloroethane	29.9	ug/L	20.0	149.45	50.00-170.00	0.500U	40.13	30.00
1,1-Dichloroethene	31.6	ug/L	20.0	157.85	50.00-170.00	0.500U	37.68	30.00
1,2,4-trichlorobenzene	27.4	ug/L	20.0	136.85	50.00-170.00	0.500U	43.13	30.00
1,2-dichloroethane	30.0	ug/L	20.0	149.90	50.00-170.00	0.500U	38.22	30.00
1,2-dichloropropane	29.9	ug/L	20.0	149.40	50.00-170.00	0.500U	37.10	30.00
Benzene	29.8	ug/L	20.0	149.00	50.00-170.00	0.500U	38.40	30.00
Carbon Tetrachloride	33.4	ug/L	20.0	166.85	50.00-170.00	0.500U	38.27	30.00
Chlorobenzene	28.6	ug/L	20.0	142.95	50.00-170.00	0.500U	36.87	30.00
Ethylbenzene	29.9	ug/L	20.0	149.35	50.00-170.00	0.500U	37.87	30.00
Methylene chloride	30.5	ug/L	20.0	152.60	50.00-170.00	0.500U	33.20	30.00
Para-dichlorobenzene	28.5	ug/L	20.0	142.70	50.00-170.00	0.500U	34.75	30.00
Styrene	32.7	ug/L	20.0	163.50	50.00-170.00	0.500U	37.99	30.00
Tetrachloroethene	28.7	ug/L	20.0	143.50	50.00-170.00	0.500U	34.53	30.00

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Mar 11, 2017; Invoice: 323915

Quality Control Batch: 10334269 **Analyst:** CTH

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Toluene	28.9	ug/L	20.0	144.60	50.00-170.00	0.500U	38.52	30.00
Trichloroethene	29.9	ug/L	20.0	149.50	50.00-170.00	0.500U	36.55	30.00
Vinyl chloride	29.7	ug/L	20.0	148.55	50.00-170.00	0.500U	38.20	30.00
Xylenes	90.6	ug/L	60.0	150.98	50.00-170.00	0.500U	38.43	30.00
cis-1,2-dichloroethene	29.8	ug/L	20.0	149.00	50.00-170.00	0.200U	38.21	30.00
o-dichlorobenzene	29.1	ug/L	20.0	145.30	50.00-170.00	0.500U	37.47	30.00
trans-1,2-dichloroethene	30.1	ug/L	20.0	150.45	50.00-170.00	0.500U	37.77	30.00

Quality Control Batch: 10334332 **Analyst:** PLB

Blank	**Result**	**Units**
Total Solids	0.000250U	%Wt

Quality Control Batch: 10334484 **Analyst:** VLB

Blank	**Result**	**Units**
Chloride	4.00U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Chloride	201	mg/L	200	100.29	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Chloride	226	mg/L	100	79.33	80.00-120.00	147

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	223	mg/L	100	75.89	80.00-120.00	147	1.53	20.00

Quality Control Batch: 10334598 **Analyst:** JEB

Blank	**Result**	**Units**

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Quality Control Batch: 10334598 **Analyst:** JEB

Blank	**Result**	**Units**
BOD5day	2.00U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
BOD5day	180	mg/L	198	90.77	85.00-115.00

Quality Control Batch: 10334930 **Analyst:** JEB

Blank	**Result**	**Units**
Fluoride	0.0500U	mg/L

Quality Control Batch: 10334988 **Analyst:** VLB

Blank	**Result**	**Units**
Total Phosphorus(as P)	0.0400U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Total Phosphorus(as P)	1.52	mg/L	1.50	101.56	85.00-115.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
Total Phosphorus(as P)	1.71	mg/L	1.50	113.91	85.00-115.00	0.0400U

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Total Phosphorus(as P)	1.74	mg/L	1.50	115.78	85.00-115.00	0.0400U	1.63	20.00

Quality Control Batch: 10334991 **Analyst:** PLB

Blank	**Result**	**Units**
TDS	2.50U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**

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Quality Control Batch: 10334991 **Analyst:** PLB

	Result	Units	Spike	%REC	%REC Lim
Laboratory Control Sample					
TDS	1450	mg/L	1500	96.67	50.00-150.00

Quality Control Batch: 10335018 **Analyst:** PCW

	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Blank								
Sulfate	5.00U	mg/L						
Laboratory Control Sample								
Sulfate	61.9	mg/L	60.0	103.17	85.00-115.00			
Matrix Spike								
Sulfate	173	mg/L	50.0	116.00	85.00-115.00	115		
Matrix Spike Duplicate								
Sulfate	164	mg/L	50.0	98.00	85.00-115.00	115	5.34	20.00

Quality Control Batch: 10335170 **Analyst:** PCW

	Result	Units	Spike	%REC	%REC Lim	Sample	RPD	RPD Lim
Blank								
Ammonia (as N)	0.0100U	mg/L						
Laboratory Control Sample								
Ammonia (as N)	0.459	mg/L	0.500	91.80	85.00-115.00			
Matrix Spike								
Ammonia (as N)	1.06	mg/L	0.780	113.97	85.00-115.00	0.171		
Matrix Spike Duplicate								
Ammonia (as N)	1.07	mg/L	0.780	115.26	85.00-115.00	0.171	0.94	20.00

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Quality Control Batch: 10335660 **Analyst:** PCW

Blank	**Result**	**Units**
TOC	1.00U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
TOC	9.73	mg/L	10.0	97.33	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**
TOC	11.4	mg/L	10.0	94.78	80.00-120.00	1.90

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
TOC	11.0	mg/L	10.0	91.21	80.00-120.00	1.90	3.19	20.00

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Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted. Sample results reported as dissolved were field filtered.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Additional Comments

Calcium Hardness	151.mg/L
Magnesium Hardness	187.mg/L

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

Check Box That Applies To Your Location

☐ **Flowers Chemical Laboratories, Inc.**
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Altamonte Springs, FL 32701
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Fax: 407-260-6110

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FLOWERS CHEMICAL LABORATORIES INCORPORATED

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Client: Youngquist Brothers	Project Name: FPL OCEC	P.O. #
Address	Client Contact	FAX
	FCL Project Manager	E-MAIL
Phone	Requested Due Date 10 Day Standard OR	Rush Charges May Apply
Sampled By (PRINT): YBI	Pick-Up Fee $ / Vehicle Surcharge $ / Sampling Fee $	
Sampler Signature	Date Sampled: 2-19-17	

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST / COMMENTS	Total # Containers
1	Well FA-3 STEP TEST	2-19-17		GW	323915GW1						See Attached List for Parameters	10
2												
3												
4												
5												
6												
7												
8												
9												
10												

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
							2-20-17	8:00AM		2/20/17	08:00
										2/20/17	0808

FINANCE CHARGES APPLIED TO PAST DUE INVOICES

• **WHITE** - Lab Copy - To Be Scanned • **YELLOW** - Client Copy

Rev 04-08

Flowers Chemical Laboratories

481 Newburyport Ave.
Altamonte Springs, FL 32701
Phone (407) 339-5984 Fax (407) 260-6110

KIT REQUEST FORM

FCL Project Manager: Jud

Total Containers	PARAMETERS	Containers per Sample	Matrix	Preservative: Ascorbic	HNO3	Zn (C2H3O2) / NaOH	Na2S2O3	H2SO4	NaOH / Asc Acid	MnSO4/ ALK AZIDE	HCL	NH4CL	Plastic: 125 mL CLEAR	250 mL AMBER	250 mL CLEAR	500 mL CLEAR	1 L CLEAR	whirl Pak BAG	Coll Bottle	Glass Containers: 40 mL vial	125 mL AMBER	250 mL AMBER	#### mL CLEAR	1 L AMBER	4 L AMBER	4 oz Soil AMBER	8 oz Soil CLEAR		300 mL BOD Bottle
4	Total Metals	1	GW		X										X													
4	Dissolved Metals	1	GW												X													
4	Sulfide	1	GW			X																	X					
4	TOC	1	GW					X												X								
8	Inorganics	2	GW														X											
4	NH3,TP	1	GW					X							X													
4	Nitrate/Nitrite	1	GW										X															
8	VOC	2	GW								X									X								

Ship To: Youngquist Brothers
Client #
ATTN: Carlos Lopes

Project:
Location:
Sampling Dates:

Date Ordered: 02/14/17

Extra Coolers: [ ] (L) [ ] (M) [ ] (S)
Trip Blanks: [ ] w/HCl [ ] w/o HCl
Custody Chain: [4] Env. [ ] DW
Temp Blank: [ ] Bailers: [ ]

Special Notes:

Cooler ID

Date to be Shipped:

Date Needed:

[X] Customer Pick Up: 02/14/17

Date: Time:

SHIPPING METHOD

[ ] STD. DHL [ ] DHL Next Day
[ ] Fed-Ex Flowers Account
[ ] Fed-Ex Client Account #
[ ] Other:

SAMPLE KIT ID: WJR021417

Thank You for Your Business

(239-872-1241) Production Well

LABORATORY WATER QUALITY
SAMPLE PARAMETERS
TABLE 1

~~Alkalinity, Phenolphthalein~~
Alkalinity, Total (As CaCO3)
~~Methyl orange alkalinity~~
Chloride
Fluoride
Nitrogen, Nitrate
Nitrogen, Nitrite
Phosphorous, Orthophosphate (as P)
Sulfate
Biochemical Oxygen Demand
Carbon, Total Organic, TOC
~~Chlorine Demand~~
Chlorine, Total Residual
Conductance, Specific
Color (Apparent)
Corrosively/LSI (Langelier Sat. Index)
Nitrogen, Ammonia
pH
~~Phosphate (as PO4)~~
Phosphorous, Total (as P)
Silica, Dissolved (as SiO2)
Solids, Total Dissolved (TDS)
Solids, Total Suspended (TSS)
Total Residue (103 c)
Turbidity
Sulfide, Hydrogen

Aluminum
Arsenic
Barium
Boron
Calcium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Potassium
Selenium
Silver
Sodium
Strontium
Zinc
Hardness, Calcium, (as CaCO3)
Hardness, Magnesium as (CaCO3)
Iron-Dissolved
Aluminum-Dissolved
Manganese-Dissolved
Silica-Dissolved
VOC
TOC

END OF SECTION

Robert 11/25/16