

# EXHIBIT 6



## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

LAN 04-06

January 6, 2010

Mr. Michael P. Halpin, P.E.  
Administrator, Siting Coordination Office  
Department of Environmental Protection  
3900 Commonwealth Boulevard, MS 48  
Tallahassee, FL 32399-3000

*Mike*  
Dear Mr. Halpin:-

**Subject: FPL Turkey Point Units 6 & 7, PA03-45A3  
Site Certification Application  
Power Plant & Associated Facilities (Non-Electrical)  
Second Completeness Review**

South Florida Water Management District (SFWMD) staff has completed its review of the above subject responses. We have identified a number of outstanding completeness items. Prior to listing those items, we have comments pertaining to our review of the related comprehensive plan amendment applications submitted to Miami-Dade County for the proposed roadway improvements and the fill source/water management feature (please note that the SFWMD does not consider the fill source to be a water management feature; however, we are including references to it in our letter since FPL refers to it as such in their application). We also have comments concerning certain statements made by FPL in the responses. In addition, we are providing you with a summary (i.e., our perspective) of the ground water modeling information submitted by FPL on October 9, 2009.

### Comprehensive Plan Amendment Applications

Please note that the completeness items contained within this letter are not intended to restrict any formal SFWMD comments, recommendations and/or objections that may be issued on the proposed comprehensive plan amendments associated with this application (for the proposed roadway improvements and fill source/water management feature). During the formal comprehensive plan amendment review process, pursuant to Chapter 9J-5, F.A.C., the SFWMD will perform a detailed evaluation of all water resource-related issues associated with the proposed amendments and will provide its formal comments, recommendations and/or objections to the Florida Department of

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Community Affairs (DCA). In addition, please note that our completeness questions/comments and the issues addressed in our agency report, including our recommended conditions of certification, can only address these features as currently proposed. They cannot address changes to these features that may occur after finalization of our agency report as a result of the Chapter 9J-5, F.A.C., review process. Any changes to these features that occur subsequent to finalization of our agency report may require additional completeness review and/or changes to our agency report and our recommended conditions of certification.

## Statements Made By FPL in Responses

The following comments apply to two themes recurring throughout FPL's completeness responses: first, that a SFWMD request is outside the scope of a completeness request for additional information and FPL has not been able to identify a regulatory standard requiring the information, and second, that the SFWMD request is premature and seeks information that will not be available or necessary until the post-certification review process.

Regarding to the first item, Section 403.507(2)(a)2., F.S., directs the water management districts to prepare a report as to matters within its jurisdiction, including but not limited to, the impact on water resources, regional water supply planning, and SFWMD-owned lands and works. The SFWMD has broad responsibilities under Chapter 373, F.S., in regard to water resources, and all the information requested is necessary for preparation of an adequate Agency Report. Legal citations for proposed conditions will be provided in our agency report as required by Section 403.507(3), F.S.

Regarding the second item, we need information of sufficient comprehensiveness and quality in order to prepare our agency report and recommend meaningful conditions of certification. The information requested by the SFWMD is necessary for review of matters that should be included in our Agency Report.

## Ground Water Modeling Summary

Regarding the ground water modeling information submitted on October 9, 2009, in support of this application, it should be noted that this information was not included in the original application and, therefore, has not been previously reviewed by the SFWMD. Subsequent to submittal of this additional ground water modeling information, SFWMD modeling staff met with FPL staff and modeling consultants to discuss technical issues related to the ground water modeling information submitted. The following summary is based on staff's review of the ground water modeling and the outcome of our meeting with FPL. Please note that the purpose of this summary is to place these issues into proper context with respect to our review of the overall

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application. As previously mentioned, specific completeness items related to the ground water modeling are provided further below and are identified by previous SFWMD question number.

The ground water model (built using MODFLOW and the Visual MODFLOW tool) is a steady state, constant density model. It has no water quality features active and does not purport to simulate density dependent flow or salinity changes resulting from any proposed operations or actions. FPL has indicated, in both the responses and in verbal communications with staff, that this tool is limited in use and scope to two specific narrow questions:

- 1) What is the pumping rate required to dewater the power block area, as described in the application?; and
- 2) What is the origin of the water pulled into the radial collector well system?

In both cases, according to FPL, the focus of the modeling analyses is on pump induced drawdown, which FPL contends is the basis of the SFWMD's completeness questions. FPL has made no claim to have addressed flows resulting from water with different temperature or density, both of which are factors associated with the proposed project.

The SFWMD has identified a number of issues associated with the modeling that focus on the following aspects of the modeling:

- *Conceptualization and Configuration*
- *Boundary Conditions*
- *Parameterization*
- *Calibration*

## *Conceptualization and Configuration*

The entire model domain is assumed to be constant density and saline. Both of these assumptions are inconsistent with other submitted documentation. The simulation bounds of the model are neither all saline nor are they of the same density. FPL has asserted that the assumption is valid for the type of analyses (pump induced drawdown of flux) conducted. While this may be possible in the narrowest interpretation, it is likely that impacts of density dependent flow or temperature induced buoyancy may dominate in some areas; however, the modeling provided does not afford the SFWMD or FPL the opportunity to examine these situations. Also, it is unusual for a system that is made up of fresh, brackish, salt and hyper-saline water to be generically represented as sea water. While we understand an equivalent fresh water head was used, the impacts of this representation on gradients, stage (heads), simulated drawdown, and flows, as well as conclusions derived from these, need to be further explored and justified.

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## *Boundary Conditions*

By utilizing a steady state simulation, the impact of selected boundary conditions will propagate over the entire model. By definition, a steady state is reached when all hydrologic drivers, including those specified at the boundaries, reach equilibrium. This assumption makes the specification of the model boundaries, such as head in the constant head cells that represent Biscayne Bay, very crucial. It is understood that for permitting purposes, non-exact simulations may be acceptable, if they are conservatively estimated; however, a non-conservative estimate (e.g., the water level in Biscayne Bay) could result in under-estimation or over-estimation of pumping rate necessary to achieve necessary drawdown during dewatering. Similarly, a non-conservatively selected stage in Biscayne Bay could overestimate the contribution of this boundary (source) to the radial collection well system. It is typical in these scenarios for extensive sensitivity analyses to be performed to establish the sensitivity of the outcome or conclusions, to erroneous or non-conservatively specified boundary conditions. FPL has applied an average value to the boundary representing Biscayne Bay. This may mask tidal or seasonal trends and is unlikely to represent the critical condition for dewatering or assessing the impacts of dewatering.

## *Parameterization*

In selecting model parameters and applying them to the model cells, FPL has used a homogeneous representation of aquifer parameters in a highly heterogeneous aquifer system. This representation is, along with some unusual layering in the model construct, suspect, and must be tested to ensure that it does not negate conclusions drawn from the model. Specific concerns include the representation of the vertical hydraulic conductivity of the top two layers in the model (1 to 1 ratio for  $K_h$  to  $K_v$ ), the representations of those layers in locations where canals and other surface features intersect the conceptual (or physical) tops of the model layers, as well as the representation of the vertical connectivity in layers that were split for predictive simulations following the calibration. It is important for FPL to demonstrate that the conclusions and determinations based on modeling remain unchanged, with more correct representation of model parameters.

## *Calibration*

The model was calibrated to the results of on-site pump tests (quantitative) and to regional groundwater gradients and flow directions (qualitative). Both calibrations were based on steady state simulations. FPL justified these simulations by the rapid response of the system to the volumes extracted during the pump test. This was further justified by the intent to apply the tools also in steady state. While these justifications

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are understood, the calibration remains insufficient and does not represent stresses to the system similar in magnitude to the intended applications. In addition, the conditions used for calibration do not demonstrate the impact of the effect of boundary conditions on the simulation results. Lastly, the model does not include important on-site operations or features present during the pump test that could contribute to the observed data to which the model is calibrated. The foregoing notwithstanding, a review of the calibration results presented show a number of situations where multiple monitoring wells show exactly the same response in the model while they vary in the measured data. This may be suggestive of impacts of a specified boundary or inadequately tuned model parameter. If the variability that is missing is important to the required outcome from the model, then the model may not be adequately calibrated for use.

## Additional Completeness Items

The following items need to be addressed in order for the SFWMD to complete its evaluation of the proposed project and prepare its Agency Report:

### SFWMD-A-2

- (1) The response to this question states that the water management feature will be constructed so that water could be pumped from the SFWMD C-103 Canal to the facility to improve the hydration of adjacent wetlands. Please address the following:
  - (a) It appears that the CH2M Hill design report submitted in support of the response considered only historical flows in the C-103 Canal for the evaluation. Has an evaluation been undertaken to quantify the volume of water available from the C-103 Canal in excess of that required for CERP or other restoration projects? Please be advised that the routing of water from the C-103 Canal into the water management feature will require a Diversion and Impoundment water use permit from the SFWMD. Please provide an evaluation that quantifies the volume of water available to the proposed project in excess of that required by CERP and other restoration projects.
  - (b) The proposed use of water from the C-103 Canal constitutes a consumptive use as defined in Section 1.8 of the Basis of Review for Water Use Applications within the SFWMD. However, the application does not include information in support of this requested consumptive use. Please provide all supporting documentation and analysis that provide reasonable assurances that the condition for permit issuance, including whether the proposed use is a reasonable-beneficial use, as defined in Chapter 373.019(13), F.S., will not interfere with existing

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legal uses, and is consistent with the public interest, pursuant to Section 373.223, F.S. As part of this demonstration, the conditions for permit issuance in Rule 40E-2.301, F.A.C., must be met for the proposed withdrawals from the C-103 Canal and any other consumptive use withdrawals associated with the proposed project. Please note that, based on the information provided regarding the proposed use of water to date, the SFWMD has significant concerns regarding compliance with these statutes and rules.

- (c) Reference is made to the use of water to complement wetland restoration efforts on FPL property. Is the requested consumptive use of water from the C-103 Canal necessary for meeting the mitigation requirements of a regulatory agency? Please note that a consumptive use right is issued for a finite period of time and is not a perpetual right to water.
- (d) Please provide the analysis used to determine that the mining operation will not breach the preferential flow paths in the aquifer resulting in the accelerated westward movement of saline water.
- (e) Please provide an analysis demonstrating the potential impacts to the ecology of Biscayne Bay that may occur from operation of the proposed water management feature.

## SFWMD-B-3

- (2) What is the abundance and lateral continuity of preferential flow zones in the Biscayne aquifer in the area of the proposed radial wells, including the area shown in red on Figure 52 in the Bechtel report? Please evaluate the adequacy of APT point measurements from drilling sites (versus broader geophysical surveys, such as those performed at the Unit 6&7 construction site) to characterize hydrologic conditions and assess risks associated with the radial well proposal.
- (3) In consideration of recent work performed by Cunningham (2004, 2006, 2009) and site-specific investigations, has enough data been collected to confirm the presence or absence of preferential flow zones in the area to be impacted by radial well operations? If present, how were preferential flow zones considered within the modeling calculations? Please provide geophysical data for the region of the radial wells and adjacent to the radial wells and provide improved modeling or a pilot test using tracer results to more accurately evaluate potential radial well construction and operation impacts. In addition, please address the following:
  - (a) What is the quantitative effect of preferential flow zones, if present, on the exchange of Industrial Wastewater Facility (IWF) water and associated materials between the IWF and Biscayne Bay?

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- (b) The response addresses the concern for voids as they relate to collapse hazard for structures. However, this question also requests additional information concerning preferred flows and flow paths resulting from secondary porosity. Please address this question as it relates to groundwater flow; specifically, the potential for preferred flow that could extend the field of impact of on-site activities well beyond the immediate vicinity of the site.
- (c) Please provide a copy of the referenced report "Geohydrologic Conditions Related to the Construction of the Cooling Ponds by Brown and Root (Page 26 of 88, Bechtel Modeling Report).

## SFWMD-B-4

- (4) Were the findings based on the MACTEC data referenced in the response to this question incorporated in the ground water modeling for the site? Was the selection of the modeling tool used for this effort based on (or consistent with) this knowledge? Was secondary porosity considered in the ground water modeling submitted for this project? If not, do the conclusions reached in this application remain unchanged?

## SFWMD-B-6

- (5) Two test zones characterized by macroporosity were identified for the testing program in the Key Largo Limestone and Fort Thompson Formation. Were these zones identified in both the Turkey Point and Unit 6 & 7 test areas? If so, are they laterally continuous between the two locations? Drilling logs for soil borings advanced at Turkey Point and the Unit 6 & 7 test areas consistently identify a zone of lost circulation encountered between approximately 20 to 34 feet in depth. Is this zone representative of the upper macroporosity zone referenced?
- (6) The response states that no "large vugs or cavities" were observed in the acoustic televiwer data for Units 6 & 7, and locations of vuggy and weathered zones on televiwer correspond with increases in measured borehole diameter and suspension P-S velocity drops. A review of the acoustic televiwer log for B-701 indicates several apparent cavities at the following depths: 24 to 26 feet; 46 to 48 feet; 65 to 67 feet; 68 to 70 feet; 82 to 86 feet; and 95 to 99 feet. Please describe in quantitative terms what constitutes "large vugs or cavities"? How are they distinguished from the referenced vuggy and weathered zones? Would large vugs and cavities not also be characterized by increases in measured borehole diameter and suspension P-S velocity drops?

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- (7) The response provides a range of porosity characteristics for the site. While not relevant in steady state modeling, have the characteristics of aquifers with porosity in this range been considered in the implementation and parameterization of the existing model? The information provided in response to this question indicates that consideration of secondary porosity and preferred flow paths is essential for a model of this site. Has FPL conducted sensitivity analyses or additional simulations with conservatively selected parameters to assess the potential impact of preferred flow paths on model results and conclusions?

## SFWMD-B-10

- (8) The response suggests that the gradient reverses past the interceptor ditch in the dry season. Is the gradient westward at any time east of the interceptor ditch? Is this consistent with the intended operation of the interceptor ditch? Please clarify. Is there field data to confirm this observation?

## SFWMD-B-11

- (9) The response acknowledges that a decrease in water level west of the location of the salt water interface can cause movement of the interface. Similarly, an increase in water level (potentiometric surface) east of the interface could drive movement of the interface. Please provide supporting data or analyses (including modeling) to demonstrate that this project, including the planned discharge of upwards of 30 MGD to the cooling canal system, will not increase the potentiometric surface or induce movement of the salt water interface or hyper-saline water from the site.

## SFWMD-B-15

- (10) The response states that the Water Use Basis of Review (BOR) is not applicable due to withdrawal of saltwater via the radial wells. Saltwater is defined in Section 1.8 of the BOR as groundwater or surface water with a chloride concentration at or above 19,000 mg/L. The original hydrologic characterization, as submitted, states that almost all of the water withdrawn from the radial collector wells will be recharged from Biscayne Bay. The response to this question assumes the salinity of the Bay to be above that of seawater at all times and that the three dimensional ground water model supports the Bay as the primary source. The statements made in the response appear to be inconsistent with the water quality sampling results presented in the HDR report, "Turkey Point Exploratory Drilling and Aquifer Performance Test Program, August 19, 2009", for monitoring wells MW-2 through MW-5 and the pumping well PW-1, collected on February 17,

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March 18, and April 5, 2009 (Appendix G-2), for the APT. The chloride concentration observed in these wells decreased and was below that of seawater at all locations during the APT and ranged between 17,500 mg/L and 18,600 mg/L, suggesting that saline water, as defined by Section 1.8 of the BOR, from the near-shore environment, will be withdrawn by the radial wells. Additionally, the fluid conductivity graph for MW-1SS (Fig 6.3), screened from 12.7 to 17.7 feet, exhibited salinities of around 20 to 23 PSU, prior to and during the APT, well below the salinity of seawater (approximately 32 PSU). Please address the following concerning the ground water modeling and the APT:

- (a) The vertical hydraulic conductivity of the layer directly below the constant head boundary condition representing Biscayne Bay is specified as equal to the horizontal hydraulic conductivity. The ratio typically used in literature is 10:1 while the ratio used in this model is 1:1, allowing higher flows downward from this fixed head that represent the bay. In addition, the hydraulic conductivity of the aquifer in which the radial wells are completed is not conservatively selected nor does it reflect the preferred flow due to secondary porosity indentified in several parts of the submittal. Please provide additional information, including sensitivity analyses, on the hydraulic properties below the Biscayne Bay boundary and the hydraulic properties of the layer in which the wells are completed to show a range of possible outcomes. Also, please provide particle tracking results showing the flow paths to the radial wells, consistent with the drawdown provided in the modeling report (Bechtel, 2009). Please provide particle tracking results depicting backwards tracking from the location of the radial wells as well as forward tracking from locations at and proximal to the cooling canal system and Biscayne Bay in order to confirm the contribution to the radial wells from different parts of the model domain. Please provide confirmation of the claimed source of flow to the radial wells through model results demonstrating the impacts of preferred flow paths using MODFLOW package such as the US Geological Survey Conduit Flow Process for MODFLOW (Shoemaker, W.B., Kuniatsky, E.L., Birk, S., Bauer, S., and Swain, E.D., 2007, Documentation of a Conduit Flow Process (CFP) for MODFLOW-2005: U.S. Geological Survey Techniques and Methods, Book 6, Chapter A24, 50 p)
- (b) The issue regarding the potential migration of the brine from/underlying the cooling canal system towards Biscayne Bay, as a result of operation of the radial wells, was not addressed. The modeling concluded that 97 percent of the water is coming from Biscayne Bay, mainly from the Constant Head Cells located immediately above the simulated radial wells.

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- (c) A review of the model layering indicates that the upper layers in the model slope upwards and thin from east to west as they approach the various surface water features and canals at the existing site. In addition, the upper layers appear to collapse to the bottom of these canal systems. The river package of MODFLOW provides or removes water from the model based upon, in part, the properties of the layer it is assigned too. Were the aquifer properties modified to reflect that the base of the canal is in the Key Largo or Ft. Thompson formations? If not, what is the rationale for this approach?
- (d) The simulated cross-sections at the SFWMD L-31 Canal and the E-6 Canal do not match available data. Please correct. The SFWMD L-31E Canal is only 10-12 feet in depth and is simulated as significantly deeper. The canal furthest to the east (E-6 Canal) is shown in the Ray Lyerly cross-section (1976) plans as -21 ft NGVD (cross section D) while it is shown and modeled at the same depths as the shallow area in Canals C1 to C-32. Additional data indicates that the canal joins the Grand Canal where it deepens to -28 feet NGVD.
- (e) The response states that the simulation of the radial wells requires that the Key Largo Formation be split into multiple layers. Were the anisotropy and hydraulic conductivities of these new layers modified as a result of this?
- (f) It does not appear that the model includes the intake pumps for the existing plant. How was the observed head near the intake pumps simulated, considering that the data provided shows a significant head reduction near the intakes?
- (g) The model concludes that the majority of the water is coming from the constant head cells above the radial collector wells. Figure 5.7 of the HDR report indicates that water levels in both the cooling canals and MW-5 drop to nearly 6 feet below sea level by the end of the Turkey Point APT. These two sites are separated by the Barge slip which is connected to Biscayne Bay and does not show a corresponding reduction in levels, perhaps suggesting that the horizontal flow is greater than indicated by the model. Please provide an explanation for these observed stages at MW-5 and IWF. Please explain why the model does not appear to be able to match the observed levels at those two sites, considering that these sites were omitted from Table 5 of the HDR APT report.
- (h) The water quality from the monitoring sites shown in Figure 6.3 of the HDR report shows a rise in salinity from just before the beginning of the APT through the APT for the industrial wastewater facility and the Barge Slip. MW-1 SS is also acting erratically; however, it tends to show increasing salinities during the same time period. FPL concludes

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from the modeling that 97 percent of the water is coming from Biscayne Bay, which appears to be hyper-saline at the time of the test. The remaining monitoring wells do not noticeably reflect this trend, with the possible exception of MW-4, which is adjacent to the industrial wastewater facility. Please provide an explanation as to why noticeable changes in salinity were not observed during the APT as recorded by the Aqua Troll Data.

- (i) No analysis was provided which indicates the degree of movement from the hyper-saline water in and underneath the cooling ponds as a result of the operation of the radial wells. Please provide an analysis of the degree of movement of this denser water. A solute transport model may be required to address this issue.
- (j) Please provide the modeling results that show that the calibrated model adequately simulates the additional aquifer performance test results conducted at the Units 6 & 7 site for the other test wells, aside from the well 7L test.
- (k) Given modeling uncertainty regarding broad-scale effects and local evidence in the HDR APT report of the presence of groundwater with lower salinity than in Biscayne Bay, please re-evaluate the effects of radial well construction and operation on freshwater resources and Outstanding Florida Waters within Biscayne Bay.
- (l) Please provide laboratory reports for the water quality sample results shown in Table 6.1 and Appendices G-1 and G-2 of the HDR report.

## SFWMD-B-19

- (11) The response refers to Table 3.3.4.2. This table does not list salinity or specific conductance and only provides an "average" value and "maximum" value. It does not state how many locations, sampling events, or periods of record associated with these summary values by these values. Please provide the previously requested data (rather than just a single average) pertaining to salinity within the Industrial Wastewater Facility.

## SFWMD-B-20

- (12) In selecting the model parameters, was accommodation made for secondary porosity observed during drilling?
- (13) The information provided contains only a qualitative description and does not contain any geotechnical information, as previously requested, to support the statements made. Please specify the basis for stating there are no direct connections to Biscayne Bay. Please provide the geotechnical information

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requested to support the statement that the area is isolated and does not connect to the Bay. If this conclusion is based on the presence of culverts draining to Biscayne Bay and no site specific geotechnical information is available, then please state accordingly.

## SFWMD-B-24

- (14) Mixing scenarios for 100 percent reclaimed water, 100 percent saline water, and 50 percent reclaimed/50 percent saline water are provided. FPL indicates that an adequate volume of reclaimed water will be available beginning in 2018. What is FPL's contingency plan if reclaimed water is not available for the provided scenarios?

## SFWMD-B-26

- (15) Please explain the finding by Genapure of very high phosphorus and zinc concentrations and low pH during the APT test (TP = 0.956 mg/L in well sample MW1-D2 P1/ on 3/17/09; TP=0.702 mg/L in SP1 on 3/17/09; Zn = 7.27 mg/L in PW-1/ on 4/13/09; Zn = 0.024 mg/L in PW-1 on 5/5/09; pH = 7.01 in PW-1 on 4/13/09).
- (16) Please explain the apparent inconsistency of specific conductance and salinity results from the APT reported from Aqua Troll measurements (with near marine values reported in Figures 6.2 and 6.3 of HDR APT report) and much lower conductance and salinity results reported from some of the same times and sites by Genapure in the HDR report. Genapure reported conductivity (in  $\mu\text{mhm/cm}$ ) of 17,300 in MW1-D2 P1 on 3/17/09, 17,600 in SP-1 on 3/17/09, and 15,500 in PW-1 on 5/5/09. Aqua Troll results from well MW-1 (a well where significant "mud loss" occurred during drilling) also exhibits relatively low salinity. Please address the implication that a relatively low salinity water source (either existing low salinity estuarine water or freshwater mixed with higher salinity water during the APT) was intercepted and affected by the APT.
- (17) Stable hydrogen (deuterium) isotope ratios in PW-1 reported by HDR (APT report) were much lower than values found in Biscayne Bay waters and also exhibited a trend of increasing ratios during the APT. This may indicate the withdrawal of water sources other than Biscayne Bay and possibly a fresh water source. This finding appears to contradict FPL's modeling estimate that Biscayne Bay water will provide 97% of radial wells withdrawals. Please explain these findings.

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- (18) Please provide digital raw data files for all Aqua Troll physical data (temp, conductivity, etc) from the APT, including from PW-1, monitoring wells, and surface water sites (including Biscayne Bay, IWF, and Barge Slip). Please note that the HDR report provides graphs (Fig. 6.2, 6.3) showing salinity from most monitoring sites; however, production well PW-1 is not included. Please provide.
- (19) Please provide all raw seepage meter data in an Excel format collected during the radial well APT at Turkey Point.
- (20) Where is site SP1?
- (21) The HDR summary stated that: "The horizontal groundwater flow pattern at the site prior to the APT was evaluated by plotting the groundwater elevation contours of a base map of the site. The water levels on February 25, 2009, representing a high tide, and on March 1, 2009, representing a low tide, show that groundwater flow is generally to the west toward the Industrial Wastewater Facility." What wind vectors were measured on those two days? How would the stated conclusions, as well as FPL inferences regarding groundwater flow and radial well water sources, change if other days of the year had differing patterns?

## SFWMD-B-27

- (22) Please provide the elevation survey that shows that the radial well construction site is "a few feet above high tide" and that ground surface elevations are typically 2.5 to 4.5 ft NAVD". Please provide data regarding long-term bay surface elevations to support FPL's conclusion that the site would be submerged (and susceptible to erosion) only during "a significant storm event".

## SFWMD-B-29

- (23) As previously requested, please provide specific core test data pertaining to waste characterization in the muck referencing those constituents from Table 4.6-1, including radiological data. In addition, please provide laboratory or other data regarding potential contaminants in the muck.
- (24) Please provide the location for the one muck test performed in 2008 for common or structural backfill. Please provide information on any other testing performed on this sample. Please indicate the number and locations of samples collected in 1976 and all other testing performed on this sample. Is the information provided an average of all samples, or an example of 1 test result?

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- (25) Please address the following for the previous subsections to this question listed below:
- (a) Please specify the timeframe in which additional protection, such as rip-rap, will be installed along the perimeter to provide erosion protection for stored muck. What additional measures will be taken after installation of temporary sheet piling during the hurricane season (June-November), or in the event of a storm or storm watch conditions, to ensure adequate protection is provided? What monitoring measures will be taken to ensure that any additional protections utilized are adequate to prevent erosion and ensure there is no interaction via ground waters or adjacent surface waters (wetlands and Biscayne Bay)? Regarding the reference to SFWMD B-40, please note that the response to this question is also incomplete.
  - (b) With respect to the industrial wastewater facility, a groundwater plume is known to exist. The plume extends past the G-III boundaries. The potential exists for contaminants within the industrial wastewater facility to enter surrounding groundwater and the surrounding surface waters, including Biscayne Bay. Materials currently within or directed into the industrial wastewater facility do not remain contained within the facility. What measures are proposed to contain the wastes within the permitted industrial wastewater facility? The statement concluding "adverse impacts to the water bodies of Biscayne Bay and the surrounding wetlands would not be expected and no monitoring is required" is not supported by the information and known site conditions.
  - (c) Please provide the radiological materials testing, as previously requested.
  - (d) Please provide the specific properties that would make muck suitable for reuse (other than for structural applications), as previously requested.
  - (e) The response only indicates the proposed location of the muck material. Please specify the disposal methods that will be employed including, but not limited to, handling and moving, erosion protection, storm events, high wind events, runoff events, management, testing of nutrients and other contaminants that may cause adverse impacts if in contact with surrounding environments, and measurements and verification procedures to demonstrate that no impacts to any surrounding areas will occur.
  - (f) Please provide the specific location, dates and types of analytical methods and procedures used to obtain the values shown in all 3 tables in this response. What is the specific basis for the assumption

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that the information provided will be applicable to the muck that will be excavated throughout the Turkey Point plant site?

- (g) The conclusion that “the locations of the storage areas are located within the industrial wastewater facility so there will be no impacts outside this facility” is not adequately justified. The industrial wastewater facility has a known groundwater plume, groundwater exchange with Biscayne Bay, as well as a potential for interaction with surface waters. Please address the concern that nutrients (including dissolved organic nutrients) and other materials derived from 1.8 million cubic yards of muck (subject to decomposition and leaching via rainwater) will enter Biscayne Bay and other adjacent areas and potentially cause ecological impacts.

## SFWMD-B-30

- (26) The response does not address the question. Please provide the information previously requested. Given the addition of about 21,000 gpm of dewatering effluent to the Industrial Wastewater Facility (IWF), how will this affect the exchange of water and materials between the IWF and adjacent areas including, but not limited to, Biscayne Bay? Based on sampling and chemical analysis of the construction site, please provide an estimate of the likely quantity of associated material (nutrients, organic carbon, salts, sulfide, contaminants, etc.) that will be routed to the IWF.

## SFWMD-B-34

- (27) The response does not address the question. Please provide the information previously requested.

## SFWMD-B-35

- (28) The responses to subsections (a) and (c) do not address the questions. Please provide the information previously requested. The response to subsection (b) refers to the response to FDEP-VII-4; however, that response only provides information on the existence of other radial well systems (with associated permits) and does not provide information or documentation regarding environmental effects. Please provide information from those sites that is relevant to an application in Biscayne Bay (e.g. karst systems with shallow water bodies supporting submerged aquatic vegetation habitat).

## SFWMD-B-36

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(29) The response to FDEP-VI-C-4 is referenced. The FDEP response states: "The extremely low recharge velocity induced by the radial collector well withdrawals will not result in significant adverse impacts to benthic resources near the radial collector wells or anywhere else in Biscayne Bay." This response is based on the Bechtel groundwater modeling estimates. Please provide additional information to address the following concerns:

(a) What is the likelihood that vertical conduits, such as solution cavities or solution enhanced fractures, will "short-circuit" the predicted relatively slow and even vertical transport of Biscayne Bay surface waters into the radial wells? What effect would such vertical conduits in the overlying strata that are hydraulically connected to laterally continuous zones of high hydraulic conductivity have on flow velocities at these surface sites and on sediment and biotic entrainment? Please provide geophysical data to address this concern.

(b) The radial wells are estimated in the Bechtel report to result in water flow velocities of up to 0.00056 cm/s at the Biscayne Bay sediment-water interface. This vertical flux can impact seagrass bed productivity and viability because it would advect porewaters in the root-zone of seagrass beds downward, replacing nutrient-rich water that is necessary for seagrass growth, with lower nutrient surface water. Please address. Please note that these rates (with porewater replacement time of less than one day) are far faster than diagenetic processes that regenerate nutrients (buried organic matter can be expected to decay on the magnitude of 1% per day). In addition to nutrient availability, other aspects of rhizosphere chemistry and microbial ecology (e.g., temperature, redox status, sulfide concentrations, microbial interactions) could be altered that could negatively affect plant physiology and growth. Please provide an analysis of this issue, including the results of experimental or modeling tests estimating the range of potential radial well effects on Biscayne Bay benthic habitat.

## SFWMD-B-39

(30) Regarding the response to subsection (b), the efficacy of turbidity curtains depends upon local wave energy. Given the open waters around Turkey Point, they would not likely be effective at times when the potential for erosion is greatest (with wind and waves). Please provide additional detailed information on plans to prevent such erosion. In addition to controlling particle movement, how will the construction area be configured to minimize the discharge of dissolved materials (including nutrients and sulfides) to adjacent waters?

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## SFWMD-B-40

- (31) Please explain/justify how the other information referenced in response to this question directly answers the question previously posed. Please substantiate the conclusions presented on page 29 with all available supporting data, rather than just modeling predictions and estimates.
- (32) The response includes statements that “there is no evidence that water from the Industrial Wastewater Facility (IWF) flows to surface waters, including Biscayne Bay” and “there is no reason to believe there would be impacts to surface waters associated with construction dewatering at the Unit 6 & 7 site”. Arguments are presented to support these statements; however, insufficient information is considered in these arguments. The response focuses on net groundwater flux from Biscayne Bay and the IWF, ignoring that very large water fluxes move both from the Bay to the IWF and from the IWF to the Bay. The Bechtel hydrologic modeling report estimates that this input to Biscayne Bay is about 4,000 acre-feet per month, equivalent to about 30,000 gpm (more than the estimated input to the IWF from dewatering the Unit 6&7 site). Given that concentrations of salts and wastewater contaminants are much higher in the IWF than in Biscayne Bay, there is almost certainly a large gross flux of these materials from the IWF to the bay and a resultant net flux in this direction as well. Additional materials will be added to the IWF from dewatering activities and muck storage. Please address the original question, considering gross fluxes of water and materials and resultant net flux between the IWF, Biscayne Bay, and other adjacent areas.
- (33) The response states that average water levels in the return canals must be at or below local sea level, and that water must flow from the east through the surficial aquifer into the IWF (based on evaporation and a net groundwater inflow). Are these statements accurate, considering outgoing tides and the southern end of the IWF where water elevations are approximately equal to sea level?
- (34) The response states that any outflow from the IWF to the underlying G-III aquifer must occur from the western distribution canals. Does this statement consider the potential for hypersaline water in the return canals to flow vertically downward?
- (35) The response states that there is no reason to expect that water flowing out of the IWF will flow back up to Biscayne Bay, or any other surface water. Does this statement consider the upward hydraulic gradients evidenced in the following well pairs in the Units 6 & 7 footprint: OW-606U& L, OW-621U&L, OW-706U, OW-721 U&L, OW-735-U, OW-802U, OW-805U, and OW-809U, listed in Table 1 of the Bechtel (2008) report? The report states (page 5) that “the well pairs

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consistently show an upward hydraulic gradient. An upward hydraulic gradient indicates groundwater flows from deeper to shallower depths". The FPL response to SFWMD-81(c) explains that the upward gradient is likely due to extracting cooling water from the return basin that is hydraulically connected to the same hydrogeologic unit as the upper zone wells. The well pairs are approximately one-half to one-mile south of the intake basin. What is the influence of extracting cooling water on vertical gradient in the Biscayne aquifer to the east of the IWF, below Biscayne Bay and intertidal areas that are closer to the plant intake than the listed well pairs?

- (36) Figure 5.7 of the HDR (2009) report shows that the water levels in the industrial wastewater facility (IWF) monitoring station and MW-5, outside the IWF, dropped significantly and closely tracked one another during the APT test period. Was this the result of pumping during the APT, extraction of cooling water from the return basin, or some other process? Is this indicative of hydraulic connection between the IWF and MW-5? If so, could an upward gradient be expected beneath MW-5 during cooling water extraction? Please provide the report graphics and data shown in Figure 5.4, 5.5, 5.7, 6.2, 6.3 and Appendix E in an electronic Excel format.
- (37) Please provide the manual field measurements/verification values (tape downs) on monitor well MW-5 graphic Figure 5.1 in the HDR APT report.

## SFWMD-B-42

- (38) Regarding the response to subsection (a), will the proposed discharges require a modification of the existing permit? If not, will these discharges be addressed in any other permit?
- (39) Regarding the response to subsection (b), please provide the specific characteristics of the wastewater discharges that will be directed into the cooling canal system. Please provide the estimated time-frames and loadings of all nutrients and other constituents that may be temporarily directed into the cooling canal system during construction. Please use site-specific data in your calculations. Please also include potential storm loadings in your estimates and any and all assumptions used in your calculations.
- (40) Regarding the response to subsection (c), the conclusion that "there is no reason to believe that construction-related wastewaters that are released to the industrial wastewater facility would impact Biscayne Bay" is not substantiated, as referenced herein or elsewhere in the information that has been provided. Given the known occurrence of the groundwater plume flowing out of the G-III aquifer

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from the industrial wastewater facility and the potential interaction with surrounding waters, including surface waters, the conclusions reached in the response are not substantiated. Please address.

## SFWMD-B-43

- (41) Please provide the information previously requested for subsections (a), (b), and (c).

## SFWMD-B-44

- (42) Review of the submitted ground water modeling shows that the parameters (vertical hydraulic conductivity) used for simulations to estimate the pumping rate necessary to achieve the required drawdown during dewatering is non-conservative and may yield a pumping rate significantly lower than is required to dewater to the desired depths. Please demonstrate, through modeling, how this volume of water will be discharged and what impacts to the groundwater system will occur as a result of discharging this volume into the cooling canal system. In simulating key features of the dewatering, such as the location of the base of the cut-off wall and the base of the excavation, changes were made to the layering of the calibrated model. Please demonstrate that these changes do not alter the model behavior and results. Please demonstrate that retaining the anisotropy ratio for horizontal and vertical hydraulic conductivity in the split layers does not result in an underestimate of the upwards flow of water and pumping rate required to dewater the pit.
- (43) How many estuarine acres are within the zone of influence of the radial wells, as shown in red on Figure 52 of the Bechtel report? What is the proportion in the Biscayne Bay Aquatic Preserve and Biscayne National Park?

## SFWMD-B-45

- (44) The response to SFWMD-B-40 acknowledges that the hydrologic exchange between the industrial wastewater facility and Biscayne Bay is tidally driven; however, the Bechtel groundwater modeling assumes constant sea level (based on June-December average). Note that average January-May water levels in Biscayne Bay are about 0.5 feet lower than June-December levels. How will the inclusion of tidal variations, including diurnal and seasonal sea level fluctuations, affect hydrologic modeling conclusions? How will this affect conclusions regarding radial well water sources and operational effects?

## SFWMD-B-46

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- (45) Please provide a copy of the referenced report: "The Turkey Point Cooling Canal Study" (Ray Lyerly, October, 1998).
- (46) FPL acknowledges the cooling canal water elevations will be, on average, approximately 0.21 ft higher in elevation during dewatering operations after discharge of this water into the cooling canal system. Please provide the following:
- (a) Information describing how these higher heads in the cooling canal system will not cause a violation of the gradient criteria in the current monitoring agreement. The current monitoring agreement requires the control water elevation of the cooling canal system to be maintained below 0.2 feet. Is increased operation of the Interceptor Ditch pumping system anticipated to overcome this implied increase in the cooling canal system water level?
  - (b) The change in head within the cooling canal system for discharging the initial estimate of 31 MGD for the duration of dewatering and for the range of likely pumpage rate to achieve dewatering from a more conservative choice of aquifer parameters, including vertical hydraulic conductivity and parameters derived from it for the various layers in the model.
  - (c) An analysis of the potential movement of the saline interface westward and northwestward as a result of the increase of the head 0.21 feet higher in the hyper-saline environment of the cooling canal system.

## SFWMD-B-47

- (47) Please provide a schematic showing areas proposed to be filled, including the proposed fill elevations.

## SFWMD-B-48

- (48) How much deeper will the barge canal be after dredging? How will dredging affect the exchange of water and materials between the industrial wastewater facility and the barge canal? What is the magnitude of this exchange currently? Please provide information on the chemical constituents within the material that is proposed to be dredged and stored on the banks of cooling canals. Please estimate leaching rates and expected fate (rate of transport out of the industrial wastewater facility to adjacent areas).

## SFWMD-B-49

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(49) Please provide the details of the proposed BMPs, as previously requested.

## SFWMD-B-50

(50) Please provide detailed information to support the conclusion on page 5-22 that “no impacts are expected as a result of construction of radial wells on the Turkey Point peninsula”.

## SFWMD-B-51

(51) The response does not clarify whether the unnatural continuous downward flux of water, as might be produced by operation of the radial well system, would impact benthic organisms adapted to normal tidal oscillatory fluxes. Please address.

## SFWMD-B-53

(52) Please provide the location, including page number references within the cited report, that contain the specific information requested by this question and to which the other references, such as salinity data, are made. Please specify how the information provided or referenced specifically answers this question. The referenced table (Table 3.3.4-1) does not show the “water quality characteristics of the potentially affected areas adjacent to the project site.” Please revise.

## SFWMD-B-55

(53) The information referenced in Section 6.1.3.1 is not adequate to address this question. Please provide the model documentation, calibration, and sensitivity analyses.

## SFWMD-B-56

(54) Please provide the data and analyses to support the statement that the “average salinity in the area of Turkey Point is 34 ppt and ocean water is 35 ppt” (the correct units should be psu). What is the areal extent of the “Turkey Point area” that is referenced in this response? Please be specific and indicate the area referenced in this question on a figure. What are the monitoring data used to support the determination of the average of the Turkey Point area and the reference for average ocean of 35 ppt? Is this average Biscayne Bay ocean or average ocean value? What is the statistical significance level in the difference between 34 and 35 (psu). Please be specific and support your conclusions with specific technical analyses (if FPL is asserting that the Turkey Point area has a mixoeuhaline salinity).

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## SFWMD-B-57

- (55) Please provide more recent estimates of groundwater flow into Biscayne Bay. Please note the variability in the various estimates. As a reminder, SFWMD staff provided FPL with this information in 2008 during the development of a monitoring plan for the Units 3 & 4 Uprate project.

## SFWMD-B-58

- (56) Please verify the correct usages of ppt and psu in the application and the responses. Although the two expressions are sometimes interchanged, they represent different measurements.

## SFWMD-B-60

- (57) Based on the information provided, the analyses could not be verified. Please provide the missing ground water model documentation and sensitivity analyses (see also SFWMD B-63). What is the basis for the statement that this change would have “no adverse impact on the estuarine biota that would be acclimated to salinity between 13 and 40 ppt”? Please indicate which estuarine biota reside in the area and are acclimated to the salinity range of 13 - 40 (psu). Please be specific. Please provide the studies that demonstrate this acclimation.
- (58) Please analyze salinity at station BISC 122 and re-evaluate calculations based on BB41. BISC 122 is the closest near-shore station to Turkey Point and is not directly influenced by regional drainage canals.

## SFWMD-B-61

- (59) Attachments SFWMD-B-63b and c are relevant to this question; however, they do not explain the origin, assumptions, and interpretation of the spreadsheet information shown. As previously requested, please provide a copy of the working model, including supporting data/documentation.

## SFWMD-B-62

- (60) Based on the information provided, the analyses could not be verified. Please provide the missing model documentation and sensitivity analyses referenced in question SFWMD-B-63.

## SFWMD-B-63

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(61) Attachment SFWMD63(a) could not be located. Please provide.

## SFWMD-B-64

(62) Were sensitivity analyses performed to establish that selected parameters do not result in underestimation of impact? Was the impact of using an anisotropy ration of 1:1 for the horizontal to vertical hydraulic conductivity instead of the more typical 10:1 ratio examined to establish how the conclusion would change as a result of this parameterization choice?

## SFWMD-B-65

(63) Please provide all data and analyses showing projected salinity increases to waters, including nearshore waters, littoral zone Biscayne Bay waters, and wetland waters as a result of cooling tower deposition. Please include the area covered by the modeling performed, all input data used, and all assumptions, including those assumptions regarding the percent use of the treated reclaimed water and saltwater from the radial wells. Was deposition from the maximum proposed amount of radial well use simulated?

(64) Please address the following concerning the table entitled "Deposition rates and concentrations resulting from treated reclaimed water and saltwater":

- (a) What is the areal extent that pertains to the information provided in the table as part of the response (i.e., what area does the information cover)?
- (b) What is the time period used to generate the numbers on the table?
- (c) How was the background number obtained? Please provide all assumptions, calculations or measurements (including locations) and data used to generate the background numbers shown on the table.
- (d) The references provided in the notes to this table could not be located. Please provide.

## SFWMD-B-66

(65) The referenced figures (FDEP- II B-53-1) could not be located. Please provide. Please quantify potential migration into the subsurface groundwater. Please provide specific information or calculations as to where the drift deposited salt may potentially migrate on an annual basis. Please also provide a seasonal analysis to compare the difference between wet season and dry season. Will the drift materials stay in place and accumulate over time? Does the potential exist

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for drift material to migrate into the subsurface groundwater and/or enter surface waters? Please provide a quantitative response.

## SFWMD-B-67

- (66) Is there any potential contact of cooling water with radiological components at any time during the cycling of the cooling water through the power plant facility to the cooling water towers? Is there any chance the cooling water may contain radiological components?

## SFWMD-B-68

- (67) Please provide documentation concerning ecological impacts to all aquatic biota in mangroves and Biscayne Bay. The discussion provided in Section 6.1.4 includes a very limited subset of aquatic biota (the mangroves) and does not address this question. In addition, please provide the increase in salinity and the reference data and information, as previously requested.

## SFWMD-B-69

- (68) Please document the pre-construction conditions of all adjacent areas that could potentially receive drift material. Please include all monitoring and testing data available for soils, waters, flora and fauna, including any recent monitoring. The referenced response to FDEP-VI-C-1 only addresses data collected for benthic monitoring within Biscayne Bay. It does not address the wetland areas that could potentially be impacted by the cooling tower deposition.

## SFWMD-B-70

- (69) Please provide the specific pages in the referenced report where the data to address this question is located. Please note that additional information may be requested following the completion of testing at the underground injection well site.

## SFWMD-B-76

- (70) Please provide the missing portions of the MACTEC report, as previously requested.

## SFWMD-B-81

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(71) Regarding the response to subsection (b), please provide data from regional monitoring wells justifying the statement that the density of groundwater in the plan area (i.e., pertaining to the domain of the groundwater model, including Biscayne Bay), is “relatively constant”.

(72) No variable density modeling results have been provided for this project, although density differences due to salt concentration and temperature are prevalent in the project area. Please provide any density dependent flow and transport modeling conducted for this project.

## SFWMD-B-83

(73) The response does not address the question. Please provide the information previously requested.

## SFWMD-B-84

(74) The response does not address the question. Please provide the information previously requested.

## SFWMD-B-87

(75) The groundwater model and model documentation suggests low drawdown impact in the proximity of the proposed dewatering activities. Please provide parameter sensitivity analyses to demonstrate the sensitivity of the conclusions to the selected parameters.

## SFWMD-B-89

(76) Please address the following pertaining to Table 3 of the Bechtel (2009) report:

- (a) The Model Calibration parameters show the vertical hydraulic conductivity for the Miami Limestone as equal to the horizontal hydraulic conductivity. Considering the semi-confined nature of the formation (and the solution used in analysis of the APT data) and vertical K values, as discussed in the HDR (2009, p. 5-5 to 5-7) report, and the published findings of aquifer heterogeneity within the Miami Limestone (Technos, 2009, Appendix A), how is a ratio of 1:1 justified in the numerical model?
- (b) Please provide the Aqtesolv input and output files for all aquifer analysis results, including pump and slug tests conducted in the Unit 6 & 7 footprints and the radial well APT. Please provide all downhole optical images (including video surveys), geophysical logs, and flow

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logs associated with any boreholes or monitoring wells constructed in support of the proposed project. Please provide this information in pdf format, where applicable, and electronic video file and Log ASCII Standard (LAS) electronic format for the geophysical logs.

## SFWMD-B-91

(77) The response to subsection (a) refers to the response to SFWMD B-43(a). However, the response provided to SFWMD B-43(a) does not address that question either. Please provide responses to both questions, as previously requested.

## SFWMD-B-92

(78) The response to subsection (a) refers to the response to SFWMD B-29; however, the response to that question does not address this question. Please provide the information previously requested.

## SFWMD-B-93

(79) In reviewing the cross-references to responses provided elsewhere, they do not answer this question. Please provide the information previously requested. In addition, please provide an estimate of the quantity of ammonia (per unit time) that will be used for pH control and resultant industrial wastewater facility concentration changes.

## SFWMD-C-95

(80) Please demonstrate with modeling or other appropriate analyses how removal of matrix material (excavation) will not affect water level? Where would the flow to fill the void created by the extraction of material (excavation) come from and what impacts will the diversion of those flows have on the current receiving waters or users?

## SFWMD-C-96

(81) The CH2M\_Hill (2009) Report, page 2-4, states that the February 2009 investigation identified the 250 mg/L isochlor at an average depth of approximately 35 feet bls along the east side and 40 feet bls along the west side of the water management structure. A 10 foot vertical safety buffer is recommended to allow for seasonal variations. However, the May dry season 250 mg/L isochlor shown in Exhibit 2-6 appears at least 10 feet deeper than

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indicated in the February, 2009 investigation (45 and 50 feet respectively). Please explain this discrepancy. How was a depth of 10 feet arrived at as a safety buffer to allow for seasonal variations? Did development of the safety buffer include other potential factors, such as salt water intrusion over the life of the project?

- (82) A 10 foot vertical buffer is proposed between the bottom of the excavation and the documented location of the 250 mg/l chloride concentration as assurance that the rock extraction will not cause mixing of fresh and salt water. In the absence of more detailed site specific quantification of saline water dynamics at the site, the Ghyben Herzberg principle would suggest that a 0.25 foot rise in sea level would result in a 10 foot rise in saltwater within the aquifer beneath the excavation. Please provide all data and analysis that supports the conclusion that sea level will not rise 0.25 feet over the life of the excavation or provide other assurances that demonstrate that when saltwater intrudes into the excavation, the salt water will be contained and prevented from contaminating shallow groundwater and off-site water resources.

## SFWMD-C-97

- (83) The response does not address the uncertainties associated with the design of the proposed water management project. What measures will be undertaken to ensure long-term operability? Please include the page numbers in the CH2M\_Hill report that identify and describe the criteria to be established.

## SFWMD-C-98

- (84) The response states: "Therefore water level will remain approximately the same and no flow through the aquifer will be induced." The removal of rock will create a void that must be filled with water if water levels are to remain unchanged. What is the source of this water? If it is groundwater, then flow towards the excavation will occur. If it is surface water, what is the impact to the source of the water and existing legal users of that source from diverting the flows?

## SFWMD-C-102

- (85) As stated in the response, the selected design includes a geo-membrane cut-off wall on the western, northern and southern shoreline of the water management feature to provide preferential movement of introduced water to the east. However, installation of the geo-membrane will alter and reduce pre-existing groundwater flow from west to the east. Please quantify the pre-existing flow to the east during the maximum dry and wet seasons. How much water will be

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introduced to provide preferential movement to the east? How much water use will be reduced on a seasonal basis due to the elimination of irrigation demands?

## SFWMD-C-104

(86) Please address the following for the previous subsections to this question listed below:

(d) The laboratory report provided does not include the error for sample MWNE 20'. Please provide.

(e) The response states that the freshwater thickness is calculated from the groundwater surface to the first sharp increase in specific conductance plus the thickness of the unsaturated zone. Please provide land surface and water level elevations during the February and August, 2009 sampling events. The freshwater thickness of 34 feet listed for the NE well does not appear consistent with the specific conductivity result of sample NE of 1892  $\mu\text{mohs/cm}$  at a depth of 30 feet bls. What is the basis for the statement that "It is acknowledged that the accepted designation of freshwater is that with a specific conductance less than 1500 microSiemens per centimeter". This appears to be in conflict with the HIA (February, 2009) report (page iii) that states in South Miami-Dade County, a chloride concentration of 250 mg/L occurs when conductivity is approximately 1100 to 1400 micromhos/cm. Has a site specific analysis of chlorides versus specific conductivity been conducted?

(f) The response states that the dry season sampling represents a "bounding case" scenario in terms of water levels and salinity regime. The referenced dry season sampling (HAI, 2009) was conducted on February 17, 2009. However, the water levels reported in monitoring well G-3550, approximately one-third mile east, for the dates of February 17 and May 16th, 2009, were 1.48 and .45 feet (sea level reference), respectively, a drop of 1.03 feet. How would a lowering of water level elevation of one foot change the elevation of the 250-foot isochlor line?

## SFWMD-D-119

(87) The reclaimed water pipeline corridor crosses the following SFWMD CERP Biscayne Bay Coastal Wetlands parcels: GZ100-001 (fee), GZ100-002 (fee), and TA500-130 (easement). Please narrow the proposed reclaimed water pipeline(s) corridor to exclude use of these parcels.

## SFWMD-D-123

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- (88) How many lanes are proposed for the proposed bridge over the SFWMD's L-31E Canal at S.W. 359th Street? Will this be a permanent or temporary bridge? Please confirm that the bridge will be designed to meet SFWMD bridge crossing criteria for low member elevation. In addition, please confirm that the bridge will be designed to exclude any pilings in the canal. Are there alternative locations being considered for haul road access? Do any of these alternatives involve use of SFWMD right-of-way? If so, please identify the specific locations.

## SFWMD-D-129

- (89) The response to this question indicates that it addresses the transmission aspects of the proposed project and FPL responded on August 20, 2009. Please confirm that the response provided on August 20, 2009 applies to the non-electrical transmission line facilities (i.e., reclaimed and potable water pipelines).

## SFWMD-E-131

- (90) The response to this question is related to the responses to SFWMD-D-119, E-132 and E-136 with respect to issues associated with the proposed reclaimed water pipeline(s) corridor. A segment of the proposed reclaimed water pipeline(s) corridor north of Palm Drive includes the east side of the SFWMD's L-31E Canal right-of-way. As discussed with FPL staff in previous meetings, the SFWMD will be commencing construction on culverts on the east side of the L-31E as part of the CERP Biscayne Bay Coastal Wetlands project. Construction of the proposed pipeline in this area will conflict with implementation of the CERP Biscayne Bay Coastal Wetlands project and SFWMD operational and maintenance needs for the L-31E.

In this response, FPL states that they are "not seeking a variance from applicable SFWMD criteria". However, this response is contradicted in FPL's responses to SFWMD-E-132 and SFWMD-E-136, as FPL states: "It is anticipated that a portion of the reclaimed water pipeline could be installed parallel to and within the L-31E Canal right-of-way as it is contained within the reclaimed water pipelines preferred corridor". Whenever possible, FPL should make use of its own rights-of-way for linear facilities, including the proposed reclaimed water pipeline(s). The SFWMD believes that the width of the existing FPL electrical transmission line right-of-way is adequate to construct the proposed reclaimed water pipeline(s). SFWMD Rule 40E-6.091, F.A.C. states:

*The use of the District's Works or Lands for the construction, operation, and maintenance of transmission lines has the potential to interfere with the District's operation, maintenance and allied purposes. Applicants*

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*should acquire their own right of way and should not look to the District to utilize District-controlled Works or Lands, which were acquired for water management and other allied purposes.”*

The proposed reclaimed water pipeline(s) cannot be placed in the SFWMD's right-of-way without the SFWMD granting a waiver of the above criteria. However, pursuant to FPL's responses to Section 4.5.5 of the SCA and SFWMD-E-131, FPL is not requesting a waiver of this criterion. Consequently, the proposed reclaimed water pipelines must be placed outside of the SFWMD's L-31E Canal right-of-way. Please narrow the proposed reclaimed water pipeline(s) corridor to exclude use of the SFWMD's L-31E Canal right-of-way.

If FPL is formally requesting a waiver of the above criteria, FPL needs to provide confirmation of this and needs to provide additional information for the SFWMD to evaluate this request. Please provide responses to items (6) and (7) on pages 2 and 3 of the SFWMD's Checklist of Required Information (see Attachment 1). Please note that the attached checklist is part of the package provided to an applicant for petition of a waiver/variance to SFWMD Right Of Way Occupancy permitting criteria.

## SFWMD-F-136

- (91) Please provide information on the location of any potential new bridge and potable water distribution line crossings that may be proposed over the L-31E Canal associated with the revised Miami-Dade County roadway text amendment application. It is our understanding that FPL has revised its original application and is also considering an alternative County staff recommendation that involves construction of a separate roadway parallel to Palm Drive north of the adjacent Florida City Canal.

## SFWMD-F-145

- (92) The response does not clarify whether the unnatural continuous downward flux of water, as might be produced by operation of the radial well system, would impact benthic organisms adapted to normal tidal oscillatory fluxes. Please address.

## SFWMD-H-149

- (93) The proposed Alternative 5 water management project (WMP) is based on a number of assumptions that constrain the design and are also the basis for accepting the hypothesized performance of the WMP to achieve certain

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objectives. Please provide the following additional information to support the conclusions reached for each previous subsection of this question listed below:

- (a) Additional modeling or other analytical data showing how the WMP will provide added regional storage when the east side will remain open, allowing interaction of ground/surface waters in a highly transmissive geologic zone. The hydraulic retention times for various volumes of water pumped to the storage area should be calculated.
- (b) The storage volume of the WMP will be in equilibrium with the prevailing ground water levels of the region via the open east wall. It appears that the net storage volume will be small relative to the 80-120 cfs pumping capacity. What is the intended operating maximum water level anticipated for the WMP?
- (c) The water to be diverted from the C-103 to the WMP is the same water source intended to be used for the Biscayne Bay Coastal Wetlands Project proposed under CERP. If first priority of water availability is reserved for the CERP project, what is the anticipated frequency and volume of water that is remaining from the C-103 Canal that would be diverted to the WMP? These volumes should be calculated on a seasonal basis.
- (d) The open east wall of the WMP provides a direct avenue for inland migration of the saltwater wedge into the WMP. Upon reaching this area, vertical mixing of the salt water in the open reservoir/detention area is possible. Distribution of this salt enriched water over freshwater wetlands could alter the character of these freshwater wetlands. What is the operational intent with respect to preventing this salt water intrusion into the WMP? How will this salt enriched water be disposed of once this occurs?
- (e) Recent sampling of the Turkey Point cooling canals indicates that the salinity of this water body is significantly higher than the salt content of Biscayne Bay. Please provide additional analysis demonstrating how the higher density and salinity of this water is being contained and will not impact surrounding freshwater resources.
- (f) An approximate 10 foot separation/safety zone is proposed between the bottom of the WMP and the existing vertical height of the 250 mg/l isochlor level in May. This level was established based on current conditions and may not be representative of future conditions from sea level rise or other extreme drought conditions. Please submit additional modeling data or other analytical data that provides reasonable assurances this buffer will be maintained.
- (g) How will the proposed curtain wall be maintained over time? How will a specific inspection of the integrity be determined?

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- (h) The proposed planting of Scirpus vegetation along some shorelines can lead to significant accumulation of detritus that may alter the soil elevations within the shallow zones of the WMP. This could provide new habitat for exotic species invasion or other native species to encroach. This will require maintenance in order to meet FAA guidelines to control attraction of wildlife considered hazardous to air traffic. Please provide information describing the intended maintenance schedule and techniques used to maintain the desired vegetation cover.
- (i) The described WMP and water transfer concept to adjacent wetlands may potentially exceed the capacity of the wetlands to store the water. What is the operational intent of maintaining a specific maximum hydroperiod and depth for these wetlands? How will pumping operations be performed so that the maximum water depth will not be exceeded?
- (j) The claimed benefits of the WMP compete with the CERP BBCW project by attempting to utilize the same finite water resource. The groundwater recharge and wetland benefits of the WMP would be significantly reduced by a lack of available water. The intended benefit of the project as a water resource or water management feature may not be sustainable over time. "Combination of the design features to optimize realization of these potential benefits of the WMP will be a goal of the detail design phases. During those phases, it will be critically important to define the frequency and rates of stormwater diversion that can be transferred to the WMP lake in a manner that supports WMP beneficial functions, while minimizing risks of inadvertent effects on the C-103 discharge zone in the Bay." How does FPL propose to balance these competing demands and produce benefits claimed by the construction of the WMP?
- (k) The overall design criteria for the WMP is to make the water retention facility less attractive to wildlife in order to comply with FAA safety requirements at the Homestead Air Reserve Base. These requirements result in reduced benefits of the proposed WMP and impact the overall wildlife benefit of this project.

## SFWMD-H-150

- (94) Please address and/or provide additional information for the previous subsections to this question listed below:
  - (a) The land elevations supporting the assumed flow path of water to Biscayne Bay suggest that the remnant creeks near the L-31E Canal will allow water to move eastward toward the bay and consequently provide

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mitigation for these wetland resources. Additional topography data is needed in the vicinity of these wetlands to determine how the water will be distributed and whether the mitigation lift can be justified. The existing creeks are intercepted by the cooling canal system. How will this water be conveyed to the bay? What is the seasonal distribution of the requested 525 acre feet of water from L-31E and the anticipated ET losses associated with this seasonal distribution? What will be the nature of the request to preserve this water from the regional system for these mitigation purposes? Is FPL requesting consumptive use approval through the Site Certification process, or is FPL going to request a Consumptive Use Permit?

(d) The proposal to set the dry season stage for inflow to the mitigation area at 0.1 ft lower than the current dry season canal maintenance level of the L-31E Canal will tend to lower the operating canal stage of the L-31E by providing a positive outfall for water flow. This will lower the adjoining wetland stages west of the L-31E and result in loss of wetland benefits. These operating criteria are inconsistent with CERP objectives for restoration and protection of wetland resources.

(e) Same concern here as in the response to (d) above. The operation of the proposed culverts at a water elevation 0.1 ft lower than the existing dry season maintenance level will cause a reduction in wetland hydroperiods for wetlands west of the L-31E Canal.

(f) FPL estimates that an average water budget of 525 acre feet is needed to achieve the restoration benefits proposed for the described mitigation plan. Please explain how this number was estimated and provide information concerning the frequency of meeting this demand with existing water supplies.

(95) Please describe how the hydrologic conditions created by this project relate to the gradient criteria required for the operation of the Interceptor Ditch pumping program. Please explain how the created hydrologic conditions will not cause a violation of the current monitoring agreement and require additional use of the Interceptor Ditch pumping system.

## SFWMD-H-151

(96) The proposed weir is very similar to an existing weir currently under construction by Miami-Dade County. Consequently, it would appear this is no longer a viable mitigation option for Units 6 & 7. Is FPL going to continue to pursue this option?

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If so, please explain how this added weir would operate and function with respect to the Miami-Dade weir under construction.

## SFWMD-H-152

(97) Please address and/or provide additional information for the previous subsections to this question listed below:

(a) The described spreader canal is located downstream of the Florida City Canal and will potentially intercept sheet flow from the wetlands north of the spreader canal and interrupt the downstream flow of water to other wetlands. In addition, depending on the depth of the spreader canal, this canal could serve to accelerate drainage of wetlands north of the canal during the dry season by increasing the evaporation losses of standing water within the spreader canal when this water would normally be contained below ground surface.

(b) The requested water budget information is necessary to determine whether the anticipated environmental lift can be substantiated.

(c) The targeted hydroperiod for this area is significantly greater than the existing conditions and is considerably longer than the existing conditions (see Attachment 2). What is the approximate monthly water budget anticipated to achieve the target water levels?

(d) The proposed nutrient levels in reclaimed water exceed the ambient background nutrient levels of rainfall, which is the primary source of water for this area. The cost of lowering nutrient levels to the required levels before discharging to wetlands would seem to make this mitigation option very costly to maintain and operate. Is it the intent of FPL to bear these costs in perpetuity once these mitigation measures are transferred to a governmental entity? The response states that phosphorus concentrations in reclaimed water used to rehydrate wetlands in the Model Land basin will be less than 1 mg/L; however, the response does not explain how concentrations will be reduced to a suitable level closer to 0.010 mg/L.

(g) Same concerns as those raised in item (d).

## SFWMD-H-153

(98) Please address and/or provide additional information for the previous subsections to this question listed below:

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(a) The number and placement of culverts will either accelerate or retard drainage of wetlands upstream. Does FPL plan to use surface water models to determine how to strike a balance of providing sufficient water flow while maintaining wetland hydroperiods?

(d) Adding additional culverts as a mitigation option may not result in a net improvement to the hydrology of wetlands. The addition of the culverts only facilitates the movement of water. The presence of additional water actually provides the environmental lift by improving wetland hydroperiods.

(e) Same concerns as those raised in item (d).

## SFWMD-H-154

(99) Please provide information describing the current status of available and already allocated Everglades Mitigation Bank credits. How does FPL plan to reserve and use the remaining credits to offset mitigation required for Unit 6 & 7 impacts?

## SFWMD-H-155

(100) Does FPL plan to utilize the Hole in the Donut credits as a priority over utilizing FPL mitigation bank credits?

## SFWMD-H-156

(101) Construction impacts will cause disturbance of existing plant communities and soils, providing a means for exotics to dominate. Some of this disturbance will occur on public lands and will require long term maintenance. Does FPL intend to fund the periodic maintenance activities on public lands as needed? What assurances will public agencies have that the required funding is maintained?

## SFWMD-H-157

(102) The information requested is necessary to determine whether the proposed mitigation activities would substantially impact or alter the viability of CERP projects planned for this region. As this agency is not a party to negotiations between FPL and Everglades National Park, there is a significant potential the planned activities could be inconsistent with U.S. Army Corps of Engineers and SFWMD restoration efforts. Please provide.

## SFWMD-H-158

(103) The information previously requested is necessary to determine the overall potential success of the proposed mitigation options to offset loss of wetlands

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through construction and operation of Units 6 & 7. Since many of the proposed mitigation options have high uncertainty of success in delivering the estimated benefits, it is difficult to determine whether the mitigation strategy and mix of projects will ultimately succeed or fail. Reliance on the Compatibility Working Group (CWG) is not sufficient to provide adequate assurances that mitigation options will deliver as promised. The CWG may not have the required expertise to determine the potential success of certain mitigation options. Moreover, the opinions expressed by the CWG cannot supplant agency responsibility and accountability for requiring applicants to fulfill obligations to fully evaluate and independently determine whether the proposed mitigation options are consistent with requirements under state and federal law. Please provide.

## SFWMD-H-159

(104) The SFWMD does not agree that the issue of sea level rise in the context of the proposed project is outside of the completeness review process. The response states: "consideration of sea level rise will be included in the final, detailed designs for the ancillary facilities, which will be available post-certification". The SFWMD believes the concerns of sea level rise and associated impacts should be addressed for all project features and facilities. FPL has used historical mean sea level trends from NOAA to project a sea level rise of 0.78 feet per 100 years. It appears that FPL did this because there is currently no accepted model that is used to accurately predict long-term sea level rise. Has FPL considered other information, such as the recent Engineering Circular released by the U.S. Army Corps of Engineers regarding sea level rise projections (see Attachment 3)? Regarding the potential impacts on water resources, operation of the cooling canal system could be significantly impacted by sea level rise in many ways. An increase in sea level and associated extreme storm surge events could flood the cooling canal system, contaminating other lands in the vicinity with highly saline water. The impacts of such flooding would be long lasting. In addition, sea level rise, regardless of its magnitude, could result in westward migration of the hyper-saline plume, potentially impacting wellfields, wetlands, and other water resource related features.

## SFWMD-J-165

(105) Please provide the information previously requested. Please note that this information is necessary for the SFWMD's review in addition to the FDEP's review.

## SFWMD-K-169

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(106) Please provide the previously requested information.

SFWMD-K-179

(107) The requested information is not provided in the response to SFWMD B-29.  
Please provide.

Regarding the references to missing information in the MACTEC report, it appears that FPL submitted the missing information on December 22, 2009; however, due to the holidays and scheduled vacation time, not all of our staff has had the opportunity to review the additional information submitted. Consequently, we are retaining references to this missing information in our letter until all of our staff has had an opportunity to review it and determine whether or not it is complete.

If you have any questions concerning the above, please do not hesitate to contact me at (561) 682-6862.

Sincerely,



James J. Golden, AICP  
Lead Planner  
Intergovernmental Policy and Planning Division

/jjg

c: See Attached Distribution List