



Report on the Construction and Testing of Dual-Zone Monitor Well DZMW-1 at the Florida Power & Light Company Turkey Point Units 6 & 7



Prepared for the Florida Power & Light Company



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September 24, 2012

MHCDEP-12-0367

Mr. Joe May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7
Report on the Construction and Testing of Dual-Zone Monitor Well DZMW-1 at
Florida Power & Light Company Turkey Point Units 6 & 7; FDEP Permit No.
0293962-001-UC**

Dear Mr. May:

As required by specific condition 4.J.1) of the above referenced permit, the Report on the Construction and Testing of Dual-Zone Monitor Well DZMW-1 at the Florida Power & Light Company Turkey Point Units 6 & 7 is hereby submitted on behalf of Florida Power & Light Company. This submittal includes the signed and sealed original and one copy of the report. An electronic copy of the report is provided inside the front cover of each report.

The following Certification is provided for the Report on the Construction and Testing of Dual-Zone Monitor Well DZMW-1 at the Florida Power & Light Company Turkey Point Units 6 & 7.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Should you have any questions regarding the report, please contact me at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



9/24/12

David McNabb, P.G.

Holtz Consulting Engineers, Inc.



9-21-12 PE #42595

David F. Holtz, P.E.

Cc: George Heuler/FDEP-Tallahassee
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Ron Reese/USGS
David Paul/FGS



FPL

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**McNabb
Hydrogeologic
Consulting, Inc.**

September 2012



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Report on the Construction and Testing of Dual-Zone Monitor Well DZMW-1 at the Florida Power & Light Company Turkey Point Units 6 & 7

INTRODUCTION

This report summarizes the construction and testing of a Dual-Zone Monitor Well (DZMW-1) at the Florida Power & Light Company (FPL) Turkey Point power plant located on the shore of Biscayne Bay in Miami-Dade County, Florida. DZMW-1 was constructed in association with construction of the Class V Exploratory Well (EW-1) authorized by Florida Department of Environmental Protection (FDEP) permit number 0293962-001-UC. Construction and testing was performed in accordance with Rule 62-528, Florida Administrative Code (F.A.C.), the recommendations of FDEP Technical Advisory Committee (TAC) and provisions of the FDEP Class V exploratory well construction permit. The FDEP TAC includes representatives of local, state, and federal agencies, including FDEP's state and local representatives, the South Florida Water Management District (SFWMD), the U.S. Environmental Protection Agency (EPA), and the United States Geological Survey (USGS). The Class V exploratory well construction permit allows construction and testing of an exploratory well and associated dual-zone monitor well without injection of fluids. FDEP issued a permit and FPL constructed a Class V exploratory well and associated dual-zone monitor well to allow evaluation of the site hydrogeology for appropriate confining intervals and confirm the presence of a zone below the confining interval that is suitable to accept injected fluids.

Background

FPL is proposing to construct two new nuclear units (Units 6 & 7) at its Turkey Point Plant. The Turkey Point facility is located on the shore of Biscayne Bay in Miami-Dade County, Florida, approximately 25 miles south of Miami. The nearest city limits are Florida City, 8 miles west, and Homestead, 9 miles northwest. A Project Location Map is provided in

Figure 1. A Site Plan showing the location of the exploratory well and associated dual-zone monitor well is provided in Figure 2.

Five electric generating units (two natural gas/oil conventional units, two nuclear and one combined cycle natural gas) currently exist at the site. The two additional nuclear units will be constructed to generate a nominal 1,100 megawatts each. Reclaimed water from the Miami-Dade Water and Sewer Department will be the primary cooling water source for the main cooling towers for the proposed nuclear units, with saline water serving as the back-up source. A Class I Industrial deep injection well system is proposed for disposal of non-hazardous operational industrial wastewater from Units 6 & 7. The wastewater disposal requirements for the two units are anticipated to be a combined total of approximately 18.6 million gallons per day (mgd) when using only reclaimed water for a cooling water source and approximately 84.8 mgd when using only back-up saline water as a cooling water source. Disposal volumes are estimated to be between approximately 18.6 mgd and 84.8 mgd when using a combination of reclaimed and saline water for cooling. Based on the upper bounds set for this Project, the deep injection well system is anticipated to consist of up to 13 deep injection wells, associated dual-zone monitor wells, piping and instrumentation.

FPL constructed EW-1 to confirm the geology and hydrogeology of the site and the feasibility of disposal of non-hazardous fluids via deep well injection. FPL may convert EW-1 to a Class I Industrial deep injection well following submittal of a permit application and issuance of a Class I deep injection well construction permit. The dual-zone monitor well is a required component of the injection system monitoring program of a Class I Industrial deep injection well system. Construction of DZMW-1 was completed on July 25, 2012, approximately 75 feet south of EW-1. A separate report detailing the construction and testing of EW-1 has been submitted to FDEP.

Prior to beginning construction of DZMW-1, McNabb Hydrogeologic Consulting, Inc. assisted FPL with the design and permitting of EW-1 and DZMW-1. FDEP Class V exploratory well construction permit no. 0293962-001-UC to construct a Class V exploratory well and associated dual-zone monitor well was issued on May 5, 2010. A copy of the FDEP permit to construct a Class V exploratory well is provided in Appendix A. Construction of

DZMW-1 began on March 27, 2012, and was completed on July 25, 2012, with the completion of the DZMW-1 wellhead.

Project Description

This project included the construction of one Class V exploratory well constructed to Class I Industrial deep injection well standards and one associated dual-zone monitor well. A report summarizing the construction and testing of the exploratory well has been submitted concurrently with this report to the FDEP. The dual-zone monitor well was constructed to a total depth of 1,905 feet below pad level (bpl) with an upper monitor zone of 1,450 to 1,490 feet bpl and a lower monitor zone of 1,860 to 1,905 feet bpl. The well was designed by McNabb Hydrogeologic Consulting, Inc. (MHC). The well was constructed by Layne Christensen Company. Resident observation during well construction was provided by a consulting team consisting of MHC, ASRus, LLC, and GEOSCI, Inc. David Holtz, P.E., of Holtz Consulting Engineers, Inc. served as the Engineer of Record for construction of DZMW-1.

Construction activities at the project site included installation of a temporary drilling pad and shallow pad monitor wells, construction and testing of exploratory well EW-1 and construction and testing of dual-zone monitor well DZMW-1.

A tabulated summary of well construction activities for DZMW-1 and weekly construction summary cover letters for the period of DZMW-1 construction are presented in Appendices B and C, respectively.

CONSTRUCTION PHASE

The following describes the construction and data collection associated with the construction of dual-zone monitor well DZMW-1 and the associated pad monitoring wells.

Pad Monitor Wells

The construction permit required the installation of pad monitor wells at the northeast, southeast, southwest and northwest corners of the DZMW-1 construction pad to monitor for groundwater impacts related to leakage from the temporary drilling pad or spillage of construction fluids. The wells were constructed to a depth of 30 feet below land surface with 20 feet of 2-inch-diameter schedule 40 PVC casing and a 10-foot long, 2-inch-diameter 20-slot PVC screen. Each pad monitor well was labeled with its name upon completion. The elevation of the top of casing of each of the pad monitor wells was measured relative to the North American Vertical Datum of 1988 (NAVD 88) to allow measurement of the elevation of the water table. The wells were completed with a steel enclosure to protect the wells from damage. Table 1 provides the pad monitor well top of casing elevations.

Table 1. Pad Monitor Well Top of Casing Elevations

Well Name	Elevation (feet above NAVD 88)
SE-DZMW PMW	7.17
NE-DZMW PMW	7.07
NW-DZMW PMW	7.19
SW-DZMW PMW	7.37

Water table elevation data and groundwater samples were collected from each pad monitor well and analyzed for specific conductance, chlorides, total dissolved solids (TDS), and temperature to establish background water quality data prior to beginning construction of DZMW-1. The pad monitor wells were then sampled weekly throughout the DZMW-1 well construction period. The samples were analyzed for specific conductance, chlorides, TDS, and temperature. Water level measurements were also taken just prior to each sample collection. Figure 3 provides a diagram of a typical pad monitor well.

Dual-Zone Monitor Well DZMW-1

Construction of dual-zone monitor well DZMW-1 began on March 27, 2012. Prior to beginning drilling operations, an elevation survey identified the pad elevation at the top of the 44-inch-diameter pit pipe at 7.21 feet NAVD 88. All measurements during construction and testing of DZMW-1 were taken relative to the pad elevation at the top of the 44-inch-diameter pit pipe. Mud rotary drilling was used to drill the interval from land surface to 1,110 feet bpl. A closed circulation, reverse-air system was used to drill the interval from 1,110 to 1,905 feet bpl to allow collection of pilot hole water samples. A stripping head was installed prior to penetrating the Floridan Aquifer and was utilized for blowout-prevention. A mixture of barite and bentonite was used to control the artesian head while drilling in artesian zones. A summary of the type of material used to control artesian head, the dates the material was used and the approximate amount of material used is provided in the Daily Kill Material Log provided in Appendix D.

Deviation surveys were performed on pilot and reamed holes to monitor the boreholes for deviation from vertical. The deviation surveys were performed at not greater than 90-foot intervals from land surface to a depth of 1,700 feet bpl, at which depth the testing intervals were decreased to not greater than 60 feet in accordance with the construction permit. A copy of the deviation survey summary sheet is provided in Appendix E. Deviation survey data indicate the boreholes were no greater than 0.6 degrees from vertical throughout the project.

Formation samples (drill cuttings) were collected and described at 10-foot intervals from the base of the pit pipe to the total depth of the well during the drilling of the pilot hole.

Additional data collected during pilot hole drilling included water samples collected at 90-foot intervals during reverse-air drilling, packer testing hydraulic data and water samples and geophysical logs. These data were interpreted to provide geologic and hydrogeologic information for the site and to assist in selection of the casing setting depths. These data were also used to identify the base of the Underground Source of Drinking Water (USDW). The USDW is defined as a non-exempt aquifer or its portion which either a) supplies drinking water for human consumption b) is classified as F-I, G-I, or G-II groundwater, or c) contains less than 10,000 mg/L of TDS. Geophysical logging was performed in

conformance with the geophysical logging program provided in the FDEP construction permit application supporting information and the requirements of the EW-1 and DZMW-1 construction permit. Following completion of pilot hole data collection, the pilot hole was reamed to the appropriate diameter for casing installation. Reamed holes were conditioned by making several wiper passes to enable unobstructed installation of casings and conditions for optimum bonding of cement to casing and cement to formation and to prevent channeling during cementing operations. MHC, Inc. prepared and submitted casing setting depth and monitoring zone recommendations for FDEP approval prior to installation of the 16-inch diameter and 6.625-inch diameter casings of DZMW-1. A copy of the FDEP e-mail approving the 16- and 6.625-inch diameter casing seat and monitoring zone recommendations is provided in Appendix F. The pilot hole below a depth of 1,153 feet was backplugged with cement and gravel (within the selected monitoring zones) prior to reaming to eliminate the possibility of an open conduit resulting from the reamed hole potentially tracking off of the pilot hole during drilling.

Dual-zone monitor well DZMW-1 was constructed with new and unused 44-, 34-, 24-, and 16-inch outside diameter steel casings and nominal 6.625-inch diameter fiberglass reinforced pipe (FRP) casing designed for the life expectancy of the well. The 44-, 34-, and 24-inch diameter casings have a wall thickness of 0.375-inch and conform to ASTM A-139, Grade B specifications. The 16-inch diameter casing has a 0.50-inch wall thickness, is seamless, and conforms to American Petroleum Institute (API) 5L specifications. The nominal 6.625-inch diameter casing has an outside diameter of 5.97-inches, a wall thickness of 0.27-inches, and conforms to ASTM D 2996-01 specifications.

Each casing, with the exception of the nominal 6.625-inch diameter FRP casing, was fully cemented with American Society of Testing and Materials (ASTM) type II cement from the base of the casing to land surface to prevent movement of fluids into or between USDWs, maintain groundwater quality in aquifers, and protect casings from corrosion. All cementing of casing was in accordance with American Water Works Association (AWWA) Standard for Water Wells, A100-06-2006. When appropriate, casings were pressurized during cementing to prevent against casing collapse. Temperature logs were performed following each cement stage that did not result in cement returns at surface. All casings were centralized to ensure the presence of an adequate annulus around the casing. Casing

depths and the types and quantities of cement used for the construction of DZMW-1 are summarized in Appendix G. Casing mill certificates for each of the casings and the FRP casing used during construction of DZMW-1 are presented in Appendix H.

Prior to beginning construction of DZMW-1, the contractor vibrated a 44-inch-diameter steel pit pipe to a depth of 37.5 feet bpl and constructed a steel construction pad for containment of fluids introduced into and produced from the well during construction. Construction of DZMW-1 began with drilling a pilot hole to a depth of 250 feet bpl using a 12¼-inch-diameter bit. A caliper and gamma ray log was then performed on the pilot hole before reaming the pilot hole to a depth of 258 feet bpl using a 42-inch-diameter drill bit. A caliper and gamma ray log was then performed on the reamed hole. The geophysical log and lithologic data were used to select a casing setting depth of 255 feet bpl. The 34-inch-diameter casing was installed to a depth of 255 feet bpl and cemented to land surface.

Below the base of the 34-inch-diameter casing, a pilot hole was drilled using mud rotary drilling techniques to a depth of 1,100 feet bpl using a 12¼-inch-diameter bit. The pilot hole then underwent geophysical logging, which included performance of caliper, gamma ray, spontaneous potential, and dual-induction logs. The pilot hole was then reamed using a 32½-inch-diameter drill bit to a depth of 1,105 feet bpl. A caliper and gamma ray log was then performed on the reamed hole. The 24-inch-diameter casing was installed to a depth of 1,102 feet bpl and cemented to land surface.

A 12¼-inch-diameter drill bit was then used to drill a pilot hole to a depth of 1,905 feet bpl. The open hole interval then underwent pilot hole geophysical logging. Logs performed include caliper, gamma ray, spontaneous potential, dual-induction, borehole compensated sonic, flowmeter, fluid conductivity, and temperature. Flowmeter, fluid conductivity and temperature logs were performed under both static and dynamic conditions. The remaining logs were performed under static conditions. Geophysical log data were used to select two intervals for packer testing. These intervals include 1,288 to 1,317 feet bpl and 1,860 to 1,905 feet bpl. Packer testing was performed to provide information related to the depth of the base of the USDW and to evaluate the fluid-producing characteristics of the test intervals.

Based on interpretation of the results of packer testing, geophysical logging, and formation sample data, an upper monitoring interval of 1,450 to 1,500 feet bpl and a lower monitoring

interval of 1,860 to 1,905 feet bpl, with corresponding of setting depths of 1,450 and 1,860 feet bpl for the 16-inch diameter and 6.625-inch diameter casings, respectively, was recommended to and approved by the FDEP and TAC. A copy of the FDEP e-mail approving the recommendations is provided in Appendix F. The interval from 1,905 to 1,854 feet bpl was then filled with gravel, the pilot hole interval from 1,854 to 1,504 feet bpl was backplugged with 12% bentonite cement blend and neat cement, the interval from 1,504 to 1,445 feet bpl was filled with gravel, and then the pilot hole interval from 1,445 to 1,153 feet bpl was backplugged with 12% bentonite cement blend and neat cement. A 22½-inch-diameter bit was then used to drill a hole to a depth of 1,453 feet bpl. A caliper and gamma ray log was then performed on the reamed hole in preparation for and to assist with installing the 16-inch-diameter casing. The 16-inch-diameter casing was then installed to a depth of 1,450 feet bpl and cemented to land surface.

Reaming of the backplugged pilot hole then resumed from the base of the 16-inch diameter casing using a 14¾-inch diameter reaming bit. The pilot hole was reamed from the base of the 16-inch diameter casing at 1,450 feet bpl to a depth of 1,850 feet bpl. A 12¼-inch diameter bit was then used to clean out the interval from 1,850 to 1,905 feet bpl. A caliper and gamma ray log was then performed on the hole in preparation for installation of the 6.625-inch diameter FRP casing. The FRP casing was installed to the depth of 1,860 feet bpl and the casing was cemented from the base of casing to a depth of 1,490 feet bpl.

Cement bond and video logging were performed on the completed well. The open hole interval of 1,860 to 1,905 feet bpl will serve as the lower monitoring zone of DZMW-1. The interval of 1,450 to 1,490 feet bpl will serve as the upper monitoring zone of DZMW-1. DZMW-1 did not penetrate the potential injection zone or the final confining bed.

The completed well was then developed and background monitor zone water sampling took place. Figure 4 provides a completion diagram of DZMW-1. A diagram of the wellhead installed on DZMW-1 is provided in Figure 5. A final site survey was performed at the completion of construction to provide precise well location and elevation data. A copy of the certified as-built survey, Certification of Completion of surface equipment, Certification of Monitor Well Completion, and signed and sealed as-built drawings of DZMW-1 are provided in Appendix I.

GEOLOGIC AND HYDROGEOLOGIC DATA COLLECTION AND FRAMEWORK

The geologic and hydrogeologic characteristics of the site were interpreted from physical (drill cutting samples), hydraulic (packer tests) and electronic data (geophysical logs). These data help to identify and characterize the geologic formations and hydrogeologic units penetrated by the well bore.

Drill Cutting Samples

Drill cutting samples from DZMW-1 were collected at 10-foot intervals from land surface to a depth of 1,905 feet bpl. The samples were described for rock type, color, grain size, consolidation, porosity, and fossils. The lithologic descriptions were useful for determining the geologic formations penetrated by the well bore. A detailed lithologic log of drill cutting samples from DZMW-1 is provided in Appendix J.

Geophysical Logging

Geophysical logs were performed in the pilot hole of DZMW-1 to correlate drill cutting samples to geophysical logs, to identify formation and hydrogeologic boundaries, to aid in the selection of straddle packer testing intervals and casing setting depths, to assist in the delineation of the base of the lowermost USDW, and to obtain specific data pertaining to the subsurface formations. A copy of the geophysical log prints performed during construction of the well are provided in Appendix K. A copy of the video survey performed on DZMW-1 is provided on the digital video disc provided in Appendix K. Table 2 provides a summary of the logs performed during construction of DZMW-1.

Table 2. Geophysical Logging Schedule

Logging Event	Date Started	Logged Interval (feet bpl)	Logs Performed
1	March 30, 2012	0 to 250	GR and C
2	April 3, 2012	0 to 258	GR and C
3	April 14, 2012	255 to 1,110	GR, C, DI and SP
4a	April 29, 2012	255 to 1,105	GR and C
4b	May 4, 2012	255 to 1,105	GR and C
5	May 5, 2012	0 to 1,090	CT
6	May 17, 2012	1,050 to 1,905	C, GR, DI, SP, BCS, FC, T and FM
7	June 13, 2012	1,100 to 1,453	GR and C
8	June 15, 2012	0 to 1,453	CT
9	June 20, 2012	1,450 to 1,905	GR and C
10	June 24, 2012	0 to 1,905	CT
11	June 27, 2012	1,200 to 1,855	CBL
12	July 20, 2012	0 to 1,887	V

GR = gamma ray; C = caliper; DI = dual-induction; SP = spontaneous potential; BCS = borehole compensated sonic; FC = fluid conductivity; T = temperature; CT = cement top temperature; FM = flowmeter; CBL = cement bond log; V = video

Site Geology and Hydrogeology

A stratigraphic profile of the site was derived from the correlation of formation samples with geophysical logs performed during pilot hole drilling. Strata encountered during construction of the exploratory well ranged from Holocene to Eocene Age deposits. The stratigraphic units and their respective ages are as follows: Miami Limestone and Fort Thompson Formation of Pleistocene Age, the Tamiami Formation of Pliocene to Miocene Age, the Hawthorn Group of formations of Miocene to Late Oligocene Ages, the Suwannee Limestone of Early Oligocene Age, and the Avon Park Formation of the Eocene Age. Figure 6 provides a generalized hydrogeologic column of the lithologic and geophysical data for DZMW-1. Lithostratigraphic and hydrogeologic descriptions of the strata penetrated by the DZMW-1 borehole are provided below.

Lithostratigraphic and Hydrogeologic Descriptions

Miami Limestone, Ft. Thompson, and Tamiami Formations

The Miami Limestone, Ft. Thompson, and Tamiami Formations of the Pleistocene to Pliocene Ages make up layers of sand, shells, limestone, sandy limestone, and, in the basal unit of the Tamiami Formation, dark greenish gray, clay-rich silt. The Miami Limestone, Ft. Thompson Formation and upper portion of the Tamiami Formation make up the Biscayne

Aquifer at the site. The presence of yellowish-gray to light olive gray, clay-rich silt at a depth of approximately 160 feet bpl marks the base of the Biscayne Aquifer. The base of the Tamiami Formation is located at a depth of approximately 210 feet bpl and marks the top of the Hawthorn Group.

Hawthorn Group

The Hawthorn group of the Miocene and Late Oligocene Age constitutes the confining interval between the Biscayne Aquifer and the Floridan Aquifer System. It is present at the site from a depth of approximately 210 to approximately 1,020 feet bpl. The Hawthorn Group sediments at the site consist of interbedded green clays, silt, sand, phosphate-rich calcareous limemuds and limestone layers similar to a marl. The Hawthorn Group makes up the Intermediate Confining Unit that separates the Biscayne Aquifer from the Upper Floridan aquifer at the site.

Suwannee Limestone

The Suwannee Limestone of the Oligocene Age occurs from a depth of approximately 1,020 to 1,260 feet bpl and generally consists of fine grained, moderately to well consolidated limestone and dolomitic limestone. It is characterized by relatively low to moderate gamma ray activity (compared to the overlying Hawthorn Group) and moderate resistivity. The Suwannee Limestone is part of the Upper Floridan aquifer, is under artesian pressure and contains brackish water.

Avon Park Formation

The Avon Park Formation of the Eocene Age occurs from a depth of 1,260 feet bpl to below the total depth of the well. The Avon Park Formation consists primarily of interbedded yellowish gray to very pale orange, very fine to fine grained, limestone interbedded with intervals of yellowish brown to dark yellowish brown, very fine grained dolomite. The portion of the Avon Park Formation penetrated by the DZMW-1 borehole is generally permeable, however, there are confining intervals present between the base of the USDW at a depth of approximately 1,450 feet bpl and the base of the borehole. As with the Suwannee Limestone above, the Avon Park Formation is also part of the artesian Upper Floridan Aquifer with brackish water less than 10,000 mg/L total dissolved solids residing in the upper portion and saline water residing in the lower portion of the Formation.

HYDROGEOLOGIC TESTING DURING CONSTRUCTION

Hydrogeologic testing during construction of DZMW-1 included collection of pad monitor well samples, pilot hole water samples during reverse-air drilling, and straddle packer testing.

Pad Monitor Well Data

Prior to beginning construction of DZMW-1, groundwater samples and water level data were collected from the pad monitor wells to establish background conditions within the uppermost surficial aquifer at the site. Weekly sampling took place during construction and testing of DZMW-1. A final sampling event took place following completion of construction and testing of DZMW-1. Water level relative to NAVD 88 was recorded for each pad monitor well prior to purging the wells for groundwater sample collection. Samples were analyzed for specific conductance, TDS, chloride, and temperature. Water level measurements, sample collection and laboratory analyses were performed by Florida Spectrum Environmental Services, Inc. throughout the project.

Review of the pad monitor well water level data indicates that, in general, water table levels at the site were stable during construction of DZMW-1. Background water table levels ranged from -1.08 to -0.97 feet NAVD 88. Water table elevations ranged from -0.36 to -0.66 feet NAVD 88 after completion of construction and testing of DZMW-1. Pad monitor well water quality parameters generally remained stable throughout the sampling period. Each of the pad monitor wells were plugged and abandoned in accordance with Rule 40E-3.531, F.A.C. following receipt of FDEP approval and a Miami-Dade Health Department permit to allow plug and abandonment of the wells. Pad monitor well data summary sheets and a copy of the Miami-Dade Health Department plug and abandonment permit are provided in Appendix L.

Pilot Hole Water Quality Data

Pilot hole water samples were collected at approximately 90-foot intervals during reverse-air drilling. Each sample underwent analysis for ammonia, chloride, specific conductance, TDS, and total Kjeldahl nitrogen (TKN). The pilot hole specific conductance, chloride, and

TDS data were evaluated to provide information related to identifying the base of the lowermost USDW.

It should be noted that the drilling process for DZMW-1 used a closed circulation system in which drilling water was present in the pilot hole at all times. In addition a large volume of fresh water was introduced to the closed circulation system at the beginning of pilot hole reverse-air drilling. Adding fresh water at the beginning of reverse-air drilling is a standard process in the drilling of deep monitoring wells. This may result in lower chloride, specific conductance and TDS results than expected for native Floridan aquifer groundwater.

Table 3 provides a summary of the DZMW-1 pilot hole water quality data. A copy of the water quality sample analytical reports is provided in Appendix M. Figure 7 provides a graph of pilot hole water sample chloride, specific conductance and TDS results relative to sample depth. The pilot hole water quality was relatively fresh between the depths of 1,105 and 1,254 feet bpl due to the high percentage of fresh water added to the closed circulation system. A gradual trend of increasing chloride and TDS concentration and specific conductance is apparent from a depth of 1,254 feet bpl to 1,614 feet bpl. This trend is an indication of groundwater with relatively high chloride, TDS, and specific conductance mixing with closed circulation drilling fluids. However, the gradual nature of the increase suggest that the formation was not contributing much water to the closed circulation drilling fluid. A significant increase in chloride concentration, TDS concentration and specific conductance was observed below 1,614 feet bpl. This suggests that a productive interval containing relatively saline water is present below 1,614 feet bpl. The continued increase of TDS, chloride and specific conductance with depth indicates that saline water is present to the total depth drilled.

Table 3. Pilot Hole Water Quality Summary

Sample Date	Sample Depth (feet bpl)	Specific conductance (umhos/cm)	TDS (mg/L)	Chloride (mg/L)	Ammonia (mg/L)	TKN (mg/L)
5/9/2012	1,105	1,171	744	111.0	U	0.46
5/10/2012	1,164	1,247	812	190.0	U	1.10
5/10/2012	1,254	2,308	1,450	596.0	U	0.49
5/11/2012	1,344	2,772	1,650	754	U	0.48
5/12/2012	1,434	4,135	2,080	969	U	0.29
5/12/2012	1,524	4,385	2,210	1,050	U	0.60
5/13/2012	1,614	4,327	2,260	1,130	U	0.20
5/13/2012	1,704	7,770	4,460	2,620	U	0.38
5/14/2012	1,794	24,560	15,300	10,300	U	0.24
5/15/2012	1,884	41,640	27,800	22,300	U	0.34

U = undetected

Figure 8 provides a graph of ammonia and TKN concentrations relative to depth. Review of the data indicates the pilot hole water samples have low concentrations of TKN typical of the Floridan Aquifer mixed with added fresh water to start reverse-air drilling. Ammonia was not detected in any of the pilot hole water samples.

In summary, the pilot hole water quality data indicates that salinity of pilot hole water increased with depth. A significant increase in salinity below a depth of 1,614 feet bpl indicate the presence of a relatively saline productive interval below this depth. Ammonia and TKN were present in concentrations typical of the Florida Aquifer.

Straddle Packer Tests

Straddle packer testing was conducted on the intervals from 1,860 to 1,905 feet bpl and 1,288 to 1,317 feet bpl to determine water quality and hydraulic characteristics of the tested intervals. The large diameter of the borehole between the depths of 1,320 feet bpl and 1,660 feet bpl did not allow packer testing within this interval. Sleeved packers were considered to allow testing within this interval, however, the sleeved packers have an outside diameter of 26-inches, that is larger than the inside diameter of the 24-inch diameter casing that was installed to a depth of 1,102 feet bpl.

Packer testing took place by first inflating the straddle packers at the test interval, developing the test interval until it was free of solids, allowing the water level to recover, pumping the test interval until water level had stabilized, then shutting off the pump and allowing water level in the test interval to recover. Water level data were collected and

recorded during each test using a submerged pressure transducer and a Hermit 3000 data logger. Water samples were also collected at the end of pumping after establishing that the quality of water produced from the test interval had stabilized. Samples were field tested for specific conductance, temperature, and pH and sent to a state certified lab (Florida Spectrum Environmental Services, Inc.) for TDS, chloride, ammonia, TKN, and sulfate analyses. A copy of the lab report for each of the packer tests along with a table summarizing the packer test laboratory analytical results are provided in Appendix N. Based on the packer tests water sample analytical data, the base of the lowermost USDW at the DZMW-1 site is located between a depth of 1,288 and 1,905 feet bpl. Based on additional packer testing, geophysical log data and monitor zone background water quality analysis from DZMW-1 and EW-1, the base of the USDW is estimated to be between the depths of 1,450 and 1,535 feet bpl. The water sample from the packer test performed on the interval from 1,860 to 1,905 feet bpl had a TDS concentration of greater than 10,000 mg/L, while the TDS concentration of the shallower test interval was less than 10,000 mg/L indicating that the base of the USDW is located between 1,450 and 1,535 feet bpl.

Table 4 provides a summary of pumping rate, water level drawdown, and the calculated specific capacity data of tested intervals. The specific capacity is calculated by dividing the pumping rate (in gpm) by the resulting drawdown (in feet) and is expressed in terms of gallons per minute per foot of drawdown (gpm/foot). Figures 9 and 10 provide an interpreted graph of water level drawdown data for each of the packer tests that were performed. The specific capacity of the test intervals were 0.40 gpm/foot and 7.53 gpm/foot.

Table 4. Straddle Packer Test Performance Data Summary

Test #	Test Interval (ft. bpl)	Pumping Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/foot)
DZMW-PT-1	1,860 - 1,905	33	82	0.40
DZMW-PT-2	1,288 - 1,317	80	10.6	7.53

The packer test water level data indicates that each of the packer test intervals are sufficiently productive to serve as monitoring zones for DZMW-1.

Additional interpretation of testing data is provided in the Dual-Zone Monitor Well Monitoring Intervals Recommendation submitted to the TAC on May 30, 2012 and the Revised Upper Monitor Zone Recommendation submitted to the TAC on May 31, 2012. A copy of the text portion of the recommendation and revised recommendation submittal is provided in Appendix O.

Background Monitoring Zones Sampling

Following completion of construction of DZMW-1, both monitoring zones were fully developed to allow collection of a representative background water sample from each zone. Volumes of approximately 250,000 gallons and 195,000 gallons of water were developed from the upper and lower monitor zones of DZMW-1, respectively. Florida Spectrum Environmental Services, Inc. then collected a groundwater sample from each monitor zone to establish background water quality conditions. The samples were analyzed for Primary and Secondary Drinking Water Standards and Municipal Wastewater Minimum Criteria Groundwater Monitoring Parameters. The initial sampling from the upper monitor zone showed a positive total coliform result. A second sampling and analysis of the upper monitoring zone demonstrated the absence of total coliform in the sample. The results of monitoring zones background water quality analyses are presented in Appendix P.

MECHANICAL INTEGRITY TESTING

Mechanical integrity testing (MIT) of dual-zone monitor well DZMW-1 was performed. Testing of DZMW-1 included performance of pressure testing, cement bond logging and video inspection of the 6.625-inch diameter FRP casing of DZMW-1. This testing was designed to demonstrate satisfactory internal mechanical integrity (no leaks in the casing) of the monitoring well. Results of the testing performed demonstrated satisfactory internal mechanical integrity of DZMW-1.

Pressure Testing

The 6.625-inch diameter FRP casing underwent pressure testing to demonstrate internal mechanical integrity. On June 27, 2012, a casing pressure test was successfully conducted on the 6.625-inch diameter FRP casing of DZMW-1. An inflatable packer was installed to a depth of 1,844 feet bpl in preparation for pressure testing. The casing was pressurized and pre-tested to allow any air introduced during pressurizing of the casing to rise to the surface. Precaution was taken to release a small portion of the pressure to ensure no air was trapped inside the casing before starting the 60-minute pressure test. The casing pressure at the start of the test was 151.5 psi. The pressure was monitored for a 60-minute period with a 200-psi calibrated pressure gauge. Pressure readings were recorded throughout the 60-minute test at 5-minute intervals. At the conclusion of the test, the casing pressure was 151.5 psi. The allowable 5 percent change in pressure (7.57 psi) specified in Rule 62-528.300(6)(e), F.A.C. was not exceeded and the test successfully demonstrated the mechanical integrity of the final casing. Sally Durall (MHC) and Mike Jordan (FPL) observed the casing pressure test. FDEP was invited to witness the pressure test, but declined to witness the test. A total of approximately 3 gallons of water were drained to the containment pad when the pressure was released from the casing.

A copy of the pressure gauge calibration certificates for the pressure gauge used for the final casing pressure test along with pressure test summary sheets are provided in Appendix Q.

Geophysical Logging

A cement bond log (CBL) was performed on the 6.625-inch diameter casing of DZMW-1 on June 27, 2012. The CBL was conducted to assess the quality of the cement-to-casing bond of

the FRP casing of DZMW-1. The CBL was performed after cementing the interval from the depth of 1,860 feet bpl up to the depth of 1,490 feet bpl which separates the upper and lower monitor zones. The low amplitude of the CBL demonstrates a cement bond around the 6.625-inch diameter casing from 1,493 feet bpl to the base of the FRP casing. Above a depth of 1,493 feet bpl, the cement bond log shows that the casing is uncemented. A copy of the CBL is provided in Appendix K.

DZMW-1 Completed Well Video Survey

A video survey of the completed well was conducted to inspect the FRP casing, and the open hole interval of DZMW-1. The color camera assembly was equipped with centralizers to keep it centered in the well, and its elevation was “zeroed” at pad level for the video survey.

On July 20, 2012, a video survey of the completed well was performed. The survey was performed from land surface to the depth of 1,887 feet bpl. The video showed the FRP casing to be in good condition. The connection between the steel transition piece and the FRP casing was observed at a depth of 29 feet bpl. The connection between the FRP casing and the California packer was observed at a depth of 1,851 feet bpl. The base of the FRP casing was observed at depth of 1,857. The base of the open hole or total depth of the well is at 1,905 feet bpl, however, the visibility was too turbid to view the open hole below the depth of 1,887 feet bpl. The discrepancy between the observed depth of the base of the casing (1,857 feet bpl) and the actual base of casing (1,860 feet bpl) is within expected instrument tolerance. A copy of each video survey is provided on the DVD in Appendix K. A summary data sheet of the video is provided in Appendix R.

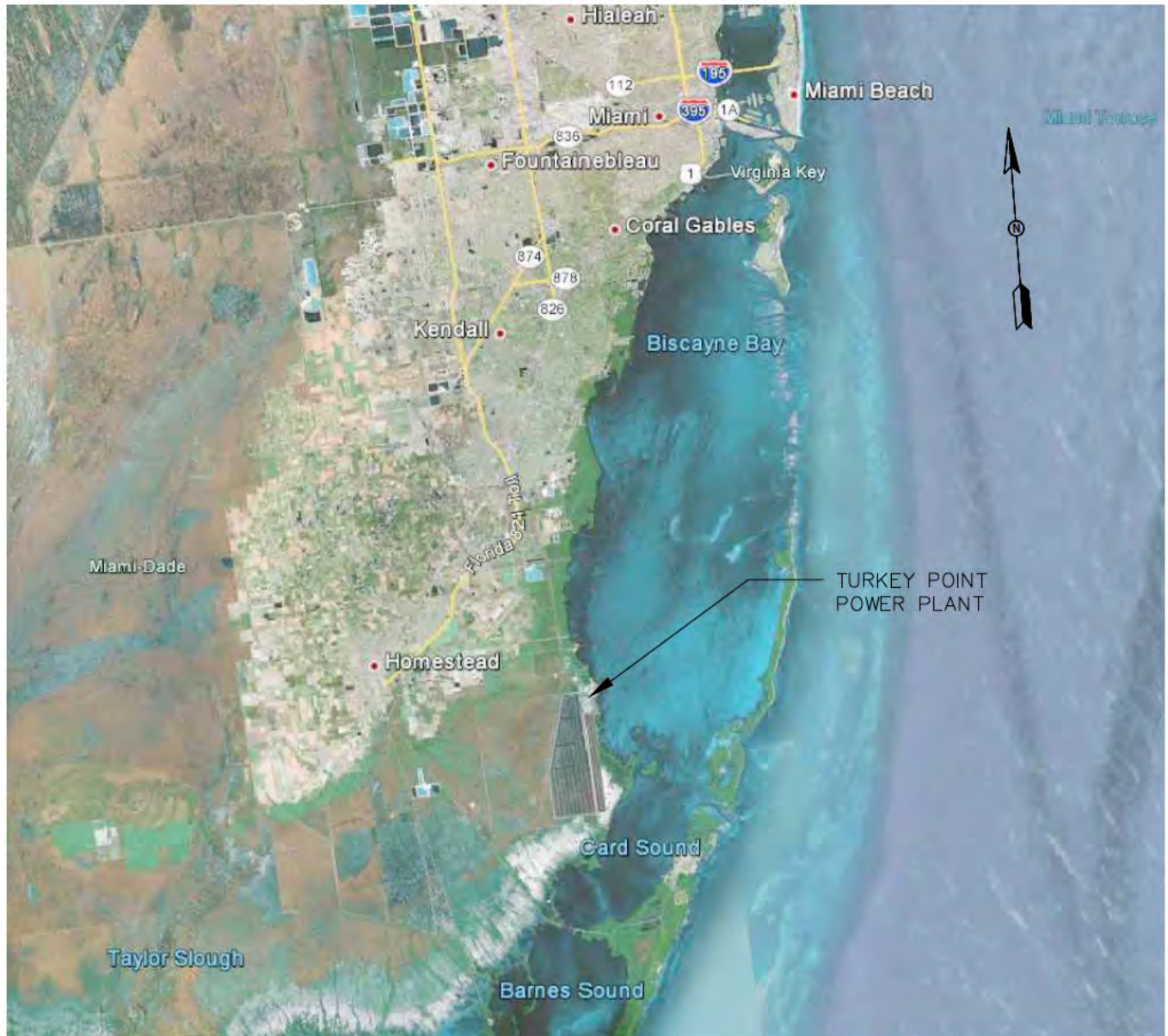
SUMMARY AND CONCLUSIONS

A dual-zone monitor well was constructed at the FPL Turkey Point power plant located in Miami-Dade County, Florida. The dual-zone monitor well is associated with the recently constructed Class V exploratory well located approximately 75 feet north of DZMW-1. DZMW-1 was constructed with an upper monitor zone of 1,450 to 1,490 feet bpl and a lower monitor zone of 1,860 to 1,905 feet bpl. Testing performed after construction of DZMW-1 demonstrates internal mechanical integrity of DZMW-1.

DZMW-1 was constructed to meet the requirements of Chapter 62-528, F.A.C. Testing during construction of DZMW-1 and EW-1 identified the base of the USDW between the depths of approximately 1,450 and 1,535 feet bpl through interpretation of packer tests water quality, geophysical log data and monitor zone background water quality analyses. The results also indicate that DZMW-1 has mechanical integrity.

It is recommended that DZMW-1 serve as a dual-zone monitor well if EW-1 is converted to a Class I deep injection well. Prior to placing the well into service, a construction permit must be obtained from the FDEP Southeast District to convert the well to Class I deep injection well IW-1. Construction and testing activities of the exploratory well are documented in a separate report.

Figures



McNabb Hydrogeologic Consulting, Inc.
 801 HERITAGE DRIVE, SUITE 110
 Jupiter, Florida 33458
 Phone 561,891,0763 - Fax 561,823,5489

FLORIDA POWER & LIGHT COMPANY
 TURKEY POINT UNITS 6 & 7
 EXPLORATORY WELL EW-1
 PROJECT

PROJECT LOCATION MAP

FIGURE 1



NOT TO SCALE



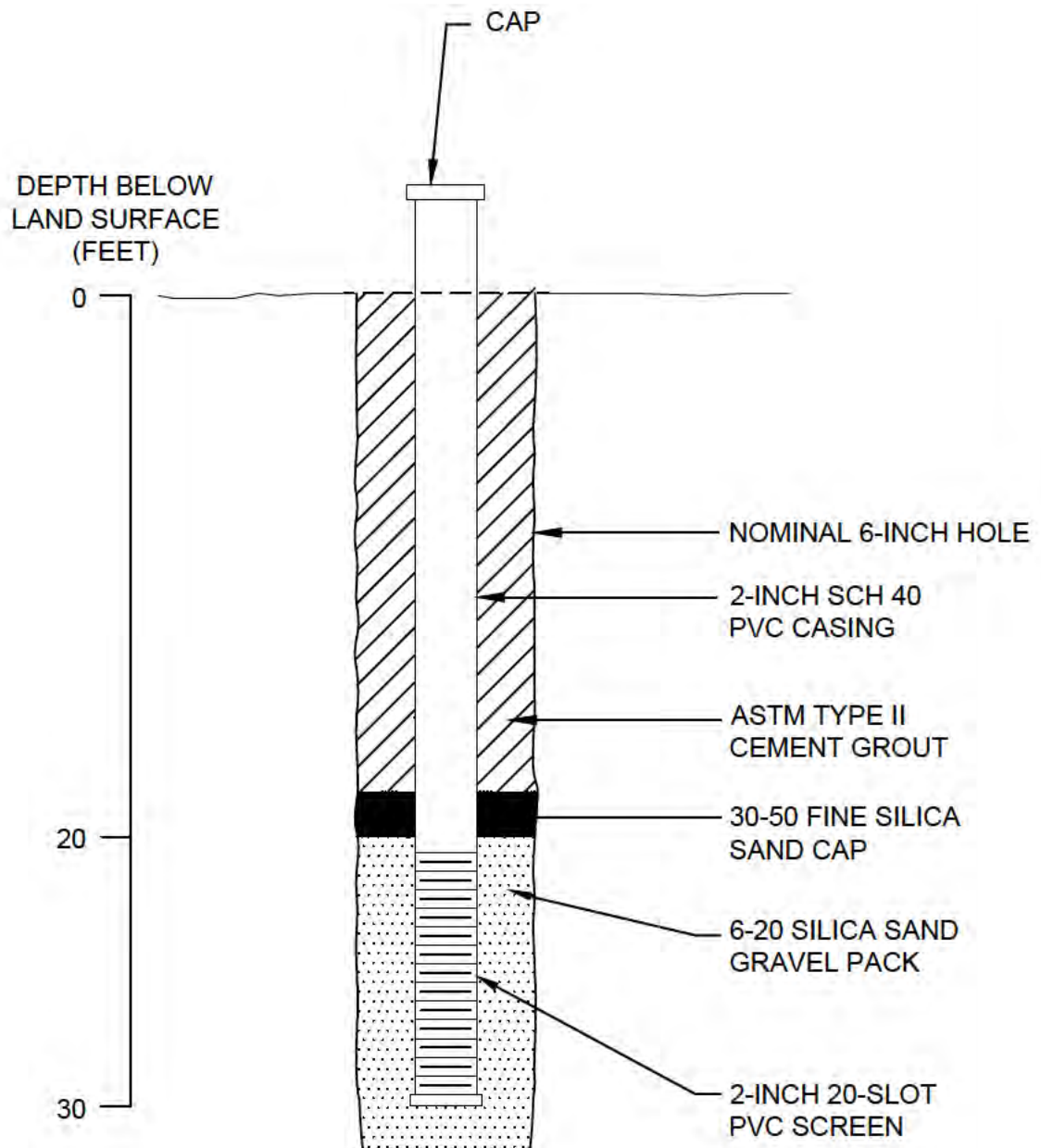
McNabb Hydrogeologic Consulting, Inc.

601 HERITAGE DRIVE, SUITE 110
Jupiter, Florida 33458
Phone 561,891,0763 - Fax 561,623,5469

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

SITE PLAN

FIGURE 2



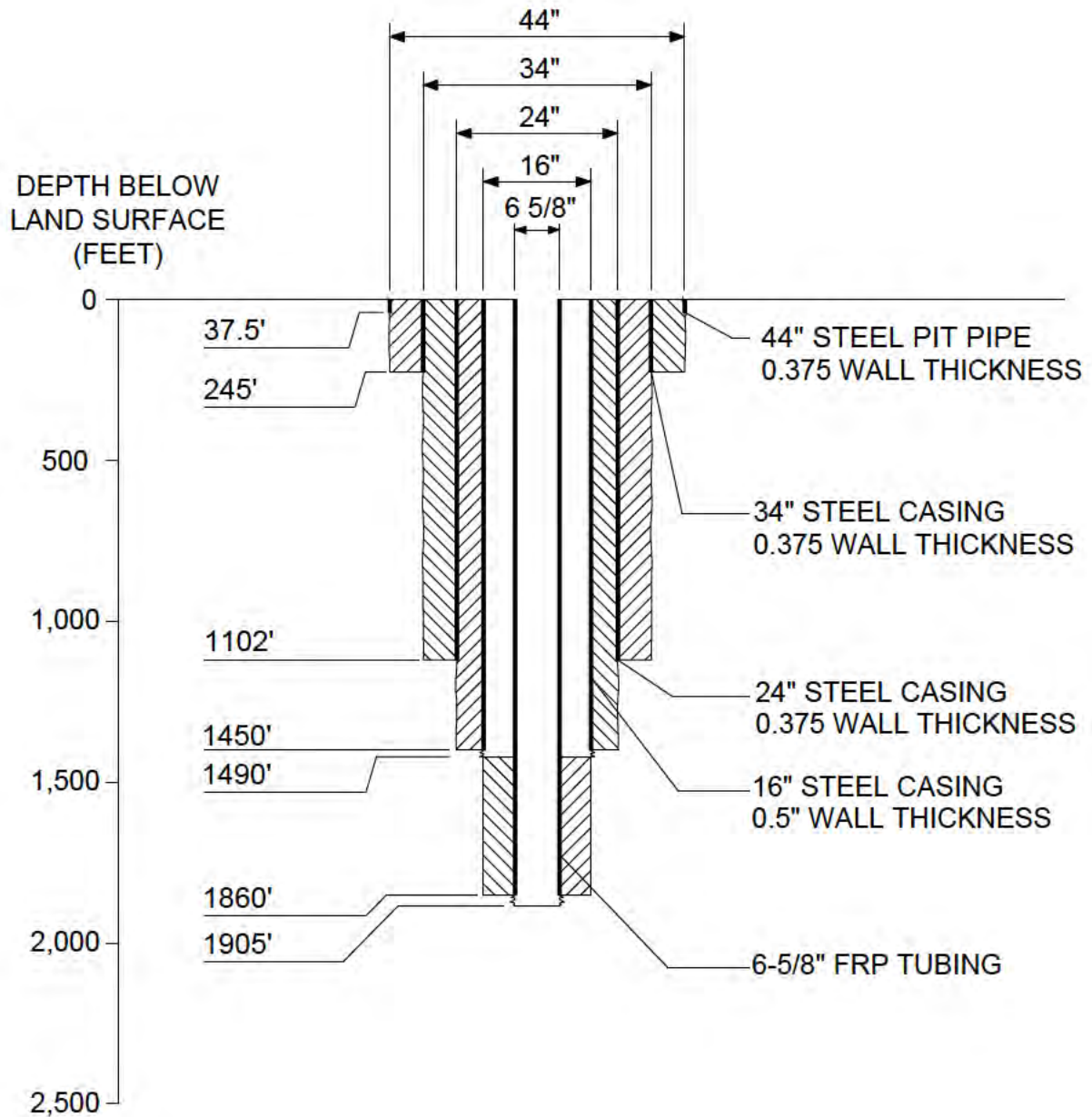
McNabb Hydrogeologic Consulting, Inc.
601 HERITAGE DRIVE, SUITE 110
Jupiter, Florida 33458
Phone 561,891,0763 • Fax 561,623,5468

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

PAD MONITOR WELL
DIAGRAM

FIGURE 3

DUAL-ZONE MONITOR WELL



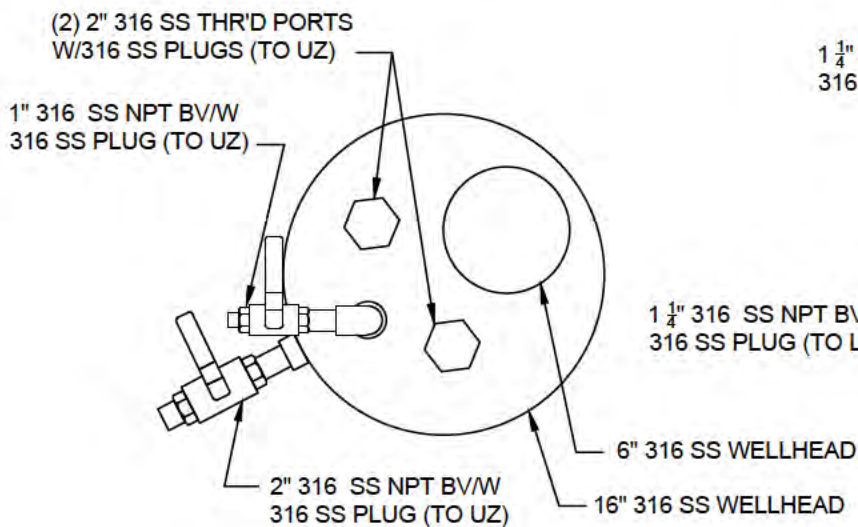
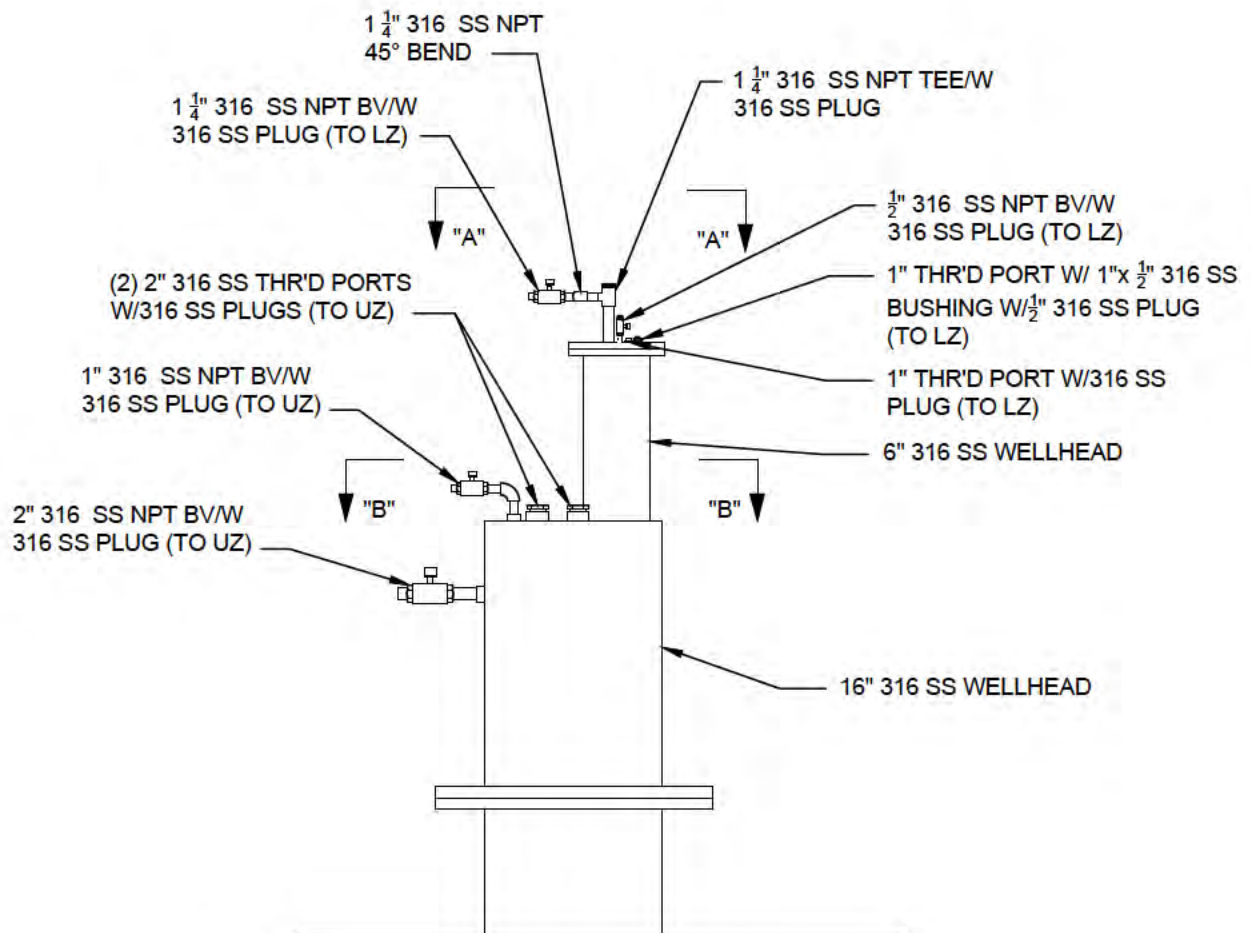
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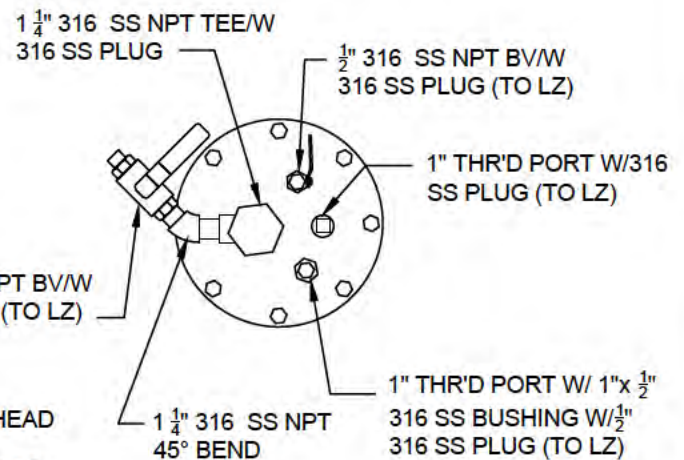
FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

DUAL ZONE MONITOR WELL
DZMW-1
COMPLETION DIAGRAM

FIGURE 4



UPPER ZONE
SECTION "B"



LOWER ZONE
SECTION "A"

UZ = UPPER ZONE
LZ = LOWER ZONE

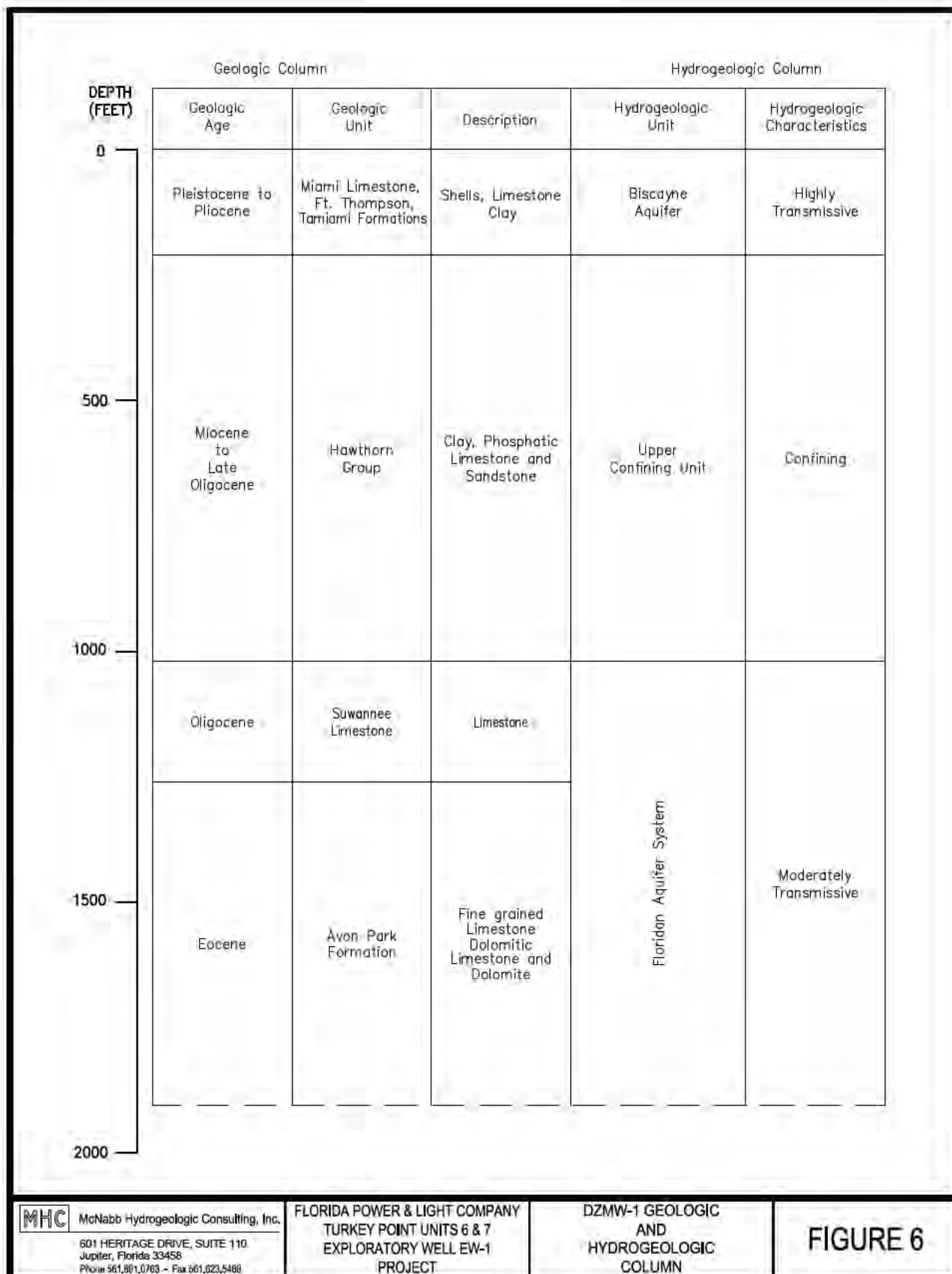


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FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

DZMW-1 WELLHEAD
COMPLETION DIAGRAM

FIGURE 5



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FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

DZMW-1 GEOLOGIC
AND
HYDROGEOLOGIC
COLUMN

FIGURE 6

Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Pilot Hole Water Quality

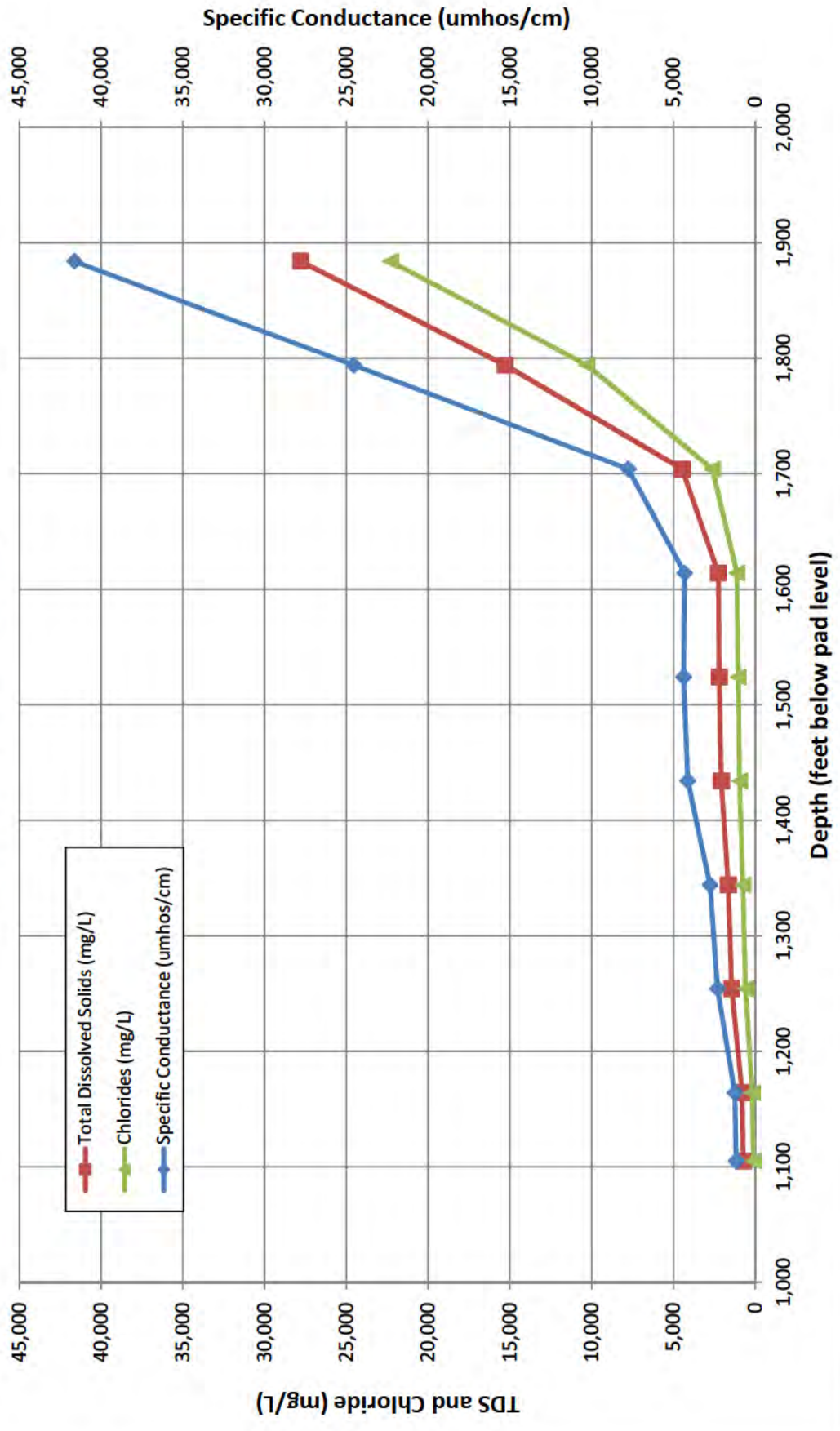


Figure 7. DZMW-1 Pilot Hole TDS, Chloride and Specific Conductance Data

Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Pilot Hole Water Quality

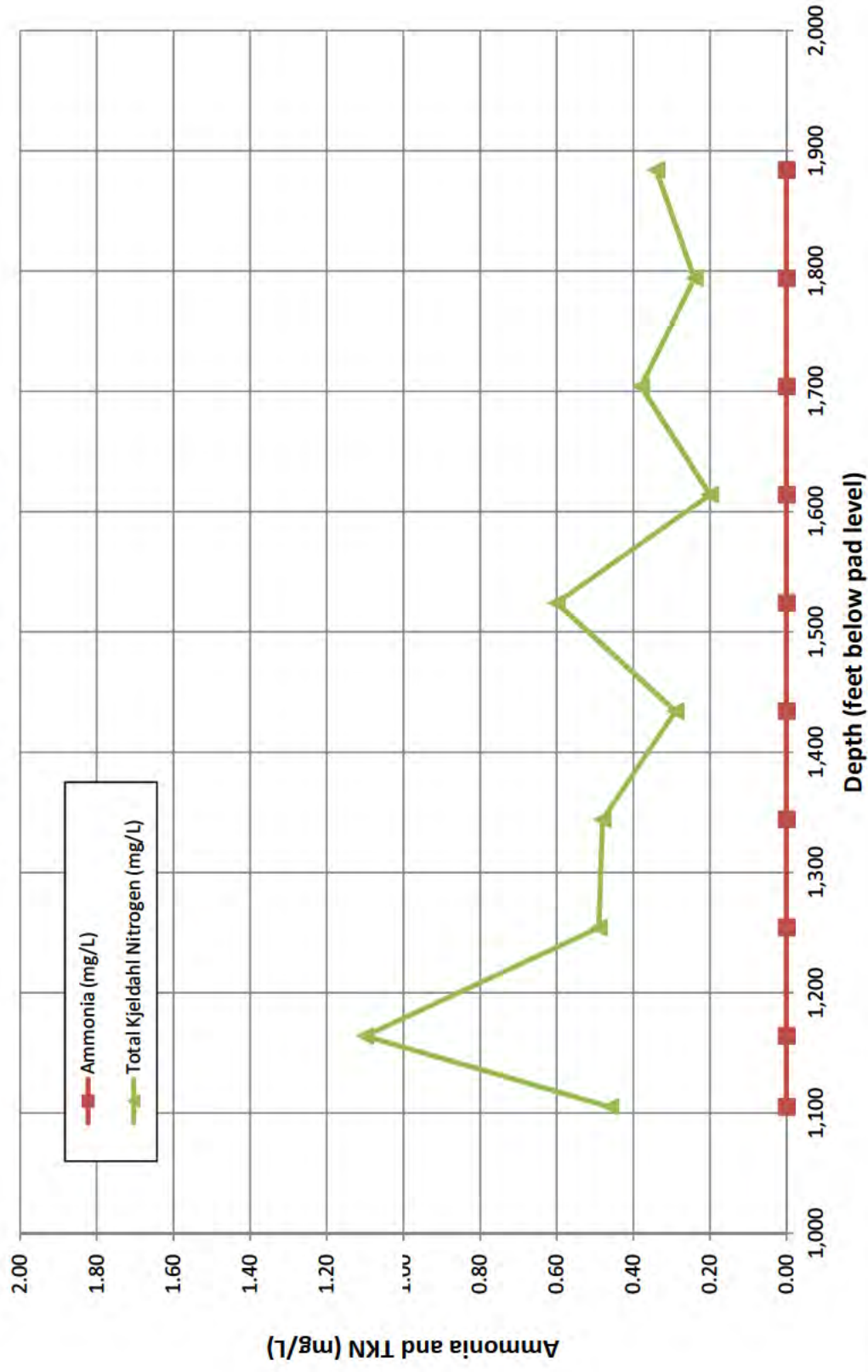


Figure 8. DZMW-1 Pilot Hole Ammonia and TKN Data

Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Packer Test DZMW-PT-1 (1,860 to 1,905 feet bpl)

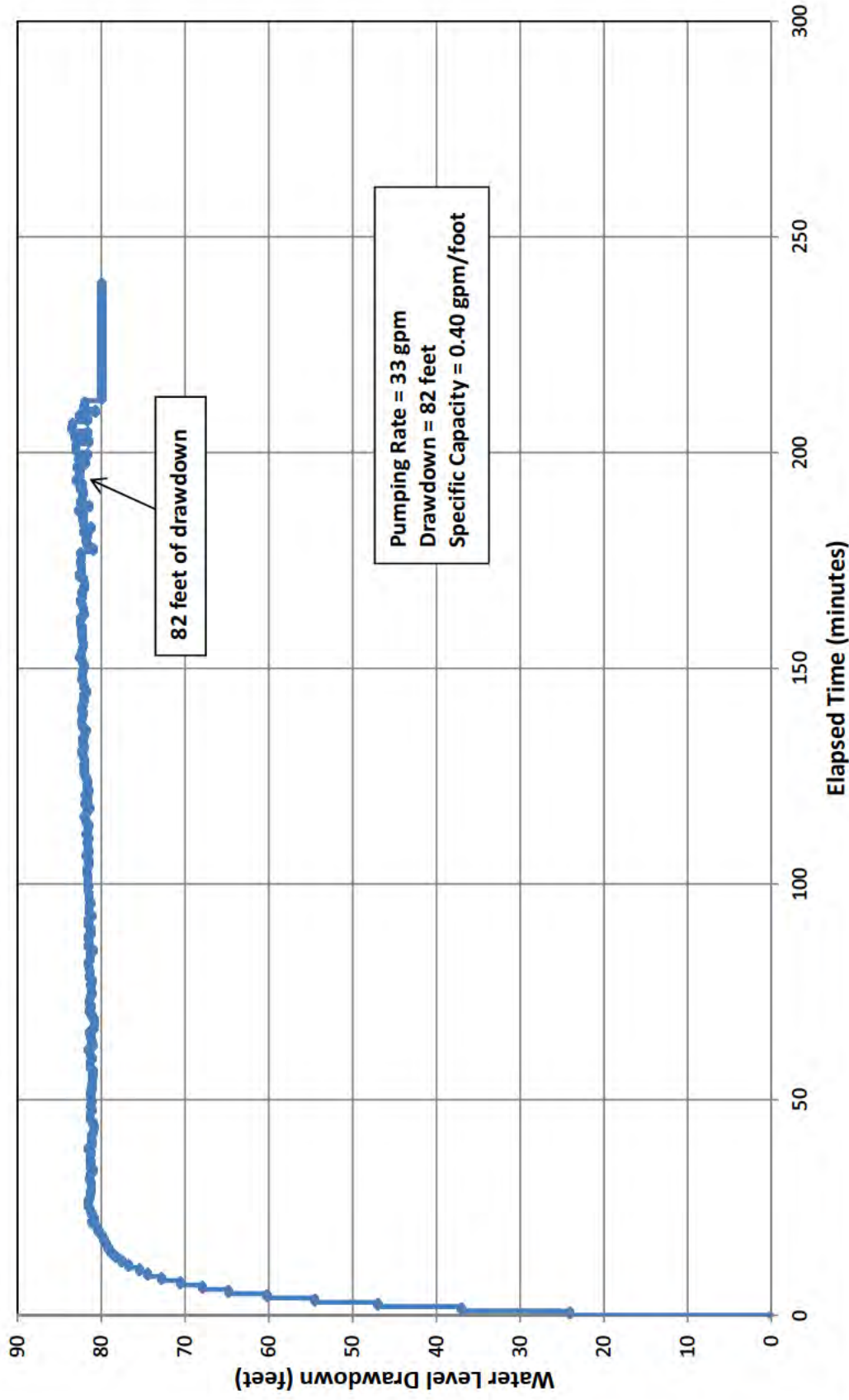


Figure 9. Packer Test DZMW-PT-1 Water Level Drawdown Data

Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Packer Test DZMW-PT-2 (1,288 to 1,317 feet bpl)

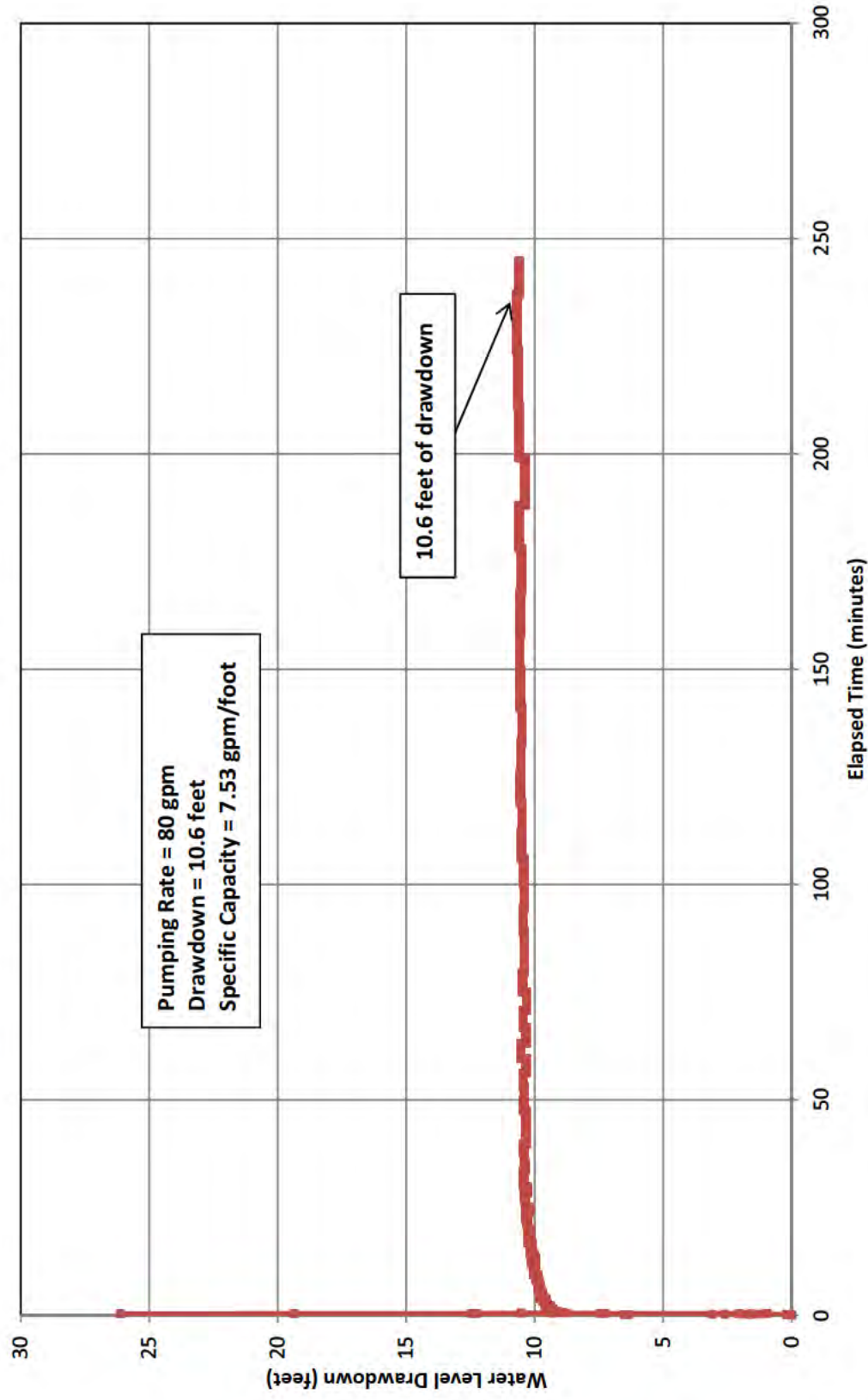


Figure 10. Packer Test DZMW-PT-2 Water Level Data

Appendix A
FDEP Construction Permit
#0293962-001-UC



Department of

Environmental Protection

Southeast District
400 North Congress Avenue, Suite 200
West Palm Beach, Florida 33401

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

ELECTRONIC CORRESPONDENCE

May 05, 2010

In the Matter of an
Application for Permit by:

Mr. Randall LaBauve
Vice President
Florida Power & Light Company
700 Universe Blvd.
Juno Beach FL 33408

MIAMI-DADE COUNTY
UIC: FPL Turkey Point Exp Well
FILE: 0293962-001-UC

PROJECT: Class V Group 9 Exploratory Well and Dual Zone Monitoring Well.

FINAL PERMIT

Enclosed is Permit Number 0293962-001-UC, to construct a Class V Exploratory Well and associated Dual Zone Monitoring Well. This permit has been issued pursuant to Section(s) 403.087, Florida Statutes and Florida Administrative Codes 62-4, 62-520, 62-522, 62-528, 62-550, 62-600 and 62-601. The system will be constructed at the FPL West County Energy Center, located at 20505 State Road 80, Loxahatchee, Florida.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, Mail Stop 35, 3900 Commonwealth Blvd., Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in the City of West Palm Beach, Florida.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Jack Long
District Director
Southeast District

Date

JL/LAB/jrm

Copies furnished to:

Joe Haberfeld, FDEP/TLH
Steve Anderson, SFWMD/WPB
Luis Otero, M-D DERM

George Heuler, FDEP/TLH
Joe May, UIC
M ke Halpin, FDEP/SCO

Nancy Marsh, USEPA
Dave McNabb, McNabb Hydro

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF DRAFT PERMIT and all copies were mailed before the close of business on _____ to the listed persons.

FILING AND ACKNOWLEDGMENT, FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

Date



Department of Environmental Protection

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

Southeast District
400 N. Congress Avenue—Suite 200
West Palm Beach, Florida 33401

PERMITTEE:

Mr. Randall LaBauve, Vice President
Florida Power & Light Company
700 Universe Blvd.
Juno Beach FL 33408

PERMIT NUMBER: 0293962-001-UC

DATE OF ISSUANCE: May 5, 2010

EXPIRATION DATE: May 4, 2015

COUNTY: Miami-Dade

POSITION: 25° 25' 19" N / 80° 20' 08" W

PROJECT: FPL Units 6 & 7 Class V Group 9 Exploratory Well

I

PROJECT: FPL Turkey Point Units 6 & 7 — Class V Exploratory Well & Dual Zone Monitoring Well
Construction and Testing of a Class V, Group 9 Exploratory Well

This permit is issued under the provisions of Chapter 403.087, Florida Statutes, and Florida Administrative Code (F.A.C.) Rules 62-4, 62-520, 62-522, 62-528, 62-550, and 62-660. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TO CONSTRUCT AND TEST: The Class V, Group 9 Exploratory Well and Dual Zone Monitoring well shall be constructed in four phases. The first phase shall be constructed first to explore to approximately 1650 feet below pad level (bpl). This phase will include the installation of conductor and surface casing, the drilling of a 12-inch diameter pilot hole to approximately 1650 feet bpl, conduct straddle packer testing, perform geophysical logging to determine the depth of the underground source of drinking water (USDW). The second phase shall include the drilling of a 12-inch diameter pilot hole to approximately 3500 feet bpl, conduct coring and straddle packer test, perform geophysical logging to determine confining sequences and injection zones. The third phase shall include reaming and setting of the intermediate casing, the injection casing and the Fiberglass Reinforced Plastic (FRP) tubing.

The conceptual design of the Class V, Group 9 Exploratory Well has a planned depth of approximately 3500 feet bpl with the packer center point at approximately 2890 feet bpl. The injection interval to be investigated shall be within the "Boulder Zone" in the lower Oldsmar Formation, and is preliminarily planned between approximately 2900 feet and the total depth of the well at 3500 feet bpl. Final depth of each casing and range of each interval for the well will be determined during construction and field-testing, subject to approval by the Department. The fourth phase shall be the construction of a dual zone monitoring well (DZMW). For planning purposes, this well proposes an upper monitoring interval of 1400-1420 feet bpl; and proposes a lower monitoring interval of 1850-1870 feet bpl. Final depth of each casing and range of each interval for the well will be determined during construction and field-testing, subject to approval by the Department. There will be no authorization to inject under this permit.

IN ACCORDANCE WITH: Application for a Class V, Group 9 Exploratory Well Construction and Testing Permit, received January 20, 2009; The application was deemed complete as of 1 November 2009; and publication of the Notice of Draft Permit 0293962-001-UC in The Miami-Herald newspaper on 13 November, 2010.

LOCATED AT: FPL Turkey Point Power Plant, 9760 SW 344th St., Florida City, FL 33035 adjacent to Biscayne Bay, approximately 25 miles south of Miami and eight miles east of Florida City.

TO SERVE: Florida Power & Light Co.

SUBJECT TO: General Conditions 1-24 and Specific Conditions 1-8.

GENERAL CONDITIONS:

The following General Conditions are referenced in Florida Administrative Code Rule 62-528.307.

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are "permit conditions" and are binding and enforceable pursuant to Section 403.141, F.S.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action.
3. As provided in Subsection 403.087(7), F.S., the issuance of this permit does not convey any vested rights or exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land, water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefrom; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, or are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
 - a. Have access to and copy any records that must be kept under conditions of this permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time will depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of noncompliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent the recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-528.350, F.A.C. The permittee shall be liable for any non-compliance of the permitted activity until the Department approves the transfer.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records shall be extended automatically unless the Department determines that the records are no longer required.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. Since there is no facility at this site for the purposes of this permit then these records may be kept at the permittee's office in Juno Beach, Florida or the site office.
 - c. Records of monitoring information shall include:
 - 1) the date, exact place, and time of sampling or measurements;
 - 2) the person responsible for performing the sampling or measurements;
 - 3) the dates analyses were performed;
 - 4) the person responsible for performing the analyses;
 - 5) the analytical techniques or methods used
 - 6) the results of such analyses
 - d. The permittee shall furnish to the Department, within the time requested in writing, any information which the Department requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.
 - e. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.
14. All applications, reports, or information required by the Department shall be certified as being true, accurate, and complete.
15. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.
16. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
17. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

18. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
19. This permit may be modified, revoked and reissued, or terminated for cause, as provided in 40 C.F.R. Sections 144.39(a), 144.40(a), and 144.41 (1998). The filing of a request by the permittee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
20. The permittee shall retain all records of all monitoring information concerning the construction of the well until five years after completion of any plugging and abandonment procedures specified under Rule 62-528.435, F.A.C. The permittee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permittee elects to continue retention of the records.
21. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C. All reports shall contain the certification required in Rule 62-528.340(4), F.A.C.
22. The permittee shall notify the Department as soon as possible of any planned physical alterations or additions to the permitted facility. In addition, prior approval is required for activities described in Rule 62-528.410(1)(h).
23. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity that may result in noncompliance with permit requirements.
24. The permittee shall report any noncompliance which may endanger health or the environment including:
 - a. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or
 - b. Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

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SPECIFIC CONDITIONS

1. General Requirements

- a. This permit is to construct and test a Class V, Group 9 Exploratory Well and construct and operate an associated Dual -Zone Monitoring Well–
- b. This permit approval is based upon evaluation of the data contained in the application and the plans and specifications submitted in support of the application. Any changes, except as provided elsewhere in this permit, must be approved by the Department before implementation.
- c. The permittee shall be subject to all requirements and regulations of Miami-Dade County and the South Florida Water Management District regarding the construction and testing of this exploratory well.
- d. Four surficial aquifer monitoring wells, identified as Pad Monitor Wells (PMWs), shall be located near the corners of the pad to be constructed for the exploratory well, and shall be identified by location number and pad location, i.e. NW, NE, SW, and SE. If located in a traffic area the well head(s) must be protected by traffic bearing enclosure(s) and cover(s). Each cover must lock and be specifically marked to identify the well and its purpose. The PMWs shall be sampled as follows:
 - 1) During the construction and associated testing phases, the PMWs shall be sampled weekly for chlorides (mg/L), specific conductance ($\mu\text{mho}/\text{cm}$ or $\mu\text{S}/\text{cm}$), temperature and water level (relative to the North American Vertical Datum of 1988 [NAVD 88]).
 - 2) Initial PMW water quality analysis results shall be submitted prior to the onset of drilling activities.
 - 3) The PMWs shall also be sampled weekly for total dissolved solids (mg/L) during the first four weeks of PMW sampling; prior to events as described under Item 4) below; and at all times when specifically requested by the Department.
 - 4) The PMWs shall be sampled within 48 hours prior to and after any planned maintenance, testing (including mechanical integrity testing) or repairs to the system which represent an increased potential for accidental discharge to the surficial aquifer.

The results of the PMW analyses shall be submitted to the Department weekly along with the well construction report for the weekly activity. A summary sheet from the FDEP Southeast District is attached for your use when reporting the above information. The PMWs shall be retained in service throughout the construction phase of the project.

- e. No underground injection is allowed that causes or allows movement of fluid into an underground source of drinking water if such fluid movement may cause a violation of any primary drinking water standard or may otherwise adversely affect the health of persons. Note: exploratory wells do not inject as part of the testing program.
- f. If historical or archaeological artifacts, such as Indian canoes, are discovered at any time within the project site, the permittee shall notify the FDEP SED office in West Palm Beach and the Bureau of Historic Preservation, Division of Archives, History and Records Management, R. A. Gray Building, Tallahassee, Florida 32301, telephone number (850) 487-2073.

2. Construction and Testing Requirements

- a. Prior to the commencement of any work, the name of the Florida-licensed water well contractors supervising the drilling operations and the water well contractors' registration number shall be submitted to the Department. The permittee or the engineer of record shall provide the Department with copies of all required federal, state or local permits prior to spudding the exploratory well.
- b. Blow-out preventers shall be installed on the exploratory well and dual-zone monitor well prior to penetration of the Floridan Aquifer.
- c. The measurement points for drilling and logging operations shall be surveyed and referenced to the NAVD 88 prior to the onset of drilling activities for the exploratory well and dual-zone monitor well.
- d. No drilling operations shall begin without an approved disposal site for drilling fluids, cuttings, or waste. It shall be the permittee's responsibility to obtain any necessary Department and local agency approvals for disposal prior to the start of construction. Any formation waters discharged to surface or surficial aquifer waters during an aquifer performance test shall require an Industrial Wastewater permit from the Department, unless otherwise authorized.
- e. The Department shall be notified within forty-eight (48) hours after work has commenced.
- f. Hurricane Preparedness — Upon the issuance of a "Hurricane Watch" by the National Weather Service, the preparations to be made include but are not necessarily limited to the following:
 - 1) Secure all on-site salt and stockpiled additive materials to prevent surface and/or groundwater contamination.
 - 2) Properly secure drilling equipment and rig(s) to prevent damage to well(s) and on-site treatment process equipment.
- g. Waters spilled during construction or testing of the exploratory well and dual-zone monitor well shall be contained and properly disposed.
- h. Department approval and UIC-TAC review is required prior to the following stages of construction:
 - 1) Spud date for the exploratory well
 - 2) The landing of the 34-inch diameter and 24-inch diameter casings of the exploratory well
 - 3) Injection zone interval
 - 4) The landing of the 16-inch diameter and 6-5/8 inch diameter casings of the dual-zone monitor well
 - 5) Upper and lower monitoring intervals
- i. The drilling and geophysical logging program, during the drilling of the exploratory well, shall at a minimum include:

- 1) Conventional mud-rotary method through setting of the outer casing; reverse-air rotary for the remainder of the drilling; no salt or brine may be used for weight control during any of the drilling operations until after the intermediate casing of the exploratory well has been installed. Drill a 12-inch diameter borehole using the mud rotary method from pad level to approximately 250 feet bpl. Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
- 2) Ream the pilot hole to a nominal 64-inch diameter and perform the following logging techniques prior to installing and cementing the 54-inch conductor casing from 0–225 feet bpl.:
 - X-Y caliper
 - Natural gamma ray
- 3) Drill a 12-inch diameter pilot hole using the mud rotary method from the landing of the conductor casing to approximately 950 feet bpl, conducting inclination surveys every 90 feet (1 degree maximum allowed). Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
 - Dual induction
 - Spontaneous Potential
- 4) Ream the pilot hole to a nominal 54-inch diameter borehole using the mud rotary method, conducting inclination surveys every 90 feet (1 degree maximum allowed), from bottom of conductor casing to approximately 925 feet bpl. Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray
- 5) Install and cement a 44-inch diameter steel outer casing from pad level to approximately 925 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
- 6) Switch to reverse-air drilling. Drill a 12-inch diameter pilot hole from the landing of the outer casing to approximately 1650 feet bpl, conducting inclination surveys every 90 feet (1 degree maximum allowed). Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
 - Dual induction
 - Spontaneous potential
 - Temperature (static and flowing)
 - Fluid conductivity (static and flowing)
 - Borehole Compensated Sonic with VDL
 - Flowmeter (static and flowing)

A minimum of two and an anticipated maximum of 4 packer-pumping tests shall be performed between the depths of 1250 and 1650 feet bpl to determine the depth of the 10,000 mg/L TDS isopleth based upon field determined conditions. Note: Pumping logs shall be run to adequately stress the confining units to make them clearly identifiable.

- 7) Ream the pilot hole to a nominal 44-inch diameter borehole using the reverse-air rotary method, conducting inclination surveys every 90 feet (1 degree maximum allowed), from bottom of conductor casing to approximately 1600 feet bpl. Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray
- 8) Install and cement a 34-inch diameter intermediate steel casing from pad level to approximately 1600 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
- 9) Drill a 12-inch diameter pilot hole using the reverse air method from the landing of the intermediate casing to approximately 3500 feet bpl, conducting inclination surveys every 60 feet (1 degree maximum allowed). Perform the following logging techniques prior to subsequent reaming:

Static conditions

- X-Y caliper
- Natural gamma ray
- Dual induction
- Spontaneous potential
- Borehole Compensated Sonic — VDL
- Temperature with differential plot
- Fluid Conductivity
- Flowmeter
- Television Survey and Borehole televiewer

Dynamic conditions

- Temperature with differential plot
- Fluid conductivity
- Flowmeter

Collect a minimum of six (6) and up to eight (8) cores. A minimum of four and up to eight packer-pumping tests shall be performed between the depths of 1650 and 2900 feet bpl to evaluate the confining characteristics of strata in this interval. Note: Pumping logs shall be run to adequately stress the confining units to make them clearly identifiable.

- 10) Ream the pilot hole to a nominal 34-inch diameter borehole using the reverse air method, conducting inclination surveys every 90 feet (1 degree maximum allowed), from bottom of intermediate casing to approximately 2898 feet bpl. Ream the pilot hole to a nominal 24-inch diameter using the reverse air method, conducting inclination surveys every 90 feet (1 degree maximum allowed), to 2900 feet bpl. Ream the pilot hole to a nominal 22-inch diameter using the reverse air method from 2900 to 3500 feet bpl. Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray

- 11) Install and cement a 24-inch diameter seamless steel injection casing from 0 to approximately 2900 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
 - Cement Bond Log with VDL after completion of cementing
 - Television Survey
 - 12) Conduct casing pressure test on the 24-inch diameter steel injection casing .
 - 13) Install the 18-inch FRP injection tubing of 0.76-inch thickness with external casing packer from 0 to approximately 2890 feet bpl.
 - 14) Develop well and collect background water samples. The background water samples shall be collected and analyzed, at a minimum, for: Primary and Secondary Drinking Water Standards and Municipal Wastewater Minimum Criteria Groundwater Monitoring Parameters. This may also be accomplished between 10) and 11), above.
 - 15) Conduct Mechanical Integrity Test (annulus pressure test on 18 -inch FRP injection tubing and perform the following logging techniques:
 - Television Survey
 - Temperature
 - 16) Complete wellhead assembly.
 - 17) Demobilize injection well rig and move to dual zone monitor well site.
- j. The drilling and geophysical logging program, during the drilling of the dual-zone monitor well, shall at a minimum include:
- 1) Conventional mud-rotary method through setting of the outer casing; reverse-air rotary for the remainder of the drilling; no salt or brine may be used for weight control during any of the drilling operations until after the final casing of the dual-zone monitor well has been installed. Drill a 12-inch diameter borehole using the mud rotary method from pad level to approximately 250 feet bpl. Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
 - 2) Ream the pilot hole to a nominal 44-inch diameter and perform the following logging techniques prior to installing and cementing the 34-inch conductor casing from 0–225 feet bpl::
 - X-Y caliper
 - Natural gamma ray

- 3) Drill a 12-inch diameter pilot hole using the mud rotary method from the landing of the conductor casing to approximately 950 feet bpl, conducting inclination surveys every 90 feet (1 degree maximum allowed). Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
 - Dual induction
 - Spontaneous Potential
- 4) Ream the pilot hole to a nominal 34-inch diameter borehole using the mud rotary method, conducting inclination surveys every 90 feet (1 degree maximum allowed), from bottom of conductor casing to approximately 925 feet bpl. Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray
- 5) Install and cement a 24-inch diameter steel outer casing from pad level to approximately 925 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
- 6) Switch to reverse-air drilling. Drill a 12-inch diameter pilot hole from the landing of the outer casing to approximately 1,900 feet bpl, conducting inclination surveys every 90 feet (1 degree maximum allowed). Perform the following logging techniques prior to subsequent reaming:
 - X-Y caliper
 - Natural gamma ray
 - Dual induction
 - Spontaneous potential
 - Temperature (static and flowing)
 - Fluid conductivity (static and flowing)
 - Borehole Compensated Sonic with VDL
 - Flowmeter (static and flowing)

A minimum of two and an anticipated maximum of 4 packer-pumping tests shall be performed between the depths of 1300 and 1900 feet bpl to determine the depth of the 10,000 mg/L TDS isopleth based upon field determined conditions and evaluate hydraulic characteristics of potential monitoring intervals. Note: Pumping logs shall be run to adequately stress the confining units to make them clearly identifiable.

- 7) Install drillable bridge plug to a depth of 1850 feet bpl and backplug pilot hole from approximately 1850 to 1430 feet bpl with cement. Install limestone gravel over interval from 1430 to 1390 feet bpl. Backplug pilot hole over the interval from approximately 1390 to within 100 feet of the base of the 24-inch diameter outer casing.

- 8) Ream the backplugged pilot hole to a nominal 24-inch diameter borehole using the reverse-air rotary method, conducting inclination surveys every 90 feet (1 degree maximum allowed), from bottom of outer casing to approximately 1,400 feet bpl. Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray
 - 9) Install and cement a 16-inch diameter intermediate steel casing from pad level to approximately 1400 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
 - 10) Drill a 16-inch diameter hole using the reverse air method from the landing of the intermediate casing to approximately 1845 feet bpl and a 12-inch diameter hole from 1845 to 1870 feet bpl conducting inclination surveys every 60 feet (1 degree maximum allowed). Perform the following logging techniques:
 - X-Y caliper
 - Natural gamma ray
 - 11) Install and cement a 6-⁵/₈ inch diameter final FRP casing from pad level to approximately 1850 feet bpl, and perform the following logging techniques:
 - Temperature log after each lift of cement
 - 12) Develop monitor zones and collect background water samples. The background water samples shall be collected and analyzed, at a minimum, for: Primary and Secondary Drinking Water Standards and Municipal Wastewater Minimum Criteria Groundwater Monitoring Parameters. This may also be accomplished between 12) and 13), below.
 - 13) Conduct Mechanical Integrity Test (casing pressure test on 6-5/8-inch FRP casing and perform the following logging techniques:
 - Cement Bond Log with VDL after completion of cementing
 - Television Survey
 - 14) Complete wellhead assembly.
 - 15) Demobilize rig.
- k. Packer testing shall at a minimum include:
- 1) At least one packer test from each monitoring zone.
 - 2) At least one packer test to reliably determine the base of the USDW.
 - 3) Water samples shall be collected from each packer test and analyzed, at a minimum, for: total dissolved solids, chlorides, specific conductance, pH, temperature, dissolved ammonia and total Kjeldhal nitrogen and sulfates.

I. The depth of the USDW and the background water quality of the monitoring zones shall be determined during drilling and testing. This determination shall be accomplished, analyzed, and interpreted using, at least, the following information:

- 1) Water sample analysis results from packer testing.
- 2) Aquifer performance testing data.
- 3) Geophysical logging data.
- 4) Plots of sonic porosity and apparent fluid resistivity (R_{wa}). Interpretation shall also include calculations of the sonic porosity and the R_{wa} and the input parameters provided.

The lower monitoring zone shall be positioned in a suitably transmissive interval at an appropriate point above the injection interval, and the immediately overlying major confining unit, and have a TDS concentration significantly greater than 10,000 mg/L with regard to TDS. The upper monitoring interval shall be located in immediate proximity to the base of the USDW. Final hydrogeological evaluation shall be done once all pertinent data and results have been submitted and incorporated in the proposal.

- a. If effluent (e.g., uncharacteristic liquid waste components or odors) is encountered or suspected during drilling or testing, the Department shall be notified immediately by telephone, and subsequently in writing. Immediate precautionary measures shall be taken to prevent any upward fluid movement.
- b. Testing:
 - i. Injection of any wastewater is prohibited as this is an exploratory well.
 - ii. The Department shall be notified at least seventy-two (72) hours prior to all testing that requires the presence of a FDEP representative.
- c. UIC-TAC meetings are scheduled on the 2nd and 4th Tuesday of each month subject to a five working day prior notice and timely receipt of critical data by all UIC-TAC members and the USEPA, Region IV, Atlanta. Emergency meetings may be arranged when justified to avoid undue construction delays.
- d. Department approval at a scheduled UIC-TAC meeting shall be based on the permittee's presentation that shows compliance with Department rules and this permit.
- e. No fluids shall be injected with the exception of fluids used while drilling operations are under way.

3. Quality Assurance/Quality Control Requirements.

- a. The permittee shall ensure that the construction of this facility shall be as described in the application and supporting documents. Any proposed modifications to this permit shall be submitted in writing to the Underground Injection Control program manager for review and clearance prior to implementation. Changes of negligible impact to the environment and staff time will be reviewed by the program manager, cleared when appropriate and incorporated into this permit. Changes or modifications other than those described above will require submission of a completed application and appropriate processing fee as per Rule 62-4.050, F.A.C.

- b. A Florida registered professional engineer, pursuant to Chapter 471, Florida Statutes (F.S.), shall be retained throughout the construction period and operational testing to be responsible for the construction and operation and to certify the application, specifications and completion report and other related documents, pursuant to Rule 62-528.440(5), F.A.C. A professional engineer or professional geologist, pursuant to Chapter 492, F.S., shall provide monitoring of the drilling and testing operation. The permittee shall notify the Department immediately of any change of the Engineer of Record or Geologist of Record.
- c. In accordance with Chapter 492, Florida Statutes, all documents prepared for the geological/hydrogeological evaluation of the exploratory well shall be signed and sealed by a Florida Licensed Professional Geologist or qualified Florida Licensed Professional Engineer.
- d. All water quality samples required in this permit shall be collected and analyzed in accordance with Department Standard Operating Procedures (SOP), pursuant to the FDEP Quality Assurance, Chapter 62-160, F.A.C. The various components of the collection of the FDEP SOPs are found in DEP-SOP-001/01 (Field Procedures) and DEP-SOP-002/-1 (Laboratory Procedures).
- e. Continuous on-site supervision by qualified personnel (engineer or geologist) is required during all drilling, testing, geophysical logging and cementing operations.
- f. The permittee shall calibrate all pressure gauge(s), flow meter(s) and other related measurement equipment associated with the exploratory well (system on a semi-annual basis). The permittee shall maintain all monitoring equipment and shall ensure that the monitoring equipment is calibrated and in proper operating condition at all times. Laboratory equipment, methods, and quality control will follow EPA guidelines as expressed in Standard Methods for the Examination of Water and Wastewater. The pressure gauge(s), flow meter(s) and other related measurement equipment associated with the exploratory well shall be calibrated using standard engineering methods.
- g. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

4. Reporting Requirements.

- a. This project shall be monitored by the Department with the assistance of the EPA - Region 4 and the TAC, which consists of representatives of the following agencies:
 - Department of Environmental Protection, West Palm Beach and Tallahassee.
 - South Florida Water Management District (SFWMD), West Palm Beach.
 - United States Geological Survey (USGS), Miami.
- b. The permittee shall provide copies of all correspondence relative to this permit to each member of the TAC (not EPA). Such correspondence includes but is not limited to reports, schedules, analyses and geophysical logs required by the Department under the terms of this permit. The permittee is not required to provide specific correspondence to any TAC member who submits to the permittee a written request to be omitted as a recipient of specific correspondence.
- c. Throughout the construction period allowed by this permit, daily progress reports shall be submitted to the Department and the TAC (not EPA) each week. The reporting period shall run Friday through Thursday and reports shall be mailed on Friday of each week. The weekly progress reports, certified by a Florida Licensed Professional Geologist or qualified Florida Licensed Professional Engineer, pursuant to S.C.s 3.b. and 7.a., and shall include at a minimum the following information:

- 1) A cover letter summarizing each week's activities and a projection of activities for the next reporting period;
 - 2) Description of daily footage drilled by diameter of bit or size of hole opener or reamer being used;
 - 3) Description of work during installation and cementing of casing, including amounts of casing and cement used. Details of cementing operations shall include the number of cementing stages, and the following information for each stage of cementing: cement slurry composition, specific gravity, pumping rate, volume of cement pumped, theoretical fill depth, and actual tag depth. From both the physical tag and the geophysical logs, a percent fill shall be calculated. An explanation of any deviation between actual versus theoretical fill shall be provided;
 - 4) Daily engineers report and driller's log with detailed descriptions of all drilling progress, cementing, testing, logging, and casing installation activities;
 - 5) Lithologic log with cuttings description, formation and depth encountered;
 - 6) Collection of drilling cuttings at least every 10 feet and at every formation change, with 5 foot sampling starting at a depth of 2800 feet bpl and continuing through the injection zone;
 - 7) Well development records;
 - 8) Water quality analyses, including but not limited to the weekly water quality analysis and water levels for the four PMWs;
 - 9) Description of work and type of testing accomplished including geophysical and video logs and pumping tests;
 - 10) Description of any construction problems that developed during the reporting period and current status;
 - 11) Copies of the driller's log;
 - 12) Description of any deviation survey conducted;
 - 13) Details of any packer tests, pump tests and core analyses; and
 - 14) Details of the additions of salt or other materials to suppress well flow, and include the date, depth and amount of material used
- d. If any problem develops that may seriously hinder compliance with this permit, construction progress or good construction practice, the Department shall be notified immediately. The Department may require a detailed written report describing what problems have occurred, the remedial measures applied to assure compliance and the measures taken to prevent recurrence of the problem.
- e. Abnormal Events.
- 1) In the event the permittee is temporarily unable to comply with any conditions of this permit due to breakdown of equipment, power outages, destruction by hazard of fire, wind or by other cause, the permittee shall notify the Department. Notification shall be made in person, by telephone or by electronic mail within 24 hours of breakdown or malfunction to the UIC Program staff, SED office in West Palm Beach.

- 2) A written report of any noncompliance referenced in Specific Condition (S.C.) 4.e above shall be submitted to the SED office within five days after discovery of the occurrence. The report shall describe the nature and cause of the breakdown or malfunction, the steps being taken or planned to be taken to correct the problem and prevent its reoccurrence, emergency procedures in use pending correction of the problem, and the time when the facility will again be operating in accordance with permit conditions.
 - f. An interpretation of all test results must be submitted with all submittals.
 - g. Within 30 days of well completion of the Exploratory Well, the permittee or the authorized representative shall submit to the Department the following information:
 - h. Certification of Class I Well Construction Completion, DEP Form 62-528.900(4);
 - i. Upon completion of construction of the well, a complete set of as-built engineering drawings (Florida registered P.E. signed and sealed) shall be submitted to the Department's SED office in West Palm Beach and Tallahassee UIC Program.
 - j. After completion of construction and testing of the well, the following requirements shall apply:
 - 1) A final engineering report shall be submitted to the Department, the TAC (not EPA). The report shall include, but not be limited to, all information and data collected under Rules 62-528.605, 62-528.615, and 62-528.635, F.A.C., with appropriate interpretations. Mill certificates for the casings shall be included in the report. This report shall also be signed and sealed by a Florida licensed professional engineer and professional geologist.
 - a) Surface equipment completion certification or certification of interim completion for the purposes of testing;
 - b) Signed and sealed record (as-built) engineering drawings of all well construction, subsurface and surface equipment, and appurtenances. The drawings shall include but not be limited to the wellhead and subsurface well components.
 - c) All other applicable permits;
5. Surface Equipment
- a. The well surface equipment and piping shall be kept free of corrosion at all times.
 - b. Spillage onto the well pad during construction activities, and any waters spilled during testing, other maintenance, testing or repairs to the system shall be contained by an impermeable containment pad and disposed of via approved and permitted methods.
 - c. The four surficial aquifer monitor wells installed at the corners of the well pad shall be secured, maintained, and retained in service throughout the construction phase of the project. The permittee may submit a request to the Department for cessation of sampling followed by capping, or plugging and abandonment of these wells.
6. Plugging and Abandonment and Alternate Use Plans.
- a. Permittees who are unable to operate the well to meet its intended purpose shall within 180 days of FDEP notification:

- 1) Submit a plugging and abandonment permit application in accordance with Rules 62-528.625 and 62-528.645, F.A.C., or
- 2) Submit an alternate use plan for the well. Alternate use may commence after the plan has been approved by the Department, including any necessary permit or permit modifications as required by the Department or any other agency, or
- 3) Implement the plugging and abandonment plan.

7. Signatories

- a. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.
- b. In accordance with Rule 62-528.340(4), F.A.C., all reports and submittals shall contain the following certification signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C. or be included under such certification as may have been previously provided (i.e., responses to a Request for Information (RFI) which are simple clarifications are thereby certified):

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8. Permit Extension(s) and Renewal(s).

- a. Pursuant to Rule 62-4.080(3), a permittee may request that a permit be extended as a modification of an existing permit. A request for an extension is the responsibility of the permittee and shall be submitted to the Department before the expiration of the permit. In accordance with Rule 62-4.070(4), F.A.C., a permit cannot be extended beyond the maximum 5-year statutory limit.

Issued this _____ day of May, 2010

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**Jack Long
District Director
Southeast District**

JL/LAB/jrm

Appendix B
DZMW-1 Construction
Summary

**Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Construction Summary**

Date	Milestone
3/27/2012	Begin drilling a 12¼-inch diameter pilot hole from land surface via mud rotary drilling method.
3/29/2012	Complete drilling the pilot hole to 250 feet bpl.
3/30/2012	Perform caliper and gamma ray logging on the pilot hole. Begin reaming from surface using a 42-inch diameter bit via mud rotary drilling method.
4/2/2012	Complete reaming the 42-inch diameter hole to a depth of 258 feet bpl.
4/3/2012	Perform caliper and gamma ray logging on the reamed hole. Install 34-inch diameter casing to a depth of 255 feet bpl and cement casing to land surface.
4/5/2012	Drill out cement plug at the base of the 34-inch diameter casing using a 3½-inch diameter bit.
4/6/2012	Begin pilot hole drilling with a 12¼-inch diameter bit via mud rotary drilling method from the base of the 34-inch casing.
4/13/2012	Complete pilot hole drilling to a depth of 1,110 feet bpl.
4/14/2012	Perform caliper, gamma ray, spontaneous potential, and dual-induction logging on the pilot hole. Begin reaming the pilot hole using a 3½-inch diameter reaming bit.
4/25/2012	Complete reaming the pilot hole to a depth of 1,105 feet bpl. Begin caliper and gamma ray logging of the reamed hole.
4/29/2012	Perform caliper and gamma ray logging of the reamed hole.
5/2/2012	Begin installation of the 24-inch diameter casing. Installation of the 24-inch diameter casing was stopped due to an obstruction encountered in the borehole at approximately 325 feet bpl. Eight casing joints were removed and the borehole was conditioned using a 3½-inch diameter bit.
5/3/2012	Complete conditioning of the reamed hole.
5/4/2012	Perform caliper and gamma ray logging of the reamed hole. Begin installation of the 24-inch diameter casing.
5/5/2012	Complete installation of the 24-inch diameter casing to a depth of 1,102 feet bpl and cement casing to land surface.
5/7/2012	Begin to drill out cement plug at the base of the 24-inch diameter casing using a 22-inch diameter bit.
5/8/2012	Complete drilling out cement plug at the base of the 24-inch diameter casing using a 22-inch diameter bit.
5/9/2012	Begin pilot hole drilling with a 12¼-inch diameter bit from the base of the 24-inch casing via reverse air drilling method.
5/15/2012	Complete pilot hole drilling to a depth of 1,905 feet bpl.
5/17/2012	Perform caliper, gamma ray, dual induction, spontaneous potential, sonic, fluid conductivity, temperature, and flowmeter logs on the open hole interval.
5/19/2012	Perform of bottom packer testing on the interval from 1,860 to 1,905 feet bpl.
5/21/2012	Begin packer testing on the interval from 1,288 to 1,317 feet bpl.
5/22/2012	Complete packer testing on the interval from 1,288 to 1,317 feet bpl.
6/3/2012	Begin backplugging the pilot hole with cement.
6/7/2012	Complete backplugging the pilot hole with cement (tag the top of cement at 1,153 feet bpl).
6/8/2012	Begin reaming from the base of the 24-inch diameter casing using a 22-inch diameter drill bit.
6/10/2012	Complete reaming using a 22-inch diameter bit to a depth of 1,453 feet bpl.
6/13/2012	Perform caliper and gamma ray logs on the reamed hole.
6/13/2012	Begin installation of the 16-inch diameter casing.
6/14/2012	Complete installation of the 16-inch diameter casing to a depth of 1,450 feet bpl. Begin cementing the 16-inch diameter casing in place.
6/15/2012	Complete cementing the 16-inch diameter casing to land surface.
6/17/2012	Drill out cement plug at the base of the 16-inch diameter casing and begin reaming the backplugged pilot hole using a 14 ¾-inch diameter bit.
6/19/2012	Complete reaming using a 14 ¾-inch diameter bit to a depth of 1,850 feet bpl. Begin reaming the backplugged pilot hole using a 12 ¼-inch diameter drill bit from the depth of 1,850 feet bpl..
6/20/2012	Complete reaming using a 12 ¼-inch diameter bit to a depth of 1,905 feet bpl. Perform caliper and gamma ray logs on the reamed hole. Perform caliper and gamma ray logs on the reamed hole.
6/22/2012	Begin installation of the 6 ⅝-inch diameter FRP casing.
6/23/2012	Complete installation of the 6 ⅝-inch diameter FRP casing to a depth of 1,860 feet bpl. Begin cementing casing in place.
6/24/2012	Complete cementing the FRP casing to the depth of 1,490 feet bpl.

**Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Construction Summary**

Date		Milestone
6/27/2012		Perform cement bond log and perform a successful pressure test on the 6 5/8-inch diameter FRP casing.
6/28/2012		Begin demobilizing equipment.
6/29/2012		Begin the upper zone development.
6/30/2012		Begin the lower zone development.
7/19/2012		Collect background water quality for the upper and lower monitor zones.
7/20/2012		Perform the final video survey of the 6 5/8-inch diameter FRP casing and open hole.
7/25/2012		Wellhead completed.

bpl = below pad level

Appendix C
DZMW-1 Weekly
Construction Summary
Cover Letters (weeks 47-64)

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469

March 30, 2012

MHCDEP-12-0124

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #47**

Dear Mr. May:

This is the forty-seventh weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, March 22, 2012 and ended at 7:00 AM, Thursday, March 29, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached. In addition to construction activities for Exploratory Well EW-1, this report also includes construction activities for dual zone monitoring well (DZMW-1)

During the previous reporting period the drilling contractor completed installation of the EW-1 FRP injection liner to a depth of 2,975 feet below pad level (bpl). A volume of approximately 25,000 gallons of 1% Baracor 100 solution was pumped into the annulus between the FRP liner and the final casing just prior to seating the FRP liner into the packer near the base of the final casing. The drilling contractor then sealed the wellhead and performed a preliminary annular pressure test. This annular pressure test did not meet the specification. The drilling contractor unsealed the wellhead, lifted the FRP liner and then re-seated the liner into the packer. The wellhead was sealed and a second preliminary annular pressure test was conducted. The results of this preliminary annular pressure test met the specification. The drilling contractor then began installation of the EW-1 wellhead. The pad monitor wells at the dual-zone monitor well location were installed, developed and sampled. The drilling contractor began to demobilize from the EW-1 location and mobilize to the DZMW-1 location by the end of the reporting period.

During this reporting period the drilling contractor completed demobilizing from EW-1 and mobilizing to and setting up at the dual-zone monitor well DZMW-1 location. The drilling contractor then began pilot hole drilling. Pilot hole drilling had reached a depth of 67 feet

below pad level (bpl) by the end of the reporting period. A preliminary annular pressure test was performed on EW-1 on March 28, 2012, however, the results of the preliminary annular pressure test did not meet the specification. Subsequent preliminary and final annual pressure tests will be delayed

There was no casing installation, cementing, packer testing or EW-1 and DZMW-1 well development during this reporting period. There were no construction related issues during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete pilot hole drilling to a depth of 250 feet bpl, perform geophysical logs, ream the pilot hole to a depth of approximately 225 feet bpl and install the 34-inch diameter casing.

In addition, sampling of the pad monitor wells around EW-1 began on April 21, 2011 and has been taking place on a weekly basis since the initial sampling. The EW-1 pad monitor wells were most recently sampled on March 29, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on March 22, 2012. Sampling of the pad monitor wells around EW-1 will continue until testing of EW-1 has been completed. Sampling of the pad monitoring wells around DZMW-1 began on March 20, 2012. The DZMW-1 pad monitor wells were most recently sampled on March 29, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on March 20, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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April 6, 2012

MHCDEP-12-0132

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #48**

Dear Mr. May:

This is the forty-eighth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, March 29, 2012 and ended at 7:00 AM, Thursday, April 5, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached. In addition to construction activities for dual-zone monitoring well DZMW-1, this report also includes construction activities for exploratory well EW-1.

During the previous reporting period the drilling contractor completed mobilizing and setting up at DZMW-1 location and began pilot hole drilling. Pilot hole drilling had reached a depth of 67 feet below pad level (bpl) by the end of the reporting period. A preliminary annular pressure test was performed on EW-1 on March 28, 2012, however, the results of the preliminary annular pressure test did not meet the specification.

During this reporting period the drilling contractor completed pilot hole drilling on DZMW-1 to a depth of 250 feet bpl. Caliper and gamma ray logging were then performed on the pilot hole before reaming the pilot hole with a 42-inch diameter bit to a depth of 258 feet bpl. The reamed hole then underwent caliper and gamma ray logging. The 34-inch diameter casing was then installed to a depth of 255 feet bpl and cemented to land surface in one cement stage using 158 barrels of neat cement. A copy of each of the geophysical logs performed during the reporting period is attached. A copy of the 34-inch diameter casing installation summary and cementing summary sheets are attached.

The annulus of EW-1 was pressurized and monitored several times during the week. While pressure monitoring results have improved, the results do not meet the specification.

There was no packer testing for EW-1 and DZMW-1 well development during this reporting period. Drill cutting samples were collected at 10-foot intervals during pilot hole drilling at DZMW-1. A copy of the DZMW-1 lithologic log is attached. Deviation surveys were performed at 90-foot intervals during pilot hole and reaming activities. A copy of the deviation survey summary sheet is attached. There were no construction related issues during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will drill a pilot hole from the base of the 34-inch diameter casing to a depth of approximately 1,110 feet bpl for DZMW-1. The pilot hole will then undergo geophysical logging.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 and DZMW-1 pad monitor wells were most recently sampled on April 5, 2012. The most recent set of EW-1 and DZMW-1 pad monitoring well sample results available are for samples collected on March 29, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lithologic Log
Deviation Survey Summary Sheet
DZMW 34-Inch Casing Installation Summary Sheet
DZMW 34-Inch Casing Cementing Summary sheet
Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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April 13, 2012

MHCDEP-12-0144

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #49**

Dear Mr. May:

This is the forty-ninth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, April 5, 2012 and ended at 7:00 AM, Thursday, April 12, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached. In addition to construction activities for dual-zone monitoring well DZMW-1, this report also includes construction activities for exploratory well EW-1.

During the previous reporting period the drilling contractor completed pilot hole drilling on DZMW-1 to a depth of 250 feet below pad level (bpl). Caliper and gamma ray logging were then performed on the pilot hole before reaming the pilot hole with a 42-inch diameter bit to a depth of 258 feet bpl. The reamed hole then underwent caliper and gamma ray logging. The 34-inch diameter casing was then installed to a depth of 255 feet bpl and cemented to land surface in one cement stage using 158 barrels of neat cement. The annulus of EW-1 was pressurized and monitored several times during the week.

During this reporting period the drilling contractor drilled out the cement plug at the base of the DZMW-1 34-inch diameter casing and then began pilot hole drilling using a 12.25-inch diameter drill bit. Pilot hole drilling reached a depth of 920 feet bpl by the end of the reporting period. The kelly hose developed a hole and had to be replaced. This prevented the drilling contractor from pilot hole drilling for approximately three days while the kelly hose was being replaced.

Purging of EW-1 in preparation for sampling the Boulder Zone took place. Water samples were collected at approximately one-hour intervals and field analyzed for turbidity, specific conductance, temperature and pH. A background water sample was collected after purging

a volume of approximately 324,000 gallons. A copy of the EW-1 background water sampling purge sheet is attached. A final video survey of the well was also performed. A copy of the video survey is not yet available and will be included with the next weekly construction summary. The annulus of EW-1 was pressurized and monitored several times during the week, however, the results do not meet the specification.

There was no packer testing for EW-1 and DZMW-1 during this reporting period. Drill cutting samples were collected at 10-foot intervals during pilot hole drilling at DZMW-1. A copy of the DZMW-1 lithologic log is attached. Deviation surveys were performed at 90-foot intervals during pilot hole and reaming activities. A copy of the deviation survey summary sheet is attached. There were no construction related issues during this reporting period.


During the next reporting period, it is anticipated that the drilling contractor will complete pilot hole drilling to a depth of approximately 1,110 feet bpl for DZMW-1. The pilot hole will then undergo geophysical logging before the drilling contractor begins reaming the pilot hole with a 32.5-inch diameter bit.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 and DZMW-1 pad monitor wells were most recently sampled on April 12, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on April 5, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on April 6, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.


4/13/12
David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lithologic Log
DZMW-1 Deviation Survey Summary Sheet
EW-1 Background Water Sampling Purge Sheet

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



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April 20, 2012

MHCDEP-12-0151

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #50**

Dear Mr. May:

This is the fiftieth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, April 12, 2012 and ended at 7:00 AM, Thursday, April 19, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached. In addition to construction activities for dual-zone monitoring well DZMW-1, this report also includes construction activities for exploratory well EW-1.

During the previous reporting period the drilling contractor drilled out the cement plug at the base of the DZMW-1 34-inch diameter casing and then began pilot hole drilling using a 12.25- inch diameter drill bit. Pilot hole drilling reached a depth of 920 feet below pad level (bpl) by the end of the reporting period. Annular pressure monitoring of EW-1 also took place.

During this reporting period the drilling contractor completed DZMW-1 pilot hole drilling to a depth of 1,110 feet bpl, performed caliper, gamma ray, spontaneous potential, and dual-induction geophysical logs, and began reaming the pilot hole. Reaming of the pilot hole had reached a depth of 625 feet bpl by the end of the reporting period. Deviation surveys were conducted at 90-foot intervals during pilot hole drilling and reaming. A copy of the DZMW-1 deviation survey summary sheet is attached.

The annulus of EW-1 was pressurized and monitored several times during the week, however, the results do not meet the specification. The FRP injection tubing was placed under compression in an effort to improve the seal at the packer at the base of the injection tubing.

A copy of the video survey performed on EW-1 during the previous reporting period is attached.

There was no packer testing, casing installation or cementing at EW-1 and DZMW-1 during this reporting period. Drill cutting samples were collected at 10-foot intervals during pilot hole drilling at DZMW-1. A copy of the DZMW-1 lithologic log is attached. There were no construction related issues during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete reaming the pilot hole to a depth of approximately 1,105 feet bpl for DZMW-1. The reamed hole will then undergo geophysical logging prior to installation of the 24-inch diameter casing to a depth of 1,100 feet bpl. The casing will then be cemented in place. It is also anticipated that additional pressure monitoring will take place at EW-1.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on April 19, 2012. The DZMW-1 pad monitor wells were most recently sampled on April 20, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on April 12, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on April 13, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lithologic Log
DZMW-1 Deviation Survey Summary Sheet
DZMW-1 Geophysical Logs
EW-1 Video Survey

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



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April 27, 2012

MHCDEP-12-0162

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #51**

Dear Mr. May:

This is the fifty-first weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, April 19, 2012 and ended at 7:00 AM, Thursday, April 26, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor completed DZMW-1 pilot hole drilling to a depth of 1,110 feet below pad level (bpl), performed caliper, gamma ray, spontaneous potential, and dual-induction geophysical logs, and began reaming the pilot hole. Reaming of the pilot hole had reached a depth of 625 feet bpl by the end of the reporting period. Annular pressure monitoring of EW-1 also took place.

During this reporting period the drilling contractor completed DZMW-1 reaming the pilot hole with a 32 ½-inch diameter bit to a depth of 1,105 feet bpl. They then began conditioning the borehole in preparation for performing deviation surveys over the interval from 630 feet bpl to 1,060 feet bpl and performing caliper and gamma ray logging in preparation for installation of the 24-inch diameter casing to a depth of approximately 1,100 feet bpl.

There was no work on exploratory well EW-1 during this reporting period. There was no packer testing, casing installation or cementing at EW-1 and DZMW-1 during this reporting period. There were no construction related issues during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete conditioning the ream hole of DZMW-1. The drilling contractor will then run deviations survey on the reamed hole over the interval from 630 feet bpl to 1,080 feet bpl, perform caliper and gamma ray logging and install the 24-inch diameter casing to a depth of

approximately 1,100 feet bpl. The casing will then be cemented in place. It is also anticipated that work to eliminate the source of the annular pressure loss will take place at EW-1.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on April 26, 2012. The DZMW-1 pad monitor wells were most recently sampled on April 27, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on April 19, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on April 20, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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May 4, 2012

MHCDEP-12-0167

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #52**

Dear Mr. May:

This is the fifty-second weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, April 26, 2012 and ended at 7:00 AM, Thursday, May 3, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor completed DZMW-1 reaming the pilot hole with a 32½-inch diameter bit to a depth of 1,105 feet blow pad level (bpl). They then began conditioning the borehole in preparation for performing deviation surveys over the interval from 630 feet bpl to 1,060 feet bpl and performing caliper and gamma ray logging in preparation for installation of the 24-inch diameter casing to a depth of approximately 1,100 feet bpl. There was no work on exploratory well EW-1 during the previous reporting period.

During this reporting period the drilling contractor conditioned the DZMW-1 reamed hole using a 32½-inch diameter bit, performed deviation surveys on the reamed hole over the interval from 630 feet bpl to 1,060 feet bpl, performed caliper and gamma ray logging and attempted to install of the 24-inch casing. While attempting to install the 24-inch diameter casing, an obstruction in the reamed hole was encountered at a depth of 325 feet bpl. The portion of the 24-inch diameter casing that had been installed was then removed from the hole and the drilling contractor began conditioning the reamed hole using a 32½-inch diameter bit. A copy of the DZMW-1 deviation survey summary sheet and the geophysical logs are attached.

The compression of the EW-1 FRP injection tubing was reduced from 22-inches to 12-inches during this reporting period. The annulus of EW-1 was then pressurized and monitored, however, the results do not meet the specification.

There was no packer testing, successful casing installation or cementing at EW-1 and DZMW-1 during this reporting period. There were no construction related issues during this reporting period with the exception of the unsuccessful 24-inch diameter casing installation at DZMW-1. This is being addressed by further conditioning of the reamed borehole prior to installing the 24-inch diameter casing.

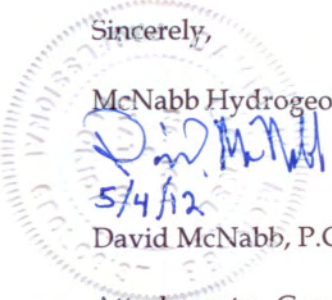
During the next reporting period, it is anticipated that the drilling contractor will complete conditioning the ream hole of DZMW-1. The drilling contractor will then perform caliper and gamma ray logging and install the 24-inch diameter casing to a depth of approximately 1,102 feet bpl. The casing will then be cemented in place. It is also anticipated that work to eliminate the source of the annular pressure loss will take place at EW-1.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on May 3, 2012. The DZMW-1 pad monitor wells were most recently sampled on May 4, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on April 26, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on April 27, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



5/4/12

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Deviation Survey Summary Sheet
DZMW-1 Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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May 11, 2012

MHCDEP-12-0185

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #53**

Dear Mr. May:

This is the fifty-third weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, May 3, 2012 and ended at 7:00 AM, Thursday, May 10, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached. In addition to construction activities for dual-zone monitoring well DZMW-1, this report also includes construction activities for exploratory well EW-1.

During the previous reporting period the drilling contractor conditioned the DZMW-1 reamed hole using a 32½-inch diameter bit, performed deviation surveys on the reamed hole over the interval from 630 feet bpl to 1,060 feet bpl, performed caliper and gamma ray logging and attempted to install the 24-inch casing. While attempting to install the 24-inch diameter casing, an obstruction in the reamed hole was encountered at a depth of 325 feet bpl. The portion of the 24-inch diameter casing that had been installed was then removed from the hole and the drilling contractor began conditioning the reamed hole using a 32½-inch diameter bit. Additionally, the compression of the EW-1 Fiberglass Reinforced Pipe (FRP) injection tubing was reduced from 22-inches to 12-inches during this reporting period. The annulus of EW-1 was then pressurized and monitored, however, the results did not meet the specification.

During this reporting period the drilling contractor re-conditioned the DZMW-1 reamed hole using a 32½-inch diameter bit, performed caliper and gamma ray logging and installed the 24-inch casing to a depth of 1,102 feet bpl. The 24-inch diameter casing was cemented to land surface in two cementing stages. A temperature log was performed following the first cement stage. A copy of the geophysical logs, the 24-inch diameter casing installation

summary sheet, and the 24-inch diameter casing cementing summary sheet are attached. After completing cementing of the casing, the drilling contractor switched from the mud rotary drilling method to the reverse-air drilling method, displaced the drilling mud in the 24-inch diameter casing, drilled through the cement plug at the base of the 24-inch diameter casing and began pilot hole drilling using a 12¼-inch diameter bit. Pilot hole drilling had reached a depth of 1,176 feet bpl by the end of the reporting period. A description of drill cuttings for the interval drilled during this reporting period is attached. DZMW-1 was killed with barite during the reporting period. A daily kill material log sheet is attached.

A crane was used to unseat the EW-1 Fiberglass Reinforced Pipe (FRP) injection tubing from the packer, rotate the injection tubing and then re-seat the injection tubing back into the packer. This was done several times, with annular pressure monitoring after each time the injection tubing was re-seated. Annular pressure monitoring showed that the results do not meet the specification.

There was no packer testing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete the pilot hole of DZMW-1 to a depth of 1,900 feet bpl. The drilling contractor will then perform geophysical logging of the pilot hole and begin straddle packer testing. It is also anticipated that work to eliminate the source of the annular pressure loss may take place at EW-1 during this reporting period.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on May 10, 2012. The DZMW-1 pad monitor wells were most recently sampled on May 11, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on May 3, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on May 4, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lithologic Log
DZMW-1 24-Inch Diameter Casing Installation Summary Sheet
DZMW-1 24-Inch Diameter Casing Cement Summary
DZMW-1 Daily Kill Material Log
DZMW-1 Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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May 18, 2012

MHCDEP-12-0192

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #54**

Dear Mr. May:

This is the fifty-fourth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, May 10, 2012 and ended at 7:00 AM, Thursday, May 17, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor re-conditioned the DZMW-1 reamed hole using a 32½-inch diameter bit, performed caliper and gamma ray logging and installed and cemented the 24-inch casing to a depth of 1,102 feet bpl. The drilling contractor then set up for reverse-air drilling and began drilling pilot hole below the base of the 24-inch diameter casing. Pilot hole drilling had reached a depth of 1,176 feet bpl by the end of the reporting period.

Work performed on EW-1 during the previous reporting period included re-seating the Fiberglass Reinforced Pipe (FRP) injection tubing into the packer in an effort to improve the seal at the packer. Annular pressure monitoring showed that the results do not meet the specification.

During this reporting period the drilling contractor completed pilot hole drilling to a depth of 1,905 feet bpl and conditioned the pilot hole in preparation for geophysical logging. Drill cutting samples were collected at 10-foot intervals during pilot hole drilling. Deviation surveys were performed at 90-foot intervals above a depth of 1,700 feet bpl and at 60-foot intervals below a depth of 1,900 feet bpl. Pilot hole water samples were collected at a 90-foot intervals or less during pilot hole drilling. A description of drill cuttings for the interval drilled during this reporting period is attached. A copy of the deviation survey summary sheet is attached. DZMW-1 was killed with barite during the reporting period. A daily kill

material log sheet is attached. Laboratory results for the pilot hole water samples are not available yet and will be included in the next weekly construction summary. There were no activities at EW-1 during this reporting period.

There was no packer testing, casing installation, cementing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will perform geophysical logging of the DZMW-1 pilot hole and perform straddle packer testing on selected intervals. It is anticipated that the drilling contractor will remove the Fiberglass Reinforced Pipe (FRP) injection liner from EW-1 during the next reporting period.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on May 17, 2012. The DZMW-1 pad monitor wells were most recently sampled on May 18, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on May 10, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on May 11, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lithologic Log
DZMW-1 Deviation Survey Summary Sheet
DZMW-1 Daily Kill Material Log

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469

May 25, 2012

MHCDEP-12-0212

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #55**

Dear Mr. May:

This is the fifty-fifth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, May 17, 2012 and ended at 7:00 AM, Thursday, May 24, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor drilled the DZMW-1 pilot hole over the interval from 1,176 feet below pad level (bpl) to 1,905 feet bpl and conditioned the pilot hole in preparation for geophysical logging. There were no activities at EW-1 during the previous reporting period.

During this reporting period the drilling contractor completed conditioning the pilot hole, performed geophysical logging, performed an off-bottom single packer test over the interval from 1,860 to 1,905 feet bpl, and performed a straddle packer test over the interval from 1,288 to 1,317 feet bpl. Logs conducted include caliper, gamma ray, spontaneous potential, dual induction, borehole compensated sonic, flowmeter, fluid conductivity, and temperature. All logs were performed under static conditions. The flowmeter, fluid conductivity and temperature logs were also performed under dynamic conditions. Copies of the geophysical logs are attached. A water sample was collected at the end of the pumping portion of each packer test. The laboratory reports for the packer test water samples are attached. DZMW-1 was killed with barite during the reporting period. A daily kill material log sheet is attached. Laboratory results for the pilot hole water samples collected during the previous reporting period are attached. There were no activities at EW-1 during this reporting period.

There was no casing installation, cementing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

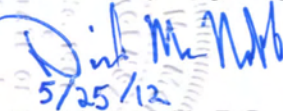
During the next reporting period, it is anticipated that the drilling contractor will backplug the DZMW-1 pilot hole with gravel (through proposed monitor zones) and cement. They will then begin reaming the backplugged hole. It is anticipated that the drilling contractor will refine their plan for establishing a tight seal at the packer in the base of EW-1 during the next reporting period.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on May 24, 2012. The DZMW-1 pad monitor wells were most recently sampled on May 25, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on May 17, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on May 18, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



5/25/12

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Packer Test Sample Laboratory Reports
DZMW-1 Pilot Hole Water Sample Laboratory Reports
DZMW-1 Daily Kill Material Log
DZMW-1 Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberland/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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June 1, 2012

MHCDEP-12-0225

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #56**

Dear Mr. May:

This is the fifty-sixth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, May 24, 2012 and ended at 7:00 AM, Thursday, May 31, 2012. There were no construction activities at the site this reporting period, therefore, the drilling contractor did not prepare daily reports for this reporting period. Consultant daily reports were prepared for this reporting period. Copies of the consultant daily construction logs are attached.

During the previous reporting period the drilling contractor performed geophysical logging, performed an off-bottom single packer test over the interval from 1,860 to 1,905 feet below pad level (bpl), and performed a straddle packer test over the interval from 1,288 to 1,317 feet bpl. There were no activities at EW-1 during the previous reporting period.

There were no drilling activities during this reporting period. The drilling contractor awaited selection of recommended monitoring zones for DZMW-1. There were no activities at EW-1 during this reporting period.

There was no casing installation, cementing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will backplug the DZMW-1 pilot hole with gravel (through proposed monitor zones) and cement between the proposed monitor zones and above the upper monitor zone. They will then begin reaming the backplugged hole. In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on May 31, 2012. The DZMW-1 pad monitor wells were most

recently sampled on June 1, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on May 24, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on May 25, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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June 8, 2012

MHCDEP-12-0229

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #57**

Dear Mr. May:

This is the fifty-seventh weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, May 31, 2012 and ended at 7:00 AM, Thursday, June 7, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

There were no construction activities at DZMW-1 or EW-1 during the previous reporting period.

During this reporting period the drilling contractor used the 12¼-inch diameter drill bit to remove barite kill material that had settled to the bottom of the hole. The drilling contractor then backfilled the pilot hole over the interval from 1,854 to 1,905 feet below pad level (bpl) using 66 five-gallon buckets of gravel. They then backplugged the interval from 1,504 to 1,854 feet bpl in three cement stages using a total of 146 barrels of 12% bentonite blend cement. The drilling contractor then backfilled the interval from 1,443 to 1,504 feet bpl using 208 five-gallon buckets of gravel. The drilling contractor then resumed backplugging the pilot hole with cement and was waiting on the fourth cement stage of 140 barrels of 12% bentonite blend cement to set at the end of the reporting period. The well was killed with barite during the reporting period. A pilot hole backplug summary sheet and daily kill material log is attached. There were no activities at EW-1 during the previous reporting period.

There was no casing installation, cementing, packer testing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete backplugging the DZMW-1 pilot hole with cement and then begin reaming the backplugged

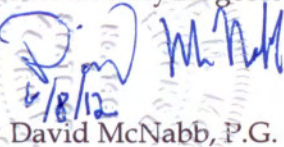
hole. It is also anticipated that the drilling contractor will pump a mixture of bentonite and lost circulation material into the base of the annulus of EW-1 in accordance with the previously submitted plan to seal the EW-1 packer.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on June 7, 2012. The DZMW-1 pad monitor wells were most recently sampled on June 8, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on May 31, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on June 1, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



6/8/12
David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pilot Hole Backplug Summary Sheet
DZMW-1 Daily Kill Material Log

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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Fax: 561-623-5469

June 15, 2012

MHCDEP-12-0235

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #58**

Dear Mr. May:

This is the fifty-eighth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, June 7, 2012 and ended at 7:00 AM, Thursday, June 14, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor backfilled the pilot hole over the interval from 1,854 to 1,905 feet below pad level (bpl) with gravel, backplugged the interval from 1,504 to 1,854 feet bpl with 12% bentonite blend cement, backfilled the interval from 1,443 to 1,504 feet bpl with gravel and then pumped a cement stage from a depth of 1,443 feet bpl. They were waiting on the cement to set in preparation for tagging the top of cement at the end of the reporting period. There were no activities at EW-1 during the previous reporting period.

During this reporting period the drilling contractor completed backplugging the DZMW-1 pilot hole to a depth of 1,153 feet bpl. The drilling contractor then used a 22-inch diameter drill bit to ream the interval from 1,105 to 1,453 feet bpl. They then attempted to perform caliper and gamma ray logging of the reamed hole, but found that kill material had fallen to the base of the hole. The drilling contractor then cleaned out the borehole, performed caliper and gamma ray logging and began installing the 16-inch diameter casing to a depth of approximately 1,450 feet bpl. Installation of the 16-inch diameter casing was not completed prior to the end of the reporting period. A copy of the 16-inch diameter casing installation summary sheet for the portion of casing installed during this reporting period is attached. Deviation surveys were performed on the reamed hole at 60-foot intervals. A copy of the deviation survey summary sheet, pilot hole backplug summary sheet and the geophysical logs performed during this reporting period is attached.

At EW-1, the compression of the Fiberglass Reinforced Pipe (RFP) injection tubing was released. Subsequent pressure monitoring of the EW-1 annulus indicated that the source of the pressure loss in the annulus has been eliminated.

There was no packer testing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete installing and cementing the 16-inch diameter casing to a depth of approximately 1,450 feet bpl and begin drilling a hole below the base of the 16-inch diameter casing in preparation for installing the final casing of DZMW-1. At EW-1 it is anticipated that the annulus will undergo preliminary and final pressure testing.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on June 14, 2012. The DZMW-1 pad monitor wells were most recently sampled on June 15, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on June 8, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on June 8, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pilot Hole Backplug Summary Sheet
DZMW-1 Deviation Survey Summary Sheet
DZMW-1 16-Inch Diameter Casing Installation Summary Sheet
DZMW-1 Daily Kill Material Log
DZMW-1 Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469

June 22, 2012

MHCDEP-12-0243

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #59**

Dear Mr. May:

This is the fifty-ninth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, June 14, 2012 and ended at 7:00 AM, Thursday, June 21, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor completed backplugging the DZMW-1 pilot hole to a depth of 1,153 feet below pad level (bpl). The drilling contractor then used a 22-inch diameter drill bit to ream the interval from 1,105 to 1,453 feet bpl. They then performed caliper and gamma ray logs on the reamed hole and began installing the 16-inch diameter casing to a depth of approximately 1,450 feet bpl. Installation of the 16-inch diameter casing was not completed prior to the end of the previous reporting period.

During this reporting period the drilling contractor completed installing the 16-inch diameter casing to a depth of 1,450 feet bpl and cemented the casing in place in three stages using a total of 443 barrels of cement. Temperature logs were performed after each cement stage as required. The drilling contractor then reamed the interval from 1,450 to 1,850 feet bpl using a 14¾-inch diameter bit before changing to a 12¾-inch diameter bit and drilling the interval from 1,850 to 1,905 feet. Deviation surveys were performed at 60-foot intervals. The borehole then underwent caliper and gamma ray logging. The well was killed with barite during the reporting period. Copies of the 16-inch casing installation summary and cementing summary sheets, deviation survey summary sheet, daily kill material log and geophysical logs are attached.

Preliminary annular pressure monitoring took place at EW-1. Pressure monitoring results indicate the annulus now meets pressure testing specifications. A preliminary annular pressure test was underway at the end of the reporting period.

There was no packer testing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will install and cement the 6 $\frac{5}{8}$ -inch diameter final casing of DZMW-1 to a depth of approximately 1,860 feet bpl. The final casing will then undergo pressure testing. At EW-1 it is anticipated that the preliminary annular pressure test will be completed and final pressure testing will take place in the presence of a Florida Department of Environmental Protection witness.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on June 21, 2012. The DZMW-1 pad monitor wells were most recently sampled on June 22, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on June 14, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on June 15, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 16-Inch Diameter Casing Installation Summary Sheet
DZMW-1 16-Inch Diameter Casing Cementing Summary Sheet
DZMW-1 Deviation Survey Summary Sheet
DZMW-1 Daily Kill Material Log
DZMW-1 Geophysical Logs

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

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June 29, 2012

MHCDEP-12-0256

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #60**

Dear Mr. May:

This is the sixtieth weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, June 21, 2012 and ended at 7:00 AM, Thursday, June 28, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor completed installing the 16-inch diameter casing to a depth of 1,450 feet below pad level (bpl) and cemented the casing in place in three stages using a total of 443 barrels of cement. The drilling contractor then reamed the interval from 1,450 to 1,850 feet bpl using a 14¼-inch diameter bit before changing to a 12¼-inch diameter bit and drilling the interval from 1,850 to 1,905 feet.

During this reporting period the drilling contractor installed the 6½-inch diameter casing of DZMW-1 to a depth of 1,860 feet bpl and cemented the casing over the interval from 1,860 to 1,490 feet bpl in three stages using a total of 114.5 barrels of neat cement. Temperature logs were performed after each cement stage as required. The 6½-inch diameter casing then underwent cement bond logging and was then successfully pressure tested. Copies of the 6½-inch diameter casing installation summary sheet, casing cementing summary sheet, and pressure test summary sheet are attached. Copies of the composite cement top temperature log and cement bond log are attached. The well was killed with barite during the reporting period. A copy of the daily kill material log is attached.

Successful preliminary and final annular pressure monitoring took place at EW-1. The final annular pressure test was performed in the presence of a Florida Department of Environmental Protection (FDEP) witness. A copy of the EW-1 annular pressure test

summary sheet is attached. The drilling contractor began moving equipment off site during the reporting period in preparation for demobilization from the site.

There was no packer testing, well development or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will continue moving equipment off site, develop both monitoring zones of DZMW-1 and collect monitoring zones background water samples for laboratory analysis.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The EW-1 pad monitor wells were most recently sampled on June 28, 2012. The DZMW-1 pad monitor wells were most recently sampled on June 29, 2012. The most recent set of EW-1 pad monitoring well sample results available are for samples collected on June 21, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on June 22, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 6%-Inch Diameter Casing Installation Summary Sheet
DZMW-1 6%-Inch Diameter Casing Cementing Summary Sheet
DZMW-1 6%-Inch Diameter Casing Pressure Test Summary Sheet
DZMW-1 Daily Kill Material Log
DZMW-1 Geophysical Logs
EW-1 Annular Pressure Test Summary Sheet

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

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July 6, 2012

MHCDEP-12-0267

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #61**

Dear Mr. May:

This is the sixty-first weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, June 28, 2012 and ended at 7:00 AM, Thursday, July 5, 2012. Consultant and drilling contractor daily reports were prepared for this reporting period. Copies of the consultant and drilling contractor daily construction logs are attached.

During the previous reporting period the drilling contractor installed the 6½-inch diameter casing of DZMW-1 to a depth of 1,860 feet below pad level (bpl) and cemented the casing over the interval from 1,860 to 1,490 feet bpl in three stages using a total of 114.5 barrels of neat cement. The 6½-inch diameter casing then underwent cement bond logging and was then successfully pressure tested. Successful preliminary and final annular pressure testing took place at EW-1. The final annular pressure test was performed in the presence of a Florida Department of Environmental Protection (FDEP) witness.

During this reporting period the drilling contractor installed the DZMW-1 wellhead, performed development of the upper and lower monitor zones and continued demobilizing from the site. Water samples were collected for laboratory analysis from the upper monitor zone after the zone was fully developed. Development of the lower monitor zone was not yet completed by the end of the reporting period.

There was no packer testing, casing installation, cementing or construction related issues at EW-1 and DZMW-1 during this reporting period.

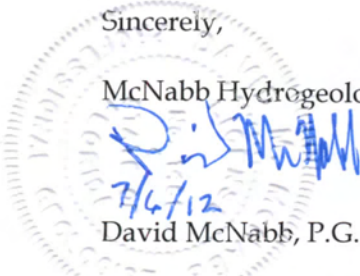
During the next reporting period, it is anticipated that the drilling contractor will continue development of the lower monitor zone, collected background water samples for laboratory analysis from the lower monitor zone, perform a video log of the completed well and continue demobilization from the site.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The most recent sampling of the EW-1 pad monitor wells was on July 5, 2012. The DZMW-1 pad monitor wells were most recently sampled on July 6, 2012. The most recent set of EW-1 pad monitoring well sample results are for samples collected on June 28, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on June 29, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Consultant Daily Construction Log
Layne Christensen Company-Drilling Shift Report
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469

July 13, 2012

MHCDEP-12-0276

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #62**

Dear Mr. May:

This is the sixty-second weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, July 5, 2012 and ended at 7:00 AM, Thursday, July 12, 2012. Drilling contractor daily reports were not prepared this week since there was no construction or testing activities at the site. Consultant daily reports were prepared for this reporting period. Copies of the consultant daily construction logs are attached.

During the previous reporting period the drilling contractor installed the DZMW-1 wellhead, performed development of the upper and lower monitor zones and continued demobilizing from the site. Background water samples were collected for laboratory analysis from the upper monitor zone after the zone was fully developed. Development of the lower monitor zone was not yet completed by the end of the reporting period.

During this reporting period the drilling contractor continued to demobilize from the site and performed development of the lower monitor zone of DZMW-1 in preparation for background water sampling. Re-development of the upper monitor zone of DZMW-1 also began in preparation for re-sampling the upper monitor zone. Re-sampling of the upper zone for all parameters will take place to confirm a positive result for total coliform in the original upper monitor zone background sample. Tables providing a summary of the lower monitor zone development and the upper monitor zone re-development are attached.

There was no packer testing, casing installation, cementing or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete development of the lower monitor zone, complete re-development of the upper monitor

zone, collect background water samples for laboratory analysis from the upper and lower monitor zones, perform a video log of the completed well and complete demobilization from the site.

In addition, sampling of the pad monitor wells around EW-1 and DZMW-1 began on April 21, 2011 and March 20, 2012, respectively, and has been taking place on a weekly basis since the initial samplings. The final sampling of the EW-1 pad monitor wells was on July 5, 2012. The DZMW-1 pad monitor wells were most recently sampled on July 13, 2012. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on July 6, 2012. Copies of the EW-1 and DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



7/13/12
David McNabb, P.G.

Attachments: Consultant Daily Construction Log
EW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lower Monitor Zone Development Summary Sheet
DZMW-1 Upper Monitor Zone Re-Development Summary Sheet

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469

July 20, 2012

MHCDEP-12-0301

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #63**

Dear Mr. May:

This is the sixty-third weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, July 12, 2012 and ended at 7:00 AM, Thursday, July 19, 2012. Drilling contractor daily reports were not prepared this week since there was no construction or testing activities at the site. Consultant daily reports were prepared for this reporting period. Copies of the consultant daily construction logs are attached.

During the previous reporting period the drilling contractor continued to demobilize from the site and performed development of the lower monitor zone of DZMW-1 in preparation for background water sampling. Re-development of the upper monitor zone of DZMW-1 also began in preparation for re-sampling the upper monitor zone.

During this reporting period the drilling contractor continued to demobilize from the site and performed development of the lower and upper monitor zone of DZMW-1 in preparation for background water sampling. Tables providing a summary of the lower monitor zone development and the upper monitor zone re-development are attached.

There was no packer testing, casing installation, cementing or construction related issues at EW-1 and DZMW-1 during this reporting period.

During the next reporting period, it is anticipated that the drilling contractor will complete development of the lower monitor zone, complete re-development of the upper monitor

zone, collect background water samples for laboratory analysis from the upper and lower monitor zones, perform a video log of the completed well and complete demobilization from the site.

In addition, sampling of the pad monitor wells around DZMW-1 began on March 20, 2012 and has been taking place on a weekly basis since the initial samplings. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on July 13, 2012. Copies of the DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.

David McNabb, P.G.

Attachments: Consultant Daily Construction Log
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lower Monitor Zone Development Summary Sheet
DZMW-1 Upper Monitor Zone Re-Development Summary Sheet

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Habermeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

WEEKLY CONSTRUCTION SUMMARY



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458

Phone: 561-891-0763

Fax: 561-623-5469



July 27, 2012

MHCDEP-12-0306

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Weekly Construction Summary #64**

Dear Mr. May:

This is the sixty-fourth and final weekly construction summary for the above referenced project. The reporting period for this weekly construction summary began at 7:00 AM, Thursday, July 19, 2012 and ended at 3:00 PM, Friday, July 20, 2012. Drilling contractor daily reports were not prepared this week since there were no construction activities at the site. Consultant daily reports were prepared for this reporting period. Copies of the consultant daily construction logs are attached.

During the previous reporting period the drilling contractor continued to demobilize from the site and performed development of the lower monitor zone of DZMW-1 in preparation for background water sampling. Re-development of the upper monitor zone of DZMW-1 also began in preparation for re-sampling the upper monitor zone.

During this reporting period the drilling contractor continued to demobilize from the site, completed development of both monitor zones of DZMW-1, collected background water samples from both monitor zones for laboratory analysis, and performed a video survey of DZMW-1. Tables providing a summary of the lower monitor zone development and the upper monitor zone re-development are attached. The background water quality and video survey will be included in the DZMW-1 well completion report.

There was no packer testing, casing installation, cementing or construction related issues at EW-1 and DZMW-1 during this reporting period.

In addition, sampling of the pad monitor wells around DZMW-1 began on March 20, 2012 and has been taking place on a weekly basis since the initial samplings. The most recent set of DZMW-1 pad monitoring well sample results available are for samples collected on July 19, 2012. The final round of sampling took place on July 26, 2012 and will be reported in the

final report. Copies of the DZMW-1 pad monitor well water quality data summary sheets are attached.

Should you have any questions regarding the above weekly construction summary, please contact David McNabb at (561) 891-0763.

Sincerely,

ASRus, LLC



Mark McNeal, P.G.

Attachments: Consultant Daily Construction Log
DZMW-1 Pad Monitor Well Water Quality Data Summary Sheets
DZMW-1 Lower Monitor Zone Development Summary Sheet
DZMW-1 Upper Monitor Zone Re-Development Summary Sheet

Cc: George Heuler/FDEP-Tallahassee
Emily Richardson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS
David McNabb/MHC

Appendix D

Daily Kill Material Log

**Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Daily Kill Material Log**

Date	Depth (feet bpl)	Kill Used	Approximate Volume (gallons)
5/8/2012	1105	Bentonite /Barite	379
5/11/2012	1344	Bentonite /Barite	379
5/11/2012	1389	Bentonite /Barite	379
5/12/2012	1479	Bentonite /Barite	379
5/12/2012	1524	Bentonite /Barite	379
5/13/2012	1614	Bentonite /Barite	379
5/13/2012	1659	Bentonite /Barite	190
5/13/2012	1704	Bentonite /Barite	284
5/17/2012	1905	Bentonite /Barite	2,842
5/18/2012	1905	Bentonite /Barite	4,548
5/22/2012	1905	Bentonite /Barite	569
6/1/2012	1905	Bentonite /Barite	2,653
6/2/2012	1905	Bentonite /Barite	190
6/3/2012	1905	Bentonite /Barite	3600
6/11/2012	1453	Bentonite /Barite	6822
6/13/2012	1453	Bentonite /Barite	5686
6/13/2012	1453	Bentonite /Barite	330
6/18/2012	1794	Bentonite /Barite	189
6/19/2012	1850	Bentonite /Barite	2653
6/20/2012	1905	Bentonite /Barite	1705
6/27/2012	1905	Bentonite /Barite	284
feet bpl = feet below pad level			

Appendix E

Deviation Survey Summary Sheet



Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Deviation Survey Summary



Pilot Hole			Reamed Holes		
Date	Depth (feet bpl)	Inclination (degrees)	Date	Depth (feet bpl)	Inclination (degrees)
3/28/2012	90	0.6	4/1/2012	90	0.2
3/29/2012	180	0.2	4/2/2012	180	0.5
4/6/2012	270	0.1	4/18/2012	270	0.1
4/6/2012	360	0.3	4/18/2012	360	0.2
4/7/2012	450	0.3	4/18/2012	450	0.5
4/7/2012	540	0.5	4/18/2012	540	0.3
4/11/2012	630	0.4	4/26/2012	630	0.2
4/11/2012	720	0.3	4/27/2012	720	0.3
4/12/2012	810	0.4	4/27/2012	810	0.1
4/12/2012	900	0.1	4/27/2012	900	0.3
4/12/2012	990	0.3	4/27/2012	990	0.3
4/13/2012	1,070	0.1	4/27/2012	1,060	0.3
5/11/2012	1,160	0.2	6/8/2012	1,160	0.1
5/11/2012	1,250	0.3	6/9/2012	1,220	0.1
5/11/2012	1,340	0.2	6/9/2012	1,280	0.2
5/11/2012	1,430	0.3	6/10/2012	1,340	0.2
5/12/2012	1,520	0.3	6/14/2012	1,400	0.4
5/13/2012	1,610	0.5	6/17/2012	1,460	0.3
5/15/2012	1,700	0.3	6/17/2012	1,520	0.1
5/14/2012	1,760	0.4	6/18/2012	1,580	0.4
5/15/2012	1,820	0.4	6/18/2012	1,640	0.2
5/15/2012	1,880	0.5	6/18/2012	1,700	0.3
			6/18/2012	1,760	0.2
			6/20/2012	1,820	0.4
			6/20/2012	1,880	0.4

bpl = below pad level

Appendix F

**FDEP Casing Depth
Recommendations and
Monitor Zones Approval**

Dave,

Joe

<><><><><><><><>

561-681-6745 (Vanessa Osborne)

Cc: Haberfeld, Joe; Heuler, George; ehopkins@sfwmd.gov; Ron Reese; Matthew Raffenberg; Paul, David; David Holtz

Subject: Revised Turkey Point DZMW-1 upper monitor zone recommendation

Joe,

Please see the attached revision for the recommended upper monitor zone of DZMW-1 at Turkey Point.

Thanks,

David McNabb, P.G.
McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110

Jupiter, Florida 33458
561-891-0763

Appendix G
Cementing and Casing
Summary Sheet

Florida Power & Light Company
Turkey Point Units 6 & 7



Dual-Zone Monitor Well DZMW-1

Summary of Casing Setting Depths and Cement Quantities

Casing	Casing Material	Outside Diameter (inches)	Inside Diameter (inches)	Casing Thickness (inches)	Casing Depth (feet bbl)	Date	Cement Stage	Type of Cement	Quantity of Cement (bbl)	Base of the Cemented Interval (feet bbl)	Theoretical Fill (feet)	Actual Fill (feet)	Percent Fill	Remarks
Pit Pipe	Steel	44.00	43.25	0.375	38	4/15/2011	#1	neat	85	38	38	38	100%	Tremie grout from 36 feet
Conductor Casing	Steel	34.00	33.25	0.375	255	4/3/2012	#1	neat	158	258	258	287	111%	Pressure grout from bottom of casing
Surface Casing	Steel	24.00	23.35	0.375	1,102	5/4/2012	#1	neat/12%	102/320	1,105	1,105	1,030	93%	Pressure grout from bottom of casing
						5/5/2012	#2	12%	29	75	56	75	134%	Tremied from 75 feet bbl
Pilot Hole (1,905) Backplug														
		12.25				6/4/2012		Gravel (LZ)		1,905	43	51	119%	Tremied from the base of the pilot hole and through the lower zone. Approximately 44 cubic feet of gravel used
						6/4/2012	Spot	neat	3	1,854	19	27	142%	Tremied from 1,850 feet bbl
						6/4/2012	#1	12%	80	1,827	274	193	70%	Tremied from 1,825 feet bbl
						6/5/2012	#2	12%	55	1,634	124	101	82%	Tremied from 1,630 feet bbl
						6/5/2012	#3	12%	11	1,533	28	29	104%	Tremied from 1,529 feet bbl
Final Casing						6/6/2012		Gravel (UZ)		1,504	59	61	103%	Tremied from within the upper zone. Approximately 139 cubic feet of gravel used
						6/6/2012	Spot	neat	3	1,443	5	4	80%	Tremied from 1,440 feet bbl
						6/6/2012	#4	12%	140	1,439	332	198	60%	Tremied from 1,435 feet bbl
						6/7/2012	#5	12%	20	1,241	71	88	124%	Tremied from 1,239 feet bbl
	Steel	16.00	15.00	0.500	1,450	6/14/2012	#1	neat	168	1,453	403	400	99%	Pressure grout from bottom of casing
						6/15/2012	#2	12%	145	1,053	525	557	106%	Tremied from 1,050 feet bbl
						6/15/2012	#3	12%	130	496	471	496	105%	Tremied from 493 feet bbl
						6/23/2012	Spot #1	neat	2	1,855	15	19	127%	Tremied from top of the California packer at 1,855 feet bbl
	FRP	6.625	5.43	0.270	1,860	6/23/2012	Spot #2	neat	4	1,836	22	28	127%	Tremied from 1,833 feet bbl
						6/24/2012	#1	neat	67	1,808	218	191	88%	Tremied from 1,806 feet bbl
						6/24/2012	#2	neat	35	1,617	87	84	97%	Tremied from 1,615 feet bbl
						6/25/2012	#3	neat	12.5	1,533	33	43	130%	Tremied from 1,528 feet bbl
								Total Neat	639.5					
								Total 4%	0.0					
								Total 12%	930.0					
								Total	1569.5					

bbl = below pad level

bbl = barrel

1 barrel = 42 gallons/5.61 cubic feet

Appendix H
Casing Mill Certificates
and FRP Cut Sheet



沧州市螺旋钢管有限责任公司
Cangzhou Spiral Steel Pipe Co., Ltd
钢管质量证明书

特种设备制造许可证
(压力管道)
编号:TS2710887-2014

MILL TEST CERTIFICATE

客户 Customer: Layne Christensen Company 合同编号 Contract No.: 88567 证书编号 Certificate No.: 11021351
品名 Product name: Spiral steel pipe 钢级 Steel Grade: Gr.B PSLI 到站 Destination

Pipes No.	炉号 Heat Numbers	规格 (Size)			数量 Quantity			化学成分 Chemical Composition (%)				焊接接头物理性能 physical properties of welding joints				管体物理性能 physical properties of pipes				无损检测 NDT		尺寸及外观 size & appearance
		直径 O.D. in	厚度 W.T. in	长度 len th ft	支数 Pieces (Pcs)	总长度 len th (ft)	总重量 Weight (MT)	C	Mn	Si	P	S	σ _b Mpa	正弯 face-bend 180°	反弯 back-bend 180°	σ _s Mpa	σ _b Mpa	δ (%)	冷弯 cold-bend 180°	UT	RT	
1	11P02636	24	0.375	39	24	936	40.224	0.15	0.60	0.21	0.026	0.019	440	pass	pass	275	440	32	pass	pass	pass	pass
2	11P02636	24	0.375	39	47	1833	112.142	0.15	0.60	0.21	0.026	0.019	440	pass	pass	275	440	32	pass	pass	pass	pass
3	11P02636	24	0.375	39	24	936	74.304	0.15	0.60	0.21	0.026	0.019	440	pass	pass	275	440	32	pass	pass	pass	pass
4	11P02636	24	0.375	39	6	234	22.830	0.15	0.60	0.21	0.026	0.019	440	pass	pass	275	440	32	pass	pass	pass	pass
6																						
7																						
8																						
9																						
10																						
Total					101	3939	249.500															

兹证明本表所列产品,均依材料规格制造及试验,并符合规格之要求。
The Spiral steel pipes are tested according to API 5L Gr.B and ASTM A139 Gr.B. This is to certify that in accordance with the relevant specifications and contracts.
The Spiral steel pipes manufactured were tested and qualified by our Quality Control Department.

检验员: 尹桂花
INSPECTOR:
许可证号:
LICENCE: 5L-0640

日期 Date: Apr-7-2011



Cangzhou Qiancheng Steel-Pipe Co., Ltd

Add Industrial Areas Yanshan Courty HeBei Province, China

Qiancheng
乾成钢管



License Number: 5L-0666

质量证明书 MILL CERTIFICATES

买方 Buyer: Layne Christensen Company

订单号/ PO No: 88567

货物描述 Description of goods: Seamless Steel Pipe

商检编号: 1306CQ103038

标准: Standard: API 5LGR.B

序号 NO	批号 Batch NO.	炉号 Heat NO	规格 specification			制造方法 Making method	钢级 Steel grade	支数 Quantity (pcs)	米数 Quantity (m)	重量 Weight (mt)	拉伸试验 Tensile test		
			外径 Diameter (inch)	壁厚 Thickness (inch)	长度 Length (ft)						抗拉强度 T.S. Mpa	屈服强度 Y.S. MPa	延伸率 E.L.%
1	3521	890802	16	0.5	39.2	Hot rolling	B	36	1411.2	52	500	310	33
2	3526	896076	24	0.5	34.55	Hot rolling	B	84	2902.2	165	485	325	34
TOTAL											120	4313.4	217

化学成分 chemical composition													
序号 NO	纵向冲击 AK Transverse	纵向冲击 AK Longitudinal	C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	Nb
1	/	/	0.19	0.23	0.65	0.018	0.015	0.018	0.010	0.005	0.002	0.006	/
2	/	/	0.21	0.22	0.66	0.017	0.014	0.019	0.010	0.004	0.001	0.005	/
冷弯 Cold bending	压扁 Flattening	超声波 U.T.	涡流检测 Eddy Current	表面尺寸 Dimensional	水压 Hydro test	15.3MPa minimum 10seconds							
	QUALIFIED	QUALIFIED	/	QUALIFIED	GOOD	11.3MPa minimum 10seconds							
/	QUALIFIED	QUALIFIED	/	QUALIFIED	GOOD								

主管/ Governor:

负责人/ Official:

检验员/ Testers:

发货员/ Consignor Reporter:

日期/ Date: 2011-3-11



品名: 埋弧焊管

COMMODITY: ERW STEEL PIPE

MANUFACTURING STANDARD: ASME SA53B/API 5L B/X42
PSL1

CONTRACT NO: TIPO-0804-S-016-BX

RAW MATERIAL: X62

CERTIFICATE AS PER EN10204 3.1B

上海中油天宝钢管有限公司

SHANGHAI ZHONGYOU TIPO STEEL PIPE CO. LTD.
NO. 999 TANGPU ROAD, MINSHANG AREA, SHANGHAI 20111, CHINA

TIPO

产品质量证明书
MILL TEST CERTIFICATE

CERTIFICATE NO: 2008-161A (ONE PAGE)

LETTER OF CREDIT NUMBER: 4436918200

PURCHASE ORDER NUMBER: 61106

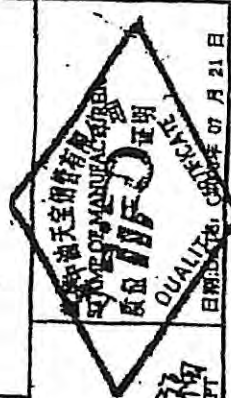
LOT/ITEM: 1/6

规格	炉号	数量 QUANTITY		化学成分 (%)													母材力学性能			压扁试验 FLATTENING TEST	外观及尺 寸公差 TOLERANCE AND SIZE	无损检测 NONDESTR UCTIVE TESTING	水压试验 (Psi) HYDROSTATIC TEST
				CHEMICAL PROPERTIES																			
				SPECIFIC- ATION	HEAT NUMBER	PCS	MT	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Ti	V	MECHANICAL AND PHYSICAL PROPERTIES				
屈服点(Psi) YIELD STRENGTH	抗拉强度 (Psi) TENSILE STRENGTH	延伸率(%) ELONGATI ON																					
24" X 0.375" X 42'	08103721	451	813.603	0.13	0.22	0.92	0.011	0.004	0.004	0.018	0.020	0.007	0.000	0.003	60916	76145	40.0	78320	OK	OK	1180		
	08103772			0.12	0.22	0.92	0.012	0.008	0.036	0.022	0.008	0.000	0.008	49313	68168	40.0	78320	OK	OK	1180			
	08203543			0.08	0.20	0.71	0.009	0.007	0.021	0.029	0.042	0.000	0.000	52939	71794	40.0	77565	OK	OK	1180			
	08103719			0.14	0.22	0.92	0.012	0.003	0.008	0.038	0.022	0.006	0.000	0.001	52939	73244	40.5	79771	OK	OK	1180		
	08103722			0.13	0.22	0.93	0.009	0.003	0.004	0.038	0.022	0.006	0.000	0.002	55114	71068	40.0	76145	OK	OK	1180		
	08103724			0.12	0.23	0.97	0.010	0.003	0.012	0.040	0.028	0.008	0.000	0.002	51488	67443	40.0	70343	OK	OK	1180		
	08103773			0.11	0.20	0.75	0.009	0.003	0.018	0.018	0.020	0.000	0.000	49313	68168	40.0	80496	OK	OK	1180			
	08303972			0.11	0.23	0.92	0.013	0.003	0.010	0.038	0.022	0.008	0.000	0.001	53664	71794	40.0	79771	OK	OK	1180		
	08304115			0.12	0.23	0.94	0.013	0.004	0.009	0.038	0.028	0.008	0.000	0.002	48588	67443	39.5	76870	OK	OK	1180		
	08103641			0.13	0.23	0.94	0.009	0.003	0.012	0.039	0.028	0.008	0.000	0.002	52214	71794	40.0	74694	OK	OK	1180		
	08103642			0.12	0.23	0.92	0.012	0.003	0.010	0.039	0.022	0.008	0.000	0.002	51488	71068	39.5	78320	OK	OK	1180		
	08103769			0.12	0.22	0.94	0.009	0.003	0.010	0.038	0.022	0.008	0.000	0.002	52939	67443	40.0	77565	OK	OK	1180		
	08103771			0.12	0.21	0.76	0.008	0.001	0.013	0.014	0.030	0.000	0.000	0.000	53664	69618	40.0	76420	OK	OK	1180		
	08103774			0.14	0.22	0.78	0.008	0.001	0.011	0.014	0.032	0.000	0.000	0.000	51488	67443	40.0	76870	OK	OK	1180		
08203548	0.11	0.23	0.92	0.011	0.003	0.008	0.039	0.022	0.008	0.000	0.002	53664	71794	39.5	75420	OK	OK	1180					
合计 TOTAL:		451	813.603																				

说明: 1. 在证明书上产品的物理\机械性能和化学成分符合ASME SA53B/API 5L B/X42 PSL1标准中X42钢级产品的要求。
1. WE CERTIFY CHEMICAL AND MECHANICAL AND PHYSICAL PROPERTIES ARE IN COMPLIANCE WITH ASME SA53B/API 5L B/X42 PSL1

开证: 金源江
ISSUER:

质量部经理: 王林
MANAGER OF Q.C. DEPT





FUTURE PIPE INDUSTRIES
Complete Pipe System Solutions

RED BOX 1250

FIBERGLASS TUBING, CASING, AND LINERS
AROMATIC AMINE CURED EPOXY RESIN

DIMENSIONAL SPECIFICATIONS

June, 2010

Nominal Size (inches)	Nominal I.D. (inches)	Minimum Drift Dia (inches)	Nominal O.D. (inches)	Nominal Wall (inches)	Pin Upset O.D. (inches)	Max Box OD* (inches)	Nominal Weight		Connection Type API 5B, Table 14*, 7**, 6*** Fourteenth Edition August 96
							(lbs/ft)	(lbs/ft)	
2-3/8	2.00	1.91	2.21	0.10	2.69	3.43	0.7	21	2-3/8" 8Rd EUE Long*IJ
2-7/8	2.47	2.37	2.73	0.13	3.19	3.93	1.0	31	2-7/8" 8Rd EUE Long*IJ
3-1/2	3.00	2.90	3.30	0.15	3.85	4.82	1.5	45	3-1/2" 8Rd EUE Long*IJ
4	3.33	3.24	3.68	0.17	4.35	4.94	2.0	61	4" 8Rd EUE Long* TC
4-1/2	3.98	3.89	4.40	0.21	4.85	5.75	2.6	77	4-1/2" 8Rd EUE Long*IJ
5-1/2	4.42	4.33	4.87	0.23	5.60	7.20	3.4	102	5-1/2" 8Rd Csg Long**IJ
6-5/8	5.43	5.33	5.97	0.27	6.73	8.51	5.1	152	6-5/8" 8Rd Csg Long**IJ
7	6.21	6.11	6.83	0.31	7.10	8.61	6.0	181	7" 8Rd Csg Long**IJ
7-5/8	6.21	6.11	6.83	0.31	7.73	10.03	6.8	205	7-5/8" 8Rd Csg Long**IJ
9-5/8	7.84	7.75	8.63	0.40	9.73	12.66	11.1	332	9-5/8" 8Rd Csg*** IJ
10-3/4	8.85	8.76	9.76	0.45	10.85	13.98	14.1	422	10-3/4" 8Rd Csg***IJ
11-3/4	10.72	10.62	11.70	0.49	11.93	14.00	16.9	507	11-3/4" 8/6Rd Csg***TC
13-3/8	11.97	11.87	13.06	0.55	13.65	15.15	21.8	653	13-3/8" 8/6Rd Csg***TC
16	14.48	14.39	15.80	0.66	16.33	18.52	31.7	950	16" 6Rd Csg TC
18	16.60	16.50	18.11	0.76	18.84	22.00	45.1	1,352	18" 6Rd Csg TC
20	17.98	17.89	19.62	0.82	20.20	23.50	51.1	1,532	20" 6Rd Csg TC
24	23.78	23.69	25.96	1.09	26.69	33.20	98.0	2,939	24" 4Rd Csg L TC
30	29.53	29.43	32.23	1.35	33.00	43.00	162.3	4,869	30" 4Rd Csg L TC

*Depending on the application, smaller maximum box diameters are available.

Thread lengths may exceed API L4

PERFORMANCE AND RATINGS (-60 deg F to +210 deg F **)

30 ft Standard Joint Length

Nominal Size	Internal Pressure Rating (psi)	Mill Test Pressure (psi)	Collapse Rating (psi)	Axial Tension Rating (lbs)	Stretch vs Tension-Over-Pipe-Wt Stretch (ft) = Ccoeff. x P x L
2-3/8	1,250	1,570	640	10,500	0.467
2-7/8	1,250	1,570	670	16,000	0.295
3-1/2	1,250	1,570	600	22,500	0.221
4	1,250	1,570	640	29,000	0.169
4-1/2	1,250	1,570	640	41,000	0.118
5-1/2	1,250	1,570	600	49,500	0.101
6-5/8	1,250	1,570	590	72,500	0.069
7	1,250	1,570	590	76,500	0.052
7-5/8	1,250	1,570	590	86,500	0.052
9-5/8	1,250	1,570	580	140,500	0.033
10-3/4	1,250	1,570	600	161,500	0.025
11-3/4	1,250	1,570	450	147,000	0.029
13-3/8	1,250	1,570	450	189,500	0.023
16	1,250	1,570	450	217,500	0.016
18	1,250	1,570	450	336,500	0.012
20	1,250	1,570	450	362,000	0.010
24	1,250	1,570	450	683,000	0.006
30	1,250	1,570	450	1,019,500	0.004

Where: P = Tensile Load (1,000 lbs)

L = String Length (1,000 ft)

MECHANICAL & PHYSICAL PROPERTIES

TUBING/CASING BODY PROPERTIES	UNIT	VALUE		TEST METHOD
		2-3/8 - 10-3/4	11-3/4 - 20	
Tensile Strength, Hoop	psi	31,300	31,300	ASTM D1599
Tensile Strength, Axial	psi	30,000	20,000	ASTM D2105
Modulus of Elasticity, Axial	10E+06 psi	3.0	2.0	ASTM D2105
Specific Gravity	---	1.9	1.9	ASTM D792
Density	lbs/in ³	0.07	0.07	ASTM D792
Thermal Conductivity	Btu/hr/ft ² /in/degF	2.4	2.4	ASTM C177
Thermal Expansion Coefficient (Linear)	10E-05in/in/degF	1.1	1.2	ASTM D696
Flow Factor	---	150	150	Hazen Williams



11811 Proctor Road, Houston, Texas 77038 • Tel: 281-847-2987 • Fax: 281-847-4216

Email: sales-houston@futurepipe.com • website: www.futurepipe.com/usa



Appendix I

**As-Built Survey, As-Built
Drawings, Certification of
Monitor Well Completion,
and Certification of Surface
Equipment Completion**

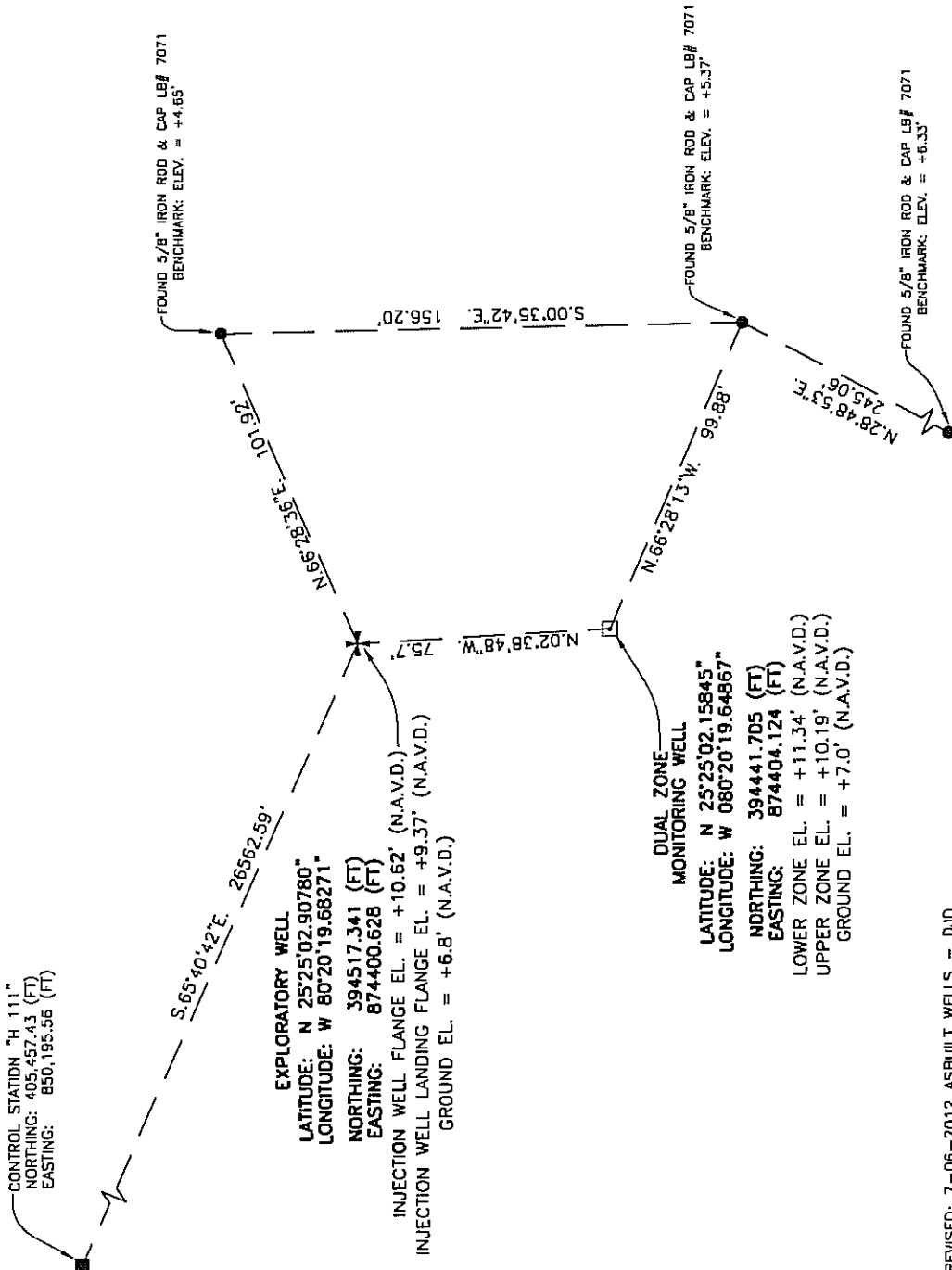


LEGEND:
M.W. = MONITOR WELL
ELEV. = ELEVATION
FT. = FEET
MT. = METERS
+ = EXPLORATORY WELL
□ = DUAL ZONE MONITORING WELL
● = FOUND 5/8" IRON ROD & CAP, LB 7071

THE COORDINATES SHOWN HEREON WERE BASED ON GPS REAL-TIME TIES TO
"H 111" CONTROL STATION.

DESIGNATION - H 111
PID - AC4311
STATE/COUNTY - FL/MIAMI-DADE
USGS QUAD - HOMESTEAD (1984)
NAD 83/99 GEOGRAPHIC COORDINATE - N 25°26'52.39299" W 080°24'43.15420"
NAD 83/99 STATE PLANE COORDINATE - FLORIDA EAST ZONE
NORTHING: 405,457.43 (FT)
EASTING: 850,195.56 (FT)

CONTROL STATION "H 111"
NORTHING: 405,457.43 (FT)
EASTING: 850,195.56 (FT)



SURVEY PLAT

PARCEL LYING IN
SECTION 4, TOWNSHIP 58 SOUTH, RANGE 40 EAST
MIAMI-DADE COUNTY, FLORIDA

NOTES:

THIS PLAT PREPARED AS A SPECIFIC PURPOSE SURVEY FOR THE PURPOSE OF
LOCATING THE RECENTLY STAKED WELLS.

BEARINGS AND COORDINATES SHOWN HEREON ARE STATE PLANE FOR THE
FLORIDA EAST ZONE NAD 83/1990 ADJUSTMENT AND BASED ON GPS REAL-
TIME TIES TO CONTROL STATION "H 111".

ELEVATIONS SHOWN HEREON ARE BASED ON "LM 13 316 FLPCO" HAVING
ELEVATION OF 5.58' IN THE NORTH AMERICAN VERTICAL DATUM 1988
(N.A.V.D. 88).

UNDERGROUND IMPROVEMENTS, UTILITIES AND/OR FOUNDATIONS WERE NOT
LOCATED UNLESS OTHERWISE SHOWN OR NOTED.

DATE OF LAST FIELD WORK: 7-06-2012.

PREPARED FOR:

LAYNE CHRISTENSEN COMPANY

BY: 
DENIS J. O'CONNELL, JR.
PROFESSIONAL SURVEYOR AND MAPPER
FLORIDA CERTIFICATE NO. LS# 543D

DATE SIGNED: 7/11/12

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA
LICENSED SURVEYOR AND MAPPER.

THIS SPECIFIC PURPOSE SURVEY IS ONLY FOR THE LANDS AS DESCRIBED. IT IS NOT
A CERTIFICATE OF TITLE, ZONING, EASEMENTS OR FREEDOM OF ENCUMBRANCES.

THIS SURVEY WAS PREPARED WITHOUT BENEFIT OF AN ABSTRACT OF TITLE AND ALL
MATTERS OF TITLE SHOULD BE REFERRED TO AN ATTORNEY AT LAW.

FPL PLANT "TURKEY POINT"

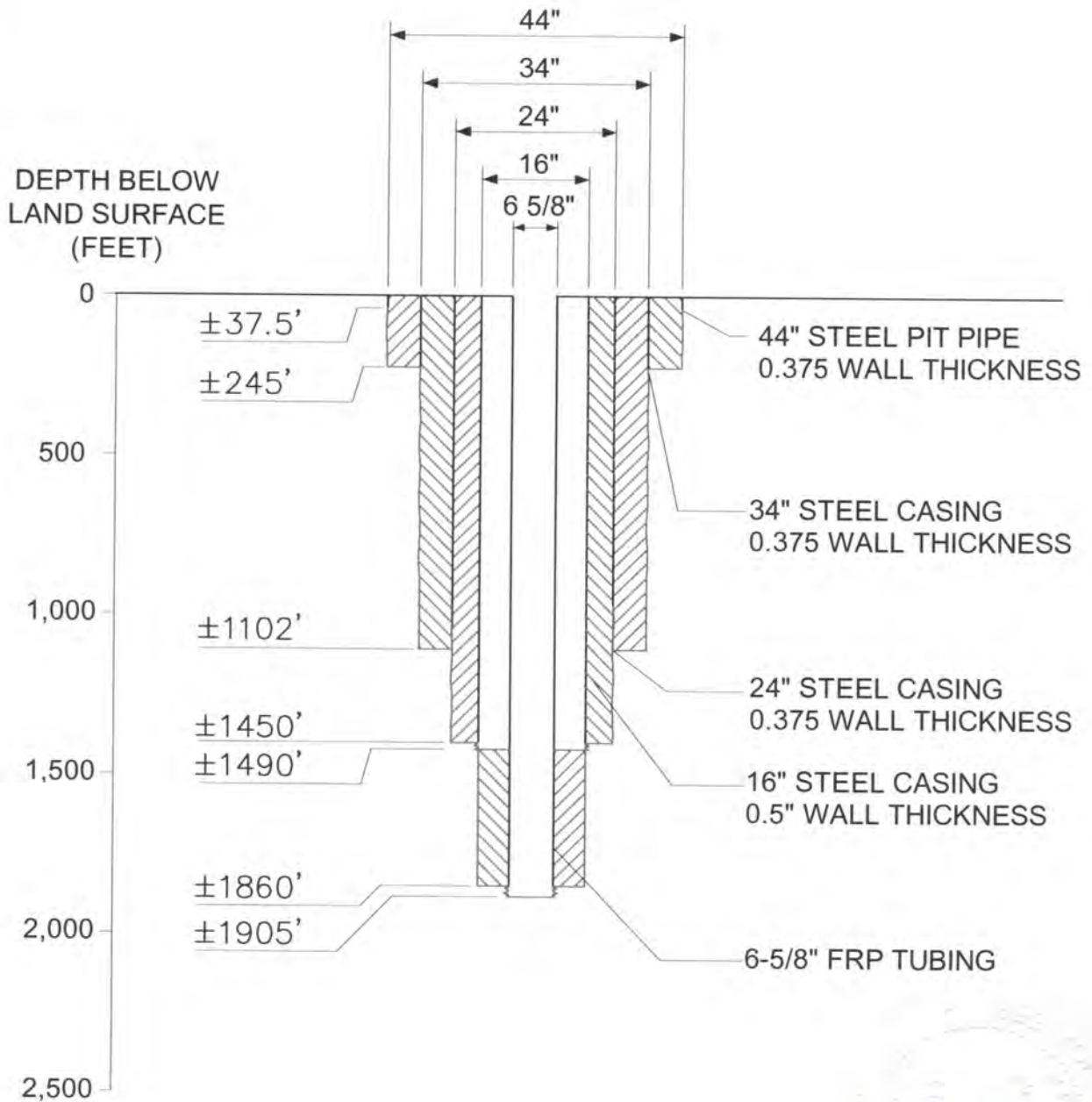
TITLE: SPECIFIC PURPOSE SURVEY



METRON
SURVEYING & MAPPING, LLC
LAND SURVEYORS-PLANNERS
LJ# 7071
10970 SOUTH CLEVELAND AVENUE
SUITE #605
FORT MYERS, FLORIDA 33907
PHONE: (239) 275-8575
FAX: (239) 275-8457
www.metronfl.com

FILE NAME: 11985SR.DWG	FOLD BOOK/PAGE: 506/32	PROJECT NO.: 11985	SHEET: 1 OF 1
SURVEY DATE: 03-25-2011	DRAWN BY: DJO	CHECKED BY: TLM	(S-T-R) 4-58-40

DUAL-ZONE MONITOR WELL



NOTE: THIS AS-BUILT DRAWING DEPICTS WELL CONSTRUCTION INFORMATION PROVIDED BY THE CONTRACTOR. TO THE BEST OF MY KNOWLEDGE THE INFORMATION DEPICTED IS ACCURATE.

David Hult
9-21-12 PE# 42595



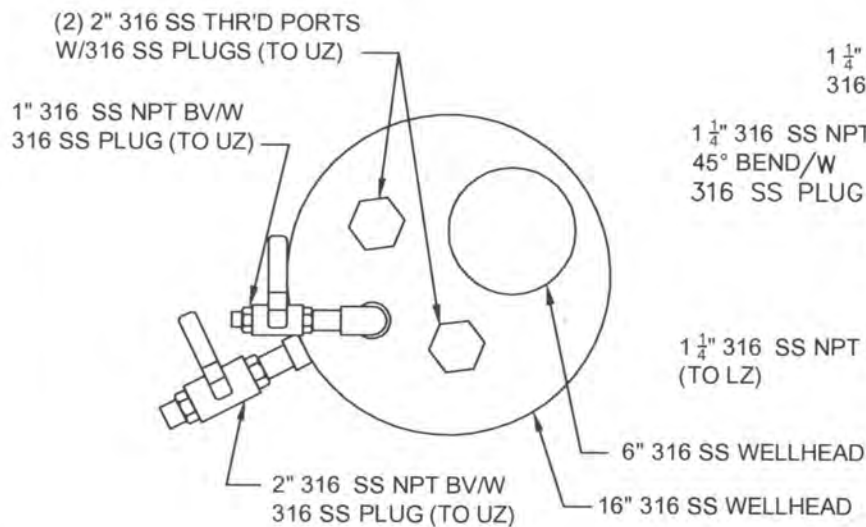
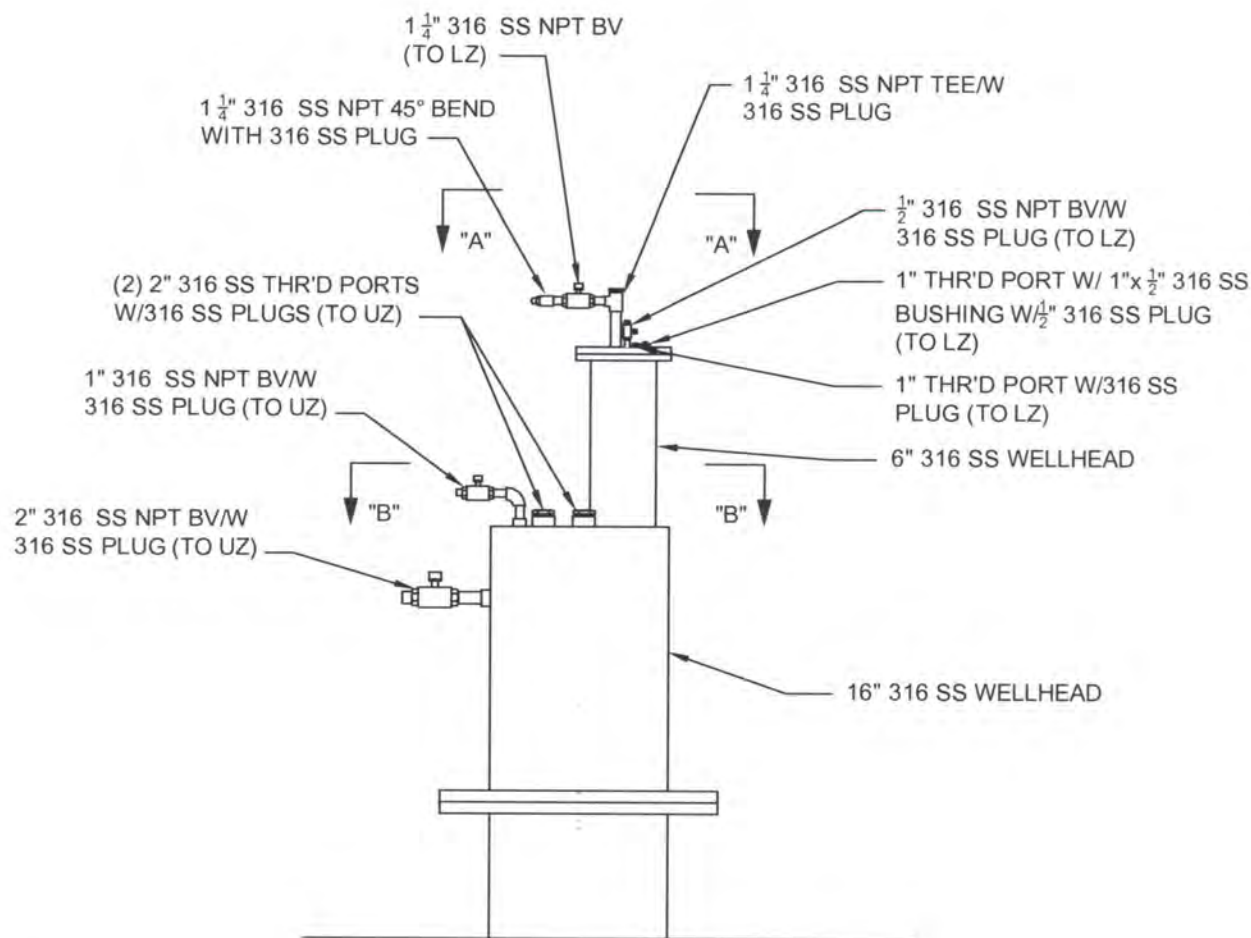
McNabb Hydrogeologic Consulting, Inc.
601 HERITAGE DRIVE, SUITE 110
JUPITER, FLORIDA 33458
Phone 561.891.0763 - Fax 561.823.5489

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNITS 6 & 7
EXPLORATORY WELL EW-1
PROJECT

DUAL ZONE MONITOR WELL
DZMW-1
COMPLETION DIAGRAM

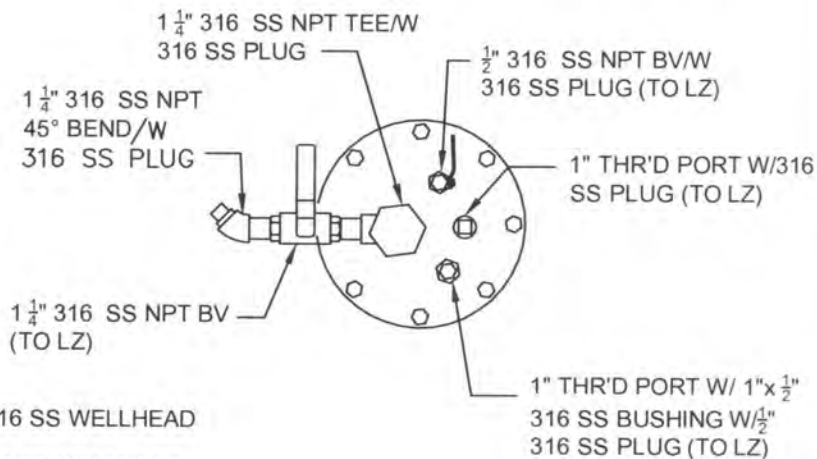


HOLTZ CONSULTING ENGINEERS, INC.
50 SOUTH US HIGHWAY ONE, SUITE 206
JUPITER, FLORIDA 33477
PH (561) 575-2005



UPPER ZONE

SECTION "B"



LOWER ZONE

SECTION "A"

NOTE: THIS AS-BUILT DRAWING DEPICTS WELL CONSTRUCTION INFORMATION PROVIDED BY THE CONTRACTOR. TO THE BEST OF MY KNOWLEDGE THE INFORMATION DEPICTED IS ACCURATE.

David Hult
PC # Y2595 9-11-12

UZ = UPPER ZONE

LZ = LOWER ZONE

**Florida Department of
Environmental Protection**
Twin Towers Office Bldg., 2600 Blair Stone Road,
Tallahassee, Florida 32399-2400

Deviations from the application and plans approved by the Department:

none

Certification by Professional Engineer

I certify that the monitor well has been completed substantially in accordance with the approved plans and specifications, or that deviations will not prevent the monitor well from functioning in compliance with the requirements of Chapter 62-528, F.A.C., when properly operated and maintained. These determinations have been based upon on-site observation of well construction, scheduled or conducted by me or by a project representative under my direct supervision, for the purpose of determining if work proceeded in compliance with plans and specifications and application materials.

David F. Holtz, PE, BCEE

Name (please type)

42595

Florida Registration Number

Holtz Consulting Engineers, Inc.

Company Name

50 South US Highway One, Suite 206

Company Address

Jupiter

City

FL

State

33477

Zip

Telephone No. 561-575-2005

David Holtz
8-21-12 PE #42595

(Affix Seal)

HOLTZ CONSULTING ENGINEERS, INC.
50 South U.S. Highway One, Suite 206, Jupiter, FL 33477

August 28, 2012

Mr. Joe May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave., Suite 200
West Palm Beach, FL 33401

Subject: **FPL Turkey Point Dual Zone Monitor Well DZMW-1
Certification of Completion of DZMW-1
Wellhead and Surface Equipment
FDEP Permit No. 0293962-001-UC**

Dear Mr. May,

The purpose of this letter is to certify that the construction of the surface equipment for Florida Power and Light (FPL) Turkey Point Dual Zone Monitor Well DZMW-1 has been completed and was constructed in accordance with applicable rules and regulations and the requirements of FDEP Permit No. 0293962-001-UC.

If you have any questions regarding the surface equipment for FPL Turkey Point Dual Zone Monitor Well DZMW-1, please contact me.

Sincerely,

HOLTZ CONSULTING ENGINEERS, INC.

David Holtz
8-28-12 PE #42595

David F. Holtz, P.E.
Vice President
Florida P.E. No. 42595

Cc: David McNabb, P.G., McNabb Hydrogeological Consulting, Inc.

Appendix J
DZMW-1 Lithologic Log



Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitoring Well DZMW-1
Lithologic Description



Date	Depth (ft. bpl)		Observer's Description
	From	To	
3/28/2012	30	40	Sandy Limestone: 100%, light gray (N7), fine grained, fine rounded quartz sand, some very fine black (N2) grains (phosphate), some shell, poorly indurated.
3/28/2012	40	50	Sandy Limestone: 100%, yellowish gray (5Y 8/1) to medium light gray (N6), fine grained, fine grained rounded quartz sand, some very fine black (N2) grains (phosphate), trace shell, moderately indurated. (Very hard drilling)
3/29/2012	50	60	Sandy Limestone: 100%, very light gray (N8) to light gray (N7), fine grained, fine grained rounded quartz sand and abundant shell fragments and shell, some very fine black (N2) grains (phosphate), poorly indurated.
3/29/2012	60	70	Sandy Limestone; 100%, light gray (N7) and white (N9), rounded quartz sand, shell fragments, some fine grained black (N2) grains (phosphate), poorly indurated.
3/29/2012	70	80	Limestone: 100%, very light gray (N8) to light gray (N7), fine grained, abundant shell fragments and shell, some very fine black (N2) grains (phosphate), poorly indurated.
3/29/2012	80	90	Limestone: 100%, very light gray (N8) to light gray (N7), fine grained, fine calcareous grains (ooids), some rounder quartz sand, some shell fragments, some very fine black (N2) grains (phosphate), moderately well indurated.
3/29/2012	90	100	Limestone: 100%, very light gray (N8) to light gray (N7), fine grained, fine calcareous grains (ooids), some shell fragments, some rounded quartz sand, some very fine black (N2) grains (phosphate), moderately well indurated.
3/29/2012	100	110	Limestone: 100%, very light gray (N8), fine grained, fine calcareous grains (ooids), some shell fragments, some very fine black (N2) grains (phosphate), moderately well indurated.
3/29/2012	110	120	Limestone: 100%, very light gray (N8), fine grained, fine calcareous grains (ooids), some shell fragments, some rounder quartz sand, some very fine black (N2) grains (phosphate), moderately well indurated.
3/29/2012	120	130	Limestone: 100%, very light gray (N8), fine grained, some rounded quartz sand, few fine calcareous grains (ooids), some shell fragments, few very fine black (N2) grains (phosphate), moderately well indurated.
3/29/2012	130	140	Limestone: 100%, light gray (N8) to yellowish gray (5Y 8/1), and white (N9) shell, shell fragments, some rounded; fine quartz sand, some fine to black (N2) grains (phosphate), moderately well indurated.
3/29/2012	140	150	Limestone: 100%, yellowish gray (5Y 8/1), and white (N9), coarse to fine grained, shell and shell fragments, fine quartz sand, some rounded, some fine dark gray (N3) to black (N2) grains (phosphate), moderately well indurated.
3/29/2012	150	160	Limestone, Shell Fragments and Sand: Limestone, 50%, yellowish gray (5Y 8/1), and white (N9), coarse to fine grained, poorly indurated; Shell Fragments, 30%, white (N9) and yellowish gray (5Y 8/1), 1mm to 2mm in size; Sand, 20%, yellowish gray (5Y 8/1, fine grained, calcareous, some fine dark gray (N3) to black (N2) grains (phosphate).
3/29/2012	160	170	Clayey Silt: yellowish gray (5Y 8/1) to light olive gray (5Y 6/1), silty, sandy, slightly clayey, some calcareous grains, and few shell fragments, fine dark gray (N3) to black (N2) grains (phosphate).



Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitoring Well DZMW-1
Lithologic Description



Date	Depth (ft. bpl)		Observer's Description
	From	To	
3/29/2012	170	180	Clayey Silt: Same as above. Slightly less sandy.
3/29/2012	180	190	Silt: dark greenish gray (5GY 8/1), sandy, clayey with fine calcareous grains and coarse to fine shell fragments, fine dark gray (N3) to black (N2) grains (phosphate).
3/29/2012	190	200	Silt: same as above.
3/29/2012	200	210	Silt: same as above.
3/29/2012	210	220	Silt: same as above.
3/29/2012	220	230	Silt: same as above.
3/29/2012	230	240	Sand: light olive gray (5Y 5/2) fine grained, phosphatic, trace shell fragments.
3/29/2012	240	250	Sand: light olive gray (5Y 5/2) fine grained, slightly clayey, phosphatic, trace shell fragments.
4/6/2012	250	260	Sand: light olive gray (5Y 5/2) fine grained, slightly clayey, phosphatic, trace shell fragments.
4/6/2012	260	270	Clayey sand: greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), fine grained, phosphatic, trace shell fragments.
4/6/2012	270	280	Clayey sand: greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), fine grained, slightly more clayey than above, phosphatic, trace shell fragments.
4/6/2012	280	290	Clayey sand: same as above.
4/6/2012	290	300	Clayey sand: same as above.
4/7/2012	300	310	Sand: light olive gray (5Y 5/2) fine grained, slightly clayey, phosphatic, trace shell fragments.
4/7/2012	310	320	Clayey sand: greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), fine grained, phosphatic, trace shell fragments.
4/7/2012	320	330	Clayey sand: dark greenish gray (5GY 4/1), fine grained, phosphatic, trace shell fragments.
4/7/2012	330	340	Clayey sand: same as above.
4/7/2012	340	350	Clayey sand: greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), fine grained, phosphatic, trace shell fragments.
4/7/2012	350	360	Clayey sand: light olive gray (5Y 6/1), fine grained, phosphatic.
4/7/2012	360	370	Clayey sand: same as above.
4/7/2012	370	380	Clayey sand: light olive gray (5Y 6/1) to dark gray (N3), fine grained, phosphatic.
4/7/2012	380	390	Clayey sand: same as above.
4/7/2012	390	400	Clayey sand: dark greenish gray (5GY 4/1), fine grained, phosphatic.
4/7/2012	400	410	Clayey sand: light olive gray (5Y 5/2) fine grained, phosphatic.
4/7/2012	410	420	Clayey sand: same as above.
4/7/2012	420	430	Clayey sand: same as above.
4/7/2012	430	440	Clayey sand: same as above.
4/7/2012	440	450	Clayey sand: light olive gray (5Y 5/2) fine grained, slightly more clayey than above, phosphatic.
4/7/2012	450	460	Clayey sand: light olive gray (5Y 5/2) fine grained, slightly more clayey than above, phosphatic.
4/7/2012	460	470	Clayey sand: light olive gray (5Y 5/2) fine grained, phosphatic, trace lithified sand fragments.



Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitoring Well DZMW-1
Lithologic Description



Date	Depth (ft. bpl)		Observer's Description
	From	To	
4/7/2012	470	480	Clayey sand: same as above.
4/7/2012	480	490	Clayey sand: same as above.
4/7/2012	490	500	Clayey sand: medium light gray (N6), fine grained, some lithified sand fragments, calcareous, trace phosphate.
4/7/2012	500	510	Clayey Limestone: yellowish gray (5Y 7/2), sandy, shell fragments, some phosphate, moderately indurated, low porosity.
4/7/2012	510	520	Limestone: yellowish gray (5Y 7/2), sandy, shell fragments, some phosphate, moderately indurated, low porosity.
4/7/2012	520	530	Limestone: same as above.
4/7/2012	530	540	Limestone: same as above.
4/7/2012	540	550	Limestone: same as above.
4/7/2012	550	560	Limestone: same as above.
4/7/2012	560	570	Limestone: same as above.
4/7/2012	570	580	Limestone, Sand, and Clay: Limestone, 40%, yellowish gray (5Y 7/2), sandy, shell fragments, slightly phosphatic, moderately indurated, low porosity; Sand, 40%, light olive gray (5Y 5/2), very fine grained, loosely consolidated, calcareous; Clay, 20%, grayish olive (10YR 4/2), very soft, moderately plastic, phosphatic.
4/11/2012	580	590	Clay and Limestone: Clay, 70%, yellowish gray (5Y 7/2), calcareous; trace shell fragments; Limestone, 30%, yellowish gray (5Y 7/2), micritic, calcareous, very low porosity and permeability.
4/11/2012	590	600	Clay and Limestone: Clay, 80%, yellowish gray (5Y 7/2), very soft, moderate plasticity; Limestone, 20%, yellowish gray (5Y 7/2), micritic, shell fragments, slightly phosphatic, moderately indurated, very low porosity.
4/11/2012	600	610	Clay and Limestone: Same as above.
4/11/2012	610	620	Clay and Limestone: Clay, 60%, yellowish gray (5Y 7/2), very soft, moderate plasticity; Limestone, 40%, yellowish gray (5Y 7/2), micritic, shell fragments, slightly phosphatic, moderately indurated.
4/11/2012	620	630	Clay and Limestone: Clay, 70%, yellowish gray (5Y 7/2), calcareous; trace shell fragments; Limestone, 30%, yellowish gray (5Y 7/2), micritic, calcareous, very low porosity and permeability.
4/11/2012	630	640	Limestone and Shell Fragments: Limestone, 60%, yellowish gray (5Y 7/2), very fine grained to silt, calcareous, very low porosity; Shell Fragments, 40%, 3-22mm.
4/11/2012	640	650	Clay and Limestone: Clay, 80%, yellowish gray (5Y 7/2), very soft, moderate plasticity; Limestone, 20%, yellowish gray (5Y 7/2), micritic, shell fragments, slightly phosphatic, moderately indurated, very low porosity.
4/11/2012	650	660	Clay and Limestone: Same as above.
4/11/2012	660	670	Clay and Limestone: Same as above.
4/11/2012	670	680	Clay and Limestone: Same as above.
4/11/2012	680	690	Clay and Limestone: Clay, 50%, same as above; Limestone, 50%, same as above.
4/11/2012	690	700	Clay and Limestone: Same as above.



Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitoring Well DZMW-1
Lithologic Description



Date	Depth (ft. bpl)		Observer's Description
	From	To	
4/11/2012	700	710	Clay and Limestone: Clay, 80%, same as above; Limestone, 20%, same as above.
4/11/2012	710	720	Limestone and Clay: Limestone 70%, same as above; Clay, 30%, calcareous; trace shell fragments.
4/11/2012	720	730	Limestone and Clay: Limestone 90%, same as above; Clay, 10%, calcareous; trace shell fragments.
4/11/2012	730	740	Clay and Limestone: Clay, 80%, yellowish gray (5Y 7/2), soft, calcareous, moderate plasticity; Limestone: 20%, yellowish gray (5Y 7/2), fine grained; trace phosphate grains.
4/11/2012	740	750	Clay and Limestone: Same as above.
4/11/2012	750	760	Clay and Limestone: Clay, 60%, same as above; Limestone, 40%, same as above.
4/11/2012	760	770	Clay and Limestone: Same as above.
4/11/2012	770	780	Clay: pale olive (10Y 6/2), moderately soft, plastic, slightly phosphatic; Trace limestone.
4/11/2012	780	790	Clay and Limestone: Clay, 50%, pale olive (10Y 6/2), soft, calcareous, medium plasticity; Limestone: 40%, yellowish gray (5Y 8/1), micritic, trace phosphate grains.
4/11/2012	790	800	Clay and Limestone: Same as above.
4/11/2012	800	810	Clay and Limestone: Same as above.
4/11/2012	810	820	Limestone and Shell Fragments: Limestone, 80%, yellowish gray (5Y 8/1) and very light gray (N8), fine grained, vuggy, moderate vuggy porosity; Shell Fragments, 20%, white (N9) and yellowish gray (5Y 8/1), <5mm.
4/11/2012	820	830	Limestone and Shell Fragments: same as above.
4/11/2012	830	840	Limestone and Shell Fragments: same as above.
4/11/2012	840	850	Limestone and Shell Fragments: same as above.
4/11/2012	850	860	Limestone and Shell Fragments: same as above.
4/11/2012	860	870	Limestone: very light gray (N8) to yellowish gray (5Y 8/1), fine grained, trace fine quart sand, some shell fragments, trace phosphate.
4/11/2012	870	880	Limestone: Same as above.
4/11/2012	880	890	Clay: yellowish gray (5Y 7/2), soft, low plasticity, poorly indurated limestone fragments (30%), trace limestone, trace phosphate.
4/11/2012	890	900	Limestone and Clay: Limestone: 60%, yellowish gray (5Y 7/2), fine to medium grained, slightly phosphatic; Clay, 40%, yellowish gray (5Y 7/2), soft, calcareous, moderate plasticity.
4/11/2012	900	910	Limestone and Clay: Limestone 50%, same as above; Clay, 50%, same as above; trace shell fragments.
4/11/2012	910	920	Limestone and Clay: Limestone 70%, same as above; Clay, 30%, same as above; trace shell fragments.
4/12/2012	920	930	Limestone and Clay: same as above.
4/12/2012	930	940	Clay: yellowish gray (5Y 8/1), soft, low plasticity, some poorly indurated limestone fragments, trace shells and shell fragments, trace phosphate.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
4/12/2012	940	950	Clay: light olive gray (5Y 5/2), soft, low plasticity, phosphatic, trace shells and shell fragments.
4/12/2012	950	960	Clay: same as above.
4/12/2012	960	970	Clay, Limestone, and Shell: Clay, 80%, light olive gray (5Y 5/2), moderately stiff, moderate plasticity, phosphatic; Limestone, 10%, yellowish gray (5Y 8/1), fine to medium grained, poorly indurated, phosphatic; Shell Fragments: 10%, white (N9) and very light gray (N8), 1 to 2mm in size.
4/12/2012	970	980	Clay, Limestone, and Shell: Clay, 60%, light olive gray (5Y 5/2), moderately stiff, moderate plasticity, phosphatic; Limestone, 30%, yellowish gray (5Y 8/1), fine to medium grained, poorly indurated, phosphatic; Shell Fragments: 10%, white (N9) and very light gray (N8), 1 to 2mm in size.
4/12/2012	980	990	Clay, Limestone, and Shell: same as above.
4/12/2012	990	1,000	Clay: yellowish gray (5Y 8/1), stiff, plastic; Trace limestone fragments.
4/12/2012	1,000	1,010	Clay: same as above.
4/12/2012	1,010	1,020	Clay: grayish olive green (5GY 3/2), soft, moderately low plasticity.
4/12/2012	1,020	1,030	Clay: yellowish gray (5Y 8/1), moderately stiff, moderate plasticity; Trace limestone fragments.
4/12/2012	1,030	1,040	Clay: light olive gray (5Y 5/2), soft, moderate plasticity; Trace limestone fragments.
4/13/2012	1,040	1,050	Clay: light olive gray (5Y 5/2), soft, moderate plasticity.
4/13/2012	1,050	1,060	Clay: same as above.
4/13/2012	1,060	1,070	Limestone and Clay: Limestone, 70%, yellowish gray (5Y 8/1), predominantly pelecypod shell fragments, up to 15 mm in size; Clay, 30%, yellowish gray (5Y 7/2), moderately plastic.
4/13/2012	1,070	1,080	Limestone and Clay: same as above.
4/13/2012	1,080	1,090	Clay and Limestone: Clay, 70%, yellowish gray (5Y 7/2), moderately plastic, phosphate grains; Limestone, 30%, yellowish gray (5Y 8/1), predominantly pelecypod shell fragments, up to 15 mm in size.
4/13/2012	1,090	1,100	Limestone and Dolomitic Limestone: Limestone, 90%, yellowish gray (5Y 7/2), arenaceous, fine grained, soft; Dolomitic Limestone, 10%, pale yellowish brown (10YR 6/2), well indurated with minor amount of pelecypod shell fragments, trace phosphate grains.
4/13/2012	1,100	1,110	Limestone and Dolomitic Limestone: same as above.
5/9/2012	1,110	1,120	Dolomitic Limestone: Dolomitic Limestone, 90%, pale yellowish brown (10YR 6/2), moderately well indurated with minor amount of pelecypod shell fragments; Limestone, 10%, yellowish gray (5Y 7/2), arenaceous, fine grained, soft.
5/9/2012	1,120	1,130	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, well indurated, fossiliferous, vuggy; Dolomite trace.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/9/2012	1,130	1,140	Dolomite and Dolomitic Limestone: Dolomite, 70%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, slightly vuggy; Dolomitic Limestone, 30%, pale yellowish brown (10YR 6/2) to moderate yellowish brown (10YR 5/4), fine grained, well indurated with minor amount of pelecypod shell fragments, very fossiliferous, low porosity, low permeability.
5/9/2012	1,140	1,150	Dolomitic Limestone: 100%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine grained, fossiliferous, poorly indurated, moderate porosity, moderate permeability.
5/9/2012	1,150	1,160	Dolomitic Limestone: same as above.
5/9/2012	1,160	1,170	Dolomitic Limestone: same as above.
5/9/2012	1,170	1,180	Dolomite: 100%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated slightly vuggy, slightly phosphatic.
5/10/2012	1,180	1,190	Dolomite: 100%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated slightly vuggy, slightly phosphatic.
5/10/2012	1,190	1,200	Limestone and Dolomite: Limestone, 50%, yellowish gray (5Y 7/2), very fine grained, well indurated, slightly fossiliferous; Dolomite, 50%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, moderately vuggy.
5/10/2012	1,200	1,210	Dolomite: 100%, pale yellowish brown (10YR 6/2) and medium light gray (N6), fine crystalline, well indurated, vuggy.
5/10/2012	1,210	1,220	Limestone and Dolomite: Limestone, 60%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, slightly fossiliferous; Dolomite, 40%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy.
5/10/2012	1,220	1,230	Dolomite and Limestone: Dolomite, 80%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine crystalline, moderately well indurated, vuggy; Limestone, 20%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, slightly fossiliferous, low porosity, low permeability.
5/10/2012	1,230	1,240	Limestone, 100%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, slightly fossiliferous (pelecypods, gastropods), low porosity, low permeability.
5/10/2012	1,240	1,250	Limestone: same as above.
5/10/2012	1,250	1,260	Limestone and Dolomite: 80%, yellowish gray (5Y 7/2), very fine grained, well indurated, well sorted, low porosity, low permeability; Dolomite, 20%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine crystalline, moderately well indurated, vuggy.
5/10/2012	1,260	1,270	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, well indurated, slightly fossiliferous (pelecypods, gastropods), very well sorted, low porosity, low permeability; Dolomite trace.
5/10/2012	1,270	1,280	Limestone and Dolomite: 90%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, moderately well sorted, fossiliferous (pelecypods, gastropods) low porosity, low permeability; Dolomite, 10%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine crystalline, moderately well indurated.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/10/2012	1,280	1,290	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, moderately well to poorly indurated, well sorted, fossiliferous (pelecypods, gastropods) low porosity, low permeability.
5/10/2012	1,290	1,300	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, moderately to poorly indurated, well sorted, fossiliferous (pelecypods, Dictyoconus americanus), low porosity, low permeability; Dolomite trace.
5/10/2012	1,300	1,310	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, well indurated, poorly sorted, fossiliferous (pelecypods), low porosity, low permeability; Dolomite trace.
5/10/2012	1,310	1,320	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, poorly indurated, well sorted, fossiliferous, low porosity, low permeability.
5/10/2012	1,320	1,330	Limestone: Same as above.
5/10/2012	1,330	1,340	Limestone: 100%, yellowish gray (5Y 7/2) and very pale orange (10YR 8/2), very fine grained, moderately to poorly indurated, fossiliferous (pelecypods), well sorted, low porosity, low permeability; Dolomite trace.
5/11/2012	1,340	1,350	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, moderately indurated, fossiliferous (pelecypods, echinoids), well sorted, vuggy, low to moderate porosity, low permeability; Dolomite trace.
5/11/2012	1,350	1,360	Limestone and Dolomite: Limestone, 80%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, slightly fossiliferous (pelecypods), well sorted, low porosity, low permeability, slightly vuggy; Dolomite, 20%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy.
5/11/2012	1,360	1,370	Limestone and Dolomite: same as above.
5/11/2012	1,370	1,380	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, moderately well indurated, slightly fossiliferous (pelecypods), well sorted, low porosity, low permeability, slightly vuggy
5/11/2012	1,380	1,390	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, well indurated, slightly fossiliferous (pelecypods), well sorted, low porosity, low permeability, slightly vuggy.
5/11/2012	1,390	1,400	Limestone: 100%, yellowish gray (5Y 7/2) and light gray (N7), very fine grained, well indurated, highly fossiliferous (pelecypod and gastropod casts and molds, echinoid spines), moderately well sorted, low porosity, low permeability, slightly vuggy.
5/11/2012	1,400	1,410	Limestone: same as above.
5/11/2012	1,410	1,420	Limestone: 100%, yellowish gray (5Y 7/2), very fine grained, moderately to well indurated, highly fossiliferous (pelecypods, abundant whole echinoids 5-10 mm in diameter), well sorted, low porosity, low permeability.
5/11/2012	1,420	1,430	Limestone: 100%, very pale orange (5YR 8/2), fine grained, well indurated, highly fossiliferous (Dictyoconus, Lituonella, Fabiana, Echinoid spines), well sorted, low to moderate intergranular porosity, moderate permeability.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/12/2012	1,430	1,440	Limestone: 100%, very pale orange (5YR 8/2) to light olive gray (5Y 6/1), fine grained, poorly indurated, highly fossiliferous (pelecypods, Dictyoconus), well sorted, moderate intergranular porosity, moderate permeability.
5/12/2012	1,440	1,450	Limestone: same as above.
5/12/2012	1,450	1,460	Limestone: 100%, pale yellowish brown (10YR 6/2), fine grained, well indurated, fossiliferous (Dictyoconus, Lituonella, gastropod molds, echinoids), well sorted, low to moderate intergranular porosity, low permeability.
5/12/2012	1,460	1,470	Limestone: 100%, pale yellowish brown (10YR 6/2), fine grained, moderately well to poorly indurated, fossiliferous (Dictyoconus americanus), well sorted, low intergranular porosity, low permeability.
5/12/2012	1,470	1,480	Limestone: 100%, pale yellowish brown (10YR 6/2), fine grained, poorly indurated, fossiliferous (Dictyoconus americanus), well sorted, moderate intergranular porosity, moderate permeability.
5/12/2012	1,480	1,490	Limestone: same as above.
5/12/2012	1,490	1,500	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, well indurated, well sorted, low intergranular porosity, low permeability.
5/12/2012	1,500	1,510	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, well indurated, slightly fossiliferous (Dictyoconus, echinoid, shell fragments), well sorted, low to moderate intergranular porosity, low permeability.
5/12/2012	1,510	1,520	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, moderate to poorly indurated, fossiliferous (Dictyoconus, echinoids, shell fragments), well sorted, low to moderate intergranular porosity, low permeability.
5/12/2012	1,520	1,530	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, moderately to poorly indurated, fossiliferous (Dictyoconus, echinoids), well sorted, low to moderate intergranular porosity, low permeability.
5/12/2012	1,530	1,540	Limestone: same as above.
5/12/2012	1,540	1,550	Limestone: 60%, pale yellowish brown (10YR 6/2), very fine grained, moderately poor indurated, fossiliferous (Dictyoconus and other foraminifera abundant), well sorted, moderate to high intergranular porosity, moderate permeability; Limestone: 40%, yellowish gray (5Y 8/1), very fine grained, well indurated, well sorted, slightly vuggy, low porosity, low permeability.
5/12/2012	1,550	1,560	Limestone: 100%, yellowish gray (5Y 8/1), very fine grained, well indurated, well sorted, slightly vuggy, low porosity, low permeability.
5/12/2012	1,560	1,570	Limestone: 100%, pale yellowish brown (10YR 6/2) and yellowish gray (5Y 8/1), very fine grained, poorly indurated, moderately well sorted, fossiliferous (Dictyoconus and other foraminifera abundant) low intergranular porosity, low permeability.
5/12/2012	1,570	1,580	Limestone: Same as above.
5/12/2012	1,580	1,590	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, moderately well indurated, highly fossiliferous (Dictyoconus, echinoids), moderately well sorted, low intergranular porosity, low permeability.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/12/2012	1,590	1,600	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, poorly indurated, fossiliferous (Dictyoconus), well sorted, low intergranular porosity, low permeability.
5/12/2012	1,600	1,610	Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained, moderately well indurated, highly fossiliferous (Dictyoconus, echinoids), moderately well sorted, low intergranular porosity, low permeability.
5/13/2012	1,610	1,620	Limestone: Same as above.
5/13/2012	1,620	1,630	Limestone: Same as above.
5/13/2012	1,630	1,640	Limestone: Same as above.
5/13/2012	1,640	1,650	Limestone: Same as above.
5/13/2012	1,650	1,660	Limestone: 100%, yellowish gray (5Y 7/2) to light olive gray (5Y 5/2), fine grained, poorly indurated, moderately well sorted, fossiliferous (benthic foraminifera, Dictyoconus, and others), moderate intergranular porosity, moderate permeability.
5/13/2012	1,660	1,670	Limestone: 100%, yellowish gray (5Y 7/2) to pale yellowish brown (10YR 6/2), fine grained, poorly indurated, moderately well sorted, fossiliferous (benthic foraminifera, Dictyoconus, Fabiana cubensis, and others), moderate intergranular porosity, moderate permeability.
5/13/2012	1,670	1,680	Limestone: Same as above.
5/13/2012	1,680	1,690	Dolomitic Limestone and Dolomite: Dolomitic Limestone, 70%, pale yellowish brown (10YR 6/2), fine grained to very fine grained, poorly indurated, highly fossiliferous (benthic foraminifera primarily Dictyoconus), moderately well sorted, moderate intergranular porosity, moderate permeability; Dolomite, 30%, pale yellowish brown (10YR 6/2) and dark yellowish brown (10YR 4/2), fine crystalline, well indurated, vuggy, low permeability.
5/13/2012	1,690	1,700	Dolomitic Limestone and Dolomite: Dolomitic Limestone, 80%, pale yellowish brown (10YR 6/2), fine grained to very fine grained, poorly indurated, highly fossiliferous (benthic foraminifera primarily Dictyoconus), moderately well sorted, moderate intergranular porosity, moderate permeability; Dolomite, 20%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy, low permeability.
5/13/2012	1,700	1,710	Dolomitic Limestone: 90%, pale yellowish brown (10YR 6/2) to very pale orange (10 YR /2), fine grained, moderate induration, fossiliferous, moderately well sorted, low intergranular porosity, low permeability; Dolomitic Limestone, 10%, light olive gray (5Y 6/1), very fine grained, well indurated, non-fossiliferous, well sorted, low intergranular porosity, low permeability.



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Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/13/2012	1,710	1,720	Dolomitic Limestone and Dolomite: Dolomitic Limestone, 70%, pale yellowish brown (10YR 6/2), very fine grained, low to moderate induration, fossiliferous with high degree decalcification, well sorted, low intergranular porosity, low permeability; Dolomite: 30%, yellowish gray (5YR 8/1) to very pale orange (10 YR /2), very fine grained, high induration, well sorted, slightly vuggy, low intergranular porosity, low permeability.
5/13/2012	1,720	1,730	Dolomitic Limestone: 100%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), very fine grained, poor to moderate induration, fossiliferous, low to moderate intergranular porosity, low permeability.
5/14/2012	1,730	1,740	Dolomitic Limestone: 100%, pale yellowish brown (10YR 6/2), very fine grained to crystalline, poor to moderate induration, fossiliferous (Dictyoconus americanus, Spirolina coryensis), low permeability.
5/14/2012	1,740	1,750	Dolomitic Limestone: same as above.
5/14/2012	1,750	1,760	Dolomitic Limestone and Dolomite: Dolomitic Limestone, 90%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine grained, moderate induration, slightly fossiliferous (Dictyoconus americanus), moderate intergranular porosity, low permeability; Dolomite, 10%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy, low permeability.
5/14/2012	1,760	1,770	Dolomitic Limestone and Dolomite: Dolomitic Limestone, 80%, pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4), fine grained, moderate induration, slightly fossiliferous (Dictyoconus americanus), moderate intergranular porosity, low permeability; Dolomite, 20%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy, low permeability.
5/14/2012	1,770	1,780	Dolomite, Dolomitic Limestone, and Mudstone: Dolomite, 80%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, vuggy, low permeability; Dolomitic Limestone, 10 %, pale yellowish orange (10 YR8/2) and pale yellowish brown (10YR 6/2), fine grained, well indurated, slightly fossiliferous, low permeability; Mudstone, 10%, dusky yellowish brown (10YR 2/2), silty, cohesive.
5/14/2012	1,780	1,790	Dolomitic Limestone, Dolomite and Mudstone: Dolomitic Limestone, 70 %, pale yellowish orange (10 YR8/2) and pale yellowish brown (10YR 6/2), fine grained, well indurated, low permeability; Dolomite, 20%, light olive gray (5Y 6/1) and dark yellowish brown (10YR 4/2), fine crystalline, well indurated, vuggy, low permeability; Mudstone, 10%, dusky yellowish brown (10YR 2/2), silty, cohesive.
5/14/2012	1,790	1,800	Dolomitic Limestone: 100%, pale yellowish brown (10YR 6/2), fine grained to very fine grained, poorly indurated, fossiliferous (benthic foraminifera primarily Dictyoconus americanus, echinoids spines), well sorted, moderate to high intergranular porosity, moderate to high permeability.



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Lithologic Description



Date	Depth (ft. bpl)		Observer's Description
	From	To	
5/14/2012	1,800	1,810	Dolomitic Limestone: 100%, pale yellowish brown (10YR 6/2), fine grained to very fine grained, moderately poor induration, highly fossiliferous (benthic foraminifera primarily Dictyoconus, echinoids spines), moderately well sorted, moderate to high intergranular porosity, moderate to high permeability.
5/14/2012	1,810	1,820	Dolomite: 100%, pale yellowish brown (10YR 6/2), fine crystalline, well indurated, few vugs, low permeability.
5/14/2012	1,820	1,830	Dolomite: 100%, pale yellowish brown (10YR 6/2) and dark yellowish brown (10YR 4/2), fine crystalline, well indurated, few vugs, few phosphate grains, low permeability.
5/14/2012	1,830	1,840	Dolomite: 90%, yellowish gray (5Y 8/1), and light olive gray (5YR 5/2), fine crystalline, well indurated, slightly vuggy, low permeability.
5/15/2012	1,840	1,850	Dolomite: 100%, pale yellowish brown (10YR 6/2), grayish orange (10YR 7/4) and dark yellowish brown (10YR 4/2), fine crystalline, well indurated, few vugs, some dark banding, low permeability.
5/15/2012	1,850	1,860	Dolomite: 100%, pale yellowish brown (10YR 6/2) and medium gray (N5), fine crystalline, well indurated, some slightly brittle, low permeability; limestone, trace.
5/15/2012	1,860	1,870	Dolomite: 100%, moderate yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/2), fine crystalline, well indurated, phosphatic, low permeability; Mudstone, trace.
5/15/2012	1,870	1,880	Dolomite: 100%, moderate yellowish brown (10YR 5/4), fine crystalline, sucrosic, well indurated, few vugs, low permeability; Mudstone, trace; Limestone, trace.
5/15/2012	1,880	1,890	Limestone and Dolomitic Limestone: 70%, very pale orange (10YR 8/2), very fine grain, moderate to moderately well indurated, fossiliferous, low porosity, low permeability, some bedding planes noticeable by darker banding; Dolomitic Limestone: 30%, pale yellowish brown (10YR 6/2), fine grain, moderate to poorly indurated, slightly fossiliferous, moderate porosity, moderate permeability; Mudstone, trace, dusky yellowish brown (10YR 2/2), silty, cohesive.
5/15/2012	1,890	1,905	Limestone, Dolomitic Limestone, and Mudstone: 60%, very pale orange (10YR 8/2), very fine grain, moderate to poorly indurated, fossiliferous, low porosity, low permeability; Dolomitic Limestone: 20%, pale yellowish brown (10YR 6/2), fine grain, moderate to poorly indurated, fossiliferous (benthic foraminifera primarily Dictyoconus americanus), low permeability; Mudstone, 20%, dusky yellowish brown (10YR 2/2), silty, cohesive.
5/15/2012	1,900	1,905	Limestone, Dolomitic Limestone, and Mudstone: same as above.

ft. bpl = feet below pad level

Appendix K

Geophysical Logs

Appendix L

**Pad Monitor Wells Data
Summary Sheets and Plug
and Abandonment Permit**

Project:		Florida Power & Light Company Turkey Point Units 6 & 7 Miami-Dade County, Florida Dual-Zone Monitor Well DZMW-1							<div>MHC</div> <div>AS&S uc</div>	
DZMW-1 Pad Monitoring Well Water Quality Data Northeast Pad Monitoring Well (NE-DZMW PMW)										
Date	Time (hours)	Depth to Water (ft. btoe)	Water Elevation (ft. NAVD 88)	Specific Conductance (umhos/cm)	Chloride (mg/L)	TDS (mg/L)	Temperature (degrees C)	Remarks		
3/20/2012	0958	8.15	-1.08	73,100	33,300	52,200	30.1	Background Sampling		
3/29/2012	1128	8.23	-1.16	73,000	29,600	51,400	30.1			
4/6/2012	0858	8.30	-1.23	72,200	28,800	51,200	30.1			
4/13/2012	1128	8.25	-1.18	72,300	33,900	53,100	30.2			
4/20/2012	1038	8.20	-1.13	72,000	34,700	54,500	30.1			
4/27/2012	0958	7.95	-0.88	72,100	37,300	55,100	29.8			
5/4/2012	1009	7.22	-0.15	72,400	29,900	51,100	29.8			
5/11/2012	1229	7.65	-0.58	72,300	34,700	53,000	30.0			
5/18/2012	1109	7.43	-0.36	73,500	37,600	51,100	30.3			
5/25/2012	1239	7.33	-0.26	73,900	34,300	54,100	30.1			
6/1/2012	1259	7.45	-0.38	74,000	33,300	51,300	29.9			
6/8/2012	1237	7.65	-0.58	73,600	31,700	52,100	30.3			
6/15/2012	1226	7.67	-0.60	73,800	33,300	54,500	30.4			
6/22/2012	1219	7.37	-0.30	73,300	32,100	57,200	30.2			
6/29/2012	1144	7.50	-0.43	73,800	29,600	53,700	30.2			
7/6/2012	1309	7.60	-0.53	73,400	27,700	54,400	29.2			
7/13/2012	1334	7.80	-0.73	73,300	28,800	52,000	29.9			
7/19/2012	1244	7.40	-0.33	74,400	29,500	54,800	30.3			
7/26/2012	1248	7.73	-0.66	75,100	33,800	53,400	30.1			
ft. btoe: feet below top of casing										
TOC: Top of Casing										
ft. NAVD 88: North American Vertical Datum of 1988										
umhos/cm: micromhos per centimeter										
mg/L: milligrams per liter										
C: Celsius										
Top of Casing Elevation: 7.07 feet NAVD 88										

<div><div><div>MHC</div><div>ASBIS LLC</div></div><div>Florida Power & Light Company Turkey Point Units 6 & 7 Miami-Dade County, Florida Dual-Zone Monitor Well DZMW-1</div></div>								
DZMW-1 Pad Monitoring Well Water Quality Data Southwest Pad Monitoring Well (SW-DZMW PMW)								
Date	Time (hours)	Depth to Water (ft. btoc)	Water Elevation (ft. NAVD 88)	Specific Conductance (umhos/cm)	Chloride (mg/L)	TDS (mg/L)	Temperature (degrees C)	Remarks
3/20/2012	1137	8.34	-0.97	73,300	32,900	50,300	30.1	Background Sampling
3/29/2012	1229	8.38	-1.01	73,100	29,900	50,700	30.2	
4/6/2012	0954	8.50	-1.13	72,000	28,800	52,500	29.9	
4/13/2012	1227	8.52	-1.15	72,000	32,300	54,400	29.9	
4/20/2012	1139	8.45	-1.08	72,100	31,800	53,700	29.9	
4/27/2012	1101	8.25	-0.88	72,600	31,800	55,300	29.9	
5/4/2012	1108	7.60	-0.23	73,200	30,500	52,600	29.6	
5/11/2012	1331	7.95	-0.58	71,500	35,400	53,800	29.5	
5/18/2012	1208	7.82	-0.45	73,800	32,600	51,200	29.9	
5/25/2012	1343	7.68	-0.31	73,900	33,500	53,600	29.8	
6/1/2012	1151	7.71	-0.34	74,100	30,700	51,500	29.5	
6/8/2012	1336	7.97	-0.60	73,300	30,900	53,400	29.9	
6/15/2012	1131	7.95	-0.58	73,400	32,000	53,600	29.9	
6/22/2012	1318	7.68	-0.31	73,800	30,000	56,000	29.7	
6/29/2012	1248	7.89	-0.52	73,400	29,600	53,000	29.9	
7/6/2012	1408	7.90	-0.53	73,600	27,200	54,000	29.5	
7/13/2012	1228	8.10	-0.73	73,300	28,900	53,200	29.2	
7/19/2012	1317	7.67	-0.30	74,300	29,200	54,500	30.4	
7/26/2012	1108	8.00	-0.63	75,000	30,800	53,000	30.1	
ft. btoc: feet below top of casing								
TOC: Top of Casing								
ft. NAVD 88: North American Vertical Datum of 1988								
umhos/cm: micromhos per centimeter								
mg/L: milligrams per liter								
C: Celsius								
Top of Casing Elevation: 7.37 feet NAVD 88								



STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT,
REPAIR, MODIFY, OR ABANDON A WELL

- ☐ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
☐ DEP
☐ Delegated Authority (If Applicable)

PLEASE FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

The water well contractor is responsible for completing
this form and forwarding the permit application to the
appropriate delegated authority where applicable.

Permit No. 13-59-8020 thru 8027
Florida Unique ID _____
Permit Stipulations Required (See Attached) _____
62-524 Quad No. _____ Delineation No. _____
CUP/WUP Application No. _____
ABOVE THIS LINE - FOR OFFICIAL USE ONLY

1. Florida Power & Light PO Box 14000, Juno Beach, FL. 33408 561-691-2451
*Owner, Legal Name if Corporation *Address *City *State *ZIP *Telephone Number
2. 9700 SW 344 St. FPL Turkey Point Power Plant, Florida City
*Well Location - Address, Road Name or Number, City
3. 30-7033-001.0010
*Parcel ID No. (PIN) or Alternate Key (Circle One)
4. 4 58 S 40E Dade 239 3980785 Lot Block Unit
*Section or Land Grant *Township *Range *County Subdivision Check if 62-524: Yes No
5. Ed McCullers 11312 239-275-1029 craig.brugger@layne.com
*Water Well Contractor *License Number *Telephone Number E-mail Address
6. 5061 Luckett Rd. Ft. Myers FL 33905
*Water Well Contractor's Address City State ZIP
7. *Type of Work: Construction Repair Modification X Abandonment Monitoring Wells- Not needed-
*Reason for Repair, Modification, or Abandonment
8. *Number of Proposed Wells 8
9. *Specify Intended Use(s) of Well(s):
Domestic Landscape Irrigation Agricultural Irrigation Site Investigation
Bottled Water Supply Recreation Area Irrigation Livestock X Monitoring
Public Water Supply (Limited Use/DOH) Nursery Irrigation Test
Public Water Supply (Community or Non-Community/DEP) Commercial/Industrial Earth-Coupled Geothermal
Class I Injection Golf Course Irrigation HVAC Supply
HVAC Return
Class V Injection: Recharge Commercial/Industrial Disposal Aquifer Storage and Recovery Drainage
Remediation: Recovery Air Sparge Other (Describe)
Other (Describe) _____ (Note: Not all types of wells are permitted by a given permitting authority)
10. *Distance from Septic System if ≤ 200 ft. N/A 11. Facility Description Power Plant 12. Estimated Start Date 7/25/12
13. *Estimated Well Depth 30 ft. *Estimated Casing Depth 20 ft. *Primary Casing Diameter 2 in. Open Hole: From 0 To 0 ft.
14. Estimated Screen Interval: From 20 To 30 ft.
15. *Primary Casing Material: Black Steel Galvanized X PVC Stainless Steel
Not Cased Other: _____
16. Secondary Casing: Telescope Casing Liner Surface Casing Diameter _____ in.
17. Secondary Casing Material: Black Steel Galvanized PVC Stainless Steel Other
18. *Method of Construction, Repair, or Abandonment: Auger Cable Tool Jetted Rotary Sonic
Combination (Two or More Methods) Hand Driven (Well Point, Sand Point) Hydraulic Point (Direct Push)
Horizontal Drilling Plugged by Approved Method X Other (Describe) Tremmie Cement
19. Proposed Grouting Interval for the Primary, Secondary, and Additional Casing:
From 0 To 30 Seal Material (Bentonite X Neat Cement Other)
From _____ To _____ Seal Material (Bentonite Neat Cement Other)
From _____ To _____ Seal Material (Bentonite Neat Cement Other)
From _____ To _____ Seal Material (Bentonite Neat Cement Other)
20. Indicate total number of existing wells on site _____ List number of existing unused wells on site _____
21. *Is this well or any existing well or water withdrawal on the owner's contiguous property covered under a Consumptive Water Use Permit (CUP/WUP)
or CUP/WUP Application? Yes X No If yes, complete the following: CUP/WUP No. _____ District Well ID No. _____
22. Latitude N 25 25'02.90780" Longitude W 80 20'19.68271"
23. Data Obtained From: GPS Map X Survey Datum: NAD 27 X NAD 83 WGS 84
I hereby certify that I will comply with the applicable rules of Title 40, Florida Administrative Code, and that a water
use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well
construction. I further certify that all information provided in this application is accurate and that I will obtain
necessary approval from other federal, state, or local governments, if applicable. I agree to provide a well
completion report to the District within 30 days after completion of the construction, repair, modification, or
abandonment authorized by this permit, or the permit expiration, whichever occurs first.
I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my
responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well; or, I certify that I am
the agent for the owner, that the information provided is accurate, and that I have informed the owner of their
responsibilities as stated above. Owner consents to allowing personnel of this WMD or Delegated Authority access
to the well site during the construction, repair, modification, or abandonment authorized by this permit.

*Signature of Contractor 11312 *License No. 239 3980785 *Signature of Owner or Agent 7/20/12 *Date
Approval Granted By _____ Issue Date _____ Expiration Date _____ Hydrologist Approval _____
Fee Received \$ _____ Receipt No. X2012129480 Check No. _____
THIS PERMIT IS NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD OR DELEGATED AUTHORITY. THE
PERMIT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL CONSTRUCTION, REPAIR, MODIFICATION, OR ABANDONMENT ACTIVITIES.

Appendix M

Pilot Hole Water Quality Laboratory Reports



Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 1 of 4
Report Printed: 05/18/12
Submission # 1205000364
Order # 16813

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1105Ft
Collected: 05/09/12 18:00
Received: 05/11/12 16:20
Collected by: Sally Durall

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	1171		uS/cm	1.0	3.0	120.1	05/09 18:00	05/09 18:00	Client
Specific Conductance (grab)	1134		uS/cm	1.0	3.0	120.1	05/12 15:02	05/12 15:02	DGK
Chloride	111		mg/L	0.55	1.65	300.0	05/11 17:51	05/11 17:51	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/16 15:16	05/16 15:16	RPV
Nitrogen (Kjeldahl) as "N"	0.46		mg/L	0.070	0.210	351.2	05/15 10:00	05/15 13:24	MSG
Total Dissolved Solids (TDS)	744		mg/L	1.00	3.00	SM 2540C	05/15 15:00	05/16 15:32	MCZ

Unless indicated, soil results are reported based on actual (wet) weight basis.

Analytes not currently NELAC certified denoted by ~.
 Work performed by outside (subcontract) labs denoted by Cert.ID in Analyst Field.
 Results relate only to this sample.
 QC=Qualifier Codes as defined by DEP 62-160
 U=Analyzed for but not detected.
 Q=Sample held beyond accepted holding time.
 I=Value is between MDL and PQL.
 J=Estimated value.


 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

Florida-Spectrum Environmental Services, Inc.
 1460 W. McNab Road, Fort Lauderdale, FL 33309

Pembroke Laboratory
 528 Gooch Rd.
 Fort Meade, FL 33841

Big Lake Laboratory
 610 North Parrot Ave.
 Okeechobee, FL 34972

Spectrum Laboratories
 630 Indian St.
 Savannah, GA 31401

www.flenviro.com

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Report To:
Craig Brugger
Layne Christensen Co-FL
5061 Luckett Road
Fort Myers, FL 33905

Page 2 of 4
Report Printed: 05/18/12
Submission # 1205000364
Order # 16814

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1164Pt
Collected: 05/10/12 05:00
Received: 05/11/12 16:20
Collected by: Sally Durall

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	1247		uS/cm	1.0	3.0	120.1	05/10 05:00	05/10 05:00	Client
Specific Conductance (grab)	1233		uS/cm	1.0	3.0	120.1	05/12 15:02	05/12 15:02	DGK
Chloride	190		mg/L	0.55	1.65	300.0	05/11 17:51	05/11 17:51	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/16 15:16	05/16 15:16	RPV
Nitrogen (Kjeldahl) as "N"	1.1		mg/L	0.070	0.210	351.2	05/15 10:00	05/15 13:24	MSG
Total Dissolved Solids (TDS)	812		mg/L	1.00	3.00	SM 2540C	05/15 15:00	05/16 15:33	MCZ

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Report To:
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5061 Luckett Road
Fort Myers, FL 33905

Page 3 of 4
Report Printed: 05/18/12
Submission # 1205000364
Order # 16815

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1254Ft
Collected: 05/10/12 20:00
Received: 05/11/12 16:20
Collected by: Sally Durall

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	2308		uS/cm	1.0	3.0	120.1	05/10 20:00	05/10 20:00	Client
Specific Conductance (grab)	2400		uS/cm	1.0	3.0	120.1	05/12 15:03	05/12 15:03	DGK
Chloride	596		mg/L	1.10	3.30	300.0	05/11 17:51	05/11 17:51	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/16 15:16	05/16 15:16	RPV
Nitrogen (Kjeldahl) as "N"	0.49		mg/L	0.070	0.210	351.2	05/15 10:00	05/15 13:24	MSG
Total Dissolved Solids (TDS)	1450		mg/L	1.00	3.00	SM 2540C	05/15 15:00	05/16 15:33	MCZ

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J=Estimated value.


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Report To:
Craig Brugger
Layne Christensen Co-FL
5061 Luckett Road
Fort Myers, FL 33905

Page 4 of 4
Report Printed: 05/18/12
Submission # 1205000364
Order # 16816

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1344Ft
Collected: 05/11/12 06:15
Received: 05/11/12 16:20
Collected by: Sally Durali

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	2772		uS/cm	1.0	3.0	120.1	05/11 06:15	05/11 06:15	Client
Specific Conductance (grab)	2830		uS/cm	1.0	3.0	120.1	05/12 15:19	05/12 15:19	DGK
Chloride	754		mg/L	1.10	3.30	300.0	05/11 17:51	05/11 17:51	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/16 15:16	05/16 15:16	RPV
Nitrogen (Kjeldahl) as "N"	0.48		mg/L	0.070	0.210	351.2	05/15 10:00	05/15 13:24	MSG
Total Dissolved Solids (TDS)	1650		mg/L	1.00	3.00	SM 2540C	05/15 15:00	05/16 15:33	MCZ

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J=Estimated value.


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Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Luckett Road
 Fort Myers, FL 33905

Page 1 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17393

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1434 ft
Collected: 05/12/12 06:00
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	4125		uS/cm	1.0	3.0	120.1	05/12 06:00	05/12 06:00	Client
Specific Conductance (grab)	3690		uS/cm	1.0	3.0	120.1	05/18 14:22	05/18 14:22	DGK
Chloride	969		mg/L	2.20	6.60	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.29		mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	2080		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 13:58	MCZ

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5061 Lockett Road
Fort Myers, FL 33905

Page 2 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17394

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1524 ft
Collected: 05/12/12 14:30
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	4385		uS/cm	1.0	3.0	120.1	05/12 14:30	05/12 14:30	Client
Specific Conductance (grab)	3920		uS/cm	1.0	3.0	120.1	05/18 14:22	05/18 14:22	DGK
Chloride	1050		mg/L	2.20	6.60	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.60		mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	2210		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 13:59	MCZ

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U=Analyzed for but not detected.
Q=Sample held beyond accepted holding time.
I=Value is between MDL and PQL.
J=Estimated value.


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Report To:
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Layne Christensen Co-FL
5061 Lockett Road
Fort Myers, FL 33905

Page 3 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17395

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1614 ft
Collected: 05/13/12 07:30
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	4327		uS/cm	1.0	3.0	120.1	05/13 07:30	05/13 07:30	Client
Specific Conductance (grab)	4040		uS/cm	1.0	3.0	120.1	05/18 14:22	05/18 14:22	DGK
Chloride	1130		mg/L	2.20	6.60	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.20	I	mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	2260		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 13:59	MCZ

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U=Analyzed for but not detected.
Q=Sample held beyond accepted holding time.
I=Value is between MDL and PQL.
J=Estimated value.


Authorized CSM Signature (954) 978-6400
Florida-Spectrum Environmental Services, Inc.
Certification # E86006

Report To:
Craig Brugger
Layne Christensen Co-FL
5061 Luckett Road
Fort Myers, FL 33905

Page 4 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17396

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1704 ft
Collected: 05/13/12 23:15
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	7770		uS/cm	1.0	3.0	120.1	05/13 23:15	05/13 23:15	Client
Specific Conductance (grab)	7700		uS/cm	1.0	3.0	120.1	05/18 14:23	05/18 14:23	DGK
Chloride	2620		mg/L	5.50	16.50	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.38		mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	4460		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 13:59	MCZ

Unless indicated, soil results are reported based on actual (wet) weight basis.

Analytes not currently NELAC certified denoted by ~.
Work performed by outside (subcontract) labs denoted by Cert.ID in Analyst Field.
Results relate only to this sample.
QC=Qualifier Codes as defined by DEP 62-160
U=Analyzed for but not detected.
Q=Sample held beyond accepted holding time.
I=Value is between MDL and PQL.
J=Estimated value.


Authorized CSM Signature (954) 978-6400
Florida-Spectrum Environmental Services, Inc.
Certification # E86006

Report To:
Craig Brugger
Layne Christensen Co-FL
5061 Luckett Road
Fort Myers, FL 33905

Page 5 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17397

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1794 ft
Collected: 05/14/12 16:15
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	24560		uS/cm	1.0	3.0	120.1	05/14 16:15	05/14 16:15	Client
Specific Conductance (grab)	24000		uS/cm	1.0	3.0	120.1	05/18 14:23	05/18 14:23	DGK
Chloride	10300		mg/L	11.00	33.00	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.24		mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	15300		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 14:00	MCZ

Unless indicated, soil results are reported based on actual (wet) weight basis.

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Results relate only to this sample.
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U=Analyzed for but not detected.
Q=Sample held beyond accepted holding time.
I=Value is between MDL and PQL.
J=Estimated value.


Authorized CSM Signature (954) 978-6400
Florida-Spectrum Environmental Services, Inc.
Certification # E86006

Report To:
Craig Brugger
Layne Christensen Co-FL
5061 Lockett Road
Fort Myers, FL 33905

Page 6 of 6
Report Printed: 05/23/12
Submission # 1205000505
Order # 17398

Project: DZMW-1 PH Water Quality
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PH-1884 ft
Collected: 05/15/12 19:15
Received: 05/17/12 15:00
Collected by: Client

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	41640		uS/cm	1.0	3.0	120.1	05/15 19:15	05/15 19:15	Client
Specific Conductance (grab)	41600		uS/cm	1.0	3.0	120.1	05/18 14:24	05/18 14:24	DGK
Chloride	22300		mg/L	22.00	66.00	300.0	05/17 18:32	05/17 18:32	DGK
Nitrogen (Ammonia) as N	U	U	mg/L	0.01	0.03	350.1	05/18 16:30	05/18 16:30	RPV
Nitrogen (Kjeldahl) as "N"	0.34		mg/L	0.070	0.210	351.2	05/22 10:00	05/22 13:54	MSG
Total Dissolved Solids (TDS)	27800		mg/L	1.00	3.00	SM 2540C	05/18 10:30	05/21 14:00	MCZ

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Results relate only to this sample.
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U=Analyzed for but not detected.
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J=Estimated value.


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Florida-Spectrum Environmental Services, Inc.
Certification # E86006

DUE DATE Requested

Rush Surcharges apply

RUSH RESERVATION #

Address: 50601 LUCETT RD, FT. MYERS, FL 33903

Site	
Location:	TUCKER POINT, HAMESBEND, FL 33035
Fax:	
Email:	AL3BLU@AER@LAWRE
Phone:	904/441-1441
Person:	ALAN ERHARDT

Sample	11/15/04

Signature _____
Number of _____

Containers

Received
& NEIAC

#	Suffixes A-?			
	CON			
	TD			
	CL			
	TK			
	NH			

COND	PH	TEMP °C
✓	7.5	22.5

[illegible]

7

2	1	1		
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2	1	1	
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2	1	1	
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2	1	1		
---	---	---	--	--

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[illegible]

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--	--	--	--	--	--

Total				
-------	--	--	--	--

Signature		1 Relinquished by:	

Additional charge)		
1	Received by:	<i>[Signature]</i>

Relinquished by:	Araceli
2	

2	Arceho
2	Arceho

Unpreserved NaOH	2	Received by:
---------------------	---	--------------

44-NH4C	3	Relinquished by:
---------	---	------------------

3	Received by:
---	--------------

e		www.flenviro.com
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COC Page _____ of _____

Appendix N

**Packer Test Water Quality
Samples Summary and
Laboratory Reports**

**Florida Power & Light Company
Turkey Point Units 6 & 7
Dual-Zone Monitor Well DZMW-1
Packer Test Water Quality Data Summary Table**

Test #	Test Interval (ft. bpl)	Specific Conductance (umhos/cm)	Chloride (mg/L)	TDS (mg/L)	TKN (mg/L)	Ammonia (mg/L)	Temperature (Celsius)	pH (standard units)
DZMW-PT-1	1,860 - 1,905	45,560	16,300	28,500	0.21	0.19	26.9	7.34
DZMW-PT-2	1,288 - 1,317	6,080	1,440	3,320	1.57	0.03	25.5	7.84

ft. bpl = feet below pad level

gpm = gallons per minutes

umhos/cm - micromhos per centimeter

mg/L = milligrams per liter

TDS = total dissolved solids

TKN = total Kjeldahl nitrogen

U = analyzed for but not detected

* = Matrix spikes outside recovery limit



Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Luckett Road
 Fort Myers, FL 33905

Page 1 of 1
Report Printed: 05/25/12
Submission # 1205000601
Order # 17885

Project: FPL Turkey Point DZMW-1 PT-1
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW PT-1
Collected: 05/20/12 01:15
Received: 05/22/12 15:10
Collected by: Marty Clasen

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	45560		uS/cm	1.0	3.0	120.1	05/20 01:15	05/20 01:15	Client
Specific Conductance (grab)	44900		uS/cm	1.0	3.0	120.1	05/23 11:06	05/23 11:06	DGK
Chloride	16300		mg/L	22.00	66.00	300.0	05/22 18:30	05/22 18:30	DGK
Sulfate	1570		mg/L	21.40	64.20	300.0	05/22 18:30	05/22 18:30	DGK
Nitrogen (Ammonia) as N	0.19		mg/L	0.01	0.03	350.1	05/23 12:04	05/23 12:04	RPV
Nitrogen (Kjeldahl) as "N"	0.21		mg/L	0.070	0.210	351.2	05/24 10:00	05/24 18:03	RPV
Total Dissolved Solids (TDS)	28500		mg/L	1.00	3.00	SM 2540C	05/22 16:00	05/23 14:09	MCZ

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 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

Florida-Spectrum Environmental Services, Inc.
 1460 W. McNab Road, Fort Lauderdale, FL 33309

Pembroke Laboratory
 528 Gooch Rd.
 Fort Meade, FL 33841

Big Lake Laboratory
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SUBMISSION # 1205-601



Logged in LIMS by CSM assigned

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- ☐ 630 Indian Street Savannah, GA 31401
- ☐ 528 Gooch Road Fort Meade, FL 33841
- ☐ 610 Parrot Ave. N, Okeechobee, FL 34972

Tel: (954) 978-6400
Tel: (912) 238-5050
Tel: (863) 285-8145
Tel: (863) 763-3336

DUE DATE Requested
RUSH RESERVATION #
Mec 4901
Rush Surcharges apply

Original-Return w/report

Yellow-Lab File Copy

Pink - Sampler Copy

Report to: (company name) Layne Christensen Company

Report to Address: 5061 Luckett Rd, Ft. Myers FL 33905

Invoice to: (company name) Layne Christensen Co., Order #

Invoice to Address: 5061 Luckett Rd, Ft. Myers FL 33905

Project Name: FPL Turkey Point and/or Number DZMW-1 PT-1

Site Location: Turkey Point, Homestead, FL 33035

Contact: Brooks Allen
Phone: 339-275-1029
Fax: 339-275-1025

Location: Turkey Point, Homestead, FL 33035

Sampler Name: Marty Clasen

Sampler Signature: [Signature]

Email: c3brugene@laynechristensen.com

ORDER #

Lab Control Number

Date Sampled

Time Sampled

Matrix

Bottle & Pres. Combo Codes

Number of Containers Received & NELAC Letter Suffixes A-?

Analysis Required

Shaded Areas For Laboratory Use Only

Sample ID

Date Sampled

Time Sampled

Matrix

Bottle & Pres. Combo Codes

Number of Containers Received & NELAC Letter Suffixes A-?

Field Tests

1 17885

DZMW PT-1

5-20-12

6:15

GW

TF

2

26A 734

2

3

4

5

6

7

8

9

10

Special Comments: left message for Gary Re. The TAT (AGW)

Deliverables:

QA/QC Report Needed?

Yes No

(additional charge)

Sample Custody & Field Comments

Temp as received Y N C

Custody seals? Y N

FIELD TIME: Sampling hrs

Pick-Up hrs

Misc. Charges

Bottle Type

Additional Preservatives

A-After amber

B-Bacteria bag/bottle

C-500 ml

D-Plastic Amber Litter

E-Litter bottle

F-S2-2 oz soil jar

G-S4-4 oz soil jar / S8-8 oz soil jar

H-T-250 ml

I-V-40 ml vial

J-W-wide mouth

K-X-other

L-Additional Bottle Types

M-TED-Teatlar Air Bag

N-B-brown litter plastic

O-Additional Preservatives

P-Hex-Hex Cr Buffer

Q-ED-Edylene Diamine

R-A-ascorbic acid

S-C-HCL

T-Cu-CoSO4

U-DI-DI water

V-H-HNO3

W-M-MCAB

X-MeOH-Methanol

Y-Z-zinc acetate

Signature

Retinquished by:

Affiliation

Date/Time

Received by:

Received by:

Received by:

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COC Page

of



Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 1 of 1
Report Printed: 05/25/12
Submission # 1205000642
Order # 18071

Project: FPL Turkey Point DZMW-1 Packer
Site Location: Turkey Point, Homestead, FL
Matrix: Water

Sample I.D.: DZMW1-PT 2 (1288-1317)
Collected: 05/22/12 17:40
Received: 05/23/12 15:00
Collected by: Sally Durall

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Specific Conductance (Field)(grab)	6080		uS/cm	1.0	3.0	120.1	05/22 17:40	05/22 17:40	Client
Specific Conductance (grab)	5620		uS/cm	1.0	3.0	120.1	05/23 18:29	05/23 18:29	DGK
Chloride	1440		mg/L	5.50	16.50	300.0	05/23 20:02	05/23 20:02	RPV
Sulfate	583		mg/L	5.35	16.05	300.0	05/23 20:02	05/23 20:02	RPV
Nitrogen (Ammonia) as N	0.03		mg/L	0.01	0.03	350.1	05/24 11:20	05/24 11:20	RPV
Nitrogen (Kjeldahl) as "N"	1.57		mg/L	0.070	0.210	351.2	05/24 10:00	05/24 18:04	RPV
Total Dissolved Solids (TDS)	3320		mg/L	1.00	3.00	SM 2540C	05/24 15:43	05/24 15:43	MCZ

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[Signature]
 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

Florida-Spectrum Environmental Services, Inc.
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 528 Gooch Rd.
 Fort Meade, FL 33841

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SUBMISSION #
1205-1042



Logged in LIMS by **AB**
CSM assigned

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Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **LAURE CHRISTENSEN COMPANY**
(company name)

Invoice to: **LAURE CHRISTENSEN COMPANY**
(company name)

Project Name: **FDL TURNER POINT TEST**
and/or Number: **239-235-1029**

Project: **CRACK AUGER**
Contact: **CRACK AUGER**

Sampler Name: **SAUL DURAN**
(printed)

ORDER #
Lab Control Number

Shaded Areas For Laboratory Use Only

Sample ID

Date Sampled

Time Sampled

Matrix

Bottle & Pres.

Combo Codes

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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☐ 610 Parrot Ave. N, Okeechobee, FL 34972

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Tel: (912) 238-5050
Tel: (863) 285-8145
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Fax: (954) 978-2233
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DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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Fax: (954) 978-2233
Fax: (912) 234-4815
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Fax: (863) 763-1544

Yellow-Lab File Copy

Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
☐ 630 Indian Street Savannah, GA 31401
☐ 528 Gooch Road Fort Meade, FL 33841
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Tel: (863) 763-3336

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Fax: (912) 234-4815
Fax: (863) 285-7030
Fax: (863) 763-1544

Yellow-Lab File Copy

Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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Tel: (954) 978-6400
Tel: (912) 238-5050
Tel: (863) 285-8145
Tel: (863) 763-3336

Fax: (954) 978-2233
Fax: (912) 234-4815
Fax: (863) 285-7030
Fax: (863) 763-1544

Yellow-Lab File Copy

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DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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Tel: (863) 763-3336

Fax: (954) 978-2233
Fax: (912) 234-4815
Fax: (863) 285-7030
Fax: (863) 763-1544

Yellow-Lab File Copy

Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
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☐ 610 Parrot Ave. N, Okeechobee, FL 34972

Tel: (954) 978-6400
Tel: (912) 238-5050
Tel: (863) 285-8145
Tel: (863) 763-3336

Fax: (954) 978-2233
Fax: (912) 234-4815
Fax: (863) 285-7030
Fax: (863) 763-1544

Yellow-Lab File Copy

Pink - Sampler Copy

DUE DATE Requested
24 HOUR
RUSH RESERVATION #
MEC 4906
Rush Surcharges apply

Report to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Invoice to: **5061 LOCKETT RD, FT MYERS, FL 33905**
Address:

Site: **TURNER POINT, HONESTY, FL 33035**
Location:

Fac: **TURNER POINT, HONESTY, FL 33035**
Fax:

Sampler Signature: **Saul Duran**

Number of Containers Received & NELAC Letter Suffixes

Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

☐ 1460 W. McNab Road Ft. Land, FL 33309
☐ 630 Indian Street Savannah, GA 31401
☐ 528 Gooch Road Fort Meade, FL 33841
☐ 610 Parrot Ave. N, Okeechobee, FL 34972

Tel: (954) 978-6400
Tel: (912) 238-5050
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Fax:

Sampler Signature: **Saul Duran**

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Analysis Required

Field Tests

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Date/Time

Signature

Affiliation

Appendix O

**Dual-Zone Monitor Well
Monitoring Intervals
Recommendation (text
only)**



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110
Jupiter, Florida 33458
Phone: 561-891-0763
Fax: 561-623-5469

May 30, 2012

MHCDEP-12-210

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Dual-Zone Monitor Well Monitoring Intervals Recommendation**

Dear Mr. May:

The purpose of this letter is to provide the Florida Department of Environmental Protection (FDEP) with a recommendation for the monitoring intervals for dual-zone monitor well DZMW-1 at the Florida Power & Light Company (FPL) Turkey Point Units 6 & 7 exploratory well project. The information presented herein is provided in support of the upper and lower monitor zones recommendations and associated casing seat recommendations for DZMW-1. The interpreted data presented below is provided to justify a recommendation to set the 16-inch casing of DZMW-1 to a depth of 1,410 feet below pad level (bpl) and establish an upper monitor zone from 1,410 to 1,440 feet bpl. The interpreted data presented herein also supports a 6-5/8-inch diameter final casing setting depth recommendation of 1,860 feet bpl and the establishment of a lower monitoring zone from 1,860 to 1,905 feet bpl. These recommendations are provided for your review and Technical Advisory Committee (TAC) approval.

Background

Construction of dual zone monitor well DZMW-1 began on March 27, 2012. A 44-inch diameter pit casing and 34-inch diameter outer casing have been installed to depths of 38 and 255 feet below pad level (bpl), respectively. The 24-inch casing was installed through the Hawthorn Group to a depth of 1,102 feet bpl. The Contractor then drilled a 12 1/4-inch diameter pilot hole from 1,102 to 1,905 feet bpl using the reverse-air drilling method.

DZMW-1 Testing and Data Summary

Drill cutting samples were collected at 10-foot intervals during pilot hole drilling. Each cutting sample was described in detail to develop a lithologic log of DZMW-1. Pilot hole water samples were collected at no greater than 90-foot intervals during reverse-air drilling of the pilot hole. Pilot hole water samples were analyzed for specific conductance, chloride, total dissolved solids (TDS), ammonia, and total kjeldahl nitrogen (TKN). Deviation

surveys were performed on the pilot hole at 90-foot intervals from below the base of the 24-inch diameter casing to 1,700 feet bpl and at 60-foot intervals on the pilot hole from 1,760 to 1,880 feet bpl while drilling. Geophysical logs conducted on the pilot hole below the base of the 24-inch diameter casing include caliper, gamma ray, spontaneous potential, dual-induction, borehole compensated sonic, flowmeter, fluid specific conductance, and temperature. All of the geophysical logs were performed under static conditions. Flowmeter, fluid conductivity and temperature logs were performed under static and dynamic conditions. Geophysical log data were used to develop an estimate of the depth of the base of the Underground Source of Drinking Water (USDW). Packer testing was performed on the intervals from 1,288 to 1,317 feet bpl and 1,860 to 1,905 feet bpl. A water sample was collected at the end of each packer test and analyzed for specific conductance, chloride, TDS, sulfate, ammonia, and TKN.

Drill Cutting Samples

The drill cuttings from the pilot hole below the 24-inch casing consist primarily of limestone, dolomitic limestone and dolomite. Table 1 provides a summary of the drill cuttings description. In general, the interval from 1,102 feet (base of the 24-inch diameter casing) to the base of the pilot hole (1,905 feet bpl) can be divided into three intervals. A detailed lithologic log of the drill cuttings below the 24-inch diameter casing is provided in Attachment A. The drill cutting samples are typical of the Floridan Aquifer.

Table 1. Generalized Lithologic Description of Drill Cuttings

Interval (feet bpl)	Generalized Description
1,102 – 1,280	Well indurated, interbedded, fine grained limestone, dolomitic limestone and dolomite
1,280 – 1,680	Poorly to well indurated, fine grained limestone
1,680 – 1,905	Poorly to moderately well indurated, very fine grained dolomitic limestone in the upper portion of this interval and well indurated, fine grained dolomite with some limestone and dolomitic limestone at the base of the interval

Pilot Hole Water Quality Data

Pilot hole water samples were collected at not greater than 90-foot intervals during reverse-air drilling. Each sample underwent specific conductance, chloride, TDS, ammonia, and TKN analyses. The pilot hole specific conductance, chloride, and TDS data were evaluated to identify increases in salinity and to assist in the identification of the base of the USDW. Even though the pilot hole water quality samples represent water that is a combination of native water and added fresh water to facilitate the drilling process, the sample data can be used to assist in the identification of the base of the USDW. The drilling process for DZMW-1 used a closed circulation system in which drilling water was present in the pilot hole at all times. The fresh water was introduced to the closed circulation system at the beginning of pilot hole reverse-air drilling. This may result in lower chloride, specific conductance and TDS results than expected for native Floridan Aquifer groundwater. The addition of fresh water to start reverse-air drilling is a typical, and FDEP approved, process in the drilling of FDEP regulated deep injection wells and injection monitoring wells.

Table 2 provides a summary of the pilot hole water quality data. A copy of the water quality sample analytical report is provided in Attachment B. Figure 1 provides a graph of pilot hole water sample chloride, TDS, and specific conductance relative to sample depth. The pilot hole water quality was relatively fresh between the depths of 1,105 and 1,254 feet bpl due to the high percentage of fresh water added to the closed circulation system. A gradual trend of increasing chloride and TDS concentration and specific conductance is apparent from a depth of 1,254 feet bpl to 1,614 feet bpl. This trend is an indication of groundwater with relatively high chloride, TDS, and specific conductance mixing with closed circulation drilling fluids, however, the gradual nature of the increase suggest that the formation was not contributing much water to the closed circulation drilling fluid. A significant increase in chloride concentration, TDS concentration and specific conductance was observed below 1,614 feet bpl. This suggests that a productive interval containing relatively saline water is present below 1,614 feet bpl. The continued increase of TDS, chloride and specific conductance with depth indicates that saline water is present to the total depth drilled.

Table 2. Pilot Hole Water Quality Summary

Sample Date	Sample Depth (feet bpl)	Specific conductance (umhos/cm)	TDS (mg/L)	Chloride (mg/L)	Ammonia (mg/L)	TKN (mg/L)
5/9/2012	1,105	1,171	744	111	U	0.46
5/10/2012	1,164	1,247	812	190	U	1.1
5/1/02012	1,254	2,308	1,450	596	U	0.49
5/11/2012	1,344	2,772	1,650	754	U	0.48
5/12/2012	1,434	4,135	2,080	969	U	0.29
5/12/2012	1,524	4,385	2,210	1,050	U	0.60
5/13/2012	1,614	4,327	2,260	1,130	U	0.20
5/13/2012	1,704	7,770	4,460	2,620	U	0.38
5/14/2012	1,794	24,560	15,300	10,300	U	0.24
5/15/2012	1,884	41,640	27,800	22,300	U	0.34

Figure 2 provides a graph of ammonia and TKN data relative to depth. Review of the data indicates the pilot hole water samples have low concentrations of TKN typical of the Floridan Aquifer mixed with added fresh water to start reverse-air drilling. Ammonia was not detected in any of the pilot hole water samples.

In summary, the pilot hole water quality data indicates that salinity of pilot hole water increased with depth. A significant increase in salinity below a depth of 1,614 feet bpl indicate the presence of a relatively saline productive interval below this depth. Ammonia and TKN were present in concentrations typical of the Florida Aquifer.

Deviation Survey Data

Deviation surveys were performed to measure the plumbness of the hole at 90-foot intervals on the pilot hole from below the base of the 24-inch diameter casing to 1,700 feet bpl and at 60-foot intervals on the pilot hole from 1,760 to 1,880 feet bpl. The deviation survey data are summarized in Table 3, below.

Table 3. Deviation Survey Summary Table

Depth (feet bpl)	Inclination (degrees from vertical)
1,160	0.2
1,250	0.3
1,340	0.2
1,430	0.3
1,520	0.3
1,610	0.5
1,700	0.3
1,760	0.4
1,820	0.4
1,880	0.5

Review of the deviation survey data indicates that the drilled borehole is very near vertical in each measurement with the range of measurements from 0.2 to 0.5 degrees out of vertical.

Geophysical Logging Data

Geophysical logging of the interval from 1,102 to 1,905 feet bpl was conducted to provide geologic and hydrogeologic data for DZMW-1 site. Logs conducted include caliper, gamma ray, spontaneous potential, dual induction, borehole compensated sonic, flowmeter, fluid conductivity, and temperature. All logs were performed under static conditions. The flowmeter, fluid conductivity and temperature logs were also performed under dynamic conditions. Copies of the geophysical logs are provided in Attachment C.

The interval from 1,102 to 1,905 feet bpl can be divided into three intervals. The DZMW-1 geophysical logs correlate with the EW-1 geophysical logs for this portion of the borehole. In general, geologic features are approximately 10 feet deeper at DZMW-1 than at EW-1.

The interval from 1,102 to 1,310 feet bpl is characterized by a relatively small diameter borehole that ranges between 15 and 19 inches, moderately high gamma ray activity ranging from approximately 10 to 65 American Petroleum Institute (API) units, moderately high and variable resistivity, and a highly variable and moderately long acoustic travel time. Fluid conductivity and temperature suggests the presence of fluid producing zones at depths of approximately 1,215 feet bpl and 1,305 feet bpl. The flowmeter log, in combination with the fluid conductivity and temperature logs suggests that most of the water contribution from the formation is occurring at the very base of this interval (1,310 feet bpl) and below this

interval. These data are interpreted to indicate that the interval from 1,102 to 1,310 feet bpl has a varying lithology and porosity. The relatively small diameter borehole suggests that the rock formation making up this interval is generally well indurated. The moderately high resistivity as indicated by the dual induction log indicates this interval contains water with less than 10,000 mg/L TDS. A log-derived TDS curve was generated from the data and is included in Attachment C. The log-derived TDS curve also suggests this interval contains water with less than 10,000 mg/L TDS.

The interval from 1,310 to 1,780 feet bpl is characterized by a larger diameter borehole that ranges from approximately 14 to 30 inches, low to occasionally moderate gamma ray activity, a moderate resistivity that decreases to a low resistivity with depth, and a less variable and shorter sonic travel time when compared to the interval above. Review of the flowmeter, fluid conductivity and temperature logs suggests there are discrete productive zones between the depths of approximately 1,460, and 1,650 feet bpl. These data are interpreted to represent an interval that contains relatively soft material that is susceptible to washing out compared to the interval above. The relatively stable sonic travel time suggests the lithology of this interval is less variable than that of the interval above. The decreasing resistivity shown on the dual-induction log suggests increasing salinity with depth. The log-derived TDS curve indicates the base of the USDW is located within this interval at a depth as shallow as approximately 1,360 feet bpl. Packer testing performed during construction of EW-1 indicated the base of the USDW was located between the depths of 1,430 feet bpl and 1,505 feet bpl, which suggests the base of the USDW at DZMW-1 may be deeper than is indicated on the log-derived TDS curve. The accuracy of the log-derived TDS curve decreases as borehole diameter increases. Therefore, the large diameter of the borehole may have negatively impacted the accuracy of the log-derived TDS curve. Packer tests could not be performed in the borehole of DZMW-1 between the depths of approximately 1,320 feet bpl and 1,660 feet bpl because the hole diameter was too large. As a result, all available data from DZMW-1 and EW-1 including packer test results from EW-1 were used to establish the base of the USDW at the site and DZMW-1 completion.

The interval from 1,780 to 1,905 feet bpl is characterized by a small diameter borehole that ranges between 12.25 and 15 inches, moderately high gamma ray activity ranging from approximately 15 to 65 API units, moderately low and variable resistivity, and a variable and moderately short acoustic travel time. Fluid conductivity and temperature suggests the presence of a fluid producing zone at a depth of approximately 1,785 feet bpl. These data are interpreted to indicate the interval from 1,780 to 1,905 feet bpl consists of hard, well indurated dolomite with relatively low porosity. The small diameter borehole suggests the rocks making up this interval are well indurated. The moderately low resistivity as indicated by the dual induction log indicates this interval contains water with greater than 10,000 mg/L TDS. A log-derived TDS curve was generated from the data and is included in Attachment C. The log-derived TDS curve also suggests this interval contains water with greater than 10,000 mg/L TDS.

Packer Testing Data

Packer testing was conducted on the intervals from 1,860 to 1,905 feet bpl and 1,288 to 1,317 feet bpl to determine water quality and hydraulic characteristics of the tested intervals. Water samples were collected at the end of each packer test and analyzed for specific conductance, chloride, sulfate, TDS, ammonia, TKN, pH, and temperature. As stated

previously, the large diameter of the borehole between the depths of 1,320 feet bpl and 1,660 feet bpl did not allow packer testing within this interval. Sleeved packers were considered to allow testing within this interval, however, the sleeved packers have an outside diameter of 26-inches, that is larger than the inside diameter of the 24-inch diameter casing that was installed to a depth of 1,102 feet bpl. Two straddle packer tests were performed within this interval during construction of EW-1. These test intervals included 1,400 to 1,430 feet bpl and 1,505 to 1,535 feet bpl. Information from the packer tests performed on EW-1 within this interval are included in the tables below to augment the information obtained from the packer tests performed on DZMW-1.

Water level of the test interval was measured and recorded during packer testing. Table 4 provides a summary of packer test pumping rate and water level drawdown data for both packer tests performed on DZMW-1 and packer tests performed on EW-1 within the large diameter borehole interval of DZMW-1. Figures 3 through 6 provide an interpreted graph of water level drawdown data for each packer test.

Table 4. Straddle Packer Test Performance Data Summary

Test #	Test Interval (ft. bpl)	Pumping Rate (gpm)	Drawdown (feet)	Specific Capacity (gpm/foot)
DZMW-PT-1	1,860 – 1,905	33	82	0.40
DZMW-PT-2	1,288 – 1,317	80	10.6	7.53
EW-PT-1	1,505 – 1,535	76	31.3	2.43
EW-PT-2	1,400 – 1,430	77	40.6	1.90

The packer test water level data indicates that each of the packer test intervals are productive enough to serve as effective monitoring zones.

Water quality data for water samples collected at the end of each packer test are summarized in Table 5. A copy of the water quality analytical reports for both packer tests is provided in Attachment D.

Table 5. Straddle Packer Test Water Quality Data Summary

Test #	Test Interval (ft. bpl)	Specific Conductance (umhos/cm)	Chloride (mg/L)	TDS mg/L	TKN (mg/L)	Ammonia (mg/L)	Temperature (°Celsius)	pH (standard units)
1	1,860 – 1,905	45,560	16,300	28,500	0.21	0.19	26.9	7.34
2	1,288 – 1,317	6,080	1,440	3,320	1.57	0.03	25.5	7.84
EW-PT-1	1,505 – 1,535	22,420	7,990	13,890	0.22	0.18	25.8	7.55
EW-PT-2	1,400 – 1,430	9,850	3,230	5,780	0.13	0.11	24.4	7.55

Based on the packer tests water sample analytical data from EW-1, the base of the USDW is located between the depths of 1,400 and 1,535 feet bpl. This is deeper than is indicated on the DZMW-1 log-derived TDS curve that showed the base of the USDW at a depth of 1,360 feet bpl. The EW-1 packer tests water sample laboratory analyses results are considered to be the more accurate of the log-derived TDS estimates that have diminished accuracy in the large diameter borehole of DZMW-1.

Summary

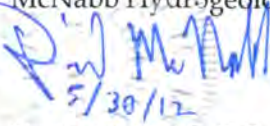
Packer testing performed on DZMW-1 indicate the base of the USDW is located between the depths of 1,288 and 1,905 feet bpl. Interpretation of DZMW-1 geophysical log data suggests the base of the USDW may be located as shallow as 1,360 feet bpl. However, the large diameter of a large portion of the DZMW-1 pilot hole prevented using packers to refine the exact depth of the USDW in DZMW-1. Therefore, packer test data from EW-1 were used to support the upper monitor zone recommendation. Packer testing performed on EW-1 indicates the base of the USDW is located between the depths of 1,400 and 1,535 feet bpl. Based on interpretation of the data collected and presented herein, it is the recommendation of McNabb Hydrogeologic Consulting, Inc. to set the 16-inch casing of DZMW-1 to a depth of 1,410 feet bpl and establish an upper monitor zone of 1,410 to 1,440 feet bpl. This interval corresponds to the interval tested by packer test EW-PT-2 and included the 10-feet deeper shift in geology between EW-1 and DZMW-1. The recommended interval will result in an upper monitoring zone that is located near the base of the USDW and within a productive zone that will effectively monitor for potential impacts to the USDW as required by FDEP for the operation of the deep injection well system.

The interpreted data presented herein also supports a 6-5/8-inch diameter final casing setting depth recommendation of 1,860 feet bpl and the establishment of a lower monitoring zone of 1,860 to 1,905 feet bpl. Packer testing results presented above demonstrate the proposed interval is located below the base of the USDW and in a productive interval. The resulting lower monitor zone will effectively serve as an early warning of impacts related to operation of the deep injection system prior to impacting the USDW. Analysis of the sonic log data indicate the formation at each of the recommended setting depths is mechanically sound and will serve to allow a good seal at the base of the casing string.

Should you have any questions regarding the recommendations, please contact me at (561) 891-0763 or Matthew Raffenberg (FPL) at (561) 691-2808.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



David McNabb, P.G.

Attachments: Figures

- A - DZMW-1 Lithologic Log
- B - Pilot Hole Water Quality Analytical Report
- C - DZMW-1 Geophysical Logs
- D - Packer Tests Water Quality Analytical Reports

Cc: George Heuler/FDEP-Tallahassee
Steve Anderson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS



McNabb Hydrogeologic Consulting, Inc.

601 Heritage Drive, Suite 110
Jupiter, Florida 33458
Phone: 561-891-0763
Fax: 561-623-5469

May 31, 2012

MHCDEP-12-224

Mr. Joseph May, P.G.
Florida Department of Environmental Protection
400 N. Congress Ave, Suite 200
West Palm Beach, FL 33401

**RE: Florida Power & Light Company Turkey Point Units 6 & 7 Exploratory Well
Project; Permit #0293962-001-UC
Dual-Zone Monitor Well Revised Upper Monitor Zone Recommendation**

Dear Mr. May:

The purpose of this letter is to provide the Florida Department of Environmental Protection (FDEP) with a revised recommendation for the upper monitor zone for dual-zone monitor well DZMW-1 at the Florida Power & Light Company (FPL) Turkey Point Units 6 & 7 exploratory well project.

The monitor zones recommendation submitted to the FDEP on May 30, 2012 included a recommendation to establish an upper monitor zone of 1,410 to 1,440 feet below pad level (bpl) for DZMW-1. Based on conversation with the FDEP, a revised upper monitor zone of approximately 1,450 to 1,500 feet bpl is hereby recommended for DZMW-1. The revised recommended depth interval of the upper monitor zone of DZMW-1 will result in a monitoring zone that is very close to or just below the base of the Underground Source of Drinking Water (USDW) based on packer test water quality data. Table 1 provides a summary of water quality from packer testing that was performed between 1,400 and 1,905 feet bpl.

Table 1. Straddle Packer Test Water Quality Data Summary

Test #	Test Interval (ft. bpl)	Specific Conductance (umhos/cm)	Chloride (mg/L)	TDS mg/L	TKN (mg/L)	Ammonia (mg/L)	Temperature (°Celsius)	pH (standard units)
1	1,860 – 1,905	45,560	16,300	28,500	0.21	0.19	26.9	7.34
2	1,288 – 1,317	6,080	1,440	3,320	1.57	0.03	25.5	7.84
EW-PT-1	1,505 – 1,535	22,420	7,990	13,890	0.22	0.18	25.8	7.55
EW-PT-2	1,400 – 1,430	9,850	3,230	5,780	0.13	0.11	24.4	7.55

Based on the packer test water quality data presented in Table 1, the total dissolved solids (TDS) concentration in the interval from 1,450 to 1,500 feet bpl is expected to be between 5,780 mg/L and 13,890 mg/L.

Consideration was given to performing a straddle packer test in the revised recommended upper monitor zone of 1,450 to 1,500 feet bpl, however, the diameter of the borehole within this interval is in excess of 20 inches. The large diameter borehole exceeds the diameter to which the inflatable packers can be expanded, making straddle packer testing in this interval impractical.

In summary, a revised upper monitor zone of approximately 1,450 to 1,500 feet bpl is recommended. If approved, the 16-inch diameter casing would be installed to a depth of approximately 1,450 feet bpl. The resulting upper monitor zone will monitor near or just below the base of the USDW.

Should you have any questions regarding the revised upper monitor zone recommendation, please contact me at (561) 891-0763 or Matthew Raffenberg (FPL) at (561) 691-2808.

Sincerely,

McNabb Hydrogeologic Consulting, Inc.



5/31/12

David McNabb, P.G.

Cc: George Heuler/FDEP-Tallahassee
Steve Anderson/SFWMD
Matthew Raffenberg/FPL
David Holtz/HCE

Joe Haberfeld/FDEP-Tallahassee
Ron Reese/USGS
David Paul/FGS

Appendix P
Upper and Lower Monitor
Intervals Background
Water Quality Laboratory
Report



Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 1 of 34
Report Printed: 08/07/12
Submission # 1207000535
Order # 24948

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Lower Zone
Collected: 07/19/12 11:10
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
SM5210B BOD	2.55	I	mg/L	2.0	6.0	SM5210B	07/20 12:30	07/25 12:30	ALL
Coliform, Total	U	U	CFU100ml	2.0	6.0	9222B	07/19 17:00	07/20 16:00	ALL
Coliform, Fecal	U	U	CFU100ml	2.0	6.0	9222D	07/19 17:00	07/20 16:00	ALL
Coliform-Total (E-Coli)	A		-----			9223B	07/19 17:00	07/20 17:00	ALL
Specific Conductance (Field)(grab)	45224		uS/cm	1.0	3.0	120.1	07/19 11:10	07/19 11:10	AP
pH (field)	7.17		units	0.1	0.3	150.1	07/19 11:10	07/19 11:10	AP
Temperature (Field)	26.51		Degree C	1	3	170.1	07/19 11:10	07/19 11:10	AP
531.1 Carbamate Pesticides: 62-550.310(4)(b)			Dilution Factor = 1						
Carbofuran	U	U	ug/L	0.54	1.62	531.1	07/26 17:20	07/26 17:20	RPV
Oxamyl (Vydate)	U	U	ug/L	0.55	1.65	531.1	07/26 17:20	07/26 17:20	RPV
Glyphosate	U	U	ug/L	3.55	10.65	547	07/24 14:10	07/24 14:10	RPV
Endothall	U	U	ug/L	2.72	8.16	548.1	07/23 14:00	07/23 14:53	CSG
549.2 Diquat: 62-550.310(4)(b)			Dilution Factor = 1						
Diquat	U	U	ug/L	0.4	1.2	549.2	07/24 13:00	07/24 14:20	RPV
Specific Conductance (grab)	43300		uS/cm	1.0	3.0	120.1	07/21 15:56	07/21 15:56	DGK
Chloride	16100		mg/L	22.00	66.00	300.0	07/20 17:02	07/20 17:02	DGK
Fluoride	U	U	mg/L	8.400	25.200	300.0	07/20 17:02	07/20 17:02	DGK
Nitrate (as N)	U	U	mg/L	7.600	22.800	300.0	07/20 17:02	07/20 17:02	DGK

Florida-Spectrum Environmental Services, Inc.
 1460 W. McNab Road, Fort Lauderdale, FL 33309

Pembroke Laboratory
 528 Gooch Rd.
 Fort Meade, FL 33841

Big Lake Laboratory
 610 North Parrot Ave.
 Okeechobee, FL 34972

Spectrum Laboratories
 630 Indian St.
 Savannah, GA 31401

www.flenviro.com

All NELAP certified analyses are performed in accordance with Chapter 64E-1 Florida Administrative Code, which has been determined to be equivalent to NELAC standards. Analyses certified by programs other than NELAP are designated with a "~".

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 2 of 34
Report Printed: 08/07/12
Submission # 1207000535
Order # 24948

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Lower Zone
Collected: 07/19/12 11:10
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Nitrite (as N)	U	U	mg/L	4.200	12.600	300.0	07/20 17:02	07/20 17:02	DGK
Ortho-Phosphate (as P)	U	U	mg/L	5.000	15.000	300.0	07/20 17:02	07/20 17:02	DGK
Sulfate	1490		mg/L	21.40	64.20	300.0	07/20 17:02	07/20 17:02	DGK
Nitrogen (Ammonia) as N	0.17		mg/L	0.01	0.03	350.1	07/20 17:01	07/20 17:01	RPV
Nitrogen (Kjeldahl) as "N"	U	U	mg/L	0.070	0.210	351.2	07/24 10:30	07/24 14:09	MSG
Nitrogen (Total Organic)	U	U	mg/L	0.045	0.135	351/350	07/27 15:20	07/27 15:20	RPV
Chemical Oxygen Demand	956		mg/L	35.14	105.42	410.4	07/23 16:00	07/23 16:00	CSG
Color/pH (Lab)	55/7.44		Pt-Co	1.0	3.0	SM2120B	07/20 09:15	07/20 09:15	CSG
Odor (Lab) at 40 Degrees C	4		TON	1.0	3.0	SM2150B	07/20 10:00	07/20 10:00	RPV
Total Dissolved Solids (TDS)	36400		mg/L	1.00	3.00	SM 2540C	07/24 14:00	07/25 12:51	MCZ
Cyanide, Total	0.0034	I	mg/L	0.002	0.006	SM4500CN-E	07/26 10:00	07/26 13:53	MSG
MBAS Surfactants	U	U	mg/L	0.060	0.180	SM5540C	07/20 10:00	07/20 10:00	DGK
Aluminum	0.045		mg/L	0.00070	0.00210	200.7	07/23	07/23 15:38	IMN
Copper	U	U	mg/L	0.0002	0.0006	200.7	07/23	07/23 15:38	IMN
Iron	1.211		mg/L	0.0008	0.0024	200.7	07/23	07/23 15:38	IMN
Manganese	0.126		mg/L	0.00009	0.00027	200.7	07/23	07/23 15:38	IMN
Silver	U	U	mg/L	0.0001	0.0003	200.7	07/23	07/23 15:38	IMN
Sodium	9579		mg/L	0.280	0.840	200.7	07/23	07/24 18:33	IMN

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 Order # 24948

Project: Injection Well Pri/Sec DW
 Site Location: Turkey Point, Homestead, FL
 Matrix: Drinking Water

Sample I.D.: Lower Zone
 Collected: 07/19/12 11:10
 Received: 07/19/12 16:50
 Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

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Zinc	0.026		mg/L	0.00050	0.00150	200.7	07/23	07/23 15:38	IMN
200.8 DW-10 Metals in Drinking Water 62-550.310			Dilution Factor = 10						
Antimony	U	U	mg/L	0.00100	0.00300	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Arsenic	0.0080		mg/L	0.0020	0.0060	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Barium	0.1265		mg/L	0.00060	0.00180	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Beryllium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Cadmium	U	U	mg/L	0.00070	0.00210	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Chromium	0.0027	I	mg/L	0.0010	0.0030	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Lead	0.0038		mg/L	0.00060	0.00180	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Nickel	U	U	mg/L	0.00290	0.00870	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Selenium	U	U	mg/L	0.00410	0.01230	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Thallium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/26 09:00	07/26 13:50	IMN
Mercury	U	U	mg/L	0.00007	0.00021	245.1	07/24	07/24 14:52	EN
504.1 EDB, DBCP: 62-550.310(4)(b)			Dilution Factor = 1						
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/2416:35	07/25 07:25	AC
Ethylene Dibromide (EDB)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/2416:35	07/25 07:25	AC
508 Pesticides & PCBs: 62-550.310(4)(b)			Dilution Factor = 1						
Arochlor 1016	U	U	ug/L	0.052	0.156	508	07/24 14:15	07/25 14:15	AC

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Arochlor 1221	U	U	ug/L	0.021	0.063	508	07/24 14:15	07/25 14:15	AC
Arochlor 1232	U	U	ug/L	0.025	0.075	508	07/24 14:15	07/25 14:15	AC
Arochlor 1242	U	U	ug/L	0.019	0.057	508	07/24 14:15	07/25 14:15	AC
Arochlor 1248	U	U	ug/L	0.034	0.102	508	07/24 14:15	07/25 14:15	AC
Arochlor 1254	U	U	ug/L	0.024	0.072	508	07/24 14:15	07/25 14:15	AC
Arochlor 1260	U	U	ug/L	0.027	0.081	508	07/24 14:15	07/25 14:15	AC
Chlordane	U	U	ug/L	0.013	0.039	508	07/24 14:15	07/25 14:15	AC
Endrin	U	U	ug/L	0.010	0.030	508	07/24 14:15	07/25 14:15	AC
g-BHC (Lindane)	U	U	ug/L	0.012	0.036	508	07/24 14:15	07/25 14:15	AC
Heptachlor	U	U	ug/L	0.012	0.036	508	07/24 14:15	07/25 14:15	AC
Heptachlor Epoxide	U	U	ug/L	0.011	0.033	508	07/24 14:15	07/25 14:15	AC
Hexachlorobenzene	U	U	ug/L	0.009	0.027	508	07/24 14:15	07/25 14:15	AC
Hexachlorocyclopentadiene	U	U	ug/L	0.010	0.030	508	07/24 14:15	07/25 14:15	AC
Methoxychlor	U	U	ug/L	0.013	0.039	508	07/24 14:15	07/25 14:15	AC
Toxaphene	U	U	ug/L	0.21	0.63	508	07/24 14:15	07/25 14:15	AC
515.3 Chlorophenoxy Herbicides 62-550 (Reg)				Dilution Factor = 1					
2,4,5-TP (silvex)	U	U	ug/L	0.04	0.12	515.3	07/20 12:39	07/21 12:39	AC
2,4-D	U	U	ug/L	0.08	0.24	515.3	07/20 12:39	07/21 12:39	AC

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Dalapon	U	U	ug/L	0.09	0.27	515.3	07/20 12:39	07/21 12:39	AC
Dinoseb	U	U	ug/L	0.11	0.33	515.3	07/20 12:39	07/21 12:39	AC
Pentachlorophenol	U	U	ug/L	0.02	0.06	515.3	07/20 12:39	07/21 12:39	AC
Picloram	U	U	ug/L	0.06	0.18	515.3	07/20 12:39	07/21 12:39	AC
525.2 Semivolatile Organics: 62-550.310(4)(b)			Dilution Factor = 1						
Alachlor	U	U	ug/L	0.038	0.114	525.2	07/21 12:12	07/21 21:29	AC
Atrazine	U	U	ug/L	0.012	0.036	525.2	07/21 12:12	07/21 21:29	AC
Benzo(a)pyrene	U	U	ug/L	0.007	0.021	525.2	07/21 12:12	07/21 21:29	AC
Di(2-Ethylhexyl)adipate	U	U	ug/L	0.009	0.027	525.2	07/21 12:12	07/21 21:29	AC
Di(2-Ethylhexyl)phthalate	U	U	ug/L	0.011	0.033	525.2	07/21 12:12	07/21 21:29	AC
Simazine	U	U	ug/L	0.017	0.051	525.2	07/21 12:12	07/21 21:29	AC
8081A Chlorinated Pesticides in Water			Dilution Factor = 1						
4,4-DDD	U	U	ug/L	0.002	0.006	EPA 8081A	07/24 14:31	07/26 14:31	AC
4,4-DDE	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:31	07/26 14:31	AC
4,4-DDT	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
a-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
Aldrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
b-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC

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Chlordane	U	U	ug/L	0.020	0.060	EPA 8081A	07/24 14:31	07/26 14:31	AC
d-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
Dieldrin	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:31	07/26 14:31	AC
Endosulfan I	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:31	07/26 14:31	AC
Endosulfan II	U	U	ug/L	0.006	0.018	EPA 8081A	07/24 14:31	07/26 14:31	AC
Endosulfan Sulfate	U	U	ug/L	0.003	0.009	EPA 8081A	07/24 14:31	07/26 14:31	AC
Endrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
Endrin Aldehyde	U	U	ug/L	0.003	0.009	EPA 8081A	07/24 14:31	07/26 14:31	AC
g-BHC (lindane)	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
Heptachlor	U	U	ug/L	0.006	0.018	EPA 8081A	07/24 14:31	07/26 14:31	AC
Heptachlor Epoxide	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:31	07/26 14:31	AC
Methoxychlor	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:31	07/26 14:31	AC
Toxaphene	U	U	ug/L	0.08	0.24	EPA 8081A	07/24 14:31	07/26 14:31	AC
8270D Semivolatile Organics in Water by GC/MS						Dilution Factor = 1			
1,2,3-Trichlorobenzene	U	U	ug/L	2.00	6.00	3510/8270D	07/20 08:00	07/20 23:39	MD
1,2,4-Trichlorobenzene	U	U	ug/L	0.027	0.081	3510/8270D	07/20 08:00	07/20 23:39	MD
1,2-Dichlorobenzene	U	U	ug/L	0.017	0.051	3510/8270D	07/20 08:00	07/20 23:39	MD
1,3-Dichlorobenzene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/20 23:39	MD

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1,4-Dichlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/20 23:39	MD
1-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/20 23:39	MD
2,3,4,6-Tetrachlorophenol	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/20 23:39	MD
2,3,5,6-Tetrachlorophenol	U	U	ug/L	0.53	1.59	3510/8270D	07/20 08:00	07/20 23:39	MD
2,3,6-Trichlorophenol	U	U	ug/L	1.2	3.6	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4,5-Trichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4,6-Trichlorophenol	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4-Dichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4-Dimethylphenol	U	U	ug/L	0.042	0.126	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4-Dinitrophenol	U	U	ug/L	0.2	0.6	3510/8270D	07/20 08:00	07/20 23:39	MD
2,4-Dinitrotoluene	U	U	ug/L	0.022	0.066	3510/8270D	07/20 08:00	07/20 23:39	MD
2,6-Dichlorophenol	U	U	ug/L	0.039	0.117	3510/8270D	07/20 08:00	07/20 23:39	MD
2,6-Dinitrotoluene	U	U	ug/L	0.025	0.075	3510/8270D	07/20 08:00	07/20 23:39	MD
2-Chloronaphthalene	U	U	ug/L	0.035	0.105	3510/8270D	07/20 08:00	07/20 23:39	MD
2-Chlorophenol	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/20 23:39	MD
2-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/20 23:39	MD
2-Methylphenol (o-cresol)	U	U	ug/L	0.039	0.117	3510/8270D	07/20 08:00	07/20 23:39	MD
2-Nitroaniline	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/20 23:39	MD

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2-Nitrophenol	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/20 23:39	MD
3,3-Dichlorobenzidine	U	U	ug/L	0.31	0.93	3510/8270D	07/20 08:00	07/20 23:39	MD
3-MethylPhenol (m-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/20 23:39	MD
3-Nitroaniline	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/20 23:39	MD
4,4'-DDD ~	U	U	ug/L	0.126	0.378	3510/8270D	07/20 08:00	07/20 23:39	MD
4,4'-DDE ~	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/20 23:39	MD
4,4'-DDT ~	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/20 23:39	MD
4,6-Dinitro-2-Methylphenol	U	U	ug/L	0.27	0.81	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Bromophenyl Phenyl Ether	U	U	ug/L	0.023	0.069	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Chloro-3-Methylphenol	U	U	ug/L	0.022	0.066	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Chloroaniline	U	U	ug/L	0.019	0.057	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Chlorophenyl Phenyl Ether	U	U	ug/L	0.58	1.74	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Methylphenol (p-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Nitroaniline	U	U	ug/L	0.089	0.267	3510/8270D	07/20 08:00	07/20 23:39	MD
4-Nitrophenol	U	U	ug/L	0.085	0.255	3510/8270D	07/20 08:00	07/20 23:39	MD
Acenaphthene	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/20 23:39	MD
Acenaphthylene	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/20 23:39	MD
Aldrin ~	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/20 23:39	MD

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alpha-BHC ~	U	U	ug/L	0.102	0.306	3510/8270D	07/20 08:00	07/20 23:39	MD
Aniline	U	U	ug/L	0.041	0.123	3510/8270D	07/20 08:00	07/20 23:39	MD
Anthracene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/20 23:39	MD
Azobenzene (1,2-Diphenylhydrazine)	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzidine	U	U	ug/L	0.26	0.78	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzo(A)Anthracene	U	U	ug/L	0.037	0.111	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzo(A)Pyrene	U	U	ug/L	0.021	0.063	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzo(B)Fluoranthene	U	U	ug/L	0.029	0.087	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzo(G,H,I)Perylene	U	U	ug/L	0.059	0.177	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzo(K)Fluoranthene	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzoic Acid	U	U	ug/L	1.16	3.48	3510/8270D	07/20 08:00	07/20 23:39	MD
Benzyl Alcohol	U	U	ug/L	0.083	0.249	3510/8270D	07/20 08:00	07/20 23:39	MD
beta-BHC ~	U	U	ug/L	0.051	0.153	3510/8270D	07/20 08:00	07/20 23:39	MD
Bis (2 Ethylhexyl) Phthalate	U	U	ug/L	0.052	0.156	3510/8270D	07/20 08:00	07/20 23:39	MD
Bis (2-Chloroethoxy)methane	U	U	ug/L	0.047	0.141	3510/8270D	07/20 08:00	07/20 23:39	MD
Bis (2-Chloroethyl) Ether	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/20 23:39	MD
Bis (2-Chloroisopropyl) Ether	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/20 23:39	MD
Bis-2-ethylhexyl Adipate	U	U	ug/L	0.36	1.08	3510/8270D	07/20 08:00	07/20 23:39	MD

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LABORATORY ANALYSIS REPORT

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Butyl Benzyl Phthalate	U	U	ug/L	0.045	0.135	3510/8270D	07/20 08:00	07/20 23:39	MD
Carbazole	U	U	ug/L	0.45	1.35	3510/8270D	07/20 08:00	07/20 23:39	MD
Chlordane (Screen) ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
Chrysene	U	U	ug/L	0.032	0.096	3510/8270D	07/20 08:00	07/20 23:39	MD
delta-BHC ~	U	U	ug/L	0.032	0.096	3510/8270D	07/20 08:00	07/20 23:39	MD
Di-N-Butyl Phthalate	U	U	ug/L	0.090	0.270	3510/8270D	07/20 08:00	07/20 23:39	MD
Di-N-Octyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/20 23:39	MD
Dibenzo(A,H.)Anthracene	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/20 23:39	MD
Dibenzofuran	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/20 23:39	MD
Dieldrin ~	U	U	ug/L	0.054	0.162	3510/8270D	07/20 08:00	07/20 23:39	MD
Diethyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/20 23:39	MD
Dimethyl Phthalate	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/20 23:39	MD
Dioxin (screen)	U	U	ug/L	0.03	0.09	3510/8270D	07/20 08:00	07/20 23:39	MD
Endosulfan I ~	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/20 23:39	MD
Endosulfan II ~	U	U	ug/L	0.109	0.327	3510/8270D	07/20 08:00	07/20 23:39	MD
Endosulfan Sulfate ~	U	U	ug/L	0.067	0.201	3510/8270D	07/20 08:00	07/20 23:39	MD
Endrin Aldehyde ~	U	U	ug/L	0.085	0.255	3510/8270D	07/20 08:00	07/20 23:39	MD
Endrin ~	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/20 23:39	MD

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 5061 Lockett Road
 Fort Myers, FL 33905

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Submission # 1207000535
Order # 24948

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Lower Zone
Collected: 07/19/12 11:10
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Fluoranthene	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/20 23:39	MD
Fluorene	U	U	ug/L	0.035	0.105	3510/8270D	07/20 08:00	07/20 23:39	MD
gamma-BHC (Lindane) ~	U	U	ug/L	0.040	0.120	3510/8270D	07/20 08:00	07/20 23:39	MD
Heptachlor Epoxide ~	U	U	ug/L	0.088	0.264	3510/8270D	07/20 08:00	07/20 23:39	MD
Heptachlor ~	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/20 23:39	MD
Hexachlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/20 23:39	MD
Hexachlorobutadiene	U	U	ug/L	0.040	0.120	3510/8270D	07/20 08:00	07/20 23:39	MD
Hexachlorocyclopentadiene	U	U	ug/L	0.012	0.036	3510/8270D	07/20 08:00	07/20 23:39	MD
Hexachloroethane	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/20 23:39	MD
Indeno(1,2,3-CD)Pyrene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/20 23:39	MD
Isophorone	U	U	ug/L	0.059	0.177	3510/8270D	07/20 08:00	07/20 23:39	MD
Methoxychlor ~	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/20 23:39	MD
N-Nitrosodi-N-Propylamine	U	U	ug/L	0.041	0.123	3510/8270D	07/20 08:00	07/20 23:39	MD
N-Nitrosodimethylamine	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/20 23:39	MD
N-Nitrosodiphenylamine	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/20 23:39	MD
Naphthalene	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/20 23:39	MD
Nitrobenzene	U	U	ug/L	0.047	0.141	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1016 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD

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LABORATORY ANALYSIS REPORT

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PCB-1221 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1232 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1242 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1248 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1254 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
PCB-1260 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/20 23:39	MD
Pentachlorophenol	U	U	ug/L	0.180	0.540	3510/8270D	07/20 08:00	07/20 23:39	MD
Phenanthrene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/20 23:39	MD
Phenol	U	U	ug/L	0.042	0.126	3510/8270D	07/20 08:00	07/20 23:39	MD
Pyrene	U	U	ug/L	0.034	0.102	3510/8270D	07/20 08:00	07/20 23:39	MD
Pyridine	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/20 23:39	MD
Toxaphene ~	U	U	ug/L	0.40	1.20	3510/8270D	07/20 08:00	07/20 23:39	MD
524.2 Volatile Organics: 62-550.310(4)(a)				Dilution Factor = 1					
1,1,1-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/20 15:33	07/20 15:33	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/20 15:33	07/20 15:33	MAZ
1,1-Dichloroethylene	U	U	ug/L	0.11	0.33	524.2	07/20 15:33	07/20 15:33	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.18	0.54	524.2	07/20 15:33	07/20 15:33	MAZ
1,2-Dichlorobenzene (ortho)	U	U	ug/L	0.08	0.24	524.2	07/20 15:33	07/20 15:33	MAZ

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LABORATORY ANALYSIS REPORT

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1,2-Dichloroethane	U	U	ug/L	0.06	0.18	524.2	07/20 15:33	07/20 15:33	MAZ
1,2-Dichloropropane	U	U	ug/L	0.06	0.18	524.2	07/20 15:33	07/20 15:33	MAZ
1,4-Dichlorobenzene (para)	U	U	ug/L	0.02	0.06	524.2	07/20 15:33	07/20 15:33	MAZ
Benzene	U	U	ug/L	0.06	0.18	524.2	07/20 15:33	07/20 15:33	MAZ
Carbon Tetrachloride	U	U	ug/L	0.07	0.21	524.2	07/20 15:33	07/20 15:33	MAZ
Chlorobenzene	U	U	ug/L	0.08	0.24	524.2	07/20 15:33	07/20 15:33	MAZ
Cis-1,2-Dichloroethylene	U	U	ug/L	0.07	0.21	524.2	07/20 15:33	07/20 15:33	MAZ
Dichloromethane (Methylene Chloride)	U	U	ug/L	0.38	1.14	524.2	07/20 15:33	07/20 15:33	MAZ
Ethylbenzene	U	U	ug/L	0.05	0.15	524.2	07/20 15:33	07/20 15:33	MAZ
Styrene	U	U	ug/L	0.03	0.09	524.2	07/20 15:33	07/20 15:33	MAZ
Tetrachloroethylene	U	U	ug/L	0.09	0.27	524.2	07/20 15:33	07/20 15:33	MAZ
Toluene	U	U	ug/L	0.05	0.15	524.2	07/20 15:33	07/20 15:33	MAZ
Trans-1,2-Dichloroethylene	U	U	ug/L	0.09	0.27	524.2	07/20 15:33	07/20 15:33	MAZ
Trichloroethylene	U	U	ug/L	0.15	0.45	524.2	07/20 15:33	07/20 15:33	MAZ
Vinyl Chloride	U	U	ug/L	0.10	0.30	524.2	07/20 15:33	07/20 15:33	MAZ
Xylenes (Total)	U	U	ug/L	0.07	0.21	524.2	07/20 15:33	07/20 15:33	MAZ
8260B Volatile Organics in Water by GC/MS						Dilution Factor = 1			
1,1,1,2-Tetrachloroethane	U	U	ug/L	0.15	0.45	5030/8260B	07/20 19:58	07/20 19:58	MAZ

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1,1,1-Trichloroethane	U	U	ug/L	0.67	2.01	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,1,2,2-Tetrachloroethane	U	U	ug/L	0.14	0.42	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,1-Dichloroethane	U	U	ug/L	0.19	0.57	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,1-Dichloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,1-Dichloropropene	U	U	ug/L	0.65	1.95	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2,3-Trichlorobenzene	U	U	ug/L	0.28	0.84	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2,3-Trichloropropane	U	U	ug/L	0.22	0.66	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.23	0.69	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2,4-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.17	0.51	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2-Dibromoethane (EDB)	U	U	ug/L	0.25	0.75	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2-Dichlorobenzene	U	U	ug/L	0.30	0.90	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2-Dichloroethane	U	U	ug/L	0.31	0.93	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,2-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,3,5-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,3-Dichlorobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 19:58	07/20 19:58	MAZ
1,3-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 19:58	07/20 19:58	MAZ

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LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
1,4-Dichlorobenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/20 19:58	07/20 19:58	MAZ
2,2-Dichloropropane	U	U	ug/L	0.76	2.28	5030/8260B	07/20 19:58	07/20 19:58	MAZ
2-Chloroethylvinyl Ether	U	U	ug/L	0.76	2.28	5030/8260B	07/20 19:58	07/20 19:58	MAZ
2-Chlorotoluene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 19:58	07/20 19:58	MAZ
4-Chlorotoluene	U	U	ug/L	0.33	0.99	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Acetone	U	U	ug/L	1.42	4.26	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Acrolein	U	U	ug/L	6.99	20.97	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Acrylonitrile	U	U	ug/L	0.52	1.56	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Benzene	U	U	ug/L	0.14	0.42	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Bromobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Bromochloromethane	U	U	ug/L	0.21	0.63	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Bromodichloromethane	U	U	ug/L	0.52	1.56	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Bromoform	U	U	ug/L	0.16	0.48	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Bromomethane	U	U	ug/L	0.60	1.80	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Carbon Tetrachloride	U	U	ug/L	0.81	2.43	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Chlorobenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Chloroethane	U	U	ug/L	0.47	1.41	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Chloroform	U	U	ug/L	0.27	0.81	5030/8260B	07/20 19:58	07/20 19:58	MAZ

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LABORATORY ANALYSIS REPORT

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Chloromethane	U	U	ug/L	0.88	2.64	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Cis-1,2-Dichloroethene	U	U	ug/L	0.17	0.51	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Cis-1,3-Dichloropropene	U	U	ug/L	0.41	1.23	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Dibromochloromethane	U	U	ug/L	0.30	0.90	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Dibromomethane	U	U	ug/L	0.37	1.11	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Dichlorodifluoromethane	U	U	ug/L	1.06	3.18	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Ethylbenzene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Hexachlorobutadiene	U	U	ug/L	0.47	1.41	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Isopropylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Methyl Ethyl Ketone	U	U	ug/L	0.56	1.68	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Methyl-Tert-Butyl Ether	U	U	ug/L	0.55	1.65	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Methylene Chloride	U	U	ug/L	0.99	2.97	5030/8260B	07/20 19:58	07/20 19:58	MAZ
n-Butylbenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 19:58	07/20 19:58	MAZ
n-PropylBenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Naphthalene	U	U	ug/L	0.24	0.72	5030/8260B	07/20 19:58	07/20 19:58	MAZ
P-Isopropyltoluene	U	U	ug/L	0.41	1.23	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Sec-Butylbenzene	U	U	ug/L	0.45	1.35	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Styrene	U	U	ug/L	0.31	0.93	5030/8260B	07/20 19:58	07/20 19:58	MAZ

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LABORATORY ANALYSIS REPORT

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Tert-Butylbenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Tetrachloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Toluene	U	U	ug/L	0.31	0.93	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Trans-1,2-Dichloroethene	U	U	ug/L	0.21	0.63	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Trans-1,3-Dichloropropene	U	U	ug/L	0.28	0.84	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Trichloroethene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Trichlorofluoromethane	U	U	ug/L	0.48	1.44	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Vinyl Chloride	U	U	ug/L	0.79	2.37	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Xylene, m & p	U	U	ug/L	0.80	2.40	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Xylene, o	U	U	ug/L	0.32	0.96	5030/8260B	07/20 19:58	07/20 19:58	MAZ
Gross Alpha	5.9 ± 2.3		pCi/L	1.3	3.9	EPA 900.1	08/01 08:44	08/02 08:24	E83033
Radium-226	4.9 ± 0.6		pCi/L	0.2	0.6	EPA 903.1	07/26 08:45	08/02 14:16	E83033
Radium-228	0.8U ± 0.5		pCi/L	0.8	2.4	EPA Ra-05	07/26 08:45	08/01 13:53	E83033

Unless indicated, soil results are reported based on actual (wet) weight basis.

Analytes not currently NELAC certified denoted by ~.
 Work performed by outside (subcontract) labs denoted by Cert.ID in Analyst Field.
 Results relate only to this sample.
 QC=Qualifier Codes as defined by DEP 62-160
 U=Analyzed for but not detected.
 Q=Sample held beyond accepted holding time.
 I=Value is between MDL and PQL.
 J=Estimated value.


 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

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Report Printed: 08/07/12
Submission # 1207000535
Order # 24949

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/19/12 11:30
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
SM5210B BOD	4.74	I	mg/L	2.0	6.0	SM5210B	07/20 12:30	07/25 12:30	ALL
Coliform, Total	U	U	CFU100ml	2.0	6.0	9222B	07/19 17:00	07/20 16:00	ALL
Coliform, Fecal	U	U	CFU100ml	2.0	6.0	9222D	07/19 17:00	07/20 16:00	ALL
Coliform-Total (E-Coli)	A		-----			9223B	07/19 17:00	07/20 17:00	ALL
Specific Conductance (Field)(grab)	12383		uS/cm	1.0	3.0	120.1	07/19 11:30	07/19 11:30	AP
pH (field)	7.48		units	0.1	0.3	150.1	07/19 11:30	07/19 11:30	AP
Temperature (Field)	27.32		Degree C	1	3	170.1	07/19 11:30	07/19 11:30	AP
531.1 Carbamate Pesticides: 62-550.310(4)(b)			Dilution Factor = 1						
Carbofuran	U	U	ug/L	0.54	1.62	531.1	07/26 17:41	07/26 17:41	RPV
Oxamyl (Vydate)	U	U	ug/L	0.55	1.65	531.1	07/26 17:41	07/26 17:41	RPV
Glyphosate	U	U	ug/L	3.55	10.65	547	07/24 14:28	07/24 14:28	RPV
Endothall	U	U	ug/L	2.72	8.16	548.1	07/23 14:00	07/23 14:55	CSG
549.2 Diquat: 62-550.310(4)(b)			Dilution Factor = 1						
Diquat	U	U	ug/L	0.4	1.2	549.2	07/24 13:00	07/24 14:20	RPV
Specific Conductance (grab)	11700		uS/cm	1.0	3.0	120.1	07/21 15:56	07/21 15:56	DGK
Chloride	3910		mg/L	5.50	16.50	300.0	07/20 17:02	07/20 17:02	DGK
Fluoride	U	U	mg/L	2.100	6.300	300.0	07/20 17:02	07/20 17:02	DGK
Nitrate (as N)	U	U	mg/L	1.900	5.700	300.0	07/20 17:02	07/20 17:02	DGK

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Nitrite (as N)	U	U	mg/L	1.050	3.150	300.0	07/20 17:02	07/20 17:02	DGK
Ortho-Phosphate (as P)	U	U	mg/L	1.250	3.750	300.0	07/20 17:02	07/20 17:02	DGK
Sulfate	441		mg/L	5.35	16.05	300.0	07/20 17:02	07/20 17:02	DGK
Nitrogen (Ammonia) as N	0.052		mg/L	0.01	0.03	350.1	07/20 17:01	07/20 17:01	RPV
Nitrogen (Kjeldahl) as "N"	0.20	I	mg/L	0.070	0.210	351.2	07/24 10:30	07/24 14:97	MSG
Nitrogen (Total Organic)	0.15		mg/L	0.045	0.135	351/350	07/27 15:19	07/27 15:19	RPV
Chemical Oxygen Demand	94	I	mg/L	35.14	105.42	410.4	07/23 16:01	07/23 16:01	CSG
Color/pH (Lab)	U	U	Pt-Co	1.0	3.0	SM2120B	07/20 09:15	07/20 09:15	CSG
Odor (Lab) at 40 Degrees C	2	I	TON	1.0	3.0	SM2150B	07/20 10:00	07/20 10:00	RPV
Total Dissolved Solids (TDS)	7000		mg/L	1.00	3.00	SM 2540C	07/24 14:00	07/25 12:52	MCZ
Cyanide, Total	0.0021	I	mg/L	0.002	0.006	SM4500CN-E	07/26 10:00	07/26 13:53	MSG
MBAS Surfactants	U	U	mg/L	0.060	0.180	SM5540C	07/20 10:00	07/20 10:00	DGK
Aluminum	0.040		mg/L	0.00070	0.00210	200.7	07/23	07/23 15:42	IMN
Copper	U	U	mg/L	0.0002	0.0006	200.7	07/23	07/23 15:42	IMN
Iron	0.341		mg/L	0.0008	0.0024	200.7	07/23	07/23 15:42	IMN
Manganese	0.010		mg/L	0.00009	0.00027	200.7	07/23	07/23 15:42	IMN
Silver	U	U	mg/L	0.0001	0.0003	200.7	07/23	07/23 15:42	IMN
Sodium	2030		mg/L	0.140	0.420	200.7	07/23	07/24 18:37	IMN

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Zinc	0.008		mg/L	0.00050	0.00150	200.7	07/23	07/23 15:42	IMN
200.8 DW-10 Metals in Drinking Water 62-550.310			Dilution Factor = 10						
Antimony	U	U	mg/L	0.00100	0.00300	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Arsenic	0.0031	I	mg/L	0.0020	0.0060	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Barium	0.1039		mg/L	0.00060	0.00180	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Beryllium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Cadmium	U	U	mg/L	0.00070	0.00210	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Chromium	0.0011	I	mg/L	0.0010	0.0030	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Lead	U	U	mg/L	0.00060	0.00180	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Nickel	U	U	mg/L	0.00290	0.00870	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Selenium	U	U	mg/L	0.00410	0.01230	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Thallium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/26 09:00	07/26 13:56	IMN
Mercury	U	U	mg/L	0.00007	0.00021	245.1	07/24	07/24 15:02	EN
504.1 EDB, DBCP: 62-550.310(4)(b)			Dilution Factor = 1						
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/2416:36	07/25 07:47	AC
Ethylene Dibromide (EDB)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/2416:36	07/25 07:47	AC
508 Pesticides & PCBs: 62-550.310(4)(b)			Dilution Factor = 1						
Arochlor 1016	U	U	ug/L	0.052	0.156	508	07/24 14:15	07/25 14:15	AC

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Arochlor 1221	U	U	ug/L	0.021	0.063	508	07/24 14:15	07/25 14:15	AC
Arochlor 1232	U	U	ug/L	0.025	0.075	508	07/24 14:15	07/25 14:15	AC
Arochlor 1242	U	U	ug/L	0.019	0.057	508	07/24 14:15	07/25 14:15	AC
Arochlor 1248	U	U	ug/L	0.034	0.102	508	07/24 14:15	07/25 14:15	AC
Arochlor 1254	U	U	ug/L	0.024	0.072	508	07/24 14:15	07/25 14:15	AC
Arochlor 1260	U	U	ug/L	0.027	0.081	508	07/24 14:15	07/25 14:15	AC
Chlordane	U	U	ug/L	0.013	0.039	508	07/24 14:15	07/25 14:15	AC
Endrin	U	U	ug/L	0.010	0.030	508	07/24 14:15	07/25 14:15	AC
g-BHC (Lindane)	U	U	ug/L	0.012	0.036	508	07/24 14:15	07/25 14:15	AC
Heptachlor	U	U	ug/L	0.012	0.036	508	07/24 14:15	07/25 14:15	AC
Heptachlor Epoxide	U	U	ug/L	0.011	0.033	508	07/24 14:15	07/25 14:15	AC
Hexachlorobenzene	U	U	ug/L	0.009	0.027	508	07/24 14:15	07/25 14:15	AC
Hexachlorocyclopentadiene	U	U	ug/L	0.010	0.030	508	07/24 14:15	07/25 14:15	AC
Methoxychlor	U	U	ug/L	0.013	0.039	508	07/24 14:15	07/25 14:15	AC
Toxaphene	U	U	ug/L	0.21	0.63	508	07/24 14:15	07/25 14:15	AC
515.3 Chlorophenoxy Herbicides 62-550 (Reg)						Dilution Factor = 1			
2,4,5-TP (silvex)	U	U	ug/L	0.04	0.12	515.3	07/20 12:43	07/21 12:43	AC
2,4-D	U	U	ug/L	0.08	0.24	515.3	07/20 12:43	07/21 12:43	AC

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Dalapon	U	U	ug/L	0.09	0.27	515.3	07/20 12:43	07/21 12:43	AC
Dinoseb	U	U	ug/L	0.11	0.33	515.3	07/20 12:43	07/21 12:43	AC
Pentachlorophenol	U	U	ug/L	0.02	0.06	515.3	07/20 12:43	07/21 12:43	AC
Picloram	U	U	ug/L	0.06	0.18	515.3	07/20 12:43	07/21 12:43	AC
525.2 Semivolatile Organics: 62-550.310(4)(b)			Dilution Factor = 1						
Alachlor	U	U	ug/L	0.038	0.114	525.2	07/21 12:13	07/21 21:56	AC
Atrazine	U	U	ug/L	0.012	0.036	525.2	07/21 12:13	07/21 21:56	AC
Benzo(a)pyrene	U	U	ug/L	0.007	0.021	525.2	07/21 12:13	07/21 21:56	AC
Di(2-Ethylhexyl)adipate	U	U	ug/L	0.009	0.027	525.2	07/21 12:13	07/21 21:56	AC
Di(2-Ethylhexyl)phthalate	U	U	ug/L	0.011	0.033	525.2	07/21 12:13	07/21 21:56	AC
Simazine	U	U	ug/L	0.017	0.051	525.2	07/21 12:13	07/21 21:56	AC
8081A Chlorinated Pesticides in Water			Dilution Factor = 1						
4,4-DDD	U	U	ug/L	0.002	0.006	EPA 8081A	07/24 14:32	07/26 14:32	AC
4,4-DDE	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:32	07/26 14:32	AC
4,4-DDT	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
a-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
Aldrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
b-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC

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Chlordane	U	U	ug/L	0.020	0.060	EPA 8081A	07/24 14:32	07/26 14:32	AC
d-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
Dieldrin	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:32	07/26 14:32	AC
Endosulfan I	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:32	07/26 14:32	AC
Endosulfan II	U	U	ug/L	0.006	0.018	EPA 8081A	07/24 14:32	07/26 14:32	AC
Endosulfan Sulfate	U	U	ug/L	0.003	0.009	EPA 8081A	07/24 14:32	07/26 14:32	AC
Endrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
Endrin Aldehyde	U	U	ug/L	0.003	0.009	EPA 8081A	07/24 14:32	07/26 14:32	AC
g-BHC (lindane)	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
Heptachlor	U	U	ug/L	0.006	0.018	EPA 8081A	07/24 14:32	07/26 14:32	AC
Heptachlor Epoxide	U	U	ug/L	0.004	0.012	EPA 8081A	07/24 14:32	07/26 14:32	AC
Methoxychlor	U	U	ug/L	0.005	0.015	EPA 8081A	07/24 14:32	07/26 14:32	AC
Toxaphene	U	U	ug/L	0.08	0.24	EPA 8081A	07/24 14:32	07/26 14:32	AC
8270D Semivolatile Organics in Water by GC/MS						Dilution Factor = 1			
1,2,3-Trichlorobenzene	U	U	ug/L	2.00	6.00	3510/8270D	07/20 08:00	07/21 24:17	MD
1,2,4-Trichlorobenzene	U	U	ug/L	0.027	0.081	3510/8270D	07/20 08:00	07/21 24:17	MD
1,2-Dichlorobenzene	U	U	ug/L	0.017	0.051	3510/8270D	07/20 08:00	07/21 24:17	MD
1,3-Dichlorobenzene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/21 24:17	MD

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1,4-Dichlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/21 24:17	MD
1-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/21 24:17	MD
2,3,4,6-Tetrachlorophenol	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/21 24:17	MD
2,3,5,6-Tetrachlorophenol	U	U	ug/L	0.53	1.59	3510/8270D	07/20 08:00	07/21 24:17	MD
2,3,6-Trichlorophenol	U	U	ug/L	1.2	3.6	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4,5-Trichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4,6-Trichlorophenol	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4-Dichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4-Dimethylphenol	U	U	ug/L	0.042	0.126	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4-Dinitrophenol	U	U	ug/L	0.2	0.6	3510/8270D	07/20 08:00	07/21 24:17	MD
2,4-Dinitrotoluene	U	U	ug/L	0.022	0.066	3510/8270D	07/20 08:00	07/21 24:17	MD
2,6-Dichlorophenol	U	U	ug/L	0.039	0.117	3510/8270D	07/20 08:00	07/21 24:17	MD
2,6-Dinitrotoluene	U	U	ug/L	0.025	0.075	3510/8270D	07/20 08:00	07/21 24:17	MD
2-Chloronaphthalene	U	U	ug/L	0.035	0.105	3510/8270D	07/20 08:00	07/21 24:17	MD
2-Chlorophenol	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/21 24:17	MD
2-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/21 24:17	MD
2-Methylphenol (o-cresol)	U	U	ug/L	0.039	0.117	3510/8270D	07/20 08:00	07/21 24:17	MD
2-Nitroaniline	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/21 24:17	MD

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2-Nitrophenol	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/21 24:17	MD
3,3-Dichlorobenzidine	U	U	ug/L	0.31	0.93	3510/8270D	07/20 08:00	07/21 24:17	MD
3-Methylphenol (m-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/21 24:17	MD
3-Nitroaniline	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/21 24:17	MD
4,4'-DDD ~	U	U	ug/L	0.126	0.378	3510/8270D	07/20 08:00	07/21 24:17	MD
4,4'-DDE ~	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/21 24:17	MD
4,4'-DDT ~	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/21 24:17	MD
4,6-Dinitro-2-Methylphenol	U	U	ug/L	0.27	0.81	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Bromophenyl Phenyl Ether	U	U	ug/L	0.023	0.069	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Chloro-3-Methylphenol	U	U	ug/L	0.022	0.066	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Chloroaniline	U	U	ug/L	0.019	0.057	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Chlorophenyl Phenyl Ether	U	U	ug/L	0.58	1.74	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Methylphenol (p-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Nitroaniline	U	U	ug/L	0.089	0.267	3510/8270D	07/20 08:00	07/21 24:17	MD
4-Nitrophenol	U	U	ug/L	0.085	0.255	3510/8270D	07/20 08:00	07/21 24:17	MD
Acenaphthene	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/21 24:17	MD
Acenaphthylene	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/21 24:17	MD
Aldrin ~	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/21 24:17	MD

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alpha-BHC ~	U	U	ug/L	0.102	0.306	3510/8270D	07/20 08:00	07/21 24:17	MD
Aniline	U	U	ug/L	0.041	0.123	3510/8270D	07/20 08:00	07/21 24:17	MD
Anthracene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/21 24:17	MD
Azobenzene (1,2-Diphenylhydrazine)	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzidine	U	U	ug/L	0.26	0.78	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzo(A)Anthracene	U	U	ug/L	0.037	0.111	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzo(A)Pyrene	U	U	ug/L	0.021	0.063	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzo(B)Fluoranthene	U	U	ug/L	0.029	0.087	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzo(G,H,I)Perylene	U	U	ug/L	0.059	0.177	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzo(K)Fluoranthene	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzoic Acid	U	U	ug/L	1.16	3.48	3510/8270D	07/20 08:00	07/21 24:17	MD
Benzyl Alcohol	U	U	ug/L	0.083	0.249	3510/8270D	07/20 08:00	07/21 24:17	MD
beta-BHC ~	U	U	ug/L	0.051	0.153	3510/8270D	07/20 08:00	07/21 24:17	MD
Bis (2 Ethylhexyl) Phthalate	U	U	ug/L	0.052	0.156	3510/8270D	07/20 08:00	07/21 24:17	MD
Bis (2-Chloroethoxy)methane	U	U	ug/L	0.047	0.141	3510/8270D	07/20 08:00	07/21 24:17	MD
Bis (2-Chloroethyl) Ether	U	U	ug/L	0.036	0.108	3510/8270D	07/20 08:00	07/21 24:17	MD
Bis (2-Chloroisopropyl) Ether	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/21 24:17	MD
Bis-2-ethylhexyl Adipate	U	U	ug/L	0.36	1.08	3510/8270D	07/20 08:00	07/21 24:17	MD

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Submission # 1207000535
Order # 24949

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/19/12 11:30
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Butyl Benzyl Phthalate	U	U	ug/L	0.045	0.135	3510/8270D	07/20 08:00	07/21 24:17	MD
Carbazole	U	U	ug/L	0.45	1.35	3510/8270D	07/20 08:00	07/21 24:17	MD
Chlordane (Screen) ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
Chrysene	U	U	ug/L	0.032	0.096	3510/8270D	07/20 08:00	07/21 24:17	MD
delta-BHC ~	U	U	ug/L	0.032	0.096	3510/8270D	07/20 08:00	07/21 24:17	MD
Di-N-Butyl Phthalate	U	U	ug/L	0.090	0.270	3510/8270D	07/20 08:00	07/21 24:17	MD
Di-N-Octyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/21 24:17	MD
Dibenzo(A,H,)Anthracene	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/21 24:17	MD
Dibenzofuran	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/21 24:17	MD
Dieldrin ~	U	U	ug/L	0.054	0.162	3510/8270D	07/20 08:00	07/21 24:17	MD
Diethyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/21 24:17	MD
Dimethyl Phthalate	U	U	ug/L	0.046	0.138	3510/8270D	07/20 08:00	07/21 24:17	MD
Dioxin (screen)	U	U	ug/L	0.03	0.09	3510/8270D	07/20 08:00	07/21 24:17	MD
Endosulfan I ~	U	U	ug/L	0.033	0.099	3510/8270D	07/20 08:00	07/21 24:17	MD
Endosulfan II ~	U	U	ug/L	0.109	0.327	3510/8270D	07/20 08:00	07/21 24:17	MD
Endosulfan Sulfate ~	U	U	ug/L	0.067	0.201	3510/8270D	07/20 08:00	07/21 24:17	MD
Endrin Aldehyde ~	U	U	ug/L	0.085	0.255	3510/8270D	07/20 08:00	07/21 24:17	MD
Endrin ~	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/21 24:17	MD

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LABORATORY ANALYSIS REPORT

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Fluoranthene	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/21 24:17	MD
Fluorene	U	U	ug/L	0.035	0.105	3510/8270D	07/20 08:00	07/21 24:17	MD
gamma-BHC (Lindane) ~	U	U	ug/L	0.040	0.120	3510/8270D	07/20 08:00	07/21 24:17	MD
Heptachlor Epoxide ~	U	U	ug/L	0.088	0.264	3510/8270D	07/20 08:00	07/21 24:17	MD
Heptachlor ~	U	U	ug/L	0.028	0.084	3510/8270D	07/20 08:00	07/21 24:17	MD
Hexachlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/20 08:00	07/21 24:17	MD
Hexachlorobutadiene	U	U	ug/L	0.040	0.120	3510/8270D	07/20 08:00	07/21 24:17	MD
Hexachlorocyclopentadiene	U	U	ug/L	0.012	0.036	3510/8270D	07/20 08:00	07/21 24:17	MD
Hexachloroethane	U	U	ug/L	0.038	0.114	3510/8270D	07/20 08:00	07/21 24:17	MD
Indeno(1,2,3-CD)Pyrene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/21 24:17	MD
Isophorone	U	U	ug/L	0.059	0.177	3510/8270D	07/20 08:00	07/21 24:17	MD
Methoxychlor ~	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/21 24:17	MD
N-Nitrosodi-N-Propylamine	U	U	ug/L	0.041	0.123	3510/8270D	07/20 08:00	07/21 24:17	MD
N-Nitrosodimethylamine	U	U	ug/L	0.020	0.060	3510/8270D	07/20 08:00	07/21 24:17	MD
N-Nitrosodiphenylamine	U	U	ug/L	0.043	0.129	3510/8270D	07/20 08:00	07/21 24:17	MD
Naphthalene	U	U	ug/L	0.044	0.132	3510/8270D	07/20 08:00	07/21 24:17	MD
Nitrobenzene	U	U	ug/L	0.047	0.141	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1016 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD

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Project: Injection Well Pri/Sec DW
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LABORATORY ANALYSIS REPORT

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PCB-1221 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1232 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1242 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1248 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1254 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
PCB-1260 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/20 08:00	07/21 24:17	MD
Pentachlorophenol	U	U	ug/L	0.180	0.540	3510/8270D	07/20 08:00	07/21 24:17	MD
Phenanthrene	U	U	ug/L	0.031	0.093	3510/8270D	07/20 08:00	07/21 24:17	MD
Phenol	U	U	ug/L	0.042	0.126	3510/8270D	07/20 08:00	07/21 24:17	MD
Pyrene	U	U	ug/L	0.034	0.102	3510/8270D	07/20 08:00	07/21 24:17	MD
Pyridine	U	U	ug/L	0.026	0.078	3510/8270D	07/20 08:00	07/21 24:17	MD
Toxaphene ~	U	U	ug/L	0.40	1.20	3510/8270D	07/20 08:00	07/21 24:17	MD
524.2 Volatile Organics: 62-550.310(4)(a)						Dilution Factor = 1			
1,1,1-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/20 16:22	07/20 16:22	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/20 16:22	07/20 16:22	MAZ
1,1-Dichloroethylene	U	U	ug/L	0.11	0.33	524.2	07/20 16:22	07/20 16:22	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.18	0.54	524.2	07/20 16:22	07/20 16:22	MAZ
1,2-Dichlorobenzene (ortho)	U	U	ug/L	0.08	0.24	524.2	07/20 16:22	07/20 16:22	MAZ

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LABORATORY ANALYSIS REPORT

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1,2-Dichloroethane	U	U	ug/L	0.06	0.18	524.2	07/20 16:22	07/20 16:22	MAZ
1,2-Dichloropropane	U	U	ug/L	0.06	0.18	524.2	07/20 16:22	07/20 16:22	MAZ
1,4-Dichlorobenzene (para)	U	U	ug/L	0.02	0.06	524.2	07/20 16:22	07/20 16:22	MAZ
Benzene	U	U	ug/L	0.06	0.18	524.2	07/20 16:22	07/20 16:22	MAZ
Carbon Tetrachloride	U	U	ug/L	0.07	0.21	524.2	07/20 16:22	07/20 16:22	MAZ
Chlorobenzene	U	U	ug/L	0.08	0.24	524.2	07/20 16:22	07/20 16:22	MAZ
Cis-1,2-Dichloroethylene	U	U	ug/L	0.07	0.21	524.2	07/20 16:22	07/20 16:22	MAZ
Dichloromethane (Methylene Chloride)	U	U	ug/L	0.38	1.14	524.2	07/20 16:22	07/20 16:22	MAZ
Ethylbenzene	U	U	ug/L	0.05	0.15	524.2	07/20 16:22	07/20 16:22	MAZ
Styrene	U	U	ug/L	0.03	0.09	524.2	07/20 16:22	07/20 16:22	MAZ
Tetrachloroethylene	U	U	ug/L	0.09	0.27	524.2	07/20 16:22	07/20 16:22	MAZ
Toluene	U	U	ug/L	0.05	0.15	524.2	07/20 16:22	07/20 16:22	MAZ
Trans-1,2-Dichloroethylene	U	U	ug/L	0.09	0.27	524.2	07/20 16:22	07/20 16:22	MAZ
Trichloroethylene	U	U	ug/L	0.15	0.45	524.2	07/20 16:22	07/20 16:22	MAZ
Vinyl Chloride	U	U	ug/L	0.10	0.30	524.2	07/20 16:22	07/20 16:22	MAZ
Xylenes (Total)	U	U	ug/L	0.07	0.21	524.2	07/20 16:22	07/20 16:22	MAZ
8260B Volatile Organics in Water by GC/MS						Dilution Factor =1			
1,1,1,2-Tetrachloroethane	U	U	ug/L	0.15	0.45	5030/8260B	07/20 20:22	07/20 20:22	MAZ

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Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/19/12 11:30
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LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
1,1,1-Trichloroethane	U	U	ug/L	0.67	2.01	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,1,2,2-Tetrachloroethane	U	U	ug/L	0.14	0.42	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,1-Dichloroethane	U	U	ug/L	0.19	0.57	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,1-Dichloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,1-Dichloropropene	U	U	ug/L	0.65	1.95	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2,3-Trichlorobenzene	U	U	ug/L	0.28	0.84	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2,3-Trichloropropane	U	U	ug/L	0.22	0.66	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.23	0.69	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2,4-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.17	0.51	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2-Dibromoethane (EDB)	U	U	ug/L	0.25	0.75	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2-Dichlorobenzene	U	U	ug/L	0.30	0.90	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2-Dichloroethane	U	U	ug/L	0.31	0.93	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,2-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,3,5-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,3-Dichlorobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 20:22	07/20 20:22	MAZ
1,3-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/20 20:22	07/20 20:22	MAZ

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1,4-Dichlorobenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/20 20:22	07/20 20:22	MAZ
2,2-Dichloropropane	U	U	ug/L	0.76	2.28	5030/8260B	07/20 20:22	07/20 20:22	MAZ
2-Chloroethylvinyl Ether	U	U	ug/L	0.76	2.28	5030/8260B	07/20 20:22	07/20 20:22	MAZ
2-Chlorotoluene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 20:22	07/20 20:22	MAZ
4-Chlorotoluene	U	U	ug/L	0.33	0.99	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Acetone	U	U	ug/L	1.42	4.26	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Acrolein	U	U	ug/L	6.99	20.97	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Acrylonitrile	U	U	ug/L	0.52	1.56	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Benzene	U	U	ug/L	0.14	0.42	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Bromobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Bromochloromethane	U	U	ug/L	0.21	0.63	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Bromodichloromethane	U	U	ug/L	0.52	1.56	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Bromoform	U	U	ug/L	0.16	0.48	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Bromomethane	U	U	ug/L	0.60	1.80	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Carbon Tetrachloride	U	U	ug/L	0.81	2.43	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Chlorobenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Chloroethane	U	U	ug/L	0.47	1.41	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Chloroform	U	U	ug/L	0.27	0.81	5030/8260B	07/20 20:22	07/20 20:22	MAZ

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Chloromethane	U	U	ug/L	0.88	2.64	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Cis-1,2-Dichloroethene	U	U	ug/L	0.17	0.51	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Cis-1,3-Dichloropropene	U	U	ug/L	0.41	1.23	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Dibromochloromethane	U	U	ug/L	0.30	0.90	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Dibromomethane	U	U	ug/L	0.37	1.11	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Dichlorodifluoromethane	U	U	ug/L	1.06	3.18	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Ethylbenzene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Hexachlorobutadiene	U	U	ug/L	0.47	1.41	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Isopropylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Methyl Ethyl Ketone	U	U	ug/L	0.56	1.68	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Methyl-Tert-Butyl Ether	U	U	ug/L	0.55	1.65	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Methylene Chloride	U	U	ug/L	0.99	2.97	5030/8260B	07/20 20:22	07/20 20:22	MAZ
n-Butylbenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 20:22	07/20 20:22	MAZ
n-PropylBenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Naphthalene	U	U	ug/L	0.24	0.72	5030/8260B	07/20 20:22	07/20 20:22	MAZ
P-Isopropyltoluene	U	U	ug/L	0.41	1.23	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Sec-Butylbenzene	U	U	ug/L	0.45	1.35	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Styrene	U	U	ug/L	0.31	0.93	5030/8260B	07/20 20:22	07/20 20:22	MAZ

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Luckett Road
 Fort Myers, FL 33905

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Report Printed: 08/07/12
Submission # 1207000535
Order # 24949

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water


Sample I.D.: Upper Zone
Collected: 07/19/12 11:30
Received: 07/19/12 16:50
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Tert-Butylbenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Tetrachloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Toluene	U	U	ug/L	0.31	0.93	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Trans-1,2-Dichloroethene	U	U	ug/L	0.21	0.63	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Trans-1,3-Dichloropropene	U	U	ug/L	0.28	0.84	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Trichloroethene	U	U	ug/L	0.34	1.02	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Trichlorofluoromethane	U	U	ug/L	0.48	1.44	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Vinyl Chloride	U	U	ug/L	0.79	2.37	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Xylene, m & p	U	U	ug/L	0.80	2.40	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Xylene, o	U	U	ug/L	0.32	0.96	5030/8260B	07/20 20:22	07/20 20:22	MAZ
Gross Alpha	15.8 ± 3.5		pCi/L	1.2	3.6	EPA 900.1	08/01 08:44	08/02 08:24	E83033
Radium-226	14.0 ± 1.0		pCi/L	0.1	0.3	EPA 903.1	07/26 08:45	08/02 14:16	E83033
Radium-228	0.9U ± 0.5		pCi/L	0.9	2.7	EPA Ra-05	07/26 08:45	08/01 13:53	E83033

Unless indicated, soil results are reported based on actual (wet) weight basis.

Analytes not currently NELAC certified denoted by ~.
 Work performed by outside (subcontract) labs denoted by Cert.ID in Analyst Field.
 Results relate only to this sample.
 QC=Qualifier Codes as defined by DEP 62-160
 U=Analyzed for but not detected.
 Q=Sample held beyond accepted holding time.
 I=Value is between MDL and PQL.
 J=Estimated value.


 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

SUBMISSION # <div style="font-size: 24pt; font-family: cursive;">1207-535</div>	 Logged into LIMS by: <div style="font-size: 24pt; font-family: cursive;">AL</div>	CHAIN OF CUSTODY RECORD 1460 W McNab Road Ft Lauderdale FL 33309 940 Alt. 27 South Babson Park, FL 33827 630 Indian Street Savannah, GA 31401 528 Gooch Road Fort Meade FL 33841 Tel: (954) 978-6400 Fax: (863) 638-3255 Tel: (912) 238-5050 Fax: (863) 285-8145 Tel: (954) 978-2233 Fax: (863) 638-3637 Fax: (912) 234-4815 Fax: (863) 285-7030	DUE DATE REQUESTED RUSH RESERVATION # Rush Surcharges apply
Report to: Layne Christensen Company		Yellow- Lab File Copy Pink- Sampler Copy	
Invoice to: Layne Christensen Company		Report to Address: 5061 Luckett Road, Fort Myers, FL 33905	
Project Name and/or Number : Injection Well Primary's Secondary Drinking Water Testing		Invoice to Address: 5061 Luckett Road, Fort Myers, FL 33905	
Project Mgr: Brooke Allen/Craig Brugger		Site Location: Turkey Point, Homestead, Florida 33035	
Sampler Name: (printed) Aracelio P. Ffrench		Phone: 239.275.1029/239.275.1025 Email: cbrugger@laynechristensen.com bsallen@laynechristensen.com	
ORDER # Lab Control Number <div style="font-size: 24pt; font-family: cursive;">24418</div>	Sample ID Lower zone	Date Sampled 07-19-12	Time Sampled 11:10
Shaded Areas For Laboratory Use Only	Matrix DW SW GW SED S EFF HW BIO SA OIL X	Bottle & Pres. Combo Codes	Sampler Signature Number of Containers Received & NELAC Letter Suffixes # A-?
Analysis Required		Field Tests	
* Primary Secondary DW		P H T E M P C D O O N D 7.12 26.57 2.48 23.32 23.88	
1 2 3 4		3 4 5 6 7 8 9 10	
SPECIAL COMMENTS: * PLEASE SEE ATTACHED LIST FOR ANALYSIS!!! "I waive NELAC protocol" (sign here) >			
Deliverables:		QA/QC Report Needed? Yes No (additional charge)	
Sample Custody & Field Comments Temp as received <div style="font-size: 24pt; font-family: cursive;">4</div> C Custody Seals? Y N Billable Field Time <div style="font-size: 24pt; font-family: cursive;">2</div> hrs Misc. Charges		Preservatives A-ascorbic acid C-HCL Cu-CuSO ₄ H-HNO ₃ M-MCAB N-NaOH NH ₄ -NH ₄ CL P-H ₃ PO ₄ S-H ₂ SO ₄ T-Na ₂ S ₂ O ₃ -H ₂ O U-Unpreserved P-H ₃ PO ₄ Z-zinc acetate	
Bottle Type A-liter amber B-Bacteria bag/bottle H- Amber F-500 ml L-liter bottle S-soil jar T-250 ml V-40 ml vial W-wide mouth X-other		QA/QC Report Needed? Yes No (additional charge)	
Sample Custody and Transfer Signatures		DATE / TIME	
1 Relinquished by:		1 Received by: <div style="font-size: 24pt; font-family: cursive;">AR</div> 7/19/12 16:50	
2 Relinquished by:		2 Received by:	
3 Relinquished by:		3 Received by:	
3 Received by:		3 Received by:	
www.flenviro.com		COC Page of	



Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

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Report Printed: 07/19/12
Submission # 1207000020
Order # 22613

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
Received: 07/02/12 15:45
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
SM5210B BOD	2.34	I	mg/L	2.0	6.0	SM5210B	07/03 13:00	07/08 13:00	ALL
Coliform-Total (E-Coli)	P(A)		-----			9223B	07/02 16:00	07/03 16:00	ALL
Specific Conductance (Field)(grab)	12201		uS/cm	1.0	3.0	120.1	07/02 09:00	07/02 09:00	AP
pH (field)	7.65		units	0.1	0.3	150.1	07/02 09:00	07/02 09:00	AP
Temperature (Field)	28.09		Degree C	1	3	170.1	07/02 09:00	07/02 09:00	AP
531.1 Carbamate Pesticides: 62-550.310(4)(b)			Dilution Factor = 1						
Carbofuran	U	U	ug/L	0.54	1.62	531.1	07/10 19:49	07/10 19:49	RPV
Oxamyl (Vydate)	U	U	ug/L	0.55	1.65	531.1	07/10 19:49	07/10 19:49	RPV
Glyphosate	U	U	ug/L	3.55	10.65	547	07/10 14:05	07/10 14:05	RPV
Endothall	U	U	ug/L	2.72	8.16	548.1	07/03 11:00	07/03 17:37	CSG
549.2 Diquat: 62-550.310(4)(b)			Dilution Factor = 1						
Diquat	U	U	ug/L	0.4	1.2	549.2	07/06 09:30	07/06 10:57	RPV
Specific Conductance (grab)	11900		uS/cm	1.0	3.0	120.1	07/06 10:10	07/06 10:10	DGK
Chloride	3810		mg/L	5.50	16.50	300.0	07/03 17:15	07/03 17:15	DGK
Fluoride	U	U	mg/L	2.100	6.300	300.0	07/03 17:15	07/03 17:15	DGK
Nitrate (as N)	U	U	mg/L	1.900	5.700	300.0	07/03 17:15	07/03 17:15	DGK
Nitrite (as N)	U	U	mg/L	1.050	3.150	300.0	07/03 17:15	07/03 17:15	DGK
Ortho-Phosphate (as P)	U	U	mg/L	1.250	3.750	300.0	07/03 17:15	07/03 17:15	DGK

Florida-Spectrum Environmental Services, Inc.
 1460 W. McNab Road, Fort Lauderdale, FL 33309

Pembroke Laboratory
 528 Gooch Rd.
 Fort Meade, FL 33841

Big Lake Laboratory
 610 North Parrot Ave.
 Okeechobee, FL 34972

Spectrum Laboratories
 630 Indian St.
 Savannah, GA 31401

www.flenviro.com

All NELAP certified analyses are performed in accordance with Chapter 64E-1 Florida Administrative Code, which has been determined to be equivalent to NELAC standards. Analyses certified by programs other than NELAP are designated with a "~".

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Report Printed: 07/19/12
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Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
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Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Sulfate	433		mg/L	5.35	16.05	300.0	07/03 17:15	07/03 17:15	DGK
Nitrogen (Ammonia) as N	0.05		mg/L	0.01	0.03	350.1	07/06 15:29	07/06 15:29	CSG
Nitrogen (Kjeldahl) as "N"	0.31		mg/L	0.070	0.210	351.2	07/10 09:45	07/10 13:31	MSG
Nitrogen (Total Organic)	0.16		mg/L	0.045	0.135	351/350	07/06 16:08	07/06 16:08	CSG
Chemical Oxygen Demand	132		mg/L	7.03	21.09	410.4	07/05 14:50	07/05 14:50	CSG
Color/pH (Lab)	20/7.92		Pt-Co	1.0	3.0	SM2120B	07/03 09:20	07/03 09:20	CSG
Odor (Lab) at 40 Degrees C	2	I	TON	1.0	3.0	SM2150B	07/02 17:20	07/02 17:20	RPV
Total Dissolved Solids (TDS)	7260		mg/L	1.00	3.00	SM 2540C	07/03 14:00	07/05 12:53	MCZ
Cyanide, Total	U	U	mg/L	0.002	0.006	SM4500CN-E	07/05 11:00	07/05 12:48	RPV
MBAS Surfactants	U	U	mg/L	0.060	0.180	SM5540C	07/03 15:50	07/03 15:50	RPV
Aluminum	0.126		mg/L	0.00070	0.00210	200.7	07/03	07/03 14:01	JAB
Copper	0.001		mg/L	0.0002	0.0006	200.7	07/03	07/03 14:01	JAB
Iron	0.546		mg/L	0.0008	0.0024	200.7	07/03	07/03 14:01	JAB
Manganese	0.015		mg/L	0.00009	0.00027	200.7	07/03	07/03 14:01	JAB
Silver	U	U	mg/L	0.0001	0.0003	200.7	07/03	07/03 14:01	JAB
Sodium	2051		mg/L	0.003	0.009	200.7	07/03	07/03 14:01	JAB
Zinc	0.010		mg/L	0.00050	0.00150	200.7	07/03	07/03 14:01	JAB
200.8 DW-10 Metals in Drinking Water 62-550.310				Dilution Factor =10					

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

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 Report Printed: 07/19/12
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 Order # 22613

Project: Injection Well Pri/Sec DW
 Site Location: Turkey Point, Homestead, FL
 Matrix: Drinking Water

Sample I.D.: Upper Zone
 Collected: 07/02/12 09:00
 Received: 07/02/12 15:45
 Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Antimony	U	U	mg/L	0.00100	0.00300	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Arsenic	0.0025	I	mg/L	0.0020	0.0060	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Barium	0.0668		mg/L	0.00060	0.00180	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Beryllium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Cadmium	U	U	mg/L	0.00070	0.00210	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Chromium	0.0014	I	mg/L	0.0010	0.0030	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Lead	U	I	mg/L	0.00060	0.00180	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Nickel	U	U	mg/L	0.00290	0.00870	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Selenium	0.0242		mg/L	0.00410	0.01230	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Thallium	U	U	mg/L	0.00010	0.00030	4.1.3/200.8	07/10 10:00	07/10 11:57	JAB
Mercury	U	U	mg/L	0.00007	0.00021	245.1	07/10	07/10 15:13	EN
504.1 EDB, DBCP: 62-550.310(4)(b)			Dilution Factor = 1						
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/0709:00	07/07 14:51	MD
Ethylene Dibromide (EDB)	U	U	ug/L	0.006	0.018	EPA 504.1 ECD	07/0709:00	07/07 14:51	MD
508 Pesticides & PCBs: 62-550.310(4)(b)			Dilution Factor = 1						
Arochlor 1016	U	U	ug/L	0.052	0.156	508	07/06 11:57	07/06 20:45	AC
Arochlor 1221	U	U	ug/L	0.021	0.063	508	07/06 11:57	07/06 20:45	AC
Arochlor 1232	U	U	ug/L	0.025	0.075	508	07/06 11:57	07/06 20:45	AC

Report To:
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Project: Injection Well Pri/Sec DW
 Site Location: Turkey Point, Homestead, FL
 Matrix: Drinking Water

Sample I.D.: Upper Zone
 Collected: 07/02/12 09:00
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 Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Arochlor 1242	U	U	ug/L	0.019	0.057	508	07/06 11:57	07/06 20:45	AC
Arochlor 1248	U	U	ug/L	0.034	0.102	508	07/06 11:57	07/06 20:45	AC
Arochlor 1254	U	U	ug/L	0.024	0.072	508	07/06 11:57	07/06 20:45	AC
Arochlor 1260	U	U	ug/L	0.027	0.081	508	07/06 11:57	07/06 20:45	AC
Chlordane	U	U	ug/L	0.013	0.039	508	07/06 11:57	07/06 20:45	AC
Endrin	U	U	ug/L	0.010	0.030	508	07/06 11:57	07/06 20:45	AC
g-BHC (Lindane)	U	U	ug/L	0.012	0.036	508	07/06 11:57	07/06 20:45	AC
Heptachlor	U	U	ug/L	0.012	0.036	508	07/06 11:57	07/06 20:45	AC
Heptachlor Epoxide	U	U	ug/L	0.011	0.033	508	07/06 11:57	07/06 20:45	AC
Hexachlorobenzene	U	U	ug/L	0.009	0.027	508	07/06 11:57	07/06 20:45	AC
Hexachlorocyclopentadiene	U	U	ug/L	0.010	0.030	508	07/06 11:57	07/06 20:45	AC
Methoxychlor	U	U	ug/L	0.013	0.039	508	07/06 11:57	07/06 20:45	AC
Toxaphene	U	U	ug/L	0.21	0.63	508	07/06 11:57	07/06 20:45	AC
515.3 Chlorophenoxy Herbicides 62-550 (Reg)			Dilution Factor = 1						
2,4,5-TP (silvex)	U	U	ug/L	0.04	0.12	515.3	07/07 12:49	07/07 20:23	AC
2,4-D	U	U	ug/L	0.08	0.24	515.3	07/07 12:49	07/07 20:23	AC
Dalapon	U	U	ug/L	0.09	0.27	515.3	07/07 12:49	07/07 20:23	AC
Dinoseb	U	U	ug/L	0.11	0.33	515.3	07/07 12:49	07/07 20:23	AC

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Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
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LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Pentachlorophenol	U	U	ug/L	0.02	0.06	515.3	07/07 12:49	07/07 20:23	AC
Picloram	U	U	ug/L	0.06	0.18	515.3	07/07 12:49	07/07 20:23	AC
525.2 Semivolatile Organics: 62-550.310(4)(b)			Dilution Factor = 1						
Alachlor	U	U	ug/L	0.03	0.09	525.2	07/03 11:09	07/03 22:54	AC
Atrazine	U	U	ug/L	0.03	0.09	525.2	07/03 11:09	07/03 22:54	AC
Benzo(a)pyrene	U	U	ug/L	0.01	0.03	525.2	07/03 11:09	07/03 22:54	AC
Di(2-Ethylhexyl)adipate	U	U	ug/L	0.01	0.03	525.2	07/03 11:09	07/03 22:54	AC
Di(2-Ethylhexyl)phthalate	U	U	ug/L	0.04	0.12	525.2	07/03 11:09	07/03 22:54	AC
Pentachlorophenol	U	U	ug/L	0.02	0.06	525.2	07/03 11:09	07/03 22:54	AC
Simazine	U	U	ug/L	0.03	0.09	525.2	07/03 11:09	07/03 22:54	AC
8081A Chlorinated Pesticides in Water			Dilution Factor = 1						
4,4-DDD	U	U	ug/L	0.002	0.006	EPA 8081A	07/06 12:26	07/07 12:26	AC
4,4-DDE	U	U	ug/L	0.005	0.015	EPA 8081A	07/06 12:26	07/07 12:26	AC
4,4-DDT	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
a-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Aldrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
b-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Chlordane	U	U	ug/L	0.020	0.060	EPA 8081A	07/06 12:26	07/07 12:26	AC

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Project: Injection Well Pri/Sec DW
 Site Location: Turkey Point, Homestead, FL
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LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
d-BHC	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Dieldrin	U	U	ug/L	0.005	0.015	EPA 8081A	07/06 12:26	07/07 12:26	AC
Endosulfan I	U	U	ug/L	0.005	0.015	EPA 8081A	07/06 12:26	07/07 12:26	AC
Endosulfan II	U	U	ug/L	0.006	0.018	EPA 8081A	07/06 12:26	07/07 12:26	AC
Endosulfan Sulfate	U	U	ug/L	0.003	0.009	EPA 8081A	07/06 12:26	07/07 12:26	AC
Endrin	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Endrin Aldehyde	U	U	ug/L	0.003	0.009	EPA 8081A	07/06 12:26	07/07 12:26	AC
g-BHC (lindane)	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Heptachlor	U	U	ug/L	0.006	0.018	EPA 8081A	07/06 12:26	07/07 12:26	AC
Heptachlor Epoxide	U	U	ug/L	0.004	0.012	EPA 8081A	07/06 12:26	07/07 12:26	AC
Methoxychlor	U	U	ug/L	0.005	0.015	EPA 8081A	07/06 12:26	07/07 12:26	AC
Toxaphene	U	U	ug/L	0.08	0.24	EPA 8081A	07/06 12:26	07/07 12:26	AC
8270D Semivolatile Organics in Water by GC/MS						Dilution Factor = 1			
1,2,3-Trichlorobenzene	U	U	ug/L	2.00	6.00	3510/8270D	07/06 08:00	07/07 01:32	MD
1,2,4-Trichlorobenzene	U	U	ug/L	0.027	0.081	3510/8270D	07/06 08:00	07/07 01:32	MD
1,2-Dichlorobenzene	U	U	ug/L	0.017	0.051	3510/8270D	07/06 08:00	07/07 01:32	MD
1,3-Dichlorobenzene	U	U	ug/L	0.031	0.093	3510/8270D	07/06 08:00	07/07 01:32	MD
1,4-Dichlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/06 08:00	07/07 01:32	MD

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

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Report Printed: 07/19/12
Submission # 1207000020
Order # 22613

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
Received: 07/02/12 15:45
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
1-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/06 08:00	07/07 01:32	MD
2,3,4,6-Tetrachlorophenol	U	U	ug/L	0.020	0.060	3510/8270D	07/06 08:00	07/07 01:32	MD
2,3,5,6-Tetrachlorophenol	U	U	ug/L	0.53	1.59	3510/8270D	07/06 08:00	07/07 01:32	MD
2,3,6-Trichlorophenol	U	U	ug/L	1.2	3.6	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4,5-Trichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4,6-Trichlorophenol	U	U	ug/L	0.026	0.078	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4-Dichlorophenol	U	U	ug/L	0.046	0.138	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4-Dimethylphenol	U	U	ug/L	0.042	0.126	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4-Dinitrophenol	U	U	ug/L	0.2	0.6	3510/8270D	07/06 08:00	07/07 01:32	MD
2,4-Dinitrotoluene	U	U	ug/L	0.022	0.066	3510/8270D	07/06 08:00	07/07 01:32	MD
2,6-Dichlorophenol	U	U	ug/L	0.039	0.117	3510/8270D	07/06 08:00	07/07 01:32	MD
2,6-Dinitrotoluene	U	U	ug/L	0.025	0.075	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Chloronaphthalene	U	U	ug/L	0.035	0.105	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Chlorophenol	U	U	ug/L	0.028	0.084	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Methylnaphthalene	U	U	ug/L	0.043	0.129	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Methylphenol (o-cresol)	U	U	ug/L	0.039	0.117	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Nitroaniline	U	U	ug/L	0.031	0.093	3510/8270D	07/06 08:00	07/07 01:32	MD
2-Nitrophenol	U	U	ug/L	0.030	0.090	3510/8270D	07/06 08:00	07/07 01:32	MD

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PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
3,3-Dichlorobenzidine	U	U	ug/L	0.31	0.93	3510/8270D	07/06 08:00	07/07 01:32	MD
3-Methylphenol (m-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/06 08:00	07/07 01:32	MD
3-Nitroaniline	U	U	ug/L	0.030	0.090	3510/8270D	07/06 08:00	07/07 01:32	MD
4,4'-DDD ~	U	U	ug/L	0.126	0.378	3510/8270D	07/06 08:00	07/07 01:32	MD
4,4'-DDE ~	U	U	ug/L	0.028	0.084	3510/8270D	07/06 08:00	07/07 01:32	MD
4,4'-DDT ~	U	U	ug/L	0.033	0.099	3510/8270D	07/06 08:00	07/07 01:32	MD
4,6-Dinitro-2-Methylphenol	U	U	ug/L	0.27	0.81	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Bromophenyl Phenyl Ether	U	U	ug/L	0.023	0.069	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Chloro-3-Methylphenol	U	U	ug/L	0.022	0.066	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Chloroaniline	U	U	ug/L	0.019	0.057	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Chlorophenyl Phenyl Ether	U	U	ug/L	0.58	1.74	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Methylphenol (p-cresol)	U	U	ug/L	0.026	0.078	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Nitroaniline	U	U	ug/L	0.089	0.267	3510/8270D	07/06 08:00	07/07 01:32	MD
4-Nitrophenol	U	U	ug/L	0.085	0.255	3510/8270D	07/06 08:00	07/07 01:32	MD
Acenaphthene	U	U	ug/L	0.036	0.108	3510/8270D	07/06 08:00	07/07 01:32	MD
Acenaphthylene	U	U	ug/L	0.033	0.099	3510/8270D	07/06 08:00	07/07 01:32	MD
Aldrin ~	U	U	ug/L	0.044	0.132	3510/8270D	07/06 08:00	07/07 01:32	MD
alpha-BHC ~	U	U	ug/L	0.102	0.306	3510/8270D	07/06 08:00	07/07 01:32	MD

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Aniline	U	U	ug/L	0.041	0.123	3510/8270D	07/06 08:00	07/07 01:32	MD
Anthracene	U	U	ug/L	0.030	0.090	3510/8270D	07/06 08:00	07/07 01:32	MD
Azobenzene (1,2-Diphenylhydrazine)	U	U	ug/L	0.036	0.108	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzidine	U	U	ug/L	0.26	0.78	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzo(A)Anthracene	U	U	ug/L	0.037	0.111	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzo(A)Pyrene	U	U	ug/L	0.021	0.063	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzo(B)Fluoranthene	U	U	ug/L	0.029	0.087	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzo(G,H,I)Perylene	U	U	ug/L	0.059	0.177	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzo(K)Fluoranthene	U	U	ug/L	0.033	0.099	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzoic Acid	U	U	ug/L	1.16	3.48	3510/8270D	07/06 08:00	07/07 01:32	MD
Benzyl Alcohol	U	U	ug/L	0.083	0.249	3510/8270D	07/06 08:00	07/07 01:32	MD
beta-BHC ~	U	U	ug/L	0.051	0.153	3510/8270D	07/06 08:00	07/07 01:32	MD
Bis (2 Ethylhexyl) Phthalate	U	U	ug/L	0.052	0.156	3510/8270D	07/06 08:00	07/07 01:32	MD
Bis (2-Chloroethoxy)methane	U	U	ug/L	0.047	0.141	3510/8270D	07/06 08:00	07/07 01:32	MD
Bis (2-Chloroethyl) Ether	U	U	ug/L	0.036	0.108	3510/8270D	07/06 08:00	07/07 01:32	MD
Bis (2-Chloroisopropyl) Ether	U	U	ug/L	0.038	0.114	3510/8270D	07/06 08:00	07/07 01:32	MD
Bis-2-ethylhexyl Adipate	U	U	ug/L	0.36	1.08	3510/8270D	07/06 08:00	07/07 01:32	MD
Butyl Benzyl Phthalate	U	U	ug/L	0.045	0.135	3510/8270D	07/06 08:00	07/07 01:32	MD

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Carbazole	U	U	ug/L	0.45	1.35	3510/8270D	07/06 08:00	07/07 01:32	MD
Chlordane (Screen) ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
Chrysene	U	U	ug/L	0.032	0.096	3510/8270D	07/06 08:00	07/07 01:32	MD
delta-BHC ~	U	U	ug/L	0.032	0.096	3510/8270D	07/06 08:00	07/07 01:32	MD
Di-N-Butyl Phthalate	U	U	ug/L	0.090	0.270	3510/8270D	07/06 08:00	07/07 01:32	MD
Di-N-Octyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/06 08:00	07/07 01:32	MD
Dibenzo(A,H,)Anthracene	U	U	ug/L	0.038	0.114	3510/8270D	07/06 08:00	07/07 01:32	MD
Dibenzofuran	U	U	ug/L	0.044	0.132	3510/8270D	07/06 08:00	07/07 01:32	MD
Dieldrin ~	U	U	ug/L	0.054	0.162	3510/8270D	07/06 08:00	07/07 01:32	MD
Diethyl Phthalate	U	U	ug/L	0.038	0.114	3510/8270D	07/06 08:00	07/07 01:32	MD
Dimethyl Phthalate	U	U	ug/L	0.046	0.138	3510/8270D	07/06 08:00	07/07 01:32	MD
Dioxin (screen)	U	U	ug/L	0.03	0.09	3510/8270D	07/06 08:00	07/07 01:32	MD
Endosulfan I ~	U	U	ug/L	0.033	0.099	3510/8270D	07/06 08:00	07/07 01:32	MD
Endosulfan II ~	U	U	ug/L	0.109	0.327	3510/8270D	07/06 08:00	07/07 01:32	MD
Endosulfan Sulfate ~	U	U	ug/L	0.067	0.201	3510/8270D	07/06 08:00	07/07 01:32	MD
Endrin Aldehyde ~	U	U	ug/L	0.085	0.255	3510/8270D	07/06 08:00	07/07 01:32	MD
Endrin ~	U	U	ug/L	0.043	0.129	3510/8270D	07/06 08:00	07/07 01:32	MD
Fluoranthene	U	U	ug/L	0.044	0.132	3510/8270D	07/06 08:00	07/07 01:32	MD

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Fluorene	U	U	ug/L	0.035	0.105	3510/8270D	07/06 08:00	07/07 01:32	MD
gamma-BHC (Lindane) ~	U	U	ug/L	0.040	0.120	3510/8270D	07/06 08:00	07/07 01:32	MD
Heptachlor Epoxide ~	U	U	ug/L	0.088	0.264	3510/8270D	07/06 08:00	07/07 01:32	MD
Heptachlor ~	U	U	ug/L	0.028	0.084	3510/8270D	07/06 08:00	07/07 01:32	MD
Hexachlorobenzene	U	U	ug/L	0.030	0.090	3510/8270D	07/06 08:00	07/07 01:32	MD
Hexachlorobutadiene	U	U	ug/L	0.040	0.120	3510/8270D	07/06 08:00	07/07 01:32	MD
Hexachlorocyclopentadiene	U	U	ug/L	0.012	0.036	3510/8270D	07/06 08:00	07/07 01:32	MD
Hexachloroethane	U	U	ug/L	0.038	0.114	3510/8270D	07/06 08:00	07/07 01:32	MD
Indeno(1,2,3-CD)Pyrene	U	U	ug/L	0.031	0.093	3510/8270D	07/06 08:00	07/07 01:32	MD
Isophorone	U	U	ug/L	0.059	0.177	3510/8270D	07/06 08:00	07/07 01:32	MD
Methoxychlor ~	U	U	ug/L	0.020	0.060	3510/8270D	07/06 08:00	07/07 01:32	MD
N-Nitrosodi-N-Propylamine	U	U	ug/L	0.041	0.123	3510/8270D	07/06 08:00	07/07 01:32	MD
N-Nitrosodimethylamine	U	U	ug/L	0.020	0.060	3510/8270D	07/06 08:00	07/07 01:32	MD
N-Nitrosodiphenylamine	U	U	ug/L	0.043	0.129	3510/8270D	07/06 08:00	07/07 01:32	MD
Naphthalene	U	U	ug/L	0.044	0.132	3510/8270D	07/06 08:00	07/07 01:32	MD
Nitrobenzene	U	U	ug/L	0.047	0.141	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1016 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1221 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD

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PCB-1232 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1242 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1248 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1254 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
PCB-1260 ~	U	U	ug/L	0.10	0.30	3510/8270D	07/06 08:00	07/07 01:32	MD
Pentachlorophenol	U	U	ug/L	0.180	0.540	3510/8270D	07/06 08:00	07/07 01:32	MD
Phenanthrene	U	U	ug/L	0.031	0.093	3510/8270D	07/06 08:00	07/07 01:32	MD
Phenol	U	U	ug/L	0.042	0.126	3510/8270D	07/06 08:00	07/07 01:32	MD
Pyrene	U	U	ug/L	0.034	0.102	3510/8270D	07/06 08:00	07/07 01:32	MD
Pyridine	U	U	ug/L	0.026	0.078	3510/8270D	07/06 08:00	07/07 01:32	MD
Toxaphene ~	U	U	ug/L	0.40	1.20	3510/8270D	07/06 08:00	07/07 01:32	MD
524.2 Volatile Organics: 62-550.310(4)(a)				Dilution Factor = 1					
1,1,1-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/06 18:05	07/06 18:05	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.08	0.24	524.2	07/06 18:05	07/06 18:05	MAZ
1,1-Dichloroethylene	U	U	ug/L	0.11	0.33	524.2	07/06 18:05	07/06 18:05	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.18	0.54	524.2	07/06 18:05	07/06 18:05	MAZ
1,2-Dichlorobenzene (ortho)	U	U	ug/L	0.08	0.24	524.2	07/06 18:05	07/06 18:05	MAZ
1,2-Dichloroethane	U	U	ug/L	0.06	0.18	524.2	07/06 18:05	07/06 18:05	MAZ

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1,2-Dichloropropane	U	U	ug/L	0.06	0.18	524.2	07/06 18:05	07/06 18:05	MAZ
1,4-Dichlorobenzene (para)	U	U	ug/L	0.02	0.06	524.2	07/06 18:05	07/06 18:05	MAZ
Benzene	U	U	ug/L	0.06	0.18	524.2	07/06 18:05	07/06 18:05	MAZ
Carbon Tetrachloride	U	U	ug/L	0.07	0.21	524.2	07/06 18:05	07/06 18:05	MAZ
Chlorobenzene	U	U	ug/L	0.08	0.24	524.2	07/06 18:05	07/06 18:05	MAZ
Cis-1,2-Dichloroethylene	U	U	ug/L	0.07	0.21	524.2	07/06 18:05	07/06 18:05	MAZ
Dichloromethane (Methylene Chloride)	U	U	ug/L	0.38	1.14	524.2	07/06 18:05	07/06 18:05	MAZ
Ethylbenzene	U	U	ug/L	0.05	0.15	524.2	07/06 18:05	07/06 18:05	MAZ
Styrene	U	U	ug/L	0.03	0.09	524.2	07/06 18:05	07/06 18:05	MAZ
Tetrachloroethylene	U	U	ug/L	0.09	0.27	524.2	07/06 18:05	07/06 18:05	MAZ
Toluene	U	U	ug/L	0.05	0.15	524.2	07/06 18:05	07/06 18:05	MAZ
Trans-1,2-Dichloroethylene	U	U	ug/L	0.09	0.27	524.2	07/06 18:05	07/06 18:05	MAZ
Trichloroethylene	U	U	ug/L	0.15	0.45	524.2	07/06 18:05	07/06 18:05	MAZ
Vinyl Chloride	U	U	ug/L	0.10	0.30	524.2	07/06 18:05	07/06 18:05	MAZ
Xylenes (Total)	U	U	ug/L	0.07	0.21	524.2	07/06 18:05	07/06 18:05	MAZ
8260B Volatile Organics in Water by GC/MS						Dilution Factor = 1			
1,1,1,2-Tetrachloroethane	U	U	ug/L	0.15	0.45	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,1,1-Trichloroethane	U	U	ug/L	0.67	2.01	5030/8260B	07/05 13:40	07/05 13:40	MAZ

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1,1,2,2-Tetrachloroethane	U	U	ug/L	0.14	0.42	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,1,2-Trichloroethane	U	U	ug/L	0.46	1.38	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,1-Dichloroethane	U	U	ug/L	0.19	0.57	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,1-Dichloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,1-Dichloropropene	U	U	ug/L	0.65	1.95	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2,3-Trichlorobenzene	U	U	ug/L	0.28	0.84	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2,3-Trichloropropane	U	U	ug/L	0.22	0.66	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2,4-Trichlorobenzene	U	U	ug/L	0.23	0.69	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2,4-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2-Dibromo-3-Chloropropane (DBCP)	U	U	ug/L	0.17	0.51	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2-Dibromoethane (EDB)	U	U	ug/L	0.25	0.75	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2-Dichlorobenzene	U	U	ug/L	0.30	0.90	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2-Dichloroethane	U	U	ug/L	0.31	0.93	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,2-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,3,5-Trimethylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,3-Dichlorobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,3-Dichloropropane	U	U	ug/L	0.46	1.38	5030/8260B	07/05 13:40	07/05 13:40	MAZ
1,4-Dichlorobenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/05 13:40	07/05 13:40	MAZ

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 15 of 17
 Report Printed: 07/19/12
 Submission # 1207000020
 Order # 22613

Project: Injection Well Pri/Sec DW
 Site Location: Turkey Point, Homestead, FL
 Matrix: Drinking Water

Sample I.D.: Upper Zone
 Collected: 07/02/12 09:00
 Received: 07/02/12 15:45
 Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
2,2-Dichloropropane	U	U	ug/L	0.76	2.28	5030/8260B	07/05 13:40	07/05 13:40	MAZ
2-Chloroethylvinyl Ether	U	U	ug/L	0.76	2.28	5030/8260B	07/05 13:40	07/05 13:40	MAZ
2-Chlorotoluene	U	U	ug/L	0.38	1.14	5030/8260B	07/05 13:40	07/05 13:40	MAZ
4-Chlorotoluene	U	U	ug/L	0.33	0.99	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Acetone	U	U	ug/L	1.42	4.26	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Acrolein	U	U	ug/L	6.99	20.97	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Acrylonitrile	U	U	ug/L	0.52	1.56	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Benzene	U	U	ug/L	0.14	0.42	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Bromobenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Bromochloromethane	U	U	ug/L	0.21	0.63	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Bromodichloromethane	U	U	ug/L	0.52	1.56	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Bromoform	U	U	ug/L	0.16	0.48	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Bromomethane	U	U	ug/L	0.60	1.80	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Carbon Tetrachloride	U	U	ug/L	0.81	2.43	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Chlorobenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Chloroethane	U	U	ug/L	0.47	1.41	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Chloroform	U	U	ug/L	0.27	0.81	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Chloromethane	U	U	ug/L	0.88	2.64	5030/8260B	07/05 13:40	07/05 13:40	MAZ

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 16 of 17
Report Printed: 07/19/12
Submission # 1207000020
Order # 22613

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
Received: 07/02/12 15:45
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Cis-1,2-Dichloroethene	U	U	ug/L	0.17	0.51	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Cis-1,3-Dichloropropene	U	U	ug/L	0.41	1.23	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Dibromochloromethane	U	U	ug/L	0.30	0.90	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Dibromomethane	U	U	ug/L	0.37	1.11	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Dichlorodifluoromethane	U	U	ug/L	1.06	3.18	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Ethylbenzene	U	U	ug/L	0.42	1.26	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Hexachlorobutadiene	U	U	ug/L	0.47	1.41	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Isopropylbenzene	U	U	ug/L	0.38	1.14	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Methyl Ethyl Ketone	U	U	ug/L	0.56	1.68	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Methyl-Tert-Butyl Ether	U	U	ug/L	0.55	1.65	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Methylene Chloride	U	U	ug/L	0.99	2.97	5030/8260B	07/05 13:40	07/05 13:40	MAZ
n-Butylbenzene	U	U	ug/L	0.34	1.02	5030/8260B	07/05 13:40	07/05 13:40	MAZ
n-PropylBenzene	U	U	ug/L	0.39	1.17	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Naphthalene	U	U	ug/L	0.24	0.72	5030/8260B	07/05 13:40	07/05 13:40	MAZ
P-Isopropyltoluene	U	U	ug/L	0.41	1.23	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Sec-Butylbenzene	U	U	ug/L	0.45	1.35	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Styrene	U	U	ug/L	0.31	0.93	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Tert-Butylbenzene	U	U	ug/L	0.40	1.20	5030/8260B	07/05 13:40	07/05 13:40	MAZ

Report To:
 Craig Brugger
 Layne Christensen Co-FL
 5061 Lockett Road
 Fort Myers, FL 33905

Page 17 of 17
Report Printed: 07/19/12
Submission # 1207000020
Order # 22613

Project: Injection Well Pri/Sec DW
Site Location: Turkey Point, Homestead, FL
Matrix: Drinking Water

Sample I.D.: Upper Zone
Collected: 07/02/12 09:00
Received: 07/02/12 15:45
Collected by: Argelio Pifferrer

LABORATORY ANALYSIS REPORT

PARAMETER	RESULT	QC	UNITS	MDL	PQL	METHOD	DATE EXT.	DATE ANALY.	ANALYST
Tetrachloroethene	U	U	ug/L	0.42	1.26	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Toluene	U	U	ug/L	0.31	0.93	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Trans-1,2-Dichloroethene	U	U	ug/L	0.21	0.63	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Trans-1,3-Dichloropropene	U	U	ug/L	0.28	0.84	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Trichloroethene	U	U	ug/L	0.34	1.02	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Trichlorofluoromethane	U	U	ug/L	0.48	1.44	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Vinyl Chloride	U	U	ug/L	0.79	2.37	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Xylene, m & p	U	U	ug/L	0.80	2.40	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Xylene, o	U	U	ug/L	0.32	0.96	5030/8260B	07/05 13:40	07/05 13:40	MAZ
Gross Alpha	58.7 ± 7.6		pCi/L	8.0	24.0	EPA 900.0	07/12 06:21	07/13 10:11	E83033
Radium-226	3.4 ± 0.3		pCi/L	0.20	0.60	EPA 903.1	07/10 08:44	07/17 11:01	E83033
Radium-228	0.9U ± 0.6		pCi/L	0.90	2.70	EPA Ra-05	07/10 08:44	07/17 12:04	E83033

* (*) Matrix spikes outside recovery limits

Unless indicated, soil results are reported based on actual (wet) weight basis.

Analytes not currently NELAC certified denoted by ~.
 Work performed by outside (subcontract) labs denoted by Cert.ID in Analyst Field.
 Results relate only to this sample.

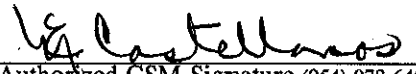
QC=Qualifier Codes as defined by DEP 62-160

U=Analyzed for but not detected.

Q=Sample held beyond accepted holding time.

I=Value is between MDL and PQL.

J=Estimated value.


 Authorized CSM Signature (954) 978-6400
 Florida-Spectrum Environmental Services, Inc.
 Certification # E86006

SUBMISSION #

1207-030

Logged into
LIMS by: *KL*

CHAIN OF CUSTODY RECORD

1460 W McNab Road Ft Lauderdale FL 33309
940 Alt. 27 South Babson Park, FL 33827
630 Indian Street Savannah, GA 31401
528 Gooch Road Fort Meade FL 33841Tel: (954) 978-6400
Tel: (863) 638-3255
Tel: (912) 238-5050
Tel: (863) 285-8145
Fax: (954) 978-2233
Fax: (863) 638-3637
Fax: (912) 234-4815
Fax: (863) 285-7030

DUE DATE Requested

RUSH RESERVATION #

Rush Surcharges apply

Report to: Layne Christensen Company

Invoice to: Layne Christensen Company

Purchase
Order #Project Name
and/or Number : Injection Well Primary's Secondary Drinking Water Testing

Phone: 239.275.1029/239.275.1025

Project
Mgr: Brooke Allen/Craig BruggerSample Name:
(printed)

Arecibo PIERRENER

Sampler
Signature

Analysis Required

Email: cbrugger@laynechristensen.com
bsallen@laynechristensen.comORDER #
Lab Control NumberSample
IDDate
SampledTime
Sampled

Matrix

Bottle
&
Pres.Combo
CodesNumber of
Containers
Received
& NELAC
Letter
Suffixes
A-?Primary
Secondary
DW
Standards

Field Tests

P
H
T
E
M
P
CC
O
N
D
I
T
I
O
N
SD
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S
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E
R
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I
C
E7.68
08.09
1207
08.0

08.0

08.0

Shaded Areas For
Laboratory Use Only

1 24613

2 UPPER ZONE

07-02-12

9:00

DW

21

X

7.68

08.09

1207

08.0

08.0

08.0

08.0

08.0

08.0

Special Comments: * PLEASE SEE ATTACHED LIST FOR ANALYSIS!!!
"I waive NELAC protocol" (sign here) >

Deliverables:

QA/QC Report Needed?

Yes

No

(additional charge)

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

Sample Custody & Field Comments

Temp as received: 4 C

Custody Seals? Y N

Billable Field Time: 2 hrs

Misc. Charges:

Bottle Type
A-liter amber
B-Bacteria bag/bottle
F-500 ml
L-liter bottle
S-soil jar
T-250 ml
V-40 ml vial
W-wide mouth
X-otherO-125ml
Plastic
Litter
G-Gallon

Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

A-ascorbic acid
C-CHCL
Cu-CuSO₄
H-HNO₃
M-MCAB
N-NaOH
NH₄-NH₄CLP-H₃PO₄
S-H₂SO₄
T-Na₂S₂O₅-H₂O
U-Unpreserved
P-H₃PO₄
Z-zinc acetate

2

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

A-liter amber
B-Bacteria bag/bottle
F-500 ml
L-liter bottle
S-soil jar
T-250 ml
V-40 ml vial
W-wide mouth
X-otherO-125ml
Plastic
Litter
G-Gallon

Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

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Preservatives

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Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

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Received by:

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07-02-12

1554

7/10/12

1555

1555

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Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

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T-250 ml
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W-wide mouth
X-otherO-125ml
Plastic
Litter
G-Gallon

Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

A-liter amber
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F-500 ml
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X-otherO-125ml
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Litter
G-Gallon

Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

A-liter amber
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F-500 ml
L-liter bottle
S-soil jar
T-250 ml
V-40 ml vial
W-wide mouth
X-otherO-125ml
Plastic
Litter
G-Gallon

Preservatives

1

Received by:

Arecibo PIERRENER

07-02-12

1554

7/10/12

1555

1555

1555

Layne Christensen

upper/lower zone

TABLE 2
LIST OF WATER QUALITY PARAMETERS
NEEDED FOR BACKGROUND ANALYSIS

PRIMARY DRINKING WATER STANDARDS

PARAMETER

Alachlor (Polychlorinated Biphenyl or PCB)
Aldicarb
Aldicarb sulfoxide
Aldicarb sulfone
Aroclors (Polychlorinated Biphenyls or PCBs)
Alpha, Gross
Antimony
Arsenic
Atrazine
Barium
Benzene
Benzo(a)pyrene
Beryllium
Bis(2-ethylhexyl) adipate (Di(2-ethylhexyl) adipate)
Bis(2-ethylhexyl) phthalate (Di(2-ethylhexyl) phthalate)
Cadmium
Carbofuran
Carbon Tetrachloride (Tetrachloromethane)
Chlordane
Chlorobenzene (Monochlorobenzene)
Chloroethylene (Vinyl Chloride)
Chromium
Coliforms, Total
Cyanide
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dalapon (2,2-Dichloropropionic acid)
Dibromochloropropane (DBCP)
1,2-Dibromoethane (EDB, Ethylene Dibromide)
1,2-Dichlorobenzene (o-Dichlorobenzene)
1,4-Dichlorobenzene (p-Dichlorobenzene or Para Dichlorobenzene)
1,2-Dichloroethane (Ethylene dichloride)
1,1-Dichloroethylene (Vinylidene chloride)
1,2-Dichloroethylene (cis-1,2-Dichloroethylene or trans-1,2-Dichloroethylene)
cis-1,2-Dichloroethylene (1,2-Dichloroethylene)
trans-1,2-Dichloroethylene (1,2-Dichloroethylene)
Dichloromethane (Methylene chloride)
1,2-Dichloropropane
Di(2-ethylhexyl) adipate (Bis(2-ethylhexyl) adipate)
Di(2-ethylhexyl) phthalate (Bis(2-ethylhexyl) phthalate)
Dinoseb
Diquat
EDB (Ethylene dibromide, 1,2-Dibromoethane)
Endothall
Endrin
Ethylbenzene
Ethylene dichloride (1,2-Dichloroethane)
Fluoride
Glyphosate (Roundup)
Gross Alpha
Heptachlor
Heptachlor Epoxide
Hexachlorobenzene (HCB)
gamma-Hexachlorocyclohexane (Lindane)
Hexachlorocyclopentadiene
Lead

PRIMARY DRINKING WATER STANDARDS, CONT'D

PARAMETER

Lindane (gamma-Hexachlorocyclohexane)
Mercury
Methoxychlor
Methylene chloride (Dichloromethane)
Monochlorobenzene (Chlorobenzene)
Nickel
Nitrate (as N)
Nitrite (as N)
Total Nitrate + Nitrite (as N)
Oxamyl
p-Dichlorobenzene or Para Dichlorobenzene (1,4-Dichlorobenzene)
Pentachlorophenol
Perchloroethylene (Tetrachloroethylene)
Picloram
Polychlorinated biphenyl (PCB or Aroclors)
Radium
Roundup (Glyphosate)
Selenium
Silver
Silvex (2,4,5-TP)
Simazine
Sodium
Styrene (Vinyl benzene)
Tetrachloroethylene (Perchloroethylene)
Tetrachloromethane (Carbon Tetrachloride)
Thallium
Toluene
Toxaphene
2,4,5-TP (Silvex)
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene, TCE)
Trihalomethanes, Total
Vinyl Chloride (Chloroethylene)
Xylenes (total)

SECONDARY DRINKING WATER STANDARDS

PARAMETER

Aluminum
Chloride
Color
Copper
Ethylbenzene
Fluoride
Foaming Agents (MBAS)
Iron
Manganese
Odor
pH
Silver
Sulfate
Toluene
Total Dissolved Solids (TDS)
Xylenes
Zinc

**MUNICIPAL WASTEWATER MINIMUM CRITERIA
GROUND WATER MONITORING PARAMETERS**

INORGANICS

Ammonia
Nitrogen (organic)
Total Kjeldahl Nitrogen
Total Phosphorus (phosphate)

VOLATILE ORGANICS

Chloroethane
Chloroform
para-Dichlorobenzene (1,4 Dichlorobenzene)
1,2-Dichloroethylene (cis-1,2-Dichloroethylene or trans-1,2-Dichloroethylene)

BASE/NEUTRAL ORGANICS

Anthracene
Butylbenzylphthalate
Dimethylphthalate
Naphalene
Phenanthrene

PESTICIDES AND PCBs

Aldrin
Dieldrin

ACID EXTRACTABLES

2-chlorophenol
Phenol
2,4,6-trichlorophenol

OTHER

Conductivity
Biological Oxygen Demand
Chemical Oxygen Demand
Temperature

END OF SECTION

Appendix Q

**Pressure Test Summary
Sheet and Pressure Gauge
Calibration Sheet**

Florida Power & Light Company**Turkey Point Units 6 & 7****Dual-Zone Monitor Well DZMW-1****6 3/8-inch Diameter FRP Casing Pressure Test****Client:** Florida Power & Light Company**Well Name:** DZMW-1**Date:** 27-Jun-12**Observer:** Sally Durall (MHC)
Mike Jordan (FPL)**Base of Casing:** 1,860 feet bpl**Packer Depth:** 1,844 feet bpl

<u>Time</u>	<u>Lapse Time (minutes)</u>	<u>Casing Pressure (psi)</u>	<u>Comments</u>
1700	0	151.5	Start Test
1705	5	151.5	
1710	10	151.5	
1715	15	151.5	
1720	20	151.5	
1725	25	151.5	
1730	30	151.5	
1735	35	151.5	
1740	40	151.5	
1745	45	151.5	
1750	50	151.5	
1755	55	151.5	
1800	60	151.5	End Test

Note: 3 gallons of water were released during pressure bleed-off.
feet bpl = feet below pad level



McDaniel Controls, Inc.

PHONE (985) 758-2782 Boutte
(504) 467-1333 New Orleans
FAX (985) 758-1688
WEB www.mcdanielcontrols.com

P. O. BOX 187 • LULING, LOUISIANA 70070 U.S.A.

Certificate of Calibration

Report number FASTCAL-C01416

Manufacturer	Model	Customer Code	Serial Number	Calibration Date	Expiration Date
McDaniel Controls	FG	BDS	111	6/13/2012	

Model Uncertainty
+/- ASME 3A of span (0.25%)

All instrument calibrations are verified for accuracy before they are shipped. The recommended calibration interval for this instrument is 12 months from the date of verification. Your particular quality assurance requirements may supersede this recommendation.

As Received Condition: In tolerance

As Left Condition: In tolerance

Laboratory ambient conditions throughout this calibration were:

Temperature 77°F / 25° C
Humidity 50 to 70% RH
Pressure 29.8 in.

Reference Standards used in this calibration are traceable to the National Institute of Standards and Technology of the United States, through the following report numbers:

Manufacturer	Model	Serial Number	Report Number	Due Date	Reference Uncertainty
Crystal Engineering	1KPSIXP2I	72633	118872	29-Sep-12	0-20% of FS: $\pm(0.02\%$ of FS); 20%-100% of FS: $\pm(0.1\%$ of Rdg)

This certificate shall not be reproduced except in full, without written approval.

Quality Representative

DISTRIBUTORS WORLD-WIDE

Quality Pressure Gauges
Standard and Glycerin-Filled

Accessories
Snubbers & Diaphragms

Corporate Headquarters — 14148 Highway 90 • Boutte, Louisiana 70039 U.S.A.

Test Results

Report number FASTCAL-C01416

As Received Test Results

300 PSI

Reference Reading	Gauge Reading	Allowable Tolerance	Difference	Difference (% of FS)	Condition
0.0	0	0.7	0.0	0.00%	Pass
49.7	50	0.7	0.3	0.10%	Pass
99.7	100	0.7	0.3	0.10%	Pass
149.5	150	0.7	0.5	0.17%	Pass
200.1	200	0.7	-0.1	-0.03%	Pass
250.2	250	0.7	-0.2	-0.07%	Pass
300.0	300	0.7	0.0	0.00%	Pass
249.9	250	0.7	0.1	0.03%	Pass
199.4	200	0.7	0.6	0.20%	Pass
149.3	150	0.7	0.7	0.23%	Pass
99.5	100	0.7	0.5	0.17%	Pass
49.4	50	0.7	0.6	0.20%	Pass
0.0	0	0.7	0.0	0.00%	Pass

As Left Test Results

300 PSI

Reference Reading	Gauge Reading	Allowable Tolerance	Difference	Difference (% of FS)	Condition
0.0	0	0.7	0.0	0.00%	Pass
49.7	50	0.7	0.3	0.10%	Pass
99.7	100	0.7	0.3	0.10%	Pass
149.5	150	0.7	0.5	0.17%	Pass
200.1	200	0.7	-0.1	-0.03%	Pass
250.2	250	0.7	-0.2	-0.07%	Pass
300.0	300	0.7	0.0	0.00%	Pass
249.9	250	0.7	0.1	0.03%	Pass
199.4	200	0.7	0.6	0.20%	Pass
149.3	150	0.7	0.7	0.23%	Pass
99.5	100	0.7	0.5	0.17%	Pass
49.4	50	0.7	0.6	0.20%	Pass
0.0	0	0.7	0.0	0.00%	Pass

Appendix R

Video Survey Summary

Sheet

Florida Power & Light Company Turkey Point Units 6 & 7 Dual-Zone Monitor Well DZMW-1 Final Video Survey Summary		
Date: 20-Jul-12		
Observer: Sally Durall		
Depth in feet below pad level		Observations
From	To	
0	100	Casing joints at 29 (transition piece), 60, and 89 feet bpl.
100	200	Casing joints at 119, 148 and 177 feet bpl.
200	300	Casing joints at 207, 237, 266 and 296 feet bpl.
300	400	Casing joints at 325, 352 and 382 feet bpl.
400	500	Casing joints at 411, 440, 469 and 499 feet bpl.
500	600	Casing joints at 528, 555 and 587 feet bpl.
600	700	Casing joints at 617, 645 and 674 feet bpl.
700	800	Casing joints at 703, 733, 762 and 791 feet bpl.
800	900	Casing joints at 821, 850 and 880 feet bpl.
900	1,000	Casing joints at 909, 939, 968 and 998 feet bpl.
1,000	1,100	Casing joints at 1,026, 1,065 and 1,085 feet bpl.
1,100	1,200	Casing joints at 1,115, 1,145 and 1,174 feet bpl.
1,200	1,300	Casing joints at 1,204, 1,233, 1,263 and 1,292 feet bpl.
1,300	1,400	Casing joints at 1,321, 1,350 and 1,380 feet bpl.
1,400	1,500	Casing joints at 1,410, 1,439, 1,469 and 1,498 feet bpl.
1,500	1,600	Casing joints at 1,526, 1,555, and 1,585 feet bpl.
1,600	1,700	Casing joints at 1,614, 1,644 and 1,673 feet bpl.
1,700	1,800	Casing joints at 1,702, 1,732, 1,762 and 1,792 feet bpl.
1,800	1,905	Casing joint at 1,821 and the California packer connection to the FRP casing is at the depth of 1,851 feet bpl. The base of the California packer is at the depth of 1,857 feet bpl. The open borehole from the depth of 1,857 to 1,887 feet bpl is a fairly gauged hole. The sediments at the bottom of the borehole did not allow a visual inspection below the depth of 1,887 feet bpl due to high turbidity.
bpl = below pad level		

