July 31, 2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)		
	)	Docket Nos.	52-029-COL
Progress Energy Florida, Inc.	)		52-030-COL
	)		
(Combined License Application for	)		
Levy County Nuclear Plant, Units 1 and 2)	)	ASLBP No.	09-879-04-COL

PRE-FILED REBUTTAL TESTIMONY OF
JEFFREY D. LEHNEN, P.G.
ADDRESSING INTERVENORS' INITIAL PRE-FILED TESTIMONY REGARDING THE ADEQUACY OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT'S DISCUSSIONS OF THE HYDROGEOLOGY OF THE LNP SITE AND SURROUNDING AREA, CUMULATIVE IMPACTS, GROUNDWATER MODELING, SALTWATER INTRUSION, AND WATER PERMITTING ASSOCIATED WITH ACTIVE GROUNDWATER WITHDRAWALS DURING CONSTRUCTION AND OPERATION OF THE LEVY NUCLEAR PLANT, UNITS 1 & 2

I. BACKGROUND

Q1: Please state your name and business address.

A1: My name is Jeffrey D. Lehnen. My business address is 3011 S.W. Williston Rd., Gainesville, FL 32608.

Q2: Please state your employer and position.

A2: I am a Principal Technologist in Water Resources with CH2M HILL, Inc., an engineering company providing consulting services to Progress Energy Florida, Inc. (PEF) for the proposed Levy Nuclear Plant, Units 1 and 2 (LNP).[1]

Q3: Have you previously submitted testimony in this proceeding?

A3: I previously provided sworn direct testimony in this proceeding, Pre-Filed Direct Testimony of Jeffrey D. Lehnen, P.G. On Computer Modeling of the Effects on Local

[1] PEF219 defines selected acronyms used in my Pre-Filed Rebuttal Testimony for ease of reference.

and Regional Water Resources from Active Groundwater Withdrawals During Construction and Operation of the Levy Nuclear Plant, Units 1 & 2 (PEF200).

Q4: In addition to your work in support of the LNP project described in your Pre-Filed Direct Testimony, what have you done to prepare this Pre-Filed Rebuttal Testimony?

A4: I have reviewed the Intervenors' Initial Written Statement of Position Regarding Contention 4 (Corrected July 6, 2012), as well as the Initial Pre-Filed Testimonies of Mr. Gareth Davies (INT001R), Dr. Tim Hazlett (INT101R), Mr. David Still (INT201R), and Dr. Sydney Bacchus (INT301R). I have also reviewed the Nuclear Regulatory Commission (NRC) Staff Initial Statement of Position and the NRC Staff Testimony Concerning Contention 4A. Lastly, I have reviewed the Pre-Filed Direct Testimony of Dr. William Dunn (PEF300), as well as the Pre-Filed Rebuttal Testimonies of Dr. Mitchell Griffin (PEF016), Mr. James Rumbaugh (PEF104), and Dr. Paul Rizzo (PEF700).

Q5: What is the purpose of your Pre-Filed Rebuttal Testimony?

A5: The purpose of my Pre-Filed Rebuttal Testimony is to address certain portions of the Initial Pre-Filed Testimonies of Mr. Davies (INT001R), Dr. Hazlett (INT101R), Mr. Still (INT201R), and Dr. Bacchus (INT301R) regarding the hydrogeological characteristics of the LNP site and the surrounding area,[2] the cumulative impacts associated with LNP active groundwater withdrawals, groundwater modeling reviewed by the NRC Staff in preparing the Final Environmental Impact Statement (FEIS) for the LNP,[3] saltwater intrusion, and LNP's water permitting.

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[2] My Pre-Filed Rebuttal Testimony will use the terms "LNP site" or "North Parcel" to refer to the northern-most parcel of PEF property in which the reactor islands are located, and the term "LNP production wellfield" or "South Parcel" to refer to the southern-most parcel of PEF property on which the four LNP production wells will be located.

[3] The NRC Staff reviewed two groundwater models when preparing the FEIS. NRC Staff Initial Statement of Position at pp. 23-24. The first groundwater model (ER Model) was originally prepared

II. HYDROGEOLOGY OF THE LNP SITE AND SURROUNDING AREA

Q6: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Mr. Davies (INT001R at p. 21), Mr. Still (INT201R at pp. 7-9, 14-18), and Dr. Bacchus (INT301R at pp. 10, 27-28, 35-36, 60-62) that groundwater resources at the LNP site and the surrounding area are already depleted from consumptive use?

A6: No. As explained in my Pre-Filed Direct Testimony, PEF200 at pp. 12-13, groundwater resources are abundant in the vicinity of the LNP site. The high permeability of the Upper Floridan Aquifer promotes wide-area recharge (replenishment of drawn groundwater) of the area, while relatively high transmissivity (the product of the thickness of the aquifer in the area and hydraulic conductivity (a measure of the ease with which water can move through the pore space or fractures within a geologic formation)) allows for groundwater to move freely from place to place. PEF200 at pp. 11-13. Additionally, existing groundwater withdrawals in the rural area surrounding the LNP site are few in number and magnitude compared to regional aquifer flowrates in the same area. PEF200 at p. 13.

The Intervenors provide two categories of anecdotal evidence in support of their arguments that groundwater resources in the area are depleted from consumptive use. In my professional opinion, neither of these categories refers to the groundwater resources that would be affected by LNP active groundwater withdrawals. The first category of anecdotal evidence consists of reports (INT201R at pp. 7-9; INT207; INT208: INT209) of saltwater intrusion in wells in the Suwannee River Water Management District (SRWMD). The Intervenors also proffer a one-sentence affidavit (INT301R at p. 27; INT376) claiming saltwater intrusion in one well within the Southwest Florida Water

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in connection with the Florida Site Certification and the Environmental Report submitted with PEF's NRC Combined License Application and is described in greater detail in TMEM-074, PEF212. The second groundwater model (Recalibrated Model) was prepared at the request of the NRC Staff and is described in greater detail in TMEM-123, PEF210.

Management District (SWFWMD). The Intervenors provide the well depth for only the well within the SWFWMD. INT376. Additionally, all of the examples provided by the Intervenors are located in areas of low groundwater (freshwater) aquifer water level elevations a short distance from the coast of the Gulf of Mexico. Shallow wells in coastal areas with low water level elevations are always highly vulnerable to saltwater intrusion from natural processes (such as wind, waves, and inundation during storm surges) due to the small gradient (difference in water level elevations) between the freshwater in groundwater aquifers and saline or brackish water bodies. More importantly, all but one of these wells are a great distance (some nearly 30 miles) from the LNP production wellfield, and most are located in areas (generally due west or northwest of the LNP production wellfield) that would not be affected by the LNP active groundwater withdrawals because of the west-southwest flow through the Upper Floridan Aquifer in the vicinity of the LNP site. PEF001 at p. 7. For these reasons, the Intervenors' claims of saltwater intrusion do not demonstrate that groundwater resources in the vicinity of the LNP site are already depleted.

The Intervenors also offer anecdotal evidence of spring depletion (INT301R at pp. 27-28; INT374) and well depletion (INT301R at pp. 27-28; INT375) as evidence that groundwater resources in the vicinity of the LNP site are already depleted from consumptive use. However, the springs (Manatee Springs, Fanning Springs, and Bronson Springs) and wells identified in the Intervenors's exhibits are a significant distance (some almost 40 miles) northwest of the LNP production wellfield. Like the Intervenors' examples of saltwater intrusion, the springs and wells identified by the Intervenors are located in coastal or low-lying areas that are not representative of groundwater supply in the vicinity of the LNP site. In contrast, Upper Floridan Aquifer water level elevations in the vicinity of the LNP site and production wellfield are well above sea level. PEF220 presents long-term water level elevation data from the United States Geological Survey

(USGS) monitoring well (Goethe Road Well) closest (about 1 mile) to the LNP site. The most recent Upper Floridan Aquifer water level elevation observed at this well was about 28 feet above the reference seawater level established by the 1929 National Geodetic Vertical Datum (NVGD 1929). This observed water level elevation falls within the middle range of historical water level elevations for the Goethe Road monitoring well, undercutting the Intervenors' claims that groundwater resources in the vicinity of the LNP site are at historic lows. Lastly, the Intervenors' argument that these springs are depleted due to overconsumption lacks evidentiary support and is, in my professional opinion, inaccurate. The exhibit (INT375) cited in support of the Intervenors' claim that overconsumption is to blame for possible spring depletion in the SRWMD consists of conjecture by local residents. In reality, the water levels in Florida springs are driven largely by recharge from rainfall, and because rainfall within this area of Florida varies widely, spring water levels vary widely as well.

Q7: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Mr. Davies (INT001R at pp. 2, 9, 15-17) and Dr. Bacchus (INT301R at pp. 9-13, 24-27) that the karstic phenomena at the LNP site and the surrounding area will result in materially different aquifer response to LNP active groundwater withdrawals than that assumed within the FEIS?

A7: No. As discussed in my Pre-Filed Direct Testimony (PEF200 at pp. 8-9) and the Pre-Filed Rebuttal Testimony of Dr. Rizzo (PEF700 at pp. 6-7), the LNP site and the surrounding area overlay the Avon Park Formation, a highly dolomitized carbonate rock formation that is resistant to the dissolution activity that creates new karst phenomena such as preferential conduits of the sort described by Mr. Davies. Despite the Avon Park Formation's resistance to the development of new karstic phenomena, its carbonate rocks are relatively permeable compared to other carbonate rock such as that within the Ocala Formation present in other parts of Florida, or carbonate rock in other parts of the country. These particular characteristics of the Avon Park Formation underlying the LNP

site and surrounding area result in relatively high hydraulic conductivity despite the absence of preferential conduits of the sort described by Mr. Davies. For these reasons, the porous media assumptions employed in connection with CH2M HILL's groundwater modeling efforts and within the FEIS best characterize groundwater flow in the vicinity of the LNP site.

Additionally, even if the characteristics of the geological formation underlying the LNP site did support the use of porous media assumptions for groundwater flow, the Intervenors incorrectly identify the consequences. As explained in my Pre-Filed Direct Testimony, PEF200 at p. 11, the magnitude and area of drawdown associated with active groundwater withdrawals is a function of hydraulic conductivity and transmissivity. Because the presence of preferential conduits improves hydraulic conductivity and transmissivity, preferential conduits would in fact diminish the magnitude of drawdown and the size of the area experiencing drawdown — not increase them as assumed by the Intervenors. For these reasons, the NRC Staff's use of porous media assumptions when evaluating the effects of LNP active groundwater withdrawals represents a more conservative approach than that recommended by the Intervenors.

Lastly, even if the Intervenors were correct in claiming that the area in the vicinity of the LNP site contained preferential conduits that could result in larger areas of drawdown from LNP active groundwater withdrawals, the LNP Conditions of Certification (COCs) would avoid permanent adverse environmental impacts. As explained in the Pre-Filed Direct Testimony of Dr. Dunn (PEF300), the COCs impose a series of monitoring and mitigation requirements (including an Aquifer Performance Testing Plan (PEF304) and Environmental Monitoring Plan (PEF305)) that will ensure timely detection and prevention of adverse environmental impacts. PEF300 at pp. 20-21.

Q8: Is the above characterization of aquifer response to LNP active groundwater withdrawals consistent with the approach envisioned in industry standards, or general understanding among hydrogeologists in connection with similar geological formations?

A8: Yes. As explained in the Pre-Filed Rebuttal Testimonies of Dr. Rizzo (PEF700 at pp. 9-10) and Mr. Rumbaugh (PEF104 at pp. 11-12), the above approach is consistent with the assumptions generally employed by hydrogeologists when evaluating geological formations with characteristics similar to those of the LNP site and the surrounding area. For example, porous media assumptions are relied on not only by the hydrogeologists within the SWFWMD jurisdiction, but also by the USGS and hydrogeologists within other water management districts when evaluating far more karstic terrain than that present at the LNP site. PEF104 at p. 11.

Furthermore, the industry and government standards referenced by Mr. Davies in support of his argument do not support a contrary conclusion. INT001R at pp. 8-9, 13. First, the American Society for Testing and Materials (ASTM) standard (ASTM D5717-95) that Mr. Davies references, INT001R at p. 9, as evidence of a "consensus" among hydrogeologists is no longer effective. This particular ASTM standard was *withdrawn* in 2005 — over seven years ago. Second, the EPA document referenced by Mr. Davies, INT001R at p. 8, is concerned with the tracing of contaminants within groundwater, not with the identification of appropriate assumptions when evaluating the environmental impacts of groundwater withdrawals.

Q9: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Bacchus (INT301R at pp. 20-22, 35-36, 47-51) that LNP active groundwater withdrawals will result in temporary or permanent reductions in springwater discharges, including those to surface waters?

A9: No. As explained in my Pre-Filed Direct Testimony, discharges from inland springs (Big King and Little King springs) in the vicinity of the LNP site would not be affected in a meaningful way by LNP active groundwater withdrawals. PEF200 at pp. 22-23, 28-29.

Similarly, groundwater discharges to surface water bodies will also be unaffected by LNP active groundwater withdrawals. Groundwater discharge to the Waccasassa River will not be affected by LNP active groundwater withdrawals because this water body is cross-gradient (neither upstream nor downstream) of the LNP production wellfield as groundwater flows west-southwest through the Upper Floridan Aquifer. PEF001 at p. 7. Additionally, the reductions in groundwater discharge to other surface water bodies such as the Cross Florida Barge Canal (CFBC) and the Lower Withlacoochee River as a result of LNP active groundwater withdrawals will be minimal, representing only 1.1 million gallons per day (mgd) of the 117 mgd of groundwater estimated to flow into these water bodies, and less than 1% of the 450 mgd flowing through the Upper Floridan Aquifer in the vicinity of the LNP site.[4] PEF212 at p. 20. Furthermore, this small reduction in discharge will be distributed across a wide area such that the impact of reduced freshwater flow from the aquifers into these water bodies will be even less significant.

Q10: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Bacchus (INT301R at pp. 9-12, 17-19, 25-26) that all depressional wetlands within the LNP site and the surrounding area are formed from relict sinkholes connected to the Upper Floridan Aquifer?

A10: No. As discussed in my Pre-Filed Direct Testimony, PEF200 at p. 9, site characterization activities for the LNP project found sinkhole activity to be non-existent at the LNP site and rare in the surrounding area. These findings are consistent with the results of Dr. Rizzo's geotechnical characterization of the area in the vicinity of the LNP site, which found that the area is a mature terrain in which the infilling of ancient karst features with rock and soil inhibits the development of karst phenomena. PEF700 at pp. 6-7.

[4] Compared to the modeled regional aquifer flow rate of 208 mgd obtained from the Recalibrated Model prepared at the request of the NRC Staff, this 1.1 mgd reduction in groundwater flow to the CFBC and the Lower Withlacoochee River would still represent less than 1% of the modeled flow through the Upper Floridan Aquifer. PEF210 at p. 33.

Furthermore, the evidence offered by Dr. Bacchus in support of her claim is not relevant to the area in the vicinity of the LNP site. Not one of the studies and publications referring to relict sinkholes referenced by Dr. Bacchus involved the area in the vicinity of the LNP site, or even involved an area demonstrated to have similar geological characteristics to those of the LNP site and surrounding area. Although Dr. Bacchus claims to have confirmed that depressional wetlands in the vicinity of the LNP site were formed from relict sinkholes, INT301R at p. 26, she is neither a hydrogeologist nor geologist, and is unqualified to offer an opinion as to the hydrogeological explanation for the presence of any particular wetland. With these considerations in mind, Dr. Bacchus's allegations regarding the presence of relict sinkholes at the LNP site and in the surrounding area are unsupported and contrary to the opinions of licensed professional engineers and geologists on the topic.

Q11: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Dr. Hazlett (INT101R at pp. 5-8), Mr. Still (INT201R at pp. 3-4), and Dr. Bacchus (INT301R at pp. 14-17, 27, 33-35, 41-47) that the FEIS did not adequately account for seasonal or long-term variability in contributors (*e.g.*, precipitation) to groundwater resources at the LNP site and the surrounding area?

A11: No. As discussed in greater detail in the Pre-Filed Direct Testimony of Mr. Rumbaugh, PEF100 at pp. 12-13, the District Wide Regulation Model, Version 2 (DWRM2) regional groundwater model that was the basis for the ER Model and Recalibrated Model is the product of a transient calibration against monthly data (including recharge from precipitation) taken from over 1,000 measuring points over an eight-year time period (1995-2002). The SWFWMD relies on this calibration in its own water permitting activity, and its experience has confirmed the accuracy of groundwater models relying on this calibration. PEF100 at p. 13-15.

Additionally, in generating the ER Model from the DWRM2 regional model CH2M HILL modified the properties of certain model cells to adopt more conservative

recharge assumptions than those within the DWRM2. PEF212 at p. 3. The changes — specifically, the substitution of variable head cells for river cells in the DWRM2 for simulating some wetlands in the model domain — were requested by the SWFWMD based on its concern that the use of river cells representing wetlands might allow too much recharge to occur in response to LNP active groundwater withdrawals, thus reducing drawdown predictions. These modifications within the ER Model were retained in the Recalibrated Model. PEF210 at p. 5.

Because the NRC Staff reviewed the results of both of these models when evaluating the impacts of LNP active groundwater withdrawals, my professional opinion is that the FEIS adequately accounted for both seasonal and long-term variability in precipitation and other contributors to groundwater resources.

III. CUMULATIVE IMPACTS

Q12: How does the magnitude of LNP active groundwater withdrawals compare with the magnitude of groundwater withdrawals by other users in the SWFWMD?

A12: As explained in the Pre-Filed Direct Testimony of Mr. Rumbaugh, PEF100 at pp. 19-20, LNP active groundwater withdrawal rates are relatively small in comparison with other permitted withdrawals within the SWFWMD. For example, even the maximal withdrawal rate (5.8 mgd) associated with LNP operation is much smaller than the combined permitted annual average withdrawal rate (8.8 mgd) for other industrial users, such as the C.D. McIntosh Power Plant and the Fort Meade Chemical Plant. Additionally, despite these larger permitted withdrawals within the SWFWMD, available data indicate that the water resources in the vicinity of the LNP site remain abundant. PEF200 at pp. 12-13.

Q13: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Dr. Bacchus (INT301R at pp. 5, 27-28, 33-35, 57-60, 65-67), Dr. Hazlett (INT101R at pp. 9-10), and Mr. Still (INT201R at pp. 14-21), that the FEIS did not adequately address the cumulative impacts of the Tarmac King

Road Limestone Mine (Tarmac Mine), the planned Knight Farm Sand Mine, the planned Adena Springs Ranch, and a purported 44 mgd worth of consumptive use recently permitted in the SRWMD?

A13: No. In my professional opinion, the NRC Staff conducted a thorough evaluation of the reasonably foreseeable cumulative impacts associated with LNP active groundwater withdrawals. In addition to evaluating groundwater modeling predictions regarding the cumulative impacts from existing permitted withdrawals in the vicinity of the LNP site, the NRC Staff reviewed water supply demands based on groundwater and surface water planning documents from the Florida Department of Environmental Protection (FDEP), the SWFWMD (including the SWFWMD's 2010 Water Supply Assessment and the LNP COCs), the SRWMD (including the 2010 SRWMD Water Supply Assessment, INT216), as well as proposed consumptive uses such as the Tarmac Mine. NRC001 at pp. 7-10 to 7-15. Considering that the relatively small magnitude of LNP active groundwater withdrawals takes place within an area whose abundant groundwater resources are largely undeveloped, the NRC Staff's conclusion that the cumulative impacts associated with LNP active groundwater withdrawals would be SMALL is, in my professional opinion, sound. NRC001 at p. 7-15. Additionally, as explained in the Pre-Filed Direct Testimony of Dr. Dunn (PEF300), the LNP COCs impose a series of monitoring and mitigation requirements that will ensure timely detection and prevention of adverse cumulative environmental impacts. PEF300 at pp. 20-21.

The active groundwater withdrawals associated with the Tarmac Mine figured prominently in the NRC's evaluation of the cumulative impacts from LNP active groundwater withdrawals. The FEIS specifically discusses the cumulative impacts from groundwater withdrawals by the Tarmac Mine. NRC001 at pp. 4-23 to 4-24. As explained in my Pre-Filed Direct Testimony (PEF200), the NRC Staff's evaluation of the withdrawals associated with the Tarmac Mine in fact assumed much larger — and thus

more conservative — groundwater withdrawal rates than the effective withdrawal rates associated with the Tarmac Mine's mode of operation, or the withdrawal rates authorized by the terms of its Water Use Permit (WUP). PEF200 at pp. 16-17. Drawdown associated with the groundwater withdrawals from the Tarmac Mine and the LNP will not overlap. PEF215; PEF210 at pp. 36-39, 42-45; PEF212 at pp. 16-19, 21.

Additionally, in my professional opinion, the FEIS did not need to evaluate the cumulative impacts associated with the planned Adena Springs Ranch. First, unlike the Tarmac Mine (whose WUP has already been granted by the SWFWMD), the withdrawal rates associated with the Adena Springs Ranch are still a matter of conjecture. No Consumptive Use Permit has been issued for the Adena Springs Ranch, and local opposition to the project has already resulted in a reduction (by over half) of the withdrawal rate originally proposed.[5] Second, any groundwater withdrawals associated with the Adena Springs Ranch will, in my professional opinion, not affect groundwater resources in the area surrounding the LNP site. The Adena Springs Ranch is planned for a site in Marion County, nearly 40 miles northeast of the LNP site. Additionally, groundwater flows through the Adena Springs Ranch and in the vicinity of the LNP site are hydrologically separated, as groundwater flow through Adena Springs Ranch is part of a different spring shed (the Silver Springs spring shed) than groundwater flow in the vicinity of the LNP site (which is part of the Rainbow Springs spring shed). Lastly, review of groundwater modeling of drawdown associated with the planned Adena Springs Ranch indicates that the drawdown associated with this project will not contribute to cumulative impacts from LNP active groundwater withdrawals. PEF221 and PEF222 depict the modeled drawdown within the surficial and Upper Floridan

[5] WUPs and Consumptive Use Permits are the terms assigned by the SWFWMD and St. John's River Water Management District, respectively, to regulatory authorizations for the withdrawal of groundwater.

Aquifers, respectively, from groundwater withdrawals by the Adena Springs Ranch. Groundwater modeling of withdrawals by the Adena Springs Ranch indicates that drawdown from this project will not even reach the City of Ocala, which is itself more than 30 miles from the LNP site and production wellfield. Because drawdown associated with the Adena Springs Ranch will not even reach the 400 square mile domain of the ER Model and Recalibrated Model, groundwater withdrawals by the Adena Springs Ranch will not contribute to cumulative environmental impacts.

Likewise, in my professional opinion, the FEIS did not need to evaluate the cumulative impacts associated with the proposed Knight Farm Sand Mine to the north of the LNP site. First, unlike the planned Adena Springs Ranch, there are no groundwater withdrawals planned for the Knight Farm Sand Mine. As noted in one of the exhibits offered by Dr. Bacchus, INT434 at p. 15, the particular type of mining (borrow pit) planned for the Knight Farm Sand Mine requires an Environmental Resource Permit (ERP) and not a WUP because it will not involve active groundwater withdrawals. Although Dr. Bacchus insists that the NRC Staff should have demanded the evaluation of the cumulative impacts of the excavation of the Knight Farm Sand Mine in its groundwater modeling and discussion of construction related impacts associated with the LNP project, INT301R at pp. 65-67, she provides no reason why the water retention ponds and excavations associated with the Knight Farm Sand Mine would have an impact on groundwater supply in the area. As explained in the Pre-Filed Rebuttal Testimony of Dr. Griffin (PEF016), Dr. Bacchus's assumption that mining and stormwater retention in general passively dewater groundwater aquifers is incorrect. PEF016 at p. 11. For these reasons, the NRC Staff did not need to address the Knight Farm Sand Mine when evaluating the cumulative impacts of operation and construction of the LNP.

Lastly, in my professional opinion, the FEIS and the groundwater modeling did not need to specifically address the 44 mgd of recently authorized groundwater

withdrawals in the SRWMD. INT201R at p. 16. First, the timing of these recent authorizations made it impossible for them to be included in the ER Model or Recalibrated Model, or to be considered in connection with the preparation of the FEIS. The earliest of these additional withdrawals was authorized around two years after the conclusion of groundwater modeling in December 2009. PEF210 at p. 1. Second, the hydrogeological characteristics of the area will largely prevent the interaction of the groundwater withdrawals recently authorized by the SRWMD with the withdrawals by the LNP. Because only a small portion of the SRWMD is up-gradient (an area of higher water level elevation from which groundwater flows) from the area in the vicinity of the LNP site and none is down-gradient (an area of lower water level elevation to which groundwater from an up-gradient area flows), only the closest among those newly-authorized consumptive uses in the SRWMD could have any meaningful hydrological connection with groundwater affected by LNP active groundwater withdrawals. Although Mr. Still provides no details regarding the distribution of the 44 mgd of the recently authorized withdrawals throughout the 7,640 square miles in the SRWMD, CH2M HILL's review of Consumptive Use Permits issued by the SRWMD since August 2011 found that none of the recently authorized withdrawals are within 10 miles of the 400 square mile domain of the ER Model and Recalibrated Model. In July 2012, CH2M HILL contacted the SRWMD and inquired into the location of recently authorized withdrawals within the SRWMD. The SRWMD provided CH2M HILL the location (expressed in terms of the Public Lands Survey System Township, Range, and Section) for all Consumptive Use Permits issued by the SRWMD since August 2011. PEF223 plots the locations of these Consumptive Use Permits. None of these recently authorized withdrawals are within the SWFWMD, or even within 10 miles of the model domain of the ER Model and Recalibrated Model. Consequently, the 44 mgd of recently authorized

withdrawals within the SRWMD are too far away from the LNP production wellfield to contribute to cumulative environmental impacts.

Q14: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Bacchus (INT301R at pp. 63-65) that the seasonal variation in Upper Floridan Aquifer water level elevations reported in the FEIS should not be used in the evaluation of cumulative impacts from LNP active groundwater withdrawals?

A14: No. Dr. Bacchus was incorrect in alleging that the value (8 feet) used in the FEIS for the seasonal variation in Upper Floridan Aquifer water level elevations at the LNP site and the surrounding area was "presumed" without evidence. INT301R at p. 63. The NRC Staff explained in the FEIS that this value was based on the NRC Staff's review of data from PEF's 2007 site investigation, as well as long-term data from nearby USGS monitoring wells in the Upper Floridan Aquifer. NRC001 at pp. 2-27 to 2-28.

Additionally, the evidence that Dr. Bacchus offers in support of her argument for an alternative value for seasonal variation in Upper Floridan Aquifer water level elevations is flawed. First, as explained in the Pre-Filed Rebuttal Testimony of Dr. Griffin, PEF016 at pp. 7-8, the significant alterations to the area in the vicinity of the LNP site make Dr. Bacchus's references to historical "natural hydroperiods" meaningless. Second, the studies she cites as proof that consumptive use has damaged these historical "natural hydroperiods" are based on a much shorter timescale — about two years — than the long-term USGS monitoring well data reviewed by the NRC Staff in generating the FEIS, and are thus inadequate to demonstrate deterioration of "natural hydroperiods" from consumptive use.

IV. GROUNDWATER MODELING

Q15: Do you agree with Dr. Hazlett's assertion (INT101R at pp. 3-5) that the observed average hydraulic conductivities obtained from slug testing and pump testing are inconsistent with the assumptions of the DWRM2 used in creating the ER Model and Recalibrated Models?

A15: No. Dr. Hazlett's claim that the hydraulic properties (specifically, hydraulic conductivity) assumed in the ER Model and Recalibrated Model were inaccurate is not supported by the available evidence. First, as explained in the Pre-Filed Direct Testimony of Mr. Rumbaugh, PEF100 at pp. 12-13, the hydraulic conductivity and transmissivity assumptions in the DWRM2 regional groundwater model that was the basis of the ER Model and Recalibrated Model were the result of an exhaustive calibration effort involving data compiled from over 1,000 measuring points over the course of eight years, between 1995-2002. The SWFWMD has relied on this calibration in its water permitting activity, and has indicated its confidence that the assumptions within the DWRM2 produce accurate predictions of the effects of groundwater withdrawals by recommending the use of these particular assumptions by WUP applicants. PEF100 at p. 13-15.

Second, although the statement in the FEIS excerpt provided in Dr. Hazlett's testimony identifies a possible inconsistency between the hydraulic conductivity values obtained from slug testing at the LNP site and the assumptions within the DWRM2 (and the ER Model and Recalibrated Models), the FEIS identifies an entirely different reason for the inconsistency — a flaw in the slug testing method — that is, in my professional opinion, more reasonable than the explanation provided by Dr. Hazlett. The slug testing described in the FEIS involved Upper Floridan Aquifer wells drilled to an average of 120 feet below surface. However, because these wells were not deep enough to penetrate the entire Upper Floridan Aquifer, PEF203, groundwater had to follow a more difficult path to the wellhead. This resulted in lower hydraulic conductivity values (indicating slightly greater difficulty for water to move through the geological formation) than those assumed in the DWRM2 (and ER Model and Recalibrated Model). Dr. Hazlett's testimony does not consider this possibility. Additionally, the FEIS notes that hydraulic conductivity pumping test results from the same area were consistent with the hydraulic conductivity

values in the DWRM2. NRC001 at pp. 2-26 to 2-27. Dr. Hazlett's testimony ignores this detail. For these reasons, it is my professional opinion that the NRC Staff was correct in concluding that LNP site testing data supported the assumptions within the DWRM2 that was the basis of the ER Model and Recalibrated Model.

Q16: Do you agree with the implication[6] in the Initial Pre-Filed Testimony of Dr. Hazlett (INT101R at pp. 2, 5-8) that an integrated groundwater/surface water computer model (integrated model) which attempted to account for alleged interactions between the stormwater runoff, CFBC, the Gulf of Mexico, and the groundwater at the LNP site and the surrounding area, would have been appropriate for use in evaluating the effects of LNP active groundwater withdrawals?

A16: No. As discussed in my and Mr. Rumbaugh's Pre-Filed Direct Testimonies, the groundwater model predictions reviewed by the NRC Staff in generating the FEIS were realistic predictions of the effects on groundwater resources from LNP active groundwater withdrawals. PEF100 at pp. 20-21; PEF200 at p. 30. The DWRM2 regional groundwater model that was the basis for the ER Model and Recalibrated Model was designed and calibrated to meet the specifications of the SWFWMD, whose experience using the DWRM2 in its review of individual WUP applications has confirmed the accuracy of the DWRM2's predictions. PEF100 at pp. 12-15.

I am also unaware of the existence of an integrated model that would provide more realistic predictions for the effects of groundwater withdrawals in the vicinity of the LNP site than those provided by the DWRM2. Additionally, the design, calibration, and use of an integrated model when evaluating LNP active groundwater withdrawals would require considerable resources and great difficulty. As explained in the Pre-Filed Direct

[6] Dr. Hazlett's testimony asserts that he is an expert in "integrated groundwater-surface water modeling." INT101R at p. 1. Although Dr. Hazlett does not explicitly recommend the substitution of an integrated model for the DWRM2, many of his criticisms of the DWRM2 relate to the purported advantages of integrated groundwater models.

Testimony of Mr. Rumbaugh, PEF100 at pp. 7-8, the complexity of groundwater systems means that groundwater modeling inevitably involves a degree of uncertainty. Expanding the scope of a groundwater model to account for the complex and poorly understood relationships between ground and surface water risks introducing even more uncertainty in the modeling effort. Although modelers can take steps to mitigate this risk of even greater uncertainty, this comes at a cost. Integrated models require the compilation and processing of a tremendous amount of site-specific data, much of which might not be available for large areas over a time period long enough for modeling purposes. Additionally, processing the vast quantities of data needed for an integrated model would require much greater computer processing capability than a pure groundwater model. With these challenges in mind, my professional opinion is that the use of an integrated model similar to that recommended by Dr. Hazlett would be inappropriate for evaluating the effects of LNP active groundwater withdrawals.

Q17: Do you agree with the assertion of Dr. Hazlett (INT101R at pp. 1-2, 5-8) that the NRC Staff should have used a transient groundwater model in connection with the evaluation of the effects of LNP active groundwater withdrawals?

A17: No. Dr. Hazlett's characterization of the ER Model and Recalibrated Model as being steady-state models is incorrect. Although both models were initially run in steady-state modes to simulate pre-development (no permitted withdrawals modeled) and pre-LNP (existing permitted withdrawals modeled) conditions, predicted drawdown and regional aquifer flowrates were obtained when both models were running in transient mode. PEF210 at p. 3; PEF212 at p. 4.

Q18: Do you agree with the assertion in the Initial Pre-Filed Testimony of Mr. Davies (INT001R at pp. 15-20) that the presence of karst in the geologic formation underlying the LNP site and the surrounding area demanded a larger model domain than the 400 square mile domain of the ER Model and Recalibrated Model?

A18: No. As explained earlier in my Pre-Filed Rebuttal Testimony, as well as in the Pre-Filed Rebuttal Testimonies of Mr. Rumbaugh (PEF104 at pp. 11-12) and Dr. Rizzo (PEF700 at pp. 9-10), the use of porous media assumptions in groundwater modeling evaluating the environmental impacts of LNP active groundwater withdrawals is appropriate.

Additionally, the results of groundwater modeling did not reveal a need to expand the domain of the ER Model or the Recalibrated Model beyond 400 square miles. The selection of a groundwater model domain that is too small will result in either drawdown being observed at the boundaries of the model domain or drawdown curves that resemble the shape of the model boundary. Because neither of these conditions was present, it is my professional opinion that the 400 square mile domain was appropriate for use in both the ER Model and the Recalibrated Model.

Lastly, even if the use of porous media assumptions were not appropriate when modeling the effects of LNP active groundwater withdrawals, the use of different assumptions would not result in the need for an expanded model domain as claimed by Mr. Davies. As explained earlier in my Pre-Filed Rebuttal Testimony, the use of fractured-rock or karstic aquifer assumptions would result in less significant drawdown over a smaller area than that resulting from the use of porous media assumptions.

Q19: Do you agree with the assertion in the Initial Pre-Filed Testimony of Mr. Still (INT201R at pp. 14-17) that the ER Model and Recalibrated Model did not account for the cumulative impacts of LNP active groundwater withdrawals because these models incorporated unrepresentative values for groundwater withdrawal rates by existing users?

A19: No. In my professional opinion, the groundwater models reviewed by the NRC Staff when preparing the FEIS used representative values for existing groundwater withdrawals when evaluating the cumulative impacts from LNP active groundwater withdrawals. As discussed earlier, the area in the vicinity of the LNP site is relatively undeveloped such that there are relatively few permitted groundwater withdrawals within

the 400 square mile model domain of the ER Model and Recalibrated Model, and these withdrawals involve a low aggregate withdrawal rate compared to more developed areas.

Mr. Still criticizes the aggregate withdrawal rate (3.51 mgd) used in the groundwater modeling of the cumulative effects from existing WUPs within the model domain as being based on obsolete data. The permitted withdrawal rates contributing to this aggregate value were verified by the SWFWMD as being representative of aggregate withdrawal rates at the time the groundwater modeling was performed in 2008-2009. Additionally, a review of the SWFWMD Water Management Information System database conducted in the past month by CH2M HILL reveals only a relatively small increase from these earlier aggregate withdrawal rates. Current and proposed aggregate withdrawal rates within the 400 square mile model domain (excluding LNP active groundwater withdrawals) amount to 11.9 mgd, or only 2.6% of the 450 mgd regional flow through the Upper Floridan Aquifer in the same area identified in my Pre-Filed Direct Testimony.[7] PEF200 at pp. 12-13. In my professional opinion, this relatively small increase in the magnitude of permitted withdrawals would not result in materially different drawdown and regional aquifer flowrate predictions than those obtained from the ER Model and Recalibrated Model.

Q20: Do you agree with the assertion in the Initial Pre-Filed Testimony of Mr. Still (INT201R at pp. 19-21) that the FEIS did not consider the spatial orientation of existing groundwater withdrawals in the vicinity of the LNP site in evaluating the cumulative impacts of LNP active groundwater withdrawals?

[7] Compared to the modeled regional aquifer flowrate of 208 mgd obtained from the Recalibrated Model prepared at the request of the NRC Staff, the current and proposed aggregate withdrawal rates within the model domain (excluding LNP active groundwater withdrawals) amount to only 5.7% of the modeled flow through the Upper Floridan Aquifer. PEF210 at p. 33.

A20: No. When preparing the FEIS, the NRC Staff reviewed the methodology and results of both the ER Model and Recalibrated Model. NRC Staff Statement of Initial Position at pp. 23-24. The positions (expressed in latitude and longitude) of existing groundwater withdrawals were incorporated into both of these models to account for the spatial orientation of existing withdrawals in the model domain. Figure 2-12 of the FEIS depicts the spatial orientation of other permitted users to the LNP production wellfield within the ER Model and Recalibrated Model. NRC001 at p. 2-32.

Q21: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Hazlett (INT101R at p. 7) that the number of surficial aquifer wells of other users incorporated into the ER Model and the Recalibrated Model resulted in unrealistic predictions of drawdown levels resulting from LNP active groundwater withdrawals?

A21: No. Although the ER Model and Recalibrated Model do not incorporate surficial aquifer wells that were not permitted by the SWFWMD, this would not result in inaccurate predictions of the effects of LNP active groundwater withdrawals on the surficial aquifer. First, although there are likely a number of unpermitted surficial aquifer wells in the domain of the ER Model and Recalibrated Model, many of these wells have been abandoned, or are used on a seasonal or intermittent basis such that accurate records of their characteristics (depth, design, etc.) and withdrawals from the surficial aquifer system do not exist. Second, the magnitude of withdrawal from unpermitted surficial aquifer wells is relatively small on both an individual and an aggregate basis within the model domain. The withdrawals from unpermitted wells are all below the threshold identified by the SWFWMD as being large enough to warrant their own WUP or consideration in connection with the WUP application for another withdrawal. These individual wells are also scattered across the domain of the ER and Recalibrated Models, with relatively few in the vicinity of the LNP site and production wellfield. Lastly, as explained in my Pre-Filed Direct Testimony, PEF200 at p. 10, the surficial and Upper

Floridan Aquifers are hydrologically connected at the LNP site and the surrounding area such that the ER Model and Recalibrated Model's incorporation of large withdrawals from Upper Floridan Aquifer wells results in the same predicted drawdowns in the surficial and Upper Floridan Aquifers. Consequently, the cumulative impacts to the surficial aquifer and wetlands were properly evaluated by the ER Model and Recalibrated Model.

V. SALTWATER INTRUSION

Q22: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Dr. Hazlett (INT101R at p. 9) and Dr. Bacchus (INT301R at pp. 57-60, 62) that seawater level increases resulting from climate change will be in seawater pushing inland above and below ground, as well as the flattening of the groundwater gradient?

A22: No. As discussed in the Pre-Filed Direct Testimony of Dr. Griffin, PEF001 at p. 7, groundwater in the vicinity of the LNP site flows west-southwest from areas of higher water level elevation toward areas of lower water level elevation (*i.e.*, down-gradient) such as the Gulf of Mexico, the Withlacoochee River, Lake Rousseau, or the CFBC. For saltwater to intrude into the freshwater aquifers, the gradient in water level elevations between the groundwater (freshwater) aquifers and the bodies of brackish or seawater in the vicinity would have to reverse such that the water level elevations of these surface water bodies exceed the water level elevations of the groundwater aquifers.

The LNP site and production wellfield are located relatively far inland in an area of relatively high water level elevations. PEF224 is an excerpt from the USGS September 2010 Potentiometric Surface of the Upper Floridan Aquifer for West-Central Florida. The contours on this exhibit represent water level elevations above the reference seawater level established by NVGD 1929. According to PEF224, Upper Floridan Aquifer water level elevations in the vicinity of the LNP site and production wellfield are around 20-30 feet. These water level elevations ensure that the small drawdown

predicted from the LNP active groundwater withdrawals will not cause a reversal of gradient between groundwater (freshwater) aquifers and current seawater levels. PEF212 at pp. 16-19, 21; PEF210 at pp. 36-39, 42-45, 48-49. The same is true even if one takes into consideration the conservative estimate for seawater level increase (+ 3 feet) over the next century identified by the NRC in the FEIS. NRC001 at 7-18. Because LNP active groundwater withdrawals will not reverse the gradient between seawater and groundwater in the vicinity of the LNP site, there is, in my professional opinion, minimal risk of saltwater intrusion below ground into freshwater aquifers in the vicinity of the LNP site as a result of LNP active groundwater withdrawals. The NRC Staff reached the same conclusion in preparing the FEIS. NRC001 at pp. 4-27, 5-16.

Q23: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Hazlett (INT101R at pp. 6-7) that the CFBC recharges groundwater systems at least part of the year?

A23: No. Dr. Hazlett's assertion that the CFBC recharges the freshwater aquifers in the vicinity of the LNP site for "at least part of the year" is inconsistent with hydrogeologists' understanding of the relationship between the CFBC and the freshwater aquifers in the vicinity of the LNP site. INT101 at p. 6. First, Dr. Hazlett presents no evidence in support of this claim. Second, as discussed earlier in my Pre-Filed Rebuttal Testimony, intrusion of brackish water into groundwater aquifers requires a reversal of the gradient between the brackish surface water body and the groundwater (freshwater) aquifers. PEF220 and PEF225-PEF227 present long-term water level elevation data (relative to the reference seawater level established by NVGD 1929) from the four USGS monitoring wells (Goethe Road Well, CE-5 Well, ROMP-124 Well, and ROMP-125 Well, respectively) closest to the CFBC. The location of each of the four monitoring wells is depicted in PEF224. A review of PEF220 and PEF225-PEF227 indicates that historical recorded water level elevations at each of these wells have not fallen below the reference seawater level established by NVGD 1929. Because the available evidence

indicates that the gradient between groundwater (freshwater) and brackish CFBC has not reversed, the CFBC does not recharge groundwater systems as claimed by Dr. Hazlett.

Q24: Do you agree with the assertion in the Initial Pre-Filed Testimonies of Mr. Still (INT201R at pp. 7-9) and Dr. Bacchus (INT301R at pp. 57-60) that the LNP site and the surrounding area are already experiencing saltwater intrusion?

A24: No. As explained earlier in my Pre-Filed Rebuttal Testimony, saltwater intrusion requires the reversal of the gradient between a groundwater (freshwater) aquifer and a saline or brackish body of water such as the Gulf of Mexico or the CFBC. Because the LNP site, LNP production wellfield, and much of the surrounding area are characterized by relatively high water level elevations, those areas are not susceptible to saltwater intrusion.

Additionally, the evidence offered by the Intervenors does not support a contrary conclusion. As explained earlier, the Intervenors offer anecdotal evidence of saltwater intrusion from a number of municipal and domestic wells located within a short distance from the Gulf of Mexico. These examples are generally distant from the LNP site and production wellfield such that the drawdowns associated with LNP active groundwater withdrawals would not reach them, or they are located in areas that are cross-gradient from the west-southwest flow through the LNP production wellfield. All of the examples provided by the Intervenors are located in areas characterized by a small gradient (often no more than a handful of feet) between the surficial aquifer and the saline or brackish water body such that they are susceptible to saltwater intrusion more as result of location than consumptive use in the area.

Q25: Do you agree with the assertion in the Initial Pre-Filed Testimony of Dr. Bacchus (INT301R at pp. 57-60) that LNP active groundwater withdrawals will pull saltwater up-gradient into the freshwater aquifers via preferential flowpaths?

A25: No. First, saltwater intrusion into groundwater (freshwater) aquifers in the vicinity of the LNP site requires a reversal of the gradient such that water level elevations are below seawater levels. As discussed earlier in my Pre-Filed Rebuttal Testimony, the LNP active groundwater withdrawals will not reduce groundwater (freshwater) aquifer water level elevations below seawater levels. Second, because (as explained earlier in my Pre-Filed Rebuttal Testimony) the presence of preferential conduits would actually reduce the area that would experience drawdown from LNP active groundwater withdrawals, the presence of preferential conduits would make it even less likely that the LNP production wells could introduce saltwater into the freshwater aquifer by pumping brackish water from the CFBC or other surface water bodies.

Q26: Do you agree with the allegation in the Initial Pre-Filed Testimony of Dr. Bacchus (INT301R at pp. 57-60) that the FEIS does not account for the risk of saltwater intrusion from "upconing" of saltwater from underlying brackish groundwater reservoirs?

A26: Vertical migration (upconing) of brackish water from the Lower Floridan Aquifer will not, in my professional opinion, result from LNP active groundwater withdrawals. Vertical movement of brackish water from the sub-seawater level Lower Floridan Aquifer to the freshwater Upper Floridan Aquifer requires a significant change in potentiometric head (a measure of the level to which water within an aquifer will rise when exposed to atmosphere, generally correlating to water level elevation) between the two aquifers such that the dense brackish water in the Lower Floridan Aquifer can move into the Upper Floridan Aquifer. As discussed earlier in my Pre-Filed Rebuttal Testimony, the water level elevation (and thus potentiometric head) of the Upper Floridan Aquifer in the vicinity of the LNP production wells is around 20-30 feet. Because the relatively high transmissivity of the Upper Floridan Aquifer in the vicinity of the LNP production wells ensures that the drawdown within each well will average only a few feet during LNP operations, the change in potentiometric head between the Upper

and Lower Floridan Aquifers will be relatively small. Consequently, LNP active groundwater withdrawals will not result in saltwater intrusion via upconing.

VI. WATER USE PERMITTING FOR LNP

Q27: Do you agree with the allegation in the Initial Pre-Filed Testimonies of Mr. Still (INT201R at pp. 10-13) and Dr. Bacchus (INT301R at pp. 51-55) that there are inconsistent regulatory authorizations for LNP active groundwater withdrawals?

A27: No. The Intervenors' allegation of inconsistencies between the SWFWMD's water permitting in connection with the LNP and the COCs issued by the FDEP is based on a fundamental misunderstanding of the role of the SWFWMD in the State Certification process under the Electric Power Plant Siting Act and the content of the COCs. The FDEP's Site Certification and the SWFWMD's water permitting are not competing processes. Instead, the FDEP's Site Certification is a coordinated review process in which multiple State regulatory authorities — including water management districts like the SWFWMD — participate. PEF300 at p. 24. The COCs which are the product of this integrated review process include a water use authorization that serves the same function as a WUP. PEF005 at pp. 41-55; PEF300 at p. 24. In contrast, the document offered by the Intervenors is only a report generated by the SWFWMD Water Management Information System database. INT215. It is not proof of the existence of a competing water use authorization (specifically, a WUP with different terms and conditions) as claimed by Dr. Bacchus. With this in mind, Dr. Bacchus's allegations of an inconsistency between competing LNP water use authorizations (one of which she claims is more "conservative" than the other) are in error.

Q28: Do you agree with the allegation in the Initial Pre-Filed Testimonies of Mr. Still (INT201R at p. 13) and Dr. Bacchus (INT301R at pp. 51-55) that the LNP water use authorization and the FEIS do not account for the design of the production wells used in connection with the LNP?

A28: No. As explained earlier, the document (INT215) provided by Dr. Bacchus is merely a report generated from the SWFWMD Water Management Information System database and not a copy of a WUP for the LNP as she assumes. Second, while the report generated from the SWFWMD Water Management Information System database by Dr. Bacchus provides well design characteristics (casing diameter, casing depth, total depth) for only one of the wells authorized for the LNP project, PEF informed the NRC in the initial Environmental Report (ER) submitted in July 2008 that the same design characteristics applied to each of the production wells authorized for the LNP project. LNP Environmental Report, PEF228 at p. 4-34. The design characteristics of the production wells described in the FEIS mirror the description of the production well design characteristics that appears in the SWFWMD Water Management Information System database. NRC001 at p. 3-21; INT215 at p. 2. With this in mind, the NRC Staff had the correct production well design characteristics when evaluating the environmental impact of the LNP production wells.

Q29: Do you agree with the allegation in the Initial Pre-Filed Testimonies of Mr. Still (INT201R at p. 13) and Dr. Bacchus (INT301R at pp. 51-55) that the FEIS did not account for the withdrawals associated with a fifth groundwater well identified in the SWFWMD water use authorization to be located within the North Parcel of PEF property?

A29: No. The fifth groundwater well authorized by the LNP's water use authorization to be located in the North Parcel will supply freshwater in support of LNP construction activities. This well is not authorized for use in connection with LNP operations. As explained in my Pre-Filed Direct Testimony, PEF200 at pp. 15-16, as well as the Pre-Filed Direct Testimony of Dr. Griffin, PEF001 at pp. 30-31, the effects on local water resources from construction activities will be minimal because construction-related withdrawals from this well will be much smaller (an annual average of 0.090 mgd) and of a much shorter duration than operations-related withdrawals from the LNP production

wells in the South Parcel. Additionally, the withdrawals associated with the construction well in the North Parcel will not contribute in any meaningful way to the cumulative impacts from the LNP's operational withdrawals because construction-related withdrawal from the well in the North Parcel will cease long before the LNP's operational withdrawals commence. The SWFWMD did not require groundwater modeling of the withdrawal associated with the North Parcel construction well in connection with the LNP's WUP for those reasons.

For its part, the NRC Staff adopted a similar position in its discussion of the environmental impact from construction activities by noting that even the maximal estimates (0.55 mgd) for *all* the construction-related withdrawals associated with the LNP project would result in "negligible" impacts to groundwater systems. NRC001 at 4-136. The much smaller annual average withdrawal of 0.090 mgd ultimately authorized by the SWFWMD for the construction well in the North Parcel will, in my professional opinion, result in similarly negligible environmental impacts. NRC001 at p. 4-22. With these considerations in mind, the FEIS adequately addresses the environmental impacts of the LNP construction well in the North Parcel authorized by the terms of LNP's COCs.

Additionally, the comparisons Dr. Bacchus makes (INT301R at p. 53) between the permitted withdrawal rates from the construction well and various municipal wells (Horseshoe Beach Utilities, Steinhatchee Water Association and Taylor Beach Water System) are strained. First, as mentioned above, the 0.090 mgd annual average withdrawal associated with the construction well in the North Parcel is not a permanent groundwater withdrawal like those of the municipal wells listed. Second, this well is located in an area of abundant water resources and limited existing use. In contrast, the municipal wells listed by Dr. Bacchus are more than 20 miles northwest of the LNP site, and are located much closer to the coast of the Gulf of Mexico than the LNP production

wells. As explained earlier in my Pre-Filed Rebuttal Testimony, the location of these wells makes them particularly susceptible to salt water contamination.

I, Jeffrey D. Lehnen, swear under penalties of perjury that this document is my true and accurate testimony.

Signature

7/31/2012

Date