Progress Energy

Serial: NPD-NRC-2009-042
March 27, 2009

10CFR52.79

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

LEVY NUCLEAR POWER PLANT, UNITS 1 AND 2
DOCKET NOS. 52-029 AND 52-030
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ENVIRONMENTAL REVIEW

Reference: Letter from Douglas Bruner to James Scarola, dated February 24, 2009, "Request for Additional Information Regarding the Environmental Review of the Combined License Application for the Levy Nuclear Power Plant, Units 1 and 2"

Ladies and Gentlemen:

Progress Energy Florida, Inc. (PEF) hereby submits a response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) provided in Enclosure 1 of the referenced letter.

A response to the NRC RAIs is provided in Enclosure 1. Enclosure 1 also identifies changes that will be made in a future revision of the Levy Nuclear Power Plant Units 1 and 2 (LNP) application. Enclosure 2 provides a list of files included on the attached CD (Attachment 1). These files have been prepared in accordance with NRC electronic submittal guidance. A pre-flight report is included as Enclosure 3 that lists the files that do not pass pre-flight, but are deemed acceptable based on the reasons noted in the enclosure.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or me at (919) 546-6107.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 27, 2009.

Sincerely,

Garry D. Miller
General Manager
Nuclear Plant Development

Enclosures/Attachment

Progress Energy Carolinas, Inc.
P.O. Box 1551
Raleigh, NC 27602

D094
NRO

cc (with 4 copies of Enclosures/Attachment):
Mr. Douglas Bruner, U.S. NRC Environmental Project Manager

cc (without attached CD):
U.S. NRC Director, Office of New Reactors/NRLPO
U.S. NRC Office of Nuclear Reactor Regulation/NRLPO
U.S. NRC Region II, Regional Administrator
Mr. Brian C. Anderson, U.S. NRC Project Manager

Levy Nuclear Power Plant Units 1 and 2
Response to NRC Request for Additional Information Regarding the Environmental Review, dated February 24, 2009

NRC RAI #	Progress Energy RAI #	Progress Energy Response
2.7-1	L-0076	Response enclosed – see following pages
3.3-1	L-0077	Response enclosed – see following pages
4.5-1	L-0078	Response enclosed – see following pages
5.4.4-1	L-0079	Response enclosed – see following pages
7.7-1	L-0080	Response enclosed – see following pages
2.7.5-1	L-0081	Response enclosed – see following pages
3.6.3-1	L-0082	Response enclosed – see following pages
5.3.3-1	L-0083	Response enclosed – see following pages
2.3.1-1	L-0084	Response enclosed – see following pages
2.3.1-2	L-0085	Response enclosed – see following pages
2.3.1-3	L-0086	Response enclosed – see following pages
2.3.1-4	L-0087	Response enclosed – see following pages
2.3.1-5	L-0088	Response enclosed – see following pages
2.3.1-6	L-0089	Response enclosed – see following pages
2.3.3-1	L-0090	Response enclosed – see following pages
2.3.3-2	L-0091	Response enclosed – see following pages
4.6-1	L-0092	Response enclosed – see following pages
4.6-2	L-0093	Response enclosed – see following pages
5.2.2-1	L-0094	Response enclosed – see following pages
5.2.2-2	L-0095	Response enclosed – see following pages
5.2.2-3	L-0096	Response enclosed – see following pages
5.3.2.1-1	L-0097	Response enclosed – see following pages
2.4.2-1	L-0098	Response enclosed – see following pages
2.4.2-2	L-0099	Response enclosed – see following pages
2.4.2-3	L-0100	Response enclosed – see following pages
4.7-1	L-0101	Response enclosed – see following pages
2.4.1-1	L-0102	Response enclosed – see following pages
2.4.1-2	L-0103	Response enclosed – see following pages
2.4.1-3	L-0104	Response enclosed – see following pages
2.4.1-4	L-0105	Response enclosed – see following pages
2.4.1-5	L-0106	Response enclosed – see following pages
4.3.1-1	L-0107	Response enclosed – see following pages
4.3.1-2	L-0108	Response enclosed – see following pages
4.3.1-3	L-0109	Response enclosed – see following pages
4.3.1-4	L-0110	Response enclosed – see following pages
4.3.1-5	L-0111	Response enclosed – see following pages

NRC RAI #	Progress Energy RAI #	Progress Energy Response
4.3.1-6	L-0112	Response enclosed – see following pages
4.3.1-7	L-0113	Response enclosed – see following pages
4.7-2	L-0114	Response enclosed – see following pages
5.3.3.2-1	L-0115	Response enclosed – see following pages
2.5.1-1	L-0116	Response enclosed – see following pages
2.5.2-1	L-0117	Response enclosed – see following pages
2.5.2-2	L-0118	Response enclosed – see following pages
2.5.2-3	L-0119	Response enclosed – see following pages
2.5.2-4	L-0120	Response enclosed – see following pages
2.5.4-1	L-0121	Response enclosed – see following pages
4.4.2-1	L-0122	Response enclosed – see following pages
4.4.2-2	L-0123	Response enclosed – see following pages
4.4.2-3	L-0124	Response enclosed – see following pages
4.4.2-4	L-0125	Response enclosed – see following pages
4.4.2-5	L-0126	Response enclosed – see following pages
4.4.2-6	L-0127	Response enclosed – see following pages
4.4.2-7	L-0128	Response enclosed – see following pages
4.4.2-8	L-0129	Response enclosed – see following pages
4.4.2-9	L-0130	Response enclosed – see following pages
4.4.2-10	L-0131	Response enclosed – see following pages
4.7-1	L-0132	Response enclosed – see following pages
5.11-1	L-0133	Response enclosed – see following pages
5.8.2-1	L-0134	Response enclosed – see following pages
9.4.1-1	L-0135	Response enclosed – see following pages
9.4.1-2	L-0136	Response enclosed – see following pages
9.4.2-1	L-0137	Response enclosed – see following pages
9.4.2-2	L-0138	Response enclosed – see following pages
9.4.2-3	L-0139	Response enclosed – see following pages
9.3-1	L-0140	Response enclosed – see following pages
9.3.2.1-1	L-0141	Response enclosed – see following pages
3.7-1	L-0142	Response enclosed – see following pages
3.7-2	L-0143	Response enclosed – see following pages
4.8.3-1	L-0144	Response enclosed – see following pages
6.2-1	L-0145	Response enclosed – see following pages

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.7-1

Text of NRC RAI:

Provide the second year of chi/Q data, along with associated revisions to the Environmental Report (ER) Section 2.7 and Table 2.7-58 that would reflect updated values used in GASPAR calculations.

A second year of on-site meteorological data is currently being collected by the applicant. 10 CFR 50.34 requires an analysis and evaluation of the amount of exposure to routine operation from the facility. Regulatory Guide 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," describes that two annual cycles of meteorological data should be provided for an operating license. Only one year of data was provided. Provide the second year of chi/Q data, along with associated revisions to ER Section 2.7 and Table 2.7-58 that would reflect updated values used in GASPAR calculations.

PGN RAI ID #: L-0076

PGN Response to NRC RAI:

Progress Energy Florida, Inc. (PEF) has recently completed the collection of the second year of meteorological data (completed on January 31, 2009), which is being submitted to NRC as described in the response to LNP ER NRC RAI 2.7.5-1. The long-term chi/Q analyses that are provided in Environmental Report (ER) Section 2.7 and ER Table 2.7-58 are also the subject of Final Safety Analysis Report Request for Additional Information (RAI) 02.03.03-4 (NRC Letter No.: LNP-RAI-LTR-017) and will be provided in a supplemental submittal to that RAI when available.

Associated LNP COL Application Revisions:

The specific changes to ER Section 2.7 and ER Table 2.7-58 will be described in a future revision to the ER.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 3.3-1

Text of NRC RAI:

Provide a copy of the pending revision to the water balance description and ER Figure 3.3-2 that explains discharge rates and blowdown values.

Provide a copy of the pending revision to the water balance description and ER Figure 3.3-2 that explains discharge rates and blowdown values. During the December 2–5, 2008 site audit, Progress Energy Florida (PEF) acknowledged a pending revision to ER Section 3.3, Plant Water Use. Updated discharge rates and blowdown values are required for the NRC staff to verify estimates of water user dose rates.

PGN RAI ID #: L-0077

PGN Response to NRC RAI:

ER Figure 3.3-2 has been revised (see 021_Attachment 3.3-1A.pdf) and will be included in a future revision of the ER. ER Table 3.3-2 will also be revised to reflect adjusted values for the cooling water system (CWS) evaporation and blowdown rates based on the revised values illustrated on Figure 3.3-2.

There was a slight change to the evaporation from the CWS and the distinction between the normal and maximum operation of the media filter has been clarified. Below are revised tables listing the values. The conversion between gallons per minute (gpm) to million gallons per day (mgd) is 694.4 and mgd values are expressed to two decimal places.

Process	Normal* (gpm)	Max. (gpm)	Normal* (mgd)	Max. (mgd)	Flow Dia. Box
CWS Cooling Tower → CWS Basin	56,520	56,520	81.39	81.39	A
SWS Cooling Tower → Wastewater Retention Basin	128	410	0.18	0.59	B
Media Filter (Intermittent Blowdown) → Wastewater Retention Basin	0	550	0.00	0.79	B
Potable Water System → Sanitary Waste Treatment	35	69	0.05	0.10	D
Demineralizer Water Users → Liquid Waste System	30	150	0.04	0.22	C
Demineralizer Water Users → Wastewater Retention Basin	320	930	0.46	1.34	B
Levy Nuclear Plant Site Stormwater (Intermittent Runoff, AADF/Max.)*	890	2,436	1.28	3.51	A
Total to CREC	**57,923**	**61,065**	**83.40***	**87.94**	

Stormwater flows are actually at the max. or zero. Normal is based on average annual daily flow (AADF).

Flow Point in Diagram:	A	B	C	D	Totals
Normal (gpm)	57,410	448	30	35	57,923
Maximum (gpm)	58,956	1,890	150	69	61,065
Normal (mgd)	82.67	0.64	0.04	0.05	83.40
Maximum (mgd)	84.90	2.72	0.22	0.10	87.94

Associated LNP COL Application Revisions:

Revise ER Figure 3.3-2 and ER Table 3.3-2. ER Table 3.3-2 will be revised as follows:

Table 3.3-2
Anticipated Water Use (Two AP1000 Units)

Service	Normal (gpm)	Maximum (gpm)
Circulating Water System		
Evaporation Rate	28,255	28,255 [(a)]
Drift Rate	5.32	5.32 [(a)]
Blowdown Rate	57,923	61,065 [(a)]
CWS Makeup Flow	84,780	84,780 [(a)]
Service Water System		
Evaporation rate	368	1248
Drift Rate	0.05	0.1
Blowdown rate [(b)]	128	410
SWS Makeup Flow	496	1662
Demineralized Water Makeup Rate	350	1080
Fire Protection Makeup Rate	0.8	1250
Potable Water	35	69

Notes:

Values in this table were based on site-specific conditions and will differ from those reported in Table 3.3-1.

a) Typically, the plant is at 100-percent power; therefore, maximum and normal values are approximately equal.

b) SWS cooling tower blowdown is discharged to CWS cooling tower basin and will reduce the CWS makeup flow required from the intake on the canal when blowdown is in operation.

gpm = gallons per minute

Attachments/Enclosures:

See 021_Attachment 3.3-1A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.5-1

Text of NRC RAI:

Provide information sufficient to demonstrate the adequacy of radiation protection for construction workers on proposed Unit 2 while proposed Unit 1 is in operation. Verify or correct numerical values in ER subsection 4.5.5.

Preliminary staff calculations resulted in an estimated 0.0756 person-Sv (0.028 mSv · 2700 workers) for the collective dose compared with 0.088 person-Sv stated in the ER. Verify or correct the 3.6 Sv per year value for average annual dose received from background radiation in ER Section 4.5.5. In addition, verify or correct construction dose estimates in the FSAR Section 12.4. Staff calculated 9.72 person-Sv collective dose from background and manmade radiation compared with the 11.43 person-Sv reported in ER Section 4.5.5. Provide information sufficient to demonstrate the adequacy of radiation protection for construction workers on proposed Unit 2 while proposed Unit 1 is in operation and verify or correct numerical values in ER subsection 4.5.5, as noted above.

PGN RAI ID #: L-0078

PGN Response to NRC RAI:

The values in ER Subsection 4.5.5 will be revised as suggested in a future revision of the ER. The value "0.088 person-Sv" will be revised to state "0.0756 person-Sv". The values in ER Subsection 4.5.5 and FSAR Section 12.4 will be revised as suggested. The value "11.43 person-Sv" will be revised to state "9.72 person-Sv" and the value "0.088 person-Sv" will be revised to state "0.0756 person-Sv" in both the FSAR and ER sections. The value stated for exposure to background was obtained from NUREG-1555 and will not be revised.

As stated in DCD Section 12.4.2, direct radiation from the containment and other plant buildings is negligible. Additionally, there is no contribution from refueling water since the refueling water is stored inside the containment instead of in an outside storage tank.

As stated in the ER, exposure of LNP 2 construction workers to radioactive liquid effluents is not evaluated because the discharge structure and blowdown piping will be completed during LNP 1 construction. The only exposure of LNP 2 construction workers to liquid effluents would be due to the tie-in of LNP 2 piping. The exposure from this activity should be negligible.

As stated in the ER, the methodology contained in the GASPAR II program (described in ER Section 5.4) was used to determine the doses for the gaseous pathway. For the purposes of the calculations, the chi/Q value (1.57E-04 sec/m^3) calculated at 1320 feet in the worst meteorological sector (WSW) and obtained from ER Table 2.7-58 (Sheet 2 of 4). Data in Table 2.7-61 were used by GASPAR II to calculate construction worker doses from the gaseous pathway and conservatively bounds the construction worker location at LNP 2. It

should be noted that LNP 2 will be situated directly due north of LNP 1, which is not in the worst meteorological sector. GASPAR II doses calculated at 1320 feet were adjusted based on construction worker residence time on the site or 2080 hours/8760 hours = 0.24. The results of the calculation are provided in the associated GASPAR II LNP Calculation LNG-0000-N5C-004, Rev. 4, "Gaseous Effluent Doses & Concentrations," which is available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

Revise the value "11.43 person-Sv" to "9.72 person-Sv" and the value "0.088 person-Sv" to "0.0756 person-Sv" in both the FSAR and ER sections.

In ER Subsection 4.5.5 and FSAR Section 12.4, revise the value "11.43 person-Sv" to "9.72 person-Sv."

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.4.4-1

Text of NRC RAI:

Provide an updated biota dose analysis and copies of the associated calculation package.

Provide the following in order for NRC staff to verify dose to biota calculations in the ER:

- The updated biota dose section (ER Section 5.4.4)
- Make calculation package LNG-0000-N5C available for staff, and,
- If dose assessment locations have changed for the biota dose section update, then provide copies of the updated GASPAR and LADTAP input/output files.

PGN RAI ID #: L-0079

PGN Response to NRC RAI:

The calculation package and the doses to biota have not been revised. The assessment locations have not been revised either.

Copies of the GASPAR II and LADTAP input and output files and supporting calculations LNG-0000-N5C-003, Rev. 2, "Liquid Effluent Doses & Concentrations," and LNG-0000-N5C-004, Rev. 4, "Gaseous Effluent Doses & Concentrations," are available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 7.1-1

Text of NRC RAI:

Provide source terms by isotope and release period for use in confirming the design basis accident dose calculations.

Provide source terms by isotope and release period for use in confirming the design basis accident (DBA) dose calculations. The confirmation of the DBA dose calculations is required because the NRC review of Revision 17 of the AP1000 design certification application has not been completed and the design is not yet certified.

Staff experience from similar situations (i.e., environmental review preceding design certification) has shown that the environmental review should not proceed without verifying the DBA dose calculations because of errors identified in previous applications.

PGN RAI ID #: L-0080

PGN Response to NRC RAI:

The tables below provide the source terms by isotope and release period used in the AP1000 DBA dose calculations.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

AP1000 Loss of Coolant Accident (LOCA) Activity Releases (Ci) (Sheet 1 of 2)

Isotope	(1.4 - 3.4 hr)	(0-2 hr)	(2 - 8 hr)	(8 - 24 hr)	(24 - 72 hr)	(72 - 96 hr)	(96 - 720 hr)
I-130	5.64E+01	3.24E+01	7.85E+01	6.21E+00	5.11E-01	1.17E-01	6.00E-03
I-131	1.68E+03	9.19E+02	2.57E+03	2.56E+02	1.33E+02	5.84E+01	5.79E+02
I-132	1.23E+03	8.79E+02	1.26E+03	1.62E+01	6.00E-03	0.00E+00	0.00E+00
I-133	3.23E+03	1.82E+03	4.72E+03	3.71E+02	7.41E+01	9.90E+00	7.80E+00

AP1000 Loss of Coolant Accident (LOCA) Activity Releases (Ci) (Sheet 1 of 2)

Isotope	(1.4 - 3.4 hr)	(0-2 hr)	(2 - 8 hr)	(8 - 24 hr)	(24 - 72 hr)	(72 - 96 hr)	(96 - 720 hr)
I-134	6.60E+02	7.09E+02	4.29E+02	3.07E-02	0.00E+00	0.00E+00	0.00E+00
I-135	2.56E+03	1.54E+03	3.36E+03	1.56E+02	4.79E+00	1.00E-02	0.00E+00
Kr-85m	1.42E+03	6.32E+02	3.14E+03	1.87E+03	8.60E+01	0.00E+00	0.00E+00
Kr-85	8.31E+01	3.22E+01	2.65E+02	7.06E+02	1.06E+03	5.28E+02	1.36E+04
Kr-87	1.10E+03	6.88E+02	1.26E+03	5.00E+01	0.00E+00	0.00E+00	0.00E+00
Kr-88	3.11E+03	1.50E+03	5.76E+03	1.70E+03	1.70E+01	0.00E+00	0.00E+00
Xe-131m	8.26E+01	3.21E+01	2.62E+02	6.79E+02	9.42E+02	4.31E+02	5.57E+03
Xe-133m	4.43E+02	1.74E+02	1.37E+03	3.15E+03	3.14E+03	9.65E+02	2.58E+03
Xe-133	1.47E+04	5.71E+03	4.62E+04	1.16E+05	1.46E+05	5.97E+04	4.07E+05
Xe-135m	1.06E+01	3.33E+01	2.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xe-135	3.15E+03	1.31E+03	8.33E+03	1.01E+04	2.06E+03	4.00E+01	1.00E+01
Xe-138	3.11E+01	1.14E+02	6.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	3.04E+00	1.72E+00	4.60E+00	2.80E-01	1.00E-03	0.00E+00	8.00E-03
Cs-134	2.58E+02	1.46E+02	3.92E+02	2.40E+01	1.00E-01	0.00E+00	1.20E+00
Cs-136	7.33E+01	4.14E+01	1.11E+02	6.70E+00	0.00E+00	0.00E+00	2.00E-01
Cs-137	1.51E+02	8.49E+01	2.28E+02	1.41E+01	0.00E+00	0.00E+00	7.00E-01
Cs-138	1.50E+02	2.60E+02	6.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sb-127	2.42E+01	1.14E+01	3.67E+01	2.14E+00	1.00E-02	0.00E+00	1.00E-02
Sb-129	5.10E+01	2.71E+01	6.23E+01	1.48E+00	0.00E+00	0.00E+00	0.00E+00
Te-127m	3.15E+00	1.47E+00	4.83E+00	2.95E-01	2.00E-03	0.00E+00	1.30E-02
Te-127	2.05E+01	1.02E+01	2.81E+01	1.11E+00	0.00E+00	0.00E+00	0.00E+00
Te-129m	1.07E+01	5.01E+00	1.64E+01	1.00E+00	1.00E-02	0.00E+00	3.00E-02
Te-129	1.88E+01	1.39E+01	1.45E+01	3.00E-02	0.00E+00	0.00E+00	0.00E+00
Te-131	3.17E+01	1.51E+01	4.69E+01	2.51E+00	0.00E+00	0.00E+00	1.00E-02
Te-132	3.23E+02	1.52E+02	4.89E+02	2.84E+01	1.00E-01	0.00E+00	1.00E-01
Sr-89	9.23E+01	4.31E+01	1.45E+02	5.40E+00	1.00E-01	0.00E+00	3.00E-01
Sr-90	7.95E+00	3.71E+00	1.22E+01	7.50E-01	0.00E+00	0.00E+00	4.00E-02
Sr-91	9.68E+01	4.79E+01	1.33E+02	5.30E+00	0.00E+00	0.00E+00	0.00E+00
Sr-92	6.83E+01	3.91E+01	7.40E+01	1.00E+00	0.00E+00	0.00E+00	0.00E+00

AP1000 Loss of Coolant Accident (LOCA) Activity Releases (Ci) (Sheet 2 of 2)

Isotope	(1.4 - 3.4 hr)	(0-2 hr)	(2 - 8 hr)	(8 - 24 hr)	(24 - 72 hr)	(72 - 96 hr)	(96 - 720 hr)
Ba-139	5.44E+01	3.74E+01	4.56E+01	1.50E-01	0.00E+00	0.00E+00	0.00E+00
Ba-140	1.63E+02	7.61E+01	2.49E+02	1.51E+01	0.00E+00	0.00E+00	4.00E-01
Mo-99	2.15E+01	1.01E+01	3.24E+01	1.86E+00	1.00E-02	0.00E+00	0.00E+00
Tc-99m	1.47E+01	7.54E+00	1.91E+01	5.90E-01	0.00E+00	0.00E+00	0.00E+00
Ru-103	1.73E+01	8.08E+00	2.65E+01	1.62E+00	0.00E+00	1.00E-02	6.00E-02
Ru-105	8.18E+00	4.33E+00	1.00E+01	2.40E-01	0.00E+00	0.00E+00	0.00E+00
Ru-106	5.70E+00	2.66E+00	8.75E+00	5.40E-01	0.00E+00	0.00E+00	3.00E-02
Rh-105	1.03E+01	4.88E+00	1.53E+01	8.30E-01	0.00E+00	0.00E+00	0.00E+00
Ce-141	3.89E+00	1.82E+00	5.96E+00	3.64E-01	1.00E-03	1.00E-03	1.20E-02
Ce-143	3.46E+00	1.64E+00	5.14E+00	2.78E-01	1.00E-03	0.00E+00	0.00E+00
Ce-144	2.94E+00	1.37E+00	4.51E+00	2.76E-01	1.00E-03	1.00E-03	1.30E-02
Pu-238	9.16E-03	4.28E-03	1.41E-02	8.60E-04	0.00E+00	0.00E+00	4.00E-05
Pu-239	8.06E-04	3.76E-04	1.24E-03	7.60E-05	0.00E+00	1.00E-06	3.00E-06
Pu-240	1.18E-03	5.52E-04	1.81E-03	1.11E-04	1.00E-06	0.00E+00	5.00E-06
Pu-241	2.65E-01	1.24E-01	4.08E-01	2.50E-02	1.00E-04	0.00E+00	1.20E-03
Np-239	4.48E+01	2.12E+01	6.75E+01	3.84E+00	1.00E-02	1.00E-02	1.00E-02
Y-90	8.08E-02	3.81E-02	1.22E-01	7.00E-03	0.00E+00	0.00E+00	0.00E+00
Y-91	1.19E+00	5.54E-01	1.82E+00	1.11E-01	1.00E-03	0.00E+00	4.00E-03
Y-92	7.89E-01	4.32E-01	9.19E-01	1.80E-02	0.00E+00	0.00E+00	0.00E+00
Y-93	1.21E+00	6.00E-01	1.68E+00	6.80E-02	0.00E+00	0.00E+00	0.00E+00
Nb-95	1.59E+00	7.46E-01	2.44E+00	1.49E-01	1.00E-03	0.00E+00	5.00E-03
Zr-95	1.59E+00	7.41E-01	2.43E+00	1.49E-01	0.00E+00	0.00E+00	6.00E-03
Zr-97	1.43E+00	6.89E-01	2.05E+00	9.80E-02	0.00E+00	0.00E+00	0.00E+00
La-140	1.67E+00	7.92E-01	2.50E+00	1.39E-01	0.00E+00	0.00E+00	0.00E+00
La-141	1.03E+00	5.54E-01	1.23E+00	2.70E-02	0.00E+00	0.00E+00	0.00E+00
La-142	5.38E-01	3.57E-01	4.74E-01	2.00E-03	0.00E+00	0.00E+00	0.00E+00
Nd-147	6.16E-01	2.89E-01	9.42E-01	5.70E-02	0.00E+00	0.00E+00	1.00E-03
Pr-143	1.39E+00	6.50E-01	2.13E+00	1.28E-01	1.00E-03	0.00E+00	3.00E-03
Am-241	1.20E-04	5.59E-05	1.84E-04	1.13E-05	0.00E+00	0.00E+00	6.00E-07
Cm-242	2.82E-02	1.32E-02	4.33E-02	2.65E-03	1.00E-05	1.00E-05	1.20E-04
Cm-244	3.46E-03	1.62E-03	5.32E-03	3.26E-04	1.00E-06	0.00E+00	1.60E-05

AP1000 Main Steam Line Break (MSLB) with Accident-Initiated Iodine Spike Activity Releases (Ci)

Isotope	(0-8 hr)	(8-24 hr)	(24-72 hr)
Kr-85m	1.827E-01	6.796E-02	6.177E-03
Kr-85	1.129E+00	2.250E+00	6.686E+00
Kr-87	4.097E-02	5.291E-04	8.602E-08
Kr-88	2.496E-01	4.037E-02	8.269E-04
Xe-131m	5.068E-01	9.810E-01	2.700E+00
Xe-133m	6.091E-01	1.038E+00	2.054E+00
Xe-133	4.632E+01	8.644E+01	2.161E+02
Xe-135m	3.056E-03	0.000E+00	0.000E+00
Xe-135	9.994E-01	8.351E-01	3.384E-01
Xe-138	3.996E-03	0.000E+00	0.000E+00
I-130	1.415E+00	1.583E+00	1.009E+00
I-131	8.330E+01	1.558E+02	4.134E+02
I-132	1.436E+02	2.238E+01	1.819E-01
I-133	1.628E+02	2.269E+02	2.553E+02
I-134	3.202E+01	2.651E-01	8.415E-07
I-135	1.097E+02	7.828E+01	1.772E+01
Cs-134	1.918E+01	5.185E-01	1.540E+00
Cs-136	2.851E+01	7.428E-01	2.060E+00
Cs-137	1.380E+01	3.739E-01	1.112E+00
Cs-138	1.012E+01	4.424E-07	0.000E+00
Kr-85m	1.827E-01	6.796E-02	6.177E-03
Kr-85	1.129E+00	2.250E+00	6.686E+00
Kr-87	4.097E-02	5.291E-04	8.602E-08
Kr-88	2.496E-01	4.037E-02	8.269E-04
Xe-131m	5.068E-01	9.810E-01	2.700E+00
Xe-133m	6.091E-01	1.038E+00	2.054E+00
Xe-133	4.632E+01	8.644E+01	2.161E+02
Xe-135m	3.056E-03	0.000E+00	0.000E+00
Xe-135	9.994E-01	8.351E-01	3.384E-01
Xe-138	3.996E-03	0.000E+00	0.000E+00

AP1000 Main Steam Line Break (MSLB) with Pre-Existing Iodine Spike Activity Releases (Ci)

Isotope	(0-8 hr)	(8-24 hr)	(24-72 hr)
I-130	5.008E-01	2.093E-01	1.334E-01
I-131	3.613E+01	3.096E+01	8.216E+01
I-132	3.466E+01	8.061E-01	6.552E-03
I-133	6.233E+01	3.534E+01	3.976E+01
I-134	6.905E+00	1.429E-03	4.535E-09
I-135	3.416E+01	7.542E+00	1.707E+00
Cs-134	1.918E+01	5.185E-01	1.540E+00
Cs-136	2.851E+01	7.428E-01	2.060E+00
Cs-137	1.380E+01	3.739E-01	1.112E+00
Cs-138	1.012E+01	4.424E-07	0.000E+00

AP1000 Locked Rotor Accident (LRA) Activity Releases (Ci)

	No Feedwater	With Feedwater
Isotope	**(0-1.5 hr)**	**(0-8hr)**
Kr-85m	8.158E+01	2.792E+02
Kr-85	7.576E+00	4.036E+01
Kr-87	1.204E+02	2.128E+02
Kr-88	2.078E+02	5.816E+02
Xe-131m	3.771E+00	1.995E+01
Xe-133m	2.021E+01	1.032E+02
Xe-133	6.664E+02	3.488E+03
Xe-135m	3.240E+01	3.296E+01
Xe-135	1.591E+02	6.717E+02
Xe-138	1.288E+02	1.305E+02
I-130	8.447E-01	1.446E+00
I-131	3.774E+01	8.052E+01
I-132	2.789E+01	1.829E+01
I-133	4.855E+01	8.977E+01
I-134	2.884E+01	5.740E+00
I-135	4.188E+01	5.789E+01
Cs-134	1.290E+00	2.585E+00
Cs-136	5.634E-01	8.631E-01
Cs-137	7.739E-01	1.521E+00
Cs-138	6.080E+00	4.078E+00
Rb-86	1.329E-02	2.913E-02

AP1000 Rod Ejection Accident (REA) Activity Releases (Ci)

Isotope	(0-8 hr)	(8-24 hr)	(24-96 hr)	(96-720 hr)
Kr-85m	1.771E+02	3.868E+01	1.767E+00	2.511E-05
Kr-85	1.061E+01	1.492E+01	3.353E+01	2.877E+02
Kr-87	2.083E+02	1.025E+00	8.366E-05	0.000E+00
Kr-88	4.096E+02	3.491E+01	3.589E-01	8.407E-09
Xe-131m	1.040E+01	1.416E+01	2.864E+01	1.162E+02
Xe-133m	5.475E+01	6.485E+01	8.450E+01	5.311E+01
Xe-133	1.837E+03	2.404E+03	4.267E+03	8.446E+03
Xe-135m	7.346E+01	4.333E-09	0.000E+00	0.000E+00
Xe-135	3.868E+02	2.088E+02	4.347E+01	1.793E-01
Xe-138	2.988E+02	3.194E-09	0.000E+00	0.000E+00
I-130	1.217E+01	4.321E+00	2.030E-01	2.946E-04
I-131	3.810E+02	2.313E+02	3.101E+01	1.675E+01
I-132	2.522E+02	9.852E+00	8.236E-03	0.000E+00
I-133	7.118E+02	3.176E+02	2.280E+01	2.410E-01
I-134	1.948E+02	1.367E-01	4.478E-08	0.000E+00
I-135	5.361E+02	1.186E+02	2.393E+00	7.322E-05
Cs-134	9.298E+01	6.030E+01	7.760E+00	5.164E+00
Cs-136	2.630E+01	1.666E+01	2.049E+00	6.584E-01
Cs-137	5.409E+01	3.509E+01	4.520E+00	3.051E+00
Cs-138	1.156E+02	1.682E-03	0.000E+00	0.000E+00
Rb-86	1.090E+00	6.956E-01	8.674E-02	3.417E-02

AP1000 Small Line Break (SLB)Outside Containment Activity Releases (Ci)

Isotope	(0-0.5 hr)
Kr-85m	1.241E+01
Kr-85	4.398E+01
Kr-87	7.047E+00
Kr-88	2.212E+01
Xe-131m	1.993E+01
Xe-133m	2.500E+01
Xe-133	1.843E+03
Xe-135m	2.588E+00
Xe-135	5.202E+01
Xe-138	3.645E+00
I-130	1.888E+00
I-131	9.256E+01
I-132	3.494E+02
I-133	2.007E+02
I-134	1.579E+02
I-135	1.680E+02
Cs-134	4.157E+00
Cs-136	6.163E+00
Cs-137	2.996E+00
Cs-138	2.214E+00

AP1000 Steam Generator Tube Rupture (SGTR) with Accident-Initiated Iodine Spike Activity Releases (Ci)

Isotope	(0-8 hr)	(8-24 hr)
Kr-85m	7.459E+01	7.529E-03
Kr-85	3.289E+02	1.339E-01
Kr-87	2.754E+01	9.119E-05
Kr-88	1.187E+02	5.429E-03
Xe-131m	1.484E+02	5.909E-02
Xe-133m	1.829E+02	6.609E-02
Xe-133	1.366E+04	5.291E+00
Xe-135m	3.449E+00	0.000E+00
Xe-135	3.474E+02	7.101E-02
Xe-138	4.565E+00	0.000E+00
I-130	1.049E+00	8.238E-01
I-131	5.505E+01	6.761E+01
I-132	1.521E+02	1.291E+01
I-133	1.133E+02	1.084E+02
I-134	5.593E+01	5.942E-02
I-135	8.602E+01	4.378E+01
Cs-134	1.687E+00	2.163E-01
Cs-136	2.506E+00	3.144E-01
Cs-137	1.217E+00	1.560E-01
Cs-138	5.639E-01	5.730E-07

AP1000 Steam Generator Tube Rupture (SGTR) with Pre-Existing Iodine Spike Activity Releases (Ci)

Isotope	(0-8 hr)	(8-24 hr)
Kr-85m	7.459E+01	7.529E-03
Kr-85	3.289E+02	1.339E-01
Kr-87	2.754E+01	9.119E-05
Kr-88	1.187E+02	5.429E-03
Xe-131m	1.484E+02	5.909E-02
Xe-133m	1.829E+02	6.609E-02
Xe-133	1.366E+04	5.291E+00
Xe-135m	3.449E+00	0.000E+00
Xe-135	3.474E+02	7.101E-02
Xe-138	4.565E+00	0.000E+00
I-130	1.848E+00	2.680E-01
I-131	1.259E+02	3.063E+01
I-132	1.423E+02	1.923E+00
I-133	2.236E+02	4.062E+01
I-134	2.741E+01	4.227E-03
I-135	1.299E+02	1.165E+01
Cs-134	1.687E+00	2.163E-01
Cs-136	2.506E+00	3.144E-01
Cs-137	1.217E+00	1.560E-01
Cs-138	5.639E-01	5.730E-07

AP1000 Fuel Handling Accident (FHA) Activity Releases (Ci)

Isotope	(0-2 hr)
Kr-85m	8.40E+00
Kr-85	1.10E+03
Kr-88	3.0E-01
Xe-131m	5.52E+02
Xe-133m	2.30E+03
Xe-133	8.88E+04
Xe-135m	1.02E+03
Xe-135	5.68E+03
I-130	7.0E-01
I-131	3.47E+02
I-132	2.44E+02
I-133	1.08E+02
I-135	3.20E+00

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.7.5-1

Text of NRC RAI:

Provide a second year of meteorological data (February 1, 2008 - January 31, 2009).

Provide a second year of meteorological data (February 1, 2008-January 31, 2009). 10 CFR 50.34 requires an analysis and evaluation of the amount of exposure to routine operation from the facility. Regulatory Guide 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," states that two annual cycles of meteorological data should be provided for an operating license. Only one year of data was provided.

PGN RAI ID #: L-0081

PGN Response to NRC RAI:

A second year of meteorological data for the period of February 1, 2008 to January 31, 2009, has been submitted to the NRC as a separate transmittal (letter dated March 17, 2009; Serial NPD-NRC-2009-036). The following information has been provided:

- One year of hourly on-site data (February 1, 2008 to January 31, 2009) in a formatted, sequential access, ASCII text data file, pursuant to the guidance in Appendix A of Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," Revision 1. The same information was also provided in "pdf" format.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 3.6.3-1

Text of NRC RAI:

Describe the air quality impacts of burning cleared vegetation.

Describe the air quality impacts of burning cleared vegetation. 10 CFR 51.71 requires an analysis of the air quality impacts of the proposed action. One such impact would be emissions from prescribed controlled burns used for managing forests on the property. Controlled burns are commonly used to manage forests in the State of Florida. Will prescribed controlled burns be used to help manage forests on the LNP site? If so, what are the anticipated frequency of the burns and the impacts of the burns on air quality?

PGN RAI ID #: L-0082

PGN Response to NRC RAI:

As described in ER Subsection 4.4.1.2 "Air Quality," cleared vegetative material will be either processed for beneficial reuse or burned on-site during the construction phase of the project. Any open burning associated with land clearing will be conducted in accordance with Florida Regulations, specifically Florida Administrative Code (F.A.C.) Chapter 62-256, which addresses Open Burning. In order to ensure that there will not be any unacceptable impacts on ambient air quality, open burning will be conducted only after the appropriate notifications and approvals are obtained from the Florida Department of Environmental Protection (FDEP), and all applicable air pollution control regulations with regard to open burning will be followed. Also, as described in ER Table 4.6-1 (Sheet 6 of 6), the impact on ambient air quality during all phases of the construction process, including open burning, have been characterized as SMALL. Therefore, the air quality impacts due to any construction-related open burning activities are not considered to be significant.

During plant operation, PEF anticipates the need to perform forest management activities that may involve periodic timbering, land clearing, or thinning. It is anticipated that these activities will involve the mechanical harvesting of mature timber and transportation of the majority of the usable material off-site. Refuse material will be ground up and redistributed on-site, disposed of off-site in an appropriate manner, or burned on-site. Any open burning of refuse generated during timbering activities will be minimized in favor of other methods and will occur only in accordance with an approved land management plan and only after the appropriate agency notifications and approvals are obtained. Additionally, PEF will comply with applicable air pollution control regulations if open burning is determined to be necessary. Air impacts from open burning activities will be no different from similar impacts from other controlled burns in the state. The majority of these activities are most likely to occur during the first year of construction when the majority of land clearing activities can be expected. Any air quality impacts associated with these land clearing activities will be similar to those that will occur during the initial construction phases of the project and they are not considered to be significant.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.3.3-1

Text of NRC RAI:

Provide CALPUFF and AMS/EPA Regulatory Model (AERMOD) input and output files.

Provide CALPUFF and AMS/EPA Regulatory Model (AERMOD) input (including meteorological data file) and output files, or justify an alternative method. Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations," states that nonradiological atmospheric considerations, including cooling tower plumes, should be described in the ER.

PGN RAI ID #: L-0083

PGN Response to NRC RAI:

The input and output files for the modeling analysis of the cooling towers for LNP 1 and LNP 2 using the CALPUFF and the AERMOD models are provided under separate cover due to the need to process the data in native file format. The data being provided in the separate submittal also include the source (.EXE) model files as obtained from the U.S. Environmental Protection Agency (EPA). A complete description of the modeling analyses has been documented in the following Technical Memoranda (TMs):

- "LNP-Cooling Tower Plume Visibility Analysis," 338884-TMEM-057, Rev. 0. A copy of this TM was available in the Progress Energy-provided Reading Room, as described in PEF's January 16, 2009 submittal (Serial NPD-NRC-2009-007) as "Supplemental Information for Environmental Audit – Information Needs with Attachments." Please refer to the response to Information Need Met-4 in that submittal.
- "LNP-Cooling Tower Plume Deposition Analysis," 338884-TMEM-058, Rev. 2. A copy of this TM was available in the Progress Energy-provided Reading Room, as described in PEF's January 16, 2009 submittal (Serial NPD-NRC-2009-007) as "Supplemental Information for Environmental Audit – Information Needs with Attachments." Please refer to the response to Information Need Met-4 in that submittal.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

The following electronic files are provided under separate cover (Serial No. NPD-NRC-2009-044) in electronic format (CD):

Index of Dispersion Modeling Files
Cooling Tower Plume Analysis
Levy Nuclear Plant

LNP – Cooling Tower Plume Visibility Analysis (Reference: 338884-TMEM-057, Rev. 0)
Levy Nuclear Plant (Sheet 1 of 2)

File Name	File Description
CTEMISS.EXE	Application that calculates the hourly emissions of water vapor and "excess" temperature for each cooling tower cell
CTEMISS.INP	Input Data File for the CTEMISS application
Q_03.PT2	Output Data File for the CTEMISS application
Q_03.LST	List Data File for the CTEMISS application
GNV03I_REV.ASC	2003 Gainesville, Florida Meteorological Data for CTEMISS application and CALPUFF Dispersion Model
CALPUFF.EXE	CALPUFF Dispersion Model
PUFF2.INP	Input Data File for the CALPUFF Dispersion Model, Plume Mode
Q_03.PT2	Point Source Data File the CALPUFF Dispersion Model, Plume and Receptor Modes
FOG_PM.DAT	Output Data File for the CALPUFF Dispersion Model, Plume Mode
PUFF_PM.LST	List File for the CALPUFF Dispersion Model, Plume Mode
POSTPM2.EXE	Plume Mode Fog Post Processor, generates the hourly visible plume results
POSTPM.INP	Input Data File for the Plume Mode Fog Post Processor
POSTPM.LST	List File for the Plume Mode Fog Post Processor
GNV03I.144	2003 Gainesville, Florida CD144 Meteorological Data File for the Plume Mode and Receptor Mode Fog Post Processors
SUMPOST.EXE	Interprets the hourly data produced by the Plume Mode Fog Post Processor
SUMPOST.INP	Input Data File for the SUMPOST Program
SUMPOST.LST	**Output Data File for the SUMPOST Program, summarizes the visible plume length and results written to POSTPM.LST (Daylight Hours Only)**
SUMPOST (ALL).LST	**Output Data File for the SUMPOST Program, summarizes the visible plume length and results written to POSTPM.LST (All Hours)**
PUFF3.INP	Input Data File for the CALPUFF Dispersion Model, Receptor Mode
FOG_RM.DAT	Output Data File for the CALPUFF Dispersion Model, Receptor Mode
PUFF_RM.LST	List File for the CALPUFF Dispersion Model, Receptor Mode
POSTRM2.EXE	Receptor Mode Fog Post Processor, identifies potential events

LNP – Cooling Tower Plume Visibility Analysis (Reference: 338884-TMEM-057, Rev. 0) Levy Nuclear Plant (Sheet 2 of 2)

File Name	File Description
POSTRM.INP	Input Data File for the Receptor Mode Fog Post Processor
POSTRM.RH	**Output Data File for the Receptor Mode Fog Post Processor, details the relative humidity histograms for each receptor**
POSTRM.LST	**List File for the Receptor Mode Fog Post Processor, details the total number of hours of plume-induced fog or ice**

Note: The files in **Bold** are summarized in the TM "LNP – Cooling Tower Plume Visibility Analysis," dated March 3, 2008.

LNP – Cooling Tower Plume Deposition Analysis (Reference: 338884-TMEM-058, Rev. 2)
Levy Nuclear Plant (Sheet 1 of 2)

File Name	File Description
BPIPPRM.EXE[a]	Building Profile Input Program for PRIME
LEVY3P.GPW, LEVY3P.PIP, LEVY3P.SO, LEVY3P.SUM, LEVY3P.TAB, LEVY3P.PRW	BPIP-Prime Processing Files and Results
AERMOD.EXE[a]	AERMOD Dispersion Model
GNV01.SFC	Meteorological data based on 2001 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Hourly Surface Data File)
GNV02.SFC	Meteorological data based on 2002 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Hourly Surface Data File)
GNV03.SFC	Meteorological data based on 2003 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Hourly Surface Data File)
GNV04.SFC	Meteorological data based on 2004 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Hourly Surface Data File)
GNV05.SFC	Meteorological data based on 2005 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Hourly Surface Data File)
GNV01.PFL	Meteorological data based on 2001 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Upper Air Profile File)
GNV02.PFL	Meteorological data based on 2002 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Upper Air Profile File)
GNV03.PFL	Meteorological data based on 2003 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Upper Air Profile File)
GNV04.PFL	Meteorological data based on 2004 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Upper Air Profile File)
GNV05.PFL	Meteorological data based on 2005 Gainesville, Florida surface observation and Jacksonville, Florida upper air data (Upper Air Profile File)
LEVY3_2001_PM.DTA	Input Data File, 2001 Meteorological Data
LEVY3_2002_PM.DTA	Input Data File, 2002 Meteorological Data

LNP – Cooling Tower Plume Deposition Analysis (Reference: 338884-TMEM-058, Rev. 2)
Levy Nuclear Plant (Sheet 2 of 2)

File Name	File Description
LEVY3_2003_PM.DTA	Input Data File, 2003 Meteorological Data
LEVY3_2004_PM.DTA	Input Data File, 2004 Meteorological Data
LEVY3_2005_PM.DTA	Input Data File, 2005 Meteorological Data
LEVY3_2001_PM.GRF	**Graphic Output Data File, 2001 Meteorological Data**
LEVY3_2002_PM. GRF	**Graphic Output Data File, 2002 Meteorological Data**
LEVY3_2003_PM. GRF	**Graphic Output Data File, 2003 Meteorological Data**
LEVY3_2004_PM. GRF	**Graphic Output Data File, 2004 Meteorological Data**
LEVY3_2005_PM. GRF	**Graphic Output Data File, 2005 Meteorological Data**
LEVY3_2001_PM.LST	**Output Data File, 2001 Meteorological Data**
LEVY3_2002_PM.LST	**Output Data File, 2002 Meteorological Data**
LEVY3_2003_PM.LST	**Output Data File, 2003 Meteorological Data**
LEVY3_2004_PM.LST	**Output Data File, 2004 Meteorological Data**
LEVY3_2005_PM.LST	**Output Data File, 2005 Meteorological Data**

Notes:
The files in **Bold** are summarized in the TM "LNP – Cooling Tower Plume Deposition Analysis," dated May 22, 2008.
a) The actual program used in the modeling analysis is part of a licensed software package. The executable (.EXE) files in the directory of files were downloaded directly from EPA's web site on March 2, 2009.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-1

Text of NRC RAI:

Clarify the 100-year floodplain map shown in ER Figure 2.3-11.

ER Figure 2.3-11 shows the 100-year floodplain near the LNP site and vicinity. It is unclear whether the LNP site is inside the 100-year floodplain in ER Figure 2.3-11 due to the poor quality of the figure. Provide a publication-quality figure that is clearly reproducible in black and white as well as an explanation, with references, as to how the 100-year floodplain was determined. Provide an estimate of loss of floodplains due to the construction of LNP facilities and the site grading. Describe how the floodplain loss would be mitigated.

PGN RAI ID #: L-0084

PGN Response to NRC RAI:

ER Figure 2.3-11 illustrates the 100-year floodplain, as determined by the Federal Emergency Management Agency (FEMA), as well as the LNP site boundary, the relative locations of LNP 1 and LNP 2, and the surrounding area within a 6-mile radius. 001_Attachment 2.3.1-1A.pdf (Figure 1) and 002_Attachment 2.3.1-1B.pdf (Figure 2) provide additional detail of the 100-year floodplain relative to the locations of LNP 1 and LNP 2. The title of Figure 1, which represents ER Figure 2.3-11, has been revised to clarify the figure as the *Existing* 100 Year Flood Zone at LNP Site. Figures 1 and 2 represent the existing 100-year floodplain in the vicinity of the LNP site prior to any construction activities.

The following discussion regarding the development of the digital 100-year floodplain data used to develop ER Figure 2.3-11, Figure 1, and Figure 2 was obtained from FEMA's Draft Q3 Data Users Guide dated March 1996 (see 003_Attachment 2.3.1-1C.pdf).

The 1968 National Flood Insurance Act required the identification of all floodplain areas within the United States. Floodplain areas are identified through Flood Insurance Studies (FISs), which are hydrologic and hydraulic studies of flood risks developed by FEMA. Using the results of an FIS, FEMA prepares a Flood Insurance Rate Map (FIRM) that depicts the spatial extent of Special Flood Hazard Areas (SFHAs). SFHAs are areas subject to inundation by a flood having a 1-percent or greater probability of being equaled or exceeded during any given year (i.e., a 100-year flood). In addition to initial FISs, FEMA is responsible for maintaining the FIRMs as communities grow, as new or better scientific and technical data concerning flood risks becomes available, and as some FISs become outdated by the construction of flood control projects or the urbanization of rural watersheds. In 1992, FEMA began converting the FIRMs to digital format. To support disaster recovery operations, FEMA has developed specifications for a digital product named the Q3 Flood Data. This product is designed to allow rapid access to and distribution of digital FIRM data and it is compatible with all existing digital FIRM data already available and underway.

The Q3 Flood Data are developed by scanning the existing hardcopy FIRM to create a raster product suitable for viewing or printing and vectorizing a thematic overlay of flood risks. Q3 Raster FIRM files contain all FIRM data in raster format, but only certain features are contained in the vector Q3 Flood Data files. The 1-percent annual probability floodplain areas are contained in the vector Q3 Flood Data files. Each Q3 Flood Data file is accompanied by a metadata file that meets the Federal Geographic Data Committee's guidelines for metadata as contained in the Content Standards for Digital Geospatial Metadata. The metadata files are ASCII text files that describe the contents of and sources used for each Q3 Flood Data file. In addition, the metadata file provides information specific to the county, including the FIRMs that were digitized. The metadata file associated with the Q3 Flood Data used to develop ER Figure 2.3-11 and Figures 1 and 2 is attached (see 004_Attachment 2.3.1-1D.pdf).

The Q3 Flood Data files are distributed only after they have passed checking routines contained in FEMA's Q3QA Checking Software. The data are accompanied by documentation showing that the files have been evaluated and passed. FEMA has established a User Support mechanism through which any problems found with the data can be identified and channeled back to FEMA for resolution. The attribute accuracy of the Q3 Flood Data vector files is tested by manual comparison of source FIRM with hardcopy plots and a symbolized display on an interactive computer graphic system. Selected attributes that cannot be visually verified are queried individually. In addition, FEMA's Q3QA Checking Software program is applied to the dataset to test the attributes against a master set of valid attributes and attribute combinations.

FEMA's Q3 Flood Data for Citrus, Marion, and Levy counties were obtained from the Florida Geographic Data Library and is presented with the footprints of LNP 1 and LNP 2 and the limits of disturbance in Figures 1 and 2, respectively. As can be seen on Figure 1, the footprints of LNP 1 and LNP 2 intersect the existing 100-year flood zone. Figure 2 shows the estimated limits of disturbance at the LNP site and includes both temporarily disturbed (i.e., construction limits) and permanently disturbed (i.e., building footprints) areas and a 50-foot buffer around these areas. The total estimated limit of disturbance at the LNP site and facilities from the site to the CFBC is approximately 1190 acres (ac.), with approximately 64 percent, or 760 acres, affecting the 100-year flood zone.

Fill will be required within a portion of the floodplain within the limits of disturbance as discussed in LNP ER Subsections 3.6.3.2, 4.1.1.1.2.1, 4.1.2.2.1, and 4.2.1. Specifically, the following items are discussed:

- The wet detention ponds are designed to retain a 25-year, 24-hour rainfall event; larger storm events, such as the 100-year rainfall, will be drained out of the ponds through broad-crested weir emergency spillways provided in each of the ponds. A minimum freeboard of 0.6 meter (2 feet) will be provided for each pond above the spillway elevation. Therefore, the ponds will set the actual floodplain elevation at the plant site.
- Pipes will maintain drainage patterns, which will equalize the water levels on each side of the site roads.

In addition, floodplain storage loss will be mitigated as required by Levy County, SWFWMD, FDEP, and FEMA.

Associated LNP COL Application Revisions:

Revise ER Figure 2.3-11 as follows:

- Change the title to "Existing 100 Year Flood Zone at LNP Site".
- Include an inset that shows the 100-year floodplain in additional detail near LNP 1 and LNP 2.

Attachments/Enclosures:

See the following attachments:

- 001_Attachment 2.3.1-1A.pdf
- 002_Attachment 2.3.1-1B.pdf
- 003_Attachment 2.3.1-1C.pdf
- 004_Attachment 2.3.1-1D.pdf

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-2

Text of NRC RAI:

With respect to ER Sections 2.3.1 and 5.2.1, describe any instream flow requirements for the Lower Withlacoochee River (downstream from the Inglis Bypass Spillway) and how these requirements would be met.

PGN RAI ID #: L-0085

PGN Response to NRC RAI:

There are currently no minimum flow requirements established for the Lower Withlacoochee River. The Southwest Florida Water Management District's (SWFWMD's) Minimum Flows and Levels Priority List and Schedule indicates that this may be addressed in 2011.

Construction and operation of the LNP facility will not impact flow in the Lower Withlacoochee River. No known streams or creeks are located within the LNP site that drain directly into the Lower Withlacoochee River. Therefore, no impacts to flow volume within the Lower Withlacoochee River are expected during construction or operational activities for the LNP site. For off-site areas, a portion of the transmission corridor and bridges for the intake and blowdown pipelines and heavy haul road will cross the Inglis Lock Bypass Channel, which drains into Lower Withlacoochee River. However, the construction and operation of these structures will not impact the volume of flow within the Inglis Lock Bypass Channel or subsequently the Lower Withlacoochee River. Overall construction and operational impacts to the Lower Withlacoochee River are predicted to be SMALL.

Groundwater withdrawals for potable water use are predicted to reduce potential freshwater seepage into to the Lower Withlacoochee River and Lake Rousseau by about 0.9 percent. The SWFWMD has reviewed this information and had no comments about these reductions during the state certification application processing. After review, the SWFWMD has indicated the LNP project is permittable.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-3

Text of NRC RAI:

Provide a publicly available reference regarding the Class III waters designation for the Crystal River Energy Complex (CREC) discharge canal and any requirements the LNP blowdown discharge into the CREC discharge canal would need to meet.

With respect to ER Section 2.3.3, provide a publicly available reference that documents the status of the CREC discharge canal as Florida Class III waters. Describe the requirements that the LNP blowdown, proposed to be discharged into the CREC discharge canal, would need to meet.

PGN RAI ID #: L-0086

PGN Response to NRC RAI:

The Crystal River Energy Complex (CREC) discharge canal is considered to be an existing "discrete conveyance" that is a part of point source and not jurisdictional waters. As per Florida Rule 63-302.520(3)(g), F.A.C., the point of discharge for a thermal discharge is "that point at which the effluent physically leaves its carrying conduit (open or closed), and discharges into the waters of the state..." This rule indicates that the discharge canal, prior to the point of actual discharge to the Gulf of Mexico, is not considered to be jurisdictional waters.

The discharge requirements of the LNP blowdown are still under consideration by FDEP as part of the state-administered National Pollutant Discharge Elimination System (NPDES) permitting process. It is anticipated that the combined LNP discharge will be required to meet the federal 40 Code of Federal Regulations (CFR) 423 effluent criteria requirements for new steam electric power generating plants, which are incorporated by reference in Chapter 62-660.400, F.A.C.

Associated LNP COL Application Revisions:

Revise ER Subsection 2.3.3.1 to remove CREC discharge canal from the list of Class III waters.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-4

Text of NRC RAI: Verify the correct number of boreholes reported in ER Sections 2.3.1.5.3 and 2.6.1.3 and in FSAR Section 2.5.0.4.

Both ER Sections 2.3.1.5.3, Site Groundwater Systems, and 2.6.1.3, Geologic Units, indicate 118 boreholes were advanced during the COL Application field investigations. FSAR Section 2.5.0.4, Stability and Uniformity of Subsurface Materials and Foundations, indicates 118 boreholes; however, FSAR Section 2.4.12.1.2, Site Groundwater Systems, indicates a total of 116 boreholes were advanced during the COL Application field investigations to characterize the subsurface conditions at the LNP 1 and LNP 2 locations. Verify the correct number of boreholes.

PGN RAI ID #: L-0087

PGN Response to NRC RAI:

The subsurface investigation program of soil boring and rock coring was completed in three phases: (1) initial, (2) main, and (3) supplemental investigation. They included a total of 118 boreholes, as follows:

1. Initial Investigation Phase: Ten boreholes were advanced using sonic drilling techniques within the vicinity of the plant layout to determine the subsurface conditions and conduct geophysical logging.
2. Main Investigation Phase: Ninety boreholes at the site for the two reactor units (LNP 1 and LNP 2) were advanced during the main phase to obtain soil and rock samples for geologic characterization and for laboratory tests.
3. Supplemental Investigation Phase: This phase program included 18 additional boreholes.

Associated LNP COL Application Revisions:

Revise the sixth paragraph of LNP FSAR Subsection 2.4.12.1.2 from:

> A site investigation that included geotechnical borings was conducted at the LNP site during late 2006 and 2007 to characterize the thickness of unconsolidated Quaternary sediment deposits, to determine the depth to the Avon Park limestone bedrock, and to evaluate the engineering properties of this rock beneath the proposed improved areas. A total of 116 boreholes were advanced during the COL Application field investigations to characterize the subsurface conditions at the LNP 1 and LNP 2 locations.

to:

A site investigation that included geotechnical borings was conducted at the LNP site during late 2006 and 2007 to characterize the thickness of unconsolidated Quaternary sediment deposits, to determine the depth to the Avon Park limestone bedrock, and to evaluate the engineering properties of this rock beneath the proposed improved areas. A total of 118 boreholes were advanced during the COL Application field investigations to characterize the subsurface conditions at the LNP 1 and LNP 2 locations.

LNP ER Subsection 2.3.1.5.3, LNP ER Subsection 2.6.1.3, and LNP FSAR Subsection 2.5.0.4, which indicate that 118 boreholes were advanced during the COL Application field investigations, do not require revision.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-5

Text of NRC RAI:

Describe the parameter estimation approach for the currently underway reanalysis that uses the MLU model, provide publication-quality graphics showing model fit of test data, and compare transmissivity values obtained from MLU analysis with those used in the SWFWMD DWRM2 TMR model.

During the site audit, PEF stated that the surficial and Floridan aquifer pump test data were being reanalyzed using the Multi-Layer Unsteady state (MLU) model of transient well flow in layered aquifer systems. Describe the parameter estimation approach and provide associated publication-quality graphics showing model fit of test data. Graphics should be clearly reproducible in black-and-white. Compare transmissivity values obtained from the MLU analysis with those used in the Southwest Florida Water Management District (SWFWMD) District Wide Regulation Model, Version 2, with Telescopic Mesh Refinement (DWRM2 TMR).

PGN RAI ID #: L-0088

PGN Response to NRC RAI:

The MLU model was used to evaluate three aquifer test programs conducted at the LNP site: one within the surficial aquifer and two within the Upper Floridan aquifer. The MLU model was selected for this evaluation because it can be used for aquifer test analysis of transient well flow in layered aquifer systems and stratified aquifers. The aquifer test programs at the LNP site involved pumping and monitoring wells screened at two different depth intervals in the surficial aquifer and up to four different depth intervals in the Upper Floridan aquifer.

The methods used to synthesize the data and estimate the properties of the aquifers beneath the LNP site from these three aquifer test programs are described in Calculation LNG-0000-X7C-040, Rev. 0, "Surficial and Floridan Aquifer Test Analysis Using MLU." A copy of this calculation is available in the Progress Energy-provided Reading Room. The following is a brief summary of the aquifer test analysis.

- The pumping schedule and screened intervals of the pumping wells were obtained for all tests. The Upper Floridan aquifer test at the LNP 1 nuclear island foundation included four pumping periods, and the Upper Floridan aquifer test at the LNP 2 nuclear island foundation included eight pumping periods. The surficial aquifer test included only one pumping period.
- The observed drawdown data at specific times within the test interval were interpolated to reduce the total number of data points to an amount that can be analyzed by the MLU model. MLU can analyze a maximum of 100 data points per observation well. To reduce the data to a number that can be analyzed by MLU, raw

data were first examined and plotted for each well. From these plots, contemporaneous drawdown values were estimated for each well; the times were selected to include key portions of the drawdown plots for each test.

- The drawdown and pumping data were entered into MLU for each of the three tests and MLU computed the aquifer properties. This process was iterative because the analysis of the Upper Floridan aquifer data required as input the properties of the surficial aquifer and the analysis of the surficial aquifer required as input the properties of the Upper Floridan aquifer. The MLU analysis was performed for each of the three tests until consistent values were achieved for the aquifer properties for both the surficial and Upper Floridan aquifers.

Selected results of the aquifer test analyses are summarized in Table 2.3.1-5-001. Plots of the raw drawdown data, interpolated drawdown data used as input to MLU, and drawdown data simulated by MLU and scatter plots of the observed and simulated drawdown data for all monitored wells during each test are provided in 005_Attachment 2.3.1-5A.pdf. These plots, which are numbered Figures 1 through 38 in 005_Attachment 2.3.1-5A.pdf, are presented as Figures 3 through 40 in Calculation LNG-0000-X7C-040, Rev. 0.

Table 2.3.1-5-001
Hydraulic Conductivity and Transmissivity Computed from MLU Analysis

Aquifer	MLU Layer	Layer Thickness (feet)	Horizontal Conductivity (Kh) (ft/day)	Vertical Conductivity (Kv) (ft/day)	Transmissivity ($feet^2$/day)
LNP 1 Aquifer Test Results					
Surficial	1	35	13	8	450
Surficial	2	45	13	10	580
Surficial	*Total*	*80*	--	--	*1030*
Upper Floridan	3	25	120	120	3000
Upper Floridan	4	25	120	120	3000
Upper Floridan	5	25	120	120	3000
Upper Floridan	6	445	120	--	53,000
Upper Floridan	*Total*	*520*	--	--	*62,000*
LNP 2 Aquifer Test Results					
Surficial	1	35	13	8	450
Surficial	2	45	13	10	580
Surficial	*Total*	*80*	--	--	*1030*
Upper Floridan	3	30	130	130	4000
Upper Floridan	4	30	130	130	4000
Upper Floridan	5	30	130	130	4000
Upper Floridan	6	30	130	130	4000
Upper Floridan	7	400	130	--	53,000
Upper Floridan	*Total*	*520*	--	--	*69,000*

Inspection of Figures 1 through 38 in 005_Attachment 2.3.1-5A.pdf shows the heterogeneous nature of the aquifer beneath the site. MLU tended to over-predict the drawdown in some wells and under-predict the drawdown in others. However, the scatter plots that compare the observed and simulated drawdown data from all monitored wells show that MLU did a reasonably good job of synthesizing all the data.

As shown in Table 2.3.1-5-001, the MLU model estimated the horizontal hydraulic conductivity of the Upper Floridan aquifer to be 120 feet per day (ft/day) at LNP 1 and 130 ft/day at LNP 2. As expected, the surficial aquifer is much less permeable than the Upper Floridan aquifer, with an estimated horizontal hydraulic conductivity of approximately 13 ft/day and vertical hydraulic conductivity ranging 8 to 10 ft/day at both LNP 1 and LNP 2.

The transmissivity of the Upper Floridan aquifer was calculated by the MLU model to range from 62,000 to 69,000 square feet per day (ft^2/day), assuming an Upper Floridan aquifer thickness of 520 feet. The assumed Upper Floridan aquifer thickness of 520 feet was based on the on-site field investigation program drilling results. The deepest geotechnical borings were drilled to depths of approximately 500 feet below ground surface (bgs) and did not encounter the Middle Confining Unit (MCU) or the underlying Oldsmar and Cedar Keys formations that comprise the Lower Floridan aquifer. However, traces of the evaporate deposits and quartz-infilled porosity typical of the MCU were observed sporadically in the borings at depths below 400 feet indicating that these borings may have approached the less permeable lower portion (MCU) of the Avon Park Formation.

Groundwater modeling was performed for the SWFWMD as a requirement of the facility's Site Certification Application (SCA) to the State of Florida. The SWFWMD's District-Wide Regulation Model, Version 2 (DWRM2) regional groundwater flow model was used to simulate LNP withdrawals. The model specifies a range of transmissivities for the Upper Floridan aquifer from 20,184 ft^2/day to 81,800 ft^2/day across the site, north to south, respectively. The model specifies a range of hydraulic conductivity for the surficial aquifer from 15 to 20 ft/day across the site, south to north, respectively.

The range of transmissivity and hydraulic conductivity values specified by the DWRM2 model for the Upper Floridan and surficial aquifers, respectively, compare reasonably well with the transmissivity and hydraulic conductivity values estimated by MLU. This comparison is summarized in Table 2.3.1-5-002.

Table 2.3.1-5-002
Comparison of Aquifer Properties

Aquifer	Aquifer Property	MLU	DWRM2
Surficial Aquifer	Hydraulic Conductivity	13 ft/day	15 – 20 ft/day
Upper Floridan Aquifer	Transmissivity	62,000 – 69,000 ft^2/day	20,200 – 81,800 ft^2/day

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 005_Attachment 2.3.1-5A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.1-6

Text of NRC RAI:

Discuss the difference between the estimated transmissivity range and the average transmissivity values derived from site-specific hydraulic tests at the LNP site.

ER Section 2.3.1.5.2 presented transmissivity values at the LNP site based on published literature. Site-specific measurements carried out during Summer 2008 by PEF indicated transmissivity values lower than those reported in ER Section 2.3.1.5.2. Discuss the estimated transmissivity range presented in ER Section 2.3.1.5.2 and the average transmissivity values derived from site-specific hydraulic tests. Discuss which of these values are most representative of actual site conditions.

PGN RAI ID #: L-0089

PGN Response to NRC RAI:

The regional transmissivity values presented in ER Subsection 2.3.1.5.2 are derived from ER Reference 2.3-045. In ER Reference 2.3-045, the U.S. Geological Survey (USGS) states, in regard to the Upper Floridan aquifer in west central Florida, "Model-derived transmissivities range from 17,000 ft^2/day in the southwest, where the freshwater section of the aquifer system becomes progressively thinner seaward, to nearly 13,000,000 ft^2/day near large springs in the north. Most transmissivities are in the range of 50,000 to 500,000 ft^2/day." In addition, Plate-1 of ER Reference 2.4-045 indicates an aquifer test(s) was performed at a well less than 10 miles to the north of the LNP site; the associated transmissivity value at this location is 20,000 ft^2/day. These transmissivity values are based on Upper Floridan aquifer thicknesses ranging from approximately 500 to 1800 feet, with an estimated Upper Floridan aquifer thickness of approximately 750 feet near the LNP site. These values are not site specific and apply to a large region of west central Florida.

Slug tests were performed in seven monitoring wells screened within the Upper Floridan aquifer. The slug test analysis method was used to determine an in-situ permeability or hydraulic conductivity of the Upper Floridan aquifer at the LNP site. Using this method, hydraulic conductivity values range from 2.4 to 54.4 ft/day in the Upper Floridan aquifer. An aquifer thickness of 250 feet was assumed for the Upper Floridan aquifer for use in the slug test analysis method. The full thickness of the Upper Floridan aquifer was not used for the slug test analysis method because of the limited aquifer influence of the slug testing method. By using this assumption and multiplying the calculated hydraulic conductivity by the assumed aquifer thickness, transmissivity values for the Upper Floridan aquifer range from approximately 600 to 13,600 ft^2/day. The analysis of the slug test data is presented in LNP Calculation LNG-0000-X7C-038, "Calculation for Groundwater Slug Test." A copy of this calculation is available in the Progress Energy-provided Reading Room.

In addition, three aquifer pumping tests were performed: one in the surficial aquifer and two in the Upper Floridan aquifer. The results of these tests were analyzed in concert using the MLU model. The analysis of the surficial and Upper Floridan aquifer test data using MLU is presented in LNP Calculation LNG-0000-X7C-040, Rev. 0, "Surficial and Floridan Aquifer Test Analysis Using MLU." A copy of this calculation is available in the Progress Energy-provided Reading Room.

Using the MLU model, the transmissivity of the Upper Floridan aquifer was calculated to range from 62,000 to 69,000 ft^2/day, assuming an Upper Floridan aquifer thickness of 520 feet. The assumed Upper Floridan aquifer thickness of 520 feet was based on the on-site field investigation program. The deepest geotechnical borings were drilled to depths of approximately 500 feet bgs and did not encounter the Middle Confining Unit (MCU) or the underlying Oldsmar and Cedar Keys formations that comprise the Lower Floridan aquifer. However, traces of the evaporate deposits and quartz-infilled porosity typical of the MCU were observed sporadically in the borings at depths below 400 feet, indicating these borings may have been approaching the less permeable lower portion (MCU) of the Avon Park Formation.

The Upper Floridan aquifer transmissivity values discussed above are summarized in Table 2.3.1-6-001.

Table 2.3.1-6-001
Summary of Upper Floridan Aquifer Transmissivity Values

	LNP ER Reference 2.3-045	Slug Test Method Using AquiferWin32	Aquifer Test Analysis Using MLU
Hydraulic Conductivity (ft/day)	NA	2.4 – 54.4	118.9 – 132.6
Transmissivity (ft^2/day)	17,000 near the coast, regionally 50,000 – 500,000	600 – 13,600	62,000 – 69,000
Aquifer Thickness (feet)	Approximately 750 near the LNP site, 500 - 1800	250	520

As summarized in Table 2.3.1-6-001, transmissivity values derived from site-specific hydraulic tests range from 600 to 69,000 ft^2/day. This range of observed site values is the result of the heterogeneity and anisotropy of the aquifers underlying the LNP site. Therefore, transmissivity values ranging from approximately 13,000 to 70,000 ft^2/day (average site transmissivity of approximately 41,500 ft^2/day) are considered most representative of actual site conditions.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.3-1

Text of NRC RAI:
Provide water quality sampling data from observations in and at the outlet of the CREC discharge canal.

Surface water quality data were presented in ER Section 2.3.3.1, although sampling data from the CREC discharge canal was not provided. Provide water quality sampling data from observations in and at the outlet of the CREC discharge canal.

PGN RAI ID #: L-0090

PGN Response to NRC RAI:

Sampling in the CREC discharge canal was initiated in 2008 and is continuing in 2009. The sampling methodology, locations, and parameters are described in TM 338884-TMEM-087, Rev. 1, "Aquatic Ecology Sampling Report, Levy Nuclear Plant".

Sample locations for the CREC discharge canal are shown on Figure 1 included as 006_Attachment 2.3.3-1A.pdf to this response. Sample dates and analytes associated with sample locations are provided in Tables 1 and 2 included as 007_Attachment 2.3.3-1B.pdf and 008_Attachment 2.3.3-1C.pdf, respectively. Analytical data associated with sampling of the CREC discharge canal in 2008 but not included in ER Subsection 2.3.3.1 are provided in Tables 3 through 6 (see 009_Attachment 2.3.3-1D.pdf through 012_Attachment 2.3.3-1G.pdf).

Data for samples collected in January and February of 2009 have not yet been received from the laboratory but will be summarized in a TM and provided to the NRC no later than April 2009. Two additional sampling events are scheduled to occur in the spring and summer of 2009. The spring sampling event is scheduled to be completed in April 2009. Results will be summarized in a TM and provided to the NRC no later than July 2009. The summer sampling event is scheduled to be completed in July 2009. Results will be summarized in a TM and provided to the NRC no later than September 2009.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See the following attachments:

- 006_Attachment 2.3.3-1A.pdf
- 007_Attachment 2.3.3-1B.pdf
- 008_Attachment 2.3.3-1C.pdf
- 009_Attachment 2.3.3-1D.pdf

- 010_Attachment 2.3.3-1E.pdf
- 011_Attachment 2.3.3-1F.pdf
- 012_Attachment 2.3.3-1G.pdf

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.3.3-2

Text of NRC RAI:

Provide a discussion of water quality trends observed in December 2007 relative to previous monitoring periods.

Groundwater quality data were presented in ER Section 2.3.3.2. Provide a discussion of water quality trends and processes that might account for the observed change in chemical oxygen demand (COD) and oxygen reduction potential (ORP) in December 2007 relative to previous monitoring periods. NRC staff needs this information to completely characterize the affected environment and to perform a subsequent assessment of impacts.

PGN RAI ID #: L-0091

PGN Response to NRC RAI:

Groundwater samples were collected quarterly from the on-site groundwater monitoring network to establish background hydrogeologic conditions for the LNP site. Two monitoring wells at each of the two proposed unit locations were sampled; each well pair consisted of a shallow (approximately 30 feet deep) and a deep (approximately 120 feet deep) well. Wells MW-15S and MW-16D are located proximal to LNP 1; wells MW-13S and MW-14D are located proximal to LNP 2.

Samples were collected at these wells in March, June, September, and December 2007 and analyzed by a laboratory for the parameters listed in ER Tables 2.3-51 and 2.3-52. ER Table 2.3-50 presents the field analytical parameters that were measured for groundwater at each well during each quarterly sampling event. Based on a review of the information in these tables, it appears that the values for chemical oxygen demand (COD) and oxygen reduction potential (ORP) in December 2007 are different from those values observed for previous sampling events.

When comparing the analytical results of COD from the December 2007 sampling event with the other three quarters for water quality trends, COD values were elevated by a factor of approximately 20 (assuming a value of one-half of the detection limit for non-detected values) depending on the particular well. COD is a measure of the chemically oxidizable content of a water sample. A measured quantity of a specific oxidizing agent is added to the sample, which is then heated to 120 degrees Celsius for 2 hours. Afterward, the amount of residual oxidizer in the sample is correlated to the sample COD value by a colorimetric titration. Interferences with or inaccurate results from COD analysis can occur from the presence of chloride, particulate solids, or heavy inorganic compounds, such as ferrous sulfide. The analytical data presented in ER Table 2.3-51 do not indicate the presence of excessive amounts of other nutrients that could result in an elevated COD value.

When comparing the results of ORP concentrations from the December 2007 sampling event with the other three quarters for water quality trends, ORP values were depressed (more negative) by a factor of approximately 2 to 4, depending on the particular well. The decrease in ORP, a field-measured parameter, during the December 2007 sampling event was observed in all four sampled wells. The calibration and sampling records were reviewed for this sampling event, and the equipment appears to have been functioning within acceptable limits. ORP and other field parameters were measured periodically during the pre-sampling purge of each well, and ORP was observed to steadily decrease during purging. This would be expected as stagnant well casing water is removed and fresh aquifer water recharges the well. No information or data are available to explain the decrease in ORP values as measured during the December 2007 sampling event.

The December 2007 sampling event occurred during the first week of December 2007. November 2007 and December 2007 were two of the driest months of the year, as shown on ER Table 2.7-53 (November: 0.77 inches and December: 2.04 inches). It is possible that decreased recharge of the aquifer could have affected groundwater geochemistry; rainfall infiltrate is typically more acidic and oxygenated than the groundwater. However, with the limited groundwater data available, it is unclear whether a correlation exists. In addition, if a correlation were present, a similar decrease in ORP would have been expected to be observed during the June 2007 sampling event, because rainfall volumes in April and May 2007 were lower, in total, than those observed in November and December 2007. Because the sampling program was designed as a quarterly program of 1-year duration and the data in question were collected during the last event in the sampling program, no subsequent groundwater sampling was conducted. Therefore, no additional analytical data are available for comparison or trend analysis at this time.

In summary, field records and analytical results were reviewed to address variations in groundwater analytical results for the December 2007 sampling event compared with the other three quarterly sampling events. The results of the review indicate that groundwater sampling was conducted in accordance with the site work plan and quality assurance plan, sampling equipment was calibrated according to manufacturer's requirements, field calibration checks were performed as required by the field work plan, and no equipment functionality or sampling methodology anomalies were reported. In addition, no anomalous site conditions were reported that could have influenced sample collection. After review of all available information and data, there is no indication the results given in ER Tables 2.3-50, 2.3-51, and 2.3-52 are incorrect. Therefore, PEF assumes the groundwater data accurately account for water quality trends associated with the LNP site during 2007.

Associated LNP COL Application Revisions:

Two maximum contaminant levels (MCLs) and one measurement unit are incorrect on ER Table 2.3-52.

Revise ER Table 2.3-52 as follows:

- The MCL for iron will be revised from "N/A" to 300 micrograms per liter (µg/L) (secondary standard).
- The MCL for copper will be revised from 1300 to 1000 µg/L.
- The units for sodium will be revised from µg/L to mg/L.

Revise ER Tables 2.3-51 and 2.3-52 to include the “S” and “D” designations with the Stations IDs for clarity.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.6-1

Text of NRC RAI:

Clarify which activities are covered by "construction" as defined in 10 CFR 51.4. Clarify which activities are not covered as "construction." Describe how impacts were determined for the latter set of activities.

Regarding hydrology:

1. Clarify which activities would be considered "construction" as defined by 10 CFR 51.4.
2. Clarify which activities would not be covered by the LWA and the COL ("preconstruction"). Describe how impacts were determined for these preconstruction activities.

PGN RAI ID #: L-0092

PGN Response to NRC RAI:

This RAI is based on the NRC staff's review of ER Section 4.6, Rev. 0. Additional information pertaining to "construction," "pre-construction," and Limited Work Authorization (LWA) activities was submitted to the NRC on January 16, 2009 as "Supplemental Information for Environmental Audit – Information Needs with Attachments" (Serial NPD-NRC-2009-007), which provides further clarification on these issues. Please refer to the response to Information Need G-A in that submittal for the proposed Rev. 1 text of ER Sections 4.6 and 4.8. The content of the proposed revision is based on discussions with NRC staff during the December 2008 LNP ER audit and guidance provided in Interim Staff Guidance (ISG) document "Interim Staff Guidance on the Definition of Construction and on Limited Work Authorization" (NRC Document COL/ESP-ISG-004), as finalized on February 17, 2009.

Regarding activities that would be considered "construction" as defined by 10 CFR 51.4, the definition of construction in 10 CFR 51.4 is the same as that provided in 10 CFR 50.10, which is the regulatory reference cited in the ISG, as well as in the proposed Rev. 1 of ER Sections 4.6 and 4.8. The proposed Rev. 1 of ER Sections 4.6 and 4.8 also provides additional clarification on how the relative impacts were determined for construction and pre-construction activities, as well as how the "percent of construction" that would be attributable to the activities for which the LWA is being requested were determined.

Associated LNP COL Application Revisions:

Proposed revisions to ER Sections 4.6 and 4.8 are provided in "Supplemental Information for Environmental Audit – Information Needs with Attachments," submitted to the NRC on January 16, 2009 (Serial NPD-NRC-2009-007). The response to Information Need G-A in that submittal includes the text of proposed Rev. 1 of ER Sections 4.6 and 4.8.

No revisions are required for the FSAR.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.6-2

Text of NRC RAI:

Describe why the labor hours required for construction of the SSCs is an important indicator of hydrology-related impacts.

ER Section 4.6 describes the number of hours required for construction of the Structures, Systems, and Components (SSC). Describe why the labor hours required for construction of the SSCs is an important indicator of hydrology-related impacts. This information is needed to properly separate preconstruction and construction impacts on hydrology.

PGN RAI ID #: L-0093

PGN Response to NRC RAI:

The response to LNP ER NRC RAI 4.6-1 (L-0092) notes that after PEF's submittal of the LNP COLA, including ER Rev. 0, additional information pertaining to "construction," "pre-construction," and LWA activities was submitted to NRC on January 16, 2009 as "Supplemental Information for Environmental Audit – Information Needs with Attachments" (Serial NPD-NRC-2009-007), which provides further clarification on these issues. Please refer to the response to Information Need G-A in that submittal for proposed Rev. 1 text of ER Sections 4.6 and 4.8.

While ER Subsection 4.6.2 contains a discussion related to the labor hours associated with construction, labor hours were not used as an indicator of impacts for water-related activities. Table 4.6-2 of the ER (in both Rev. 0 and in the proposed Rev. 1 text) indicates that the estimated water-related impacts for construction and pre-construction activities are based on area rather than labor hours. For all water-related impacts, including groundwater, the "Basis of Estimate" as provided in the proposed Rev. 1 text of ER Section 4.6 is stated as follows:

> "Estimates are based on the area of land use that will be dedicated to safety-related structures, systems, or components (SSCs) and the assumption that the construction of SSCs will occur on no more than approximately 50 acres (25 acres each for units LNP 1 and LNP 2) of the project area being developed (that is, 926 acres, excluding off-site electric transmission lines) (4%, restated as <5%)."

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.2.2-1

Text of NRC RAI:

Describe the extent of and the impacts from the saltwater drawn from the Gulf of Mexico during operations of LNP Units 1 and 2 on the old arm of the Withlacoochee River upstream of its confluence with the CFBC.

ER Section 5.2.2.2 states: "These freshwater contributions are the subject of current additional study, and the results will be presented in a supplement to the ER." During the site audit, PEF stated that the above statement refers to the study currently being conducted regarding the biological communities in the Withlacoochee River just downstream of the Inglis Dam and is anticipated to be available in February 2009. Describe the extent of and the impacts from saltwater drawn from the Gulf of Mexico during operations of LNP Units 1 and 2 on the old arm of the Withlacoochee River upstream of its confluence with the Cross Florida Barge Canal (CFBC).

PGN RAI ID #: L-0094

PGN Response to NRC RAI:

An evaluation of potential changes in salinity levels in the old arm of the Withlacoochee River has been performed and is described in TM 338884-TMEM-079, Rev 1, "Estimated Salinity Changes in the Cross Florida Barge Canal [CFBC] and Old Withlacoochee River Channels after Levy Nuclear Plant Intake Operation" (see 028_Attachment 5.2.2-1A.pdf). A copy of this TM is available in the Progress Energy-provided Reading Room.

The TM used water quality sampling, biological sampling, and surface water modeling to evaluate the potential impacts of the proposed cooling water withdrawal from the CFBC. Results of the water quality monitoring and surface water modeling indicate that the transition zone from freshwater communities to marine (saltwater) communities is expected to move inland. However, areas near the Inglis Dam are expected to continue to have salinities below 5 parts per million for approximately ½ mile below the dam.

The biological monitoring identified marine (saltwater) communities in the lower reaches of the old Withlacoochee River, transitioning to brackish and freshwater communities closer to Inglis Dam. The results of the evaluation, as described in the TM, indicate that these communities will continue to be viable in the Old Withlacoochee River based on the salinities predicted by the modeling.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 028_Attachment 5.2.2-1A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.2.2-2

Text of NRC RAI:

Describe the State groundwater usage permitting process that resulted in moving the water supply well field from the northern to the southern portion of the LNP site.
Describe potential alternate water supplies and associated impacts if the well field is unable to meet plant water requirements.

During the site audit, NRC staff was made aware that the proposed water supply well field had been moved from the northern to the southern portion of the LNP site due to State permitting requirements. Describe the State groundwater usage permitting process that resulted in this action. Include a discussion of potential adverse impacts of this relocated well field and any potential mitigation strategies. The assessment of groundwater usage impacts in the ER is based on the DWRM2 TMR model, which uses basin and regional-scale hydraulic property distributions. The specified transmissivity values in the vicinity of the proposed well field location are based on little or no site-specific data, which will not be available until the supply wells are installed. Groundwater usage from these wells, the only identified source of plant water supply, would still need to comply with State requirements even if actual site conditions result in larger impacts than predicted by the current assessment. Describe potential alternate water supplies and associated impacts if the well field is unable to meet plant water requirements.

PGN RAI ID #: L-0095

PGN Response to NRC RAI:

The State of Florida has five water management districts that have regulatory authority over the water resources of the State. The SWFWMD covers an area of west-central Florida extending from northern Levy County in the north to Charlotte County to the south. The SWFWMD extends from the Gulf of Mexico eastward toward the center of the state.

The proposed groundwater use is regulated under the SWFWMD's Water Use Permitting (WUP) Program. A WUP is a state license to use the ground or surface water natural resources. The Florida Statutes (Chapters 120 and 373) and F.A.C. (Chapters 40D-1 and 40D-2) prescribe the applicable rules. The application for a WUP is evaluated by the SWFWMD staff to determine if the use of water is reasonable and beneficial, does not impact an existing legal use, and is in the public interest. The onus is on the applicant to provide reasonable assurances for this on both an incremental and cumulative basis. Chapters 40D-1 and 40D-2, F.A.C, describes the water use permitting process.

The SWFWMD has developed a region-wide groundwater flow model known as DWRM2 using the USGS MODFLOW model code. The model is used by the SWFWMD to analyze requested withdrawals to evaluate the resulting drawdown impacts in the various layers of the model. The model is the primary tool used to determine if the withdrawal could cause

unacceptable impacts to other well users, Floridan aquifer water quality, drawdown impacts on the surficial aquifer, and subsequent impacts to lakes and wetland hydroperiod.

The process (based on SWFWMD guidance) was first to develop the Telescope Mesh Refinement (TMR) extracted model from the DWRM2 regional model. The TMR refines the model cell sizes around the proposed wellfield and extracts an area of 20 by 20 miles from the DWRM2 model with the wellfield centered in the square. A number of wellfield locations and iterations were then developed to evaluate potential drawdown impacts throughout the TMR model domain. Using these evaluations, it was found that locating the wellfield in the southern part of the property resulted in the least amount of predicted drawdown in the Upper Floridan and surficial aquifers. By locating the wellfield in the southern area, it was also noted that the decreased drawdown of the groundwater aquifers would also reduce potential impacts to wetlands in the area.

The SWFWMD agreed to the conceptual wellfield location and developed Recommended Conditions of Permit that were approved by the District Board in December 2008. Those Conditions were sent to FDEP with the Agency Report. A copy of the Agency Report and Conditions of Certification are included with this response as 029_Attachment 5.2.2-2A.pdf.

The Conditions of Site Certification will require PEF to develop an Environmental Monitoring Plan to assure that potential impacts to wetlands and groundwater levels and water quality are monitored. The Conditions will also require PEF to report the results of monitoring on an annual basis with an analysis of statistical trends, wetland soil impacts, and vegetational succession. If any adverse impacts are observed and deemed to be unacceptable by the SWFWMD, PEF will be required to mitigate those adverse impacts. Specific mitigation activities are not listed but could include wellfield operational changes, pumping rates, and potentially changes in the wellfield design.

The Conditions of Certification will also require PEF to prepare an Alternative Water Supply Plan in addition to the Environmental Monitoring Plan. The Alternative Water Supply Plan must identify other sources of water for freshwater uses in the facility. The Plan must include preliminary design of the alternative so that if adverse impacts occur and cannot be mitigated, PEF will be required to implement the selected alternative water supply source. The Conditions of Certification will require PEF to run aquifer tests on all of the water supply wells and multi-well aquifer performance tests on two select wells once they are constructed. The purpose of the testing will be to evaluate the actual aquifer characteristics of the wellfield. The results of the field testing will be compared with the aquifer parameters in the TMR model. The Condition stipulates that if those values vary by 20 percent or greater, PEF will be required to revise the groundwater model using site-specific values and re-evaluate the drawdown impacts using the revised model. If the revised simulations indicate there will be unacceptable impacts, PEF will need to mitigate those impacts or implement the alternative water supply plan.

If the wellfield does not have the necessary capacity to meet the freshwater needs of the facility, additional wells could be drilled to add the necessary capacity. There is ample space on the PEF property for additional water supply wells. Another option would be to locate wells off the PEF property to add the needed capacity.

If the Upper Floridan aquifer cannot provide the needed freshwater capacity, drilling the wells into deeper intervals of the aquifer could increase the well capacity. This may not be an acceptable alternative since deeper intervals of the Floridan aquifer likely contain lower

quality water than the upper intervals. If lower quality water were encountered, additional treatment may be needed to reduce the total dissolved solids (TDS) of the water.
If more Floridan aquifer wells did not meet the water demands, surface water could provide an alternative source of freshwater. Although there are no plans to do so, Lake Rousseau could be used for water supply by constructing an intake on the lake and adding surface water treatment processes. The other abundant source of water is the Gulf of Mexico. If groundwater and surface water could not be used, a portion of the cooling tower makeup water from the CFBC could be treated using desalination processes to meet the freshwater needs of the facility.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 029_Attachment 5.2.2-2A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.2.2-3

Text of NRC RAI: Discuss implementation of the DWRM2 TMR groundwater model. Discuss the predicted impacts of groundwater usage at LNP.

ER Section 5.2.2 stated that groundwater would be used for general plant operations. ER Section 5.2.1.4 stated that groundwater for operations would be obtained from on-site supply wells shown in ER Figure 4.2-1. During the site audit, the NRC staff became aware that the location of the supply wells had changed from those shown in ER Figure 4.2-1 and that PEF was using a groundwater model, DWRM2 TMR, to assess operational impacts of the groundwater withdrawal. Discuss implementation of the DWRM2 TMR groundwater model that is being used to assess impacts of LNP's groundwater withdrawals from the Floridan aquifer, including how surface recharge is implemented in the model and the impact associated with using projected future water use on a county-wide level (see ER Table 2.3-20) in the assessment. Discuss SWFWMD's process for managing groundwater resources.

Discuss the predicted impacts of LNP's groundwater usage on 1) the basin- or subbasin-scale water balance, 2) potentiometric heads within the aquifer, 3) wetlands, 4) discharge to springs and other surface water bodies, 5) other groundwater users, and 6) the potential for salt water intrusion.

PGN RAI ID #: L-0096

PGN Response to NRC RAI:

A general discussion of the SWFWMD's process for managing groundwater resources is provided in LNP ER NRC RAI 5.2.2-2.

The wellfield modeling was performed using information exported from the SWFWMD's DWRM2 and is described in TM 338884-TMEM-074, Rev. 1, "Revised Conceptual Wellfield Layout and Evaluation of Simulated Drawdown Impacts, Levy Nuclear Plant." The TM provides background information on the DWRM2 model and describes the general modeling procedures. A copy of this TM is available in the Progress Energy-provided Reading Room.

The groundwater model was developed by using the TMR process from the DWRM2 regional model. The TMR process was used to refine the model cell sizes around the proposed wellfield and extract an area from the DWRM2 model centered around the wellfield. A number of wellfield locations and iterations were developed to evaluate potential drawdown impacts throughout the TMR model domain. Using these evaluations, it was predicted that relocating the wellfield to the southern part of the LNP property would reduce drawdown levels in the Upper Floridan aquifer and the surficial aquifer system.

The primary reason for the reduced drawdown in the Upper Floridan aquifer with the southern wellfield is the assumed higher transmissivity of that area in the TRM model. 030_Attachment 5.2.2-3A.pdf (Figure 1 SWFWMD DWRM2 TMR Groundwater Model

Transmissivity of Layer 4 – Upper Floridan Aquifer) shows that the transmissivity of the Upper Floridan aquifer varies from 20,184 to 81,809 square feet per day (ft^2/day) in the northern two thirds of the property up to 144,967 to 241,309 ft^2/day in the vicinity of the proposed wellfield along the southern edge of the property. The assumed higher transmissivity in the area of the proposed wellfield acts to reduce the magnitude of the cone of depression around the wells and subsequently there will be corresponding reductions in water level changes in the overlying surficial aquifer system. With less drawdown in the surficial aquifer system, any anticipated impacts to wetland areas would be minimized.

The TM predicts the simulated hydrologic impacts associated with the proposed normal daily withdrawal of 1.58 mgd and 5.8 mgd peak withdrawal of groundwater from the Upper Floridan aquifer, as stated in ER Subsection 5.2.2.3. No changes to the model parameters were made other than the following:

- Two springs (Little King and Big King) were added to the model.
- Model cells that used MODFLOW's River (RIV) package to represent wetlands were changed to variable-head cells (i.e., the River package was not used to represent wetlands). This change was made based on SWFWMD staff concerns that MODFLOW's River package could provide an infinite source of water to the model and artificially limit simulated drawdowns. Model cells that used the RIV package to represent Lake Rousseau and the Withlacoochee River were not modified.
- The length of model Stress Period 3 was increased to 60 years to represent the expected operating life of the facility.

The revised wellfield layout is presented as 031_Attachment 5.2.2-3B.pdf (Figure 2 - Raw Water Supply Well Locations). The original wellfield layout that was shown in ER Figure 4.2-1 is described and illustrated in the TM. The revised layout includes four wells located on the southern portion of the LNP property. Two wells are located along County Road 40, with two wells located to the north on the east side of the heavy haul road. Exhibit 3 in the TM depicts the original and revised wellfield layouts.

Each well was simulated to pump at a constant rate of 0.395 mgd, for a total withdrawal of 1.58 mgd. The model simulation was run for the proposed 60-year operating life of the facility. The model includes three stress periods. Stress Period 1 is a steady-state stress period that represents pre-development conditions; there are no well withdrawals simulated from the model. Stress Period 2, also steady-state, includes all other users except LNP. It is intended to provide an assessment of currently permitted impacts. Stress Period 3 is the predictive phase of the simulation. In the SWFWMD's DWRM2 model, the default period length is 1 year. For this simulation, the stress period length was increased to 60 years to represent the expected life of the facility.

The model is constructed with 5 layers, each representing a regional aquifer system within the DWRM2 model domain. Vertical flow between each layer is represented by a leakance value in the model. Recharge is applied to the uppermost layer and is calculated as net recharge. The evapotranspiration (ET) function is not used. The model layers include:

- Layer 1 – Surficial aquifer system
- Layer 2 – Intermediate aquifer or confining bed (not present at the property)

- Layer 3 – Intermediate aquifer or confining bed (not present at the property)
- Layer 4 – Upper Floridan aquifer
- Layer 5 – Lower Floridan aquifer

Each layer in the DWRM2 model has boundary conditions that govern flow into and out of the layer. The surficial aquifer system is laterally bounded by constant head cells. The vertical boundary conditions vary in the surficial aquifer system using active, drain, and river cells to define the movement of water into the surficial aquifer system. The surficial aquifer system (Layer 1) varies from 30 to 70 feet thick in the TMR model domain. 032_Attachment 5.2.2-3C.pdf (Figure 3 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 1 – Surficial Aquifer System) shows the boundary conditions in the surficial aquifer system.

Most of the Layer 1 cells in the TMR model domain are drain cells. These cells allow water to exit the model vertically at a set elevation. Drain cells are used to represent the high water table and groundwater discharge to land surface such as in wetlands and springs. River cells function in the same manner as drain cells but also allow water to enter the cell. River cells are used to represent surface water bodies like Lake Rousseau and the Withlacoochee River.

Layer 2 and 3 represent intermediate aquifers or confining beds in the DWRM2 model. In other areas of the SWFWMD, additional formations are present between the surficial aquifer system and Upper Floridan aquifer that function in some areas as confining beds and in other areas as minor aquifers. Neither of these layers is present at the property or within the TMR model domain. They were left in the TMR for simplicity but are designated with no thickness so they have no hydraulic impact on the movement of water in the simulated groundwater system. The two layers are bounded laterally by constant head conditions and are active cells as shown in 033_Attachment 5.2.2-3D.pdf (Figure 4 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 2 – Intermediate 1) and 034_Attachment 5.2.2-3E.pdf (Figure 5 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 3 – Intermediate 2).

Layer 4 is the Upper Floridan aquifer, which will be used as the source of fresh water in the wellfield. The Upper Floridan aquifer is bounded by constant head cells and all cells are active. 035_Attachment 5.2.2-3F.pdf (Figure 6 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 4 – Upper Floridan Aquifer) shows the boundary conditions for the Upper Floridan aquifer.

Layer 5 is the Lower Floridan aquifer. This layer represents the deeper intervals of the Floridan and in nearly the entire TMR model domain is a no-flow boundary. Lower Floridan aquifer cells are active only in the northeastern corner of the TMR model. 036_Attachment 5.2.2-3G.pdf (Figure 7 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 5 – Lower Floridan Aquifer) shows the Lower Floridan aquifer and boundary conditions. This layer is designated no-flow in this area to represent brackish groundwater.

The model parameters of Layer 1 (surficial aquifer system) and Layer 4 (Upper Floridan aquifer) were of particular interest during model development and review. The surficial aquifer system receives nearly all of the vertical recharge through rainfall and seepage from lakes and rivers. 037_Attachment 5.2.2-3H.pdf (Figure 8 DWRM2 TMR Model Water

Budget) is a summary of the TMR model Water Budget, with LNP withdrawing 1.58 mgd. The TMR water budget shows that a significant volume of water enters the surficial aquifer system via rainfall recharge. It also shows there is an even larger volume of water moving in and out of the river cells representing Lake Rousseau and the Withlacoochee River.

038_Attachment 5.2.2-3I.pdf (Figure 9 SWFWMD DWRM2 TMR Groundwater Model Recharge) shows the range of net recharge values in the TMR model domain. Over most of the property, net recharge ranges from 3.7 to 8.6 inches per year (in/yr). Higher recharge values occur in the southeastern corner of the property with 8.7 to 19.4 in/yr.

039_Attachment 5.2.2-3J.pdf (Figure 10 SWFWMD DWRM2 TMR Groundwater Model Hydraulic Conductivity of Surficial Aquifer) is the Layer 1 hydraulic conductivity array in the model. Note how the hydraulic conductivity is decreasing from northwest to southeast across the property, with 19 to 20 feet per day (ft/day) in the northwest to 15 to 16 ft/day in the southeast.

The model simulations of drawdown are presented in the referenced TM. Based on those simulations, the following was concluded:

- Simulated incremental and cumulative surficial aquifer system and Upper Floridan aquifer drawdown in the wellfield after 60 years of operation does not exceed 0.5 foot anywhere in the wellfield except in the immediate vicinity of some wells.
- There are no wetlands with either an incremental or cumulative drawdown of 0.5 foot or greater within the proposed wellfield's area of influence.
- Under Average Day conditions, the operation of the LNP wellfield was predicted to decrease the model-simulated surficial and Floridan aquifer discharge into river cells used to represent rivers and lakes by approximately 1.1 mgd or about 0.9 percent of the simulated total flux between the Floridan aquifer and river cells in the model.
- The simulated impacts to Lake Rousseau and the lower Withlacoochee River (measured at the Bypass Canal) of 1.1 mgd are insignificant compared with the 37-year recorded average daily discharge of 687 mgd through the Bypass Canal.
- Under Average Day conditions, the operation of the LNP wellfield decreased the model-simulated discharge from the drain cells representing Big King and Little King springs by approximately 0.01 mgd or about 0.2 percent of their total simulated flux.
- The operation of LNP's proposed wellfield is not expected to adversely impact adjacent permitted users of the Floridan aquifer. The model predicts less than 0.2 foot of additional drawdown at the location of the nearest other Upper Floridan aquifer user under Average Day conditions. The model simulation for Maximum Week withdrawals estimates an additional 0.1 to 0.2 foot of drawdown at the nearest Floridan aquifer well. Wetland impacts are not expected to occur during the short duration (1 week) of the maximum week withdrawal.
- Operation of the wellfield has a very low potential for causing lateral saltwater intrusion since the predicted drawdown from the wellfield is less than 0.3 foot beyond the property boundary. The Floridan aquifer gradient in the vicinity of the wellfield is toward the coast and the CFBC and remains virtually unchanged from pumping the LNP wellfield.
- The potential exists for vertical migration of saltwater from deeper intervals of the Floridan aquifer if present at the site. There is no direct information that identifies

brackish water in deeper intervals but it can be expected to occur at some unknown depth. The potential for upward migration of lower quality water will be managed by wellfield operations that will rotate the use of the wells so no well is stressed for a long period of time. Water quality monitoring at the supply and monitoring wells will be designed to detect changes in water quality.

The TM also contains a discussion of projected incremental and cumulative pumping impacts on other groundwater users, lakes, and springs in the vicinity of the LNP property. As stated in the TM, the simulated future impacts to nearby water resources were evaluated for both daily average water use and maximum weekly water use. The projected average day pumping conditions decreased the model-simulated surficial and Floridan aquifer discharge into surface water cells representing nearby rivers and lakes by approximately 1.1 mgd or about 0.9 percent of the total flux. The model-simulated discharge from drain cells representing Little King and Big King springs decreased by approximately 0.01 mgd or about 0.2 percent of the total flux through those model cells. The model-simulated impacts to surface water bodies are insignificant.

As shown in 037_Attachment 5.2.2-3H.pdf (Model Water Budget), the total inflow and outflow in the model is about 450 mgd. The model area covers only a small portion of the three-county area surrounding the property. 037_Attachment 5.2.2-3H.pdf contains a summary of the TMR model Water Budget with LNP withdrawing 1.58 mgd. Each layer of the model is shown with the total flow into and out of the layer for the horizontal and vertical boundaries. Inflows are highlighted in blue; outflows are highlighted in yellow. Total inflows are about 450 mgd and total outflows are 450 mgd. The LNP withdrawal comprises only about 0.4 percent of the total flux through the model.

Regional water use was summarized in ER Subsection 2.3.2.4.1 for Levy County, Subsection 2.3.2.4.2 for Citrus County, and Subsection 2.3.2.4.3 for Marion County. The total groundwater use for the three counties was 59 mgd in 2005 and is projected to be about 80 mgd in 2025. As shown in 036_Attachment 5.2.2-3G.pdf, the model groundwater budget, which includes only a small portion of the area of these three counties, is approximately 450 mgd. This is over 5.5 times the projected water use in these three counties. Therefore, the LNP withdrawal of 1.58 mgd is insignificant compared with the total model flux and the regional groundwater resources.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See the following attachments:

- 030_Attachment 5.2.2-3A.pdf (Figure 1 SWFWMD DWRM2 TMR Groundwater Model Transmissivity of Layer 4 – Upper Floridan Aquifer)
- 031_Attachment 5.2.2-3B.pdf (Figure 2 Raw Water Supply Well Locations)
- 032_Attachment 5.2.2-3C.pdf (Figure 3 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 1 – Surficial Aquifer System)

- 033_Attachment 5.2.2-3D.pdf (Figure 4 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 2 – Intermediate 1)

- 034_Attachment 5.2.2-3E.pdf (Figure 5 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 3 – Intermediate 2)

- 035_Attachment 5.2.2-3F.pdf (Figure 6 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 4 – Upper Floridan Aquifer)

- 036_Attachment 5.2.2-3G.pdf (Figure 7 SWFWMD DWRM2 TMR Groundwater Model Boundary Conditions Layer 5 – Lower Floridan Aquifer)

- 037_Attachment 5.2.2-3H.pdf (Figure 8 DWRM2 TMR Model Water Budget with LNP Withdrawing 1.58 mgd)

- 038_Attachment 5.2.2-3I.pdf (Figure 9 SWFWMD DWRM2 TMR Groundwater Model Recharge)

- 039_Attachment 5.2.2-3J.pdf (Figure 10 SWFWMD DWRM2 TMR Hydraulic Conductivity of Surficial Aquifer)

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.3.2.1-1

Text of NRC RAI:

Provide details of the thermal plume modeling in the Gulf of Mexico performed for the combined CREC and LNP discharges.

ER Section 5.3.2.1 did not provide details of the thermal plume modeling for the combined CREC and LNP discharges into the Gulf of Mexico. Provide details of the thermal plume modeling in the Gulf of Mexico performed for the combined CREC and LNP discharges. Provide details of the simulation model used in the study and input files used in the simulation. Describe the process used to set up the simulation model including selection of all parameter values used.

PGN RAI ID #: L-0097

PGN Response to NRC RAI:

A detailed description of a thermal modeling assessment of the combined CREC and LNP discharges into the Gulf of Mexico is provided in TM 338884-TMEM-078, Rev 0, "Assessment of the Influence of the Additional Levy Nuclear Plant Units 1 and 2 Discharge on the Crystal River Energy Complex Plume Dilution and Distance."

The TM describes the use of the EPA's Visual Plumes model for predicting the thermal plume extent resulting from the combined CREC and LNP discharges. A description of the model inputs, evaluation scenarios, and results are included in the TM. A copy of this TM is available in the Progress Energy-provided Reading Room.

Electronic copies of the input files used in the modeling analyses are provided under separate cover (Serial No. NPD-NRC-2009-044) due to the need to process the data in native format.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.2-1

Text of NRC RAI:

Provide any sampling reports or data from sampling events in the CFBC and Withlacoochee River for water quality, fish, and benthic macroinvertebrates.

A full year of biological sampling has been completed to provide a biological characterization of the CFBC with additional data from the remnant arm of the Withlacoochee River. Provide final sampling reports or data from the sampling events in the CFBC and Withlacoochee River for water quality, fish, and benthic macroinvertebrates. The final sampling report should include data collected during late spring/early summer 2008 and July/August 2008. The final report should include more detail regarding catch per unit effort for crab trap sampling, and should address the reason for a lack of sampling in January through March 2008.

PGN RAI ID #: L-0098

PGN Response to NRC RAI:

Biological sampling data for the CFBC and Old Withlacoochee River are provided in TM 338884-TMEM-087, Rev. 1, "Aquatic Ecology Sampling Report" (January 2009). This TM provides data on aquatic sampling conducted from October 2007 to November 2008 and includes information on crab trap sampling, presented as catch per unit effort. Additional information is provided in TM 338884-TMEM-088, "Supplemental 316(b) Information on Potential Impacts to Aquatic Biota at LNP" (January 2009). Both TMs are available in the Progress Energy-provided Reading Room.

Four sampling events were conducted for fish, motile invertebrates, and benthic infauna, 2 events for shoreline invertebrates, and 14 events for icthyoplankton and meroplankton. Sampling was conducted throughout the year, in both wet and dry seasons. Sampling was not conducted in the January through March period, when abundance of these organisms is generally lowest, but was conducted immediately before and after this period. Fish and motile invertebrate sampling events generally lasted from 2 to 4 weeks.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.2-2

Text of NRC RAI:

Provide any sampling reports or data from the sampling events in the CREC discharge canal and nearby Gulf of Mexico seagrass habitat for water quality, fish, and benthic macroinvertebrates.

A full year of biological sampling has been completed to provide a biological characterization for the CREC discharge canal and nearby Gulf of Mexico. Provide final sampling reports or data from the sampling events in the CREC discharge canal and nearby Gulf of Mexico seagrass habitat for water quality, fish, and benthic macroinvertebrates. The final sampling report should include data collected during sampling events in the spring, summer, fall, and winter of 2008.

PGN RAI ID #: L-0099

PGN Response to NRC RAI:

The requested data are provided in TM 338884-TMEM-087, Rev. 1, "Aquatic Ecology Sampling Report, Levy Nuclear Plant" (January 2009). This TM is available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.2-3

Text of NRC RAI:

Provide a statement with supporting hydrological references regarding assumptions of what the biota/plankton community composition would be near the area of the intake in the CFBC during operations.

During operation, it is assumed that the hydrological environment would resemble current downstream portions of the CFBC. Provide a statement with supporting hydrological references regarding assumptions of what the biota/plankton community composition would be near the area of the intake in the CFBC during operations. Operation of the intake would change water quality characteristics in the CFBC near the intake as a function of altered hydrology. A referenced statement that includes expected water flow changes, water quality changes, and resulting biota/plankton community changes is needed to assess impacts during operation.

PGN RAI ID #: L-0100

PGN Response to NRC RAI:

The hydraulic zone of influence for LNP has been determined through modeling conducted for the 316(b) Demonstration Study, included as an attachment to the NPDES Permit Application, which was submitted to the FDEP as an appendix to the LNP SCA. This modeling determined that the hydraulic zone of influence for LNP would extend approximately 5 miles west of Inglis Lock, about 2 miles inland from the Gulf of Mexico. The zone of influence at any time might vary from this and would reflect the magnitude and direction of tides, winds, and discharges to the canal from the Inglis Dam, through the Inglis Lock, or through seeps along the CFBC.

During operation, it is assumed that the biota, plankton, and water quality in the intake vicinity would be similar to that in the lower CFBC and nearshore Gulf, represented by CFBC Sampling Stations 3 and 4. Data for these stations and other CFBC sampling stations are included in TM 338884-TMEM-087, Rev. 1, "Aquatic Ecology Sampling Report, Levy Nuclear Plant" (January 2009), which is available in the Progress Energy-provided Reading Room.

The 316(b) Demonstration Study states, "The CWIS will induce consistent flows to the upper dead-end portions of the CFBC, circulating water and resulting in the improvement in water quality and aquatic biota. The new intake will convert the dead-end portions of the CFBC into a slow flowing setting in which more aquatic species are likely to find conditions suitable for habitation." An assessment of impingement and entrainment effects on representative species and threatened and endangered species was conducted and is documented in TM 338884-TMEM-088, "Supplemental 316(b) Information on Potential Impacts to Aquatic Biota at LNP" (January 2009), which is available in the Progress Energy-provided Reading Room.

As suggested by agency ecologists during the LNP audit, data from Station 4 in the near-shore Gulf were used to assess adult loss equivalents from estimated entrainment at the proposed LNP CWIS. The use of Station 4 data was considered to be conservative and used to estimate maximum potential impacts from LNP CWIS entrainment. The conservative assumptions used in the Supplemental 316(b) assessment found that potential impacts to all species evaluated were minimal to none and overall could be considered SMALL.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.7-1

Text of NRC RAI:

Provide information on cumulative impacts to aquatic resources for proposed activities that may impact waters of the CFBC, such as Inglis Hydropower project, elimination of the Inglis Lock, US19 bridge expansion, Tarmack quarry, and plans for additional quarries or mines.

Provide information on cumulative impacts to aquatic resources for proposed activities that may impact waters of the CFBC, such as Inglis Hydropower project, elimination of the Inglis Lock, US19 bridge expansion, Tarmack quarry, and plans for additional quarries or mines. NRC staff needs this information to assess the impacts of LNP in conjunction with other proposed activities on aquatic resources within the LNP site and vicinity.

PGN RAI ID #: L-0101

PGN Response to NRC RAI:

Planned, Potential and Existing Projects in Area of Proposed LNP with the Potential to Affect Aquatic Resources

The following is a list of projects known at the present time (March 2009) to be either planned or potentially implemented in the Levy County and Citrus County areas within the LNP site and vicinity.

- Proposed Expansion of the CEMEX, Inc.—Inglis Rock Quarry

An application for the creation of a special zoning district, which would have exempted the Hollins property, currently leased to CEMEX, from most of the land use regulations in Citrus County, was submitted to the Citrus Planning and Development Review Board (PDRB). After hearing objections from area residents, the PDRB members accepted the staff's recommendation to deny the proposed change, and this proposed denial action was forwarded to the Citrus County Board of County Commissioners. The application was subsequently withdrawn. The existing rock quarrying operation holds NPDES Permit No. FLR 05 F854.

- Proposed Tarmac King Road Limestone Mine

This proposed mining operation is expected to provide construction-grade aggregate that meets the Florida Department of Transportation (DOT) specifications for buildings and infrastructure. The proposed mine is to provide this aggregate for Tarmac America's and its customer's use in the west central area of Florida. In September 2007, the USACE Jacksonville, Florida Division received a Section 404 permit application to impact wetlands for limestone mining on a 9400-ac. site in Levy County. The mining site location is to the

west of the LNP site on the west side of Highway 19 and north of the town of Inglis and the CFBC. Under the proposed action, Tamarac America plans to mine approximately 30 ac. a year on a tract along King Road in southern Levy County. The tract covers 4800 ac.: 800 ac. of wetlands that will be set aside; 1300 ac. for the quarry, processing plant, roads, and buffers; and the remaining 2700 ac. for mining activity over approximately 100 years.

- Hydropower Project, FERC Project No. 12783 Draft License Application

Inglis Hydropower, LLC, proposes to install electrical generation at the existing Inglis Bypass Spillway. The project would generate 2000 kilowatts and use existing facilities to minimize or eliminate additional environmental impacts. The Inglis Bypass Spillway is presently and will continue to be owned by the State of Florida, with the needed land for the project to be leased from the State. Proposed project facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and an existing transmission line. The project would use "run-of-the-river" operations.

- Suncoast Parkway Expansion

The Suncoast Parkway (also known as Toll Road 589), a four-lane toll road, currently extends from the Veterans Expressway in Tampa to U.S. Highway Hernando-Citrus county line, a distance of approximately 42 miles. The proposed Suncoast would extend northward approximately 27 miles through Hernando and Citrus counties. The Florida Turnpike Enterprise (FTE) is now proceeding toward 60% design plans. It is anticipated that a design public hearing will be scheduled for the late spring of 2009. The public hearing timeframe is subject to change based on design activities.

- Widening of Route 19 Bridge Crossing the CFBC

This Florida DOT project is designed to allow for the construction of two additional lanes on the Route 19 bridge across the CFBC. The plan is to add another two-lane bridge immediately west and adjacent to the existing two-lane bridge span. When completed, four lanes of bridge crossing will exist over the CFBC. The project is in the early construction phase, and road preparation for the approaches to the new bridge was underway as of the SCA hearings the week of February 20, 2009. The exact schedule for completion was not available from publicly accessible Florida DOT information.

- Proposed Filling of the Inglis Lock

This project was originally proposed by the FDEP to allow for the permanent closing of the Inglis Lock, since the cost of repairs and future maintenance was above projected future budget limitations. However, following 2008 permit approval from the USACE, the FDEP has recently (January 2009) removed this potential project from future planning due to state budget shortfalls. The previously completed bulkhead re-enforcement will now serve as the permanent closing mechanism until future state budgets allow for reconsideration of the filling option.

Potential Aquatic Impacts from Listed Projects

- Proposed Expansion of the CEMEX—Inglis Rock Quarry

The proposed expansion of mining operations will require a zoning change in Citrus County to be approved by the Citrus County Board of County Commissioners. The proposed zoning change application was withdrawn by the owner of the land proposed for the mining expansion. Therefore, at the present time, no increases in potential aquatic resource cumulative effects are anticipated.

The water discharge effects of the current mining operation are controlled by the terms and conditions of NPDES Permit No. FLR 05 F854. No additional cumulative impacts from the existing mining operation water discharges are anticipated. The aquatic studies conducted by PEF consultants in 2007-2008 in the CFBC in the area of the barge slip entrance to the existing Inglis Rock Quarry indicated no obvious identifiable adverse effects related to the existing mine operations on evaluated aquatic resources.

- Proposed Tarmac King Road Limestone Mine

In September 2007, the USACE Jacksonville, Florida Division received a Section 404 permit application to impact wetlands for limestone mining on a 9400-ac. site in Levy County. The mining site location is to the west of the proposed LNP on the west side of Highway 19 and north of the town of Inglis and the CFBC. Under the proposed action, up to 2700 ac. of wetland and uplands would be mined over a period of approximately 100 years. The USACE determined that the proposed action could have significant impacts on the environment and that an EIS must be prepared under National Environmental Policy Act (NEPA). The Draft EIS is planned for release in early 2009. As of this writing, the Draft EIS has not been released. Following a 45-day comment period from the date of the release of the Draft EIS, a Final EIS would likely be issued in late spring 2009, with a Record of Decision (ROD) anticipated in early summer 2009. The magnitude of potential direct impacts to aquatic resources is unknown until the Draft EIS is issued. It is highly unlikely that the USACE or the FDEP would issue permits that allow adverse impacts to occur.

- Hydropower Project, FERC Project No. 12783 Draft License Application

The proposed hydropower project will make use of the existing Inglis Bypass Spillway. The spillway is presently and will continue to be owned by the State of Florida, with the needed land for the project to be leased from the State. Proposed project facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and a re-constructed existing transmission line. The project will use "run-of-the-river" operations.

The project will use the existing Inglis Bypass Spillway, which was built in 1970. The dam is made of concrete. The dam and spillway have gates to regulate flow over the spillway and thereby regulate water levels in the impoundment. The Inglis Lock Bypass Channel is earthen with a riprap surface. The original powerhouse was at the main dam until the 1960s, but the construction of the CFBC made it necessary to construct the Bypass Channel to carry water to the lower segment of the Withlacoochee River.

A short intake channel will be dug and lined with large riprap similar to that used on the Bypass Channel to convey the water from the Bypass Channel above the spillway to the project intake. It will be approximately 100 feet wide and 45 feet long. A 130-foot-long penstock will carry the water from the intake structure to the powerhouse. The 100-foot-long discharge channel walls and floor will be designed to reduce velocity of the released water following passage through the turbines.

The Withlacoochee River discharges into the Gulf of Mexico 11 miles below the proposed project site. Since the proposed hydropower project is to operate in run-of-the-river mode, there will be no changes to freshwater discharges to the river and, therefore, no impact on the essential fish habitat.

This project has the potential to adversely affect fish populations by causing fish to be impinged on intake racks or entrained into the turbines. Studies on other hydropower facilities show that up to 10 percent of fish passing through a turbine will be injured or killed. Fish populations can be affected if sufficient numbers of fish are killed. Smaller aquatic organisms, such as phytoplankton and zooplankton, will be entrained in the turbines. However, such small organisms pass through without being struck by turbine blades. Some mortality can result to small organisms due to pressure changes, but this mortality is relatively small compared with the reproductive potential of plankton.

Fish impingement could be effectively reduced to very low levels by design of intake racks to reduce the intake velocity. This proposed project will incorporate intake racks with a maximum intake velocity of 2 feet per second (fps) and a maximum space between bars of 2 inches. This relatively high approach velocity may result in relatively high impingement and entrainment rates for fish in the Bypass Channel that approach the intake racks. It is assumed that additional consideration of lower approach velocities will be made a part of future project planning and approval activities by FERC and the FDEP. If, as expected, future project design specifications are modified to allow for approach velocities in the less than 0.5 fps range, then it is not anticipated that adverse cumulative impacts will occur to aquatic resources in the Bypass Channel or downstream in the Withlacoochee River. In any case, impacts that may occur from the proposed hydropower project will not adversely affect cumulative impacts to the CFBC, since the Bypass Channel and the lower Withlacoochee River are not hydraulically connected to the CFBC.

- Suncoast Parkway Expansion

Based on the alignment map provided by the FTE, it appears the Suncoast Parkway Expansion (also known as Toll Road 589) project will stop short (south) of the CFBC. A contribution to direct cumulative aquatic impacts to the CFBC, the remnant channel of the Withlacoochee River between the Inglis Dam and the CFBC, Lake Rousseau, and near-shore Gulf of Mexico waters adjacent to the CFBC and the existing CREC from this roadway project are not anticipated. Documented wetland losses from highway alignment and construction activities will be mitigated according to established FDEP and USACE permit requirements and guidelines.

Potential secondary impacts of induced development growth by the Suncoast Parkway (also known as Toll Road 589) expansion project cannot be predicted with certainty and will be based on general future national and state economic activity, future human population movement patterns, and county and local planning and zoning activities.

- Widening of Route 19 Bridge Crossing the CBFC

The bridge widening project involves the construction of an additional two lanes crossing the CFBC. The new Highway 19 span will be located immediately to the west (towards the Gulf) of the existing two-lane span. Two additional highway lanes will be added to the new bridge approaches in both directions.

The new span, like the existing span, will not involve in-water construction activities, and the new bridge span will be supported by on-shore pilings on both the north and south approaches to the new bridge. Therefore, the potential impacts of the new bridge will be limited to short-term runoff and erosion impacts from construction activities and long-term potential oil, grease, and sediment contaminant impacts from road runoff.

The short-term impacts will be mitigated by the required use of erosion and runoff control devices and by the low erosion potential of the existing sandy and shell fragment sediments in the proposed road approach and bridge abutment/piling construction areas. Long-term runoff impacts will be mitigated by the direction of road runoff to a collection system that directs runoff towards the north and south ends of the new bridge span and away from direct flows to the CFBC. It is not anticipated that the construction of the Route 19 bridge widening project will adversely affect aquatic resources or add measureable cumulative impacts.

- Proposed Filling of the Inglis Lock

The project has been canceled due to state budget shortfall and it is uncertain when or if the project will be revisited in the future. The area proposed for fill is currently isolated from both Lake Rousseau and the CFBC by lock gates, and it is assumed that any construction activities would be subject to permit conditions that would include stormwater management and erosion control measures. In any case, the projected cumulative impacts to aquatic resources from the filling of Inglis Lock would be small.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.1-1

Text of NRC RAI:

Provide additional information needed to complete the baseline characterization for terrestrial, wetland and wildlife resources.

ER section 2.4.1 provides a baseline characterization for terrestrial, wetland and wildlife resources. However, the following was not included in the baseline characterization:

- A master list of plant species observed over various field investigations at the site and vicinity.
- Notes on seasonal observations to the wildlife tables in ER Section 2.4 (ER Tables 2.4-2, 2.4-3, 2.4-4 and 2.4-5).
- A summary of previously conducted field studies to verify habitats, including wetlands, within the transmission corridors (up to the first substation).

PGN RAI ID #: L-0102

PGN Response to NRC RAI:

Updated tables (ER Tables 2.4.2, 2.4.3, 2.4.4, 2.4.5 and Table 2.4.1-1-001) with seasonal observations for wildlife and important species are provided at the end of this response. Table 2.4.1-1-001 is a master list of plant species observed at the site and vicinity. Between September 2006 and November 2008, pedestrian surveys of the LNP site were conducted by CH2M HILL botanists and wildlife ecologists, potentially impacted areas in the south property, and the associated facility areas south to the CREC, with an emphasis on federally and state-listed species. Seasonal occurrences of observed species, along with a list of species likely to occur at the LNP site (including associated facility areas – south property to CREC), blowdown pipeline corridor, and transmission line corridors from literature reviews were used to generate the tables.

PEF conducted pedestrian and vehicular field reconnaissance within accessible areas of each proposed transmission corridor to verify/update vegetative habitat classifications, including wetland locations, type, and extent, and to document occurrences of listed species or their habitats. Once the right of ways (ROWs) are selected within the transmission line corridors, PEF will conduct more detailed surveys to verify the habitats and detailed wetland delineation will be conducted.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

Table 2.4-2 (Sheet 1 of 2)
Mammalian Species Likely to Occur on the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name	Observed on Site[a]	Season Observed[b, c]
Bobcat	*Lynx rufus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Cotton mouse	*Peromyscus gossypinus*	N/A	N/A
Cottontail rabbit	*Sylvilagus floridanus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Coyote	*Canis latrans*	LNP	F, W, Sp, S
Eastern gray squirrel	*Sciurus carolinensis*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Eastern mole	*Scalopus aquaticus*	N/A	N/A
Feral Hog	*Sus scrofa*	LNP	F, W, Sp,S
		Blowdown Pipeline Corridor	W
Southern flying squirrel	*Glaucomys volans*	N/A	N/A
Gray fox	*Urocyon cinereoargenteus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W

Table 2.4-2 (Sheet 2 of 2)
Mammalian Species Likely to Occur on the LNP and Blowdown Pipeline Corridor Sites

Hispid cotton rat	*Sigmodon hispidus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Marsh rabbit	*Sylvilagus palustris*	N/A	N/A
Mink	*Mustela vison*	N/A	--
Nine-banded armadillo	*Dasypus novemcinctus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Raccoon	*Procyon lotor*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
River otter	*Lutra canadensis*	Blowdown Pipeline Corridor	W
Striped skunk	*Mephitis mephitis*	N/A	N/A
Virginia opossum	*Didelphis virginiana*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
White-tail deer	*Odocoileus virginianus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W

Notes:

LNP = Levy Nuclear Plant Site, including south property down to barge slip.

N/A Not directly observed.

a) The species not directly observed were based on ER Reference 2.4-009.
b) F = Fall, W = Winter, Sp = Spring, S = Summer
c) Observations along Blowdown Corridor based on winter survey only.

TABLE 2.4-3 (SHEET 1 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Acadian Flycatcher	*Empidonax virescens*	N/A	N/A
American Kestrel	*Falco sparverius*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor©	W
Anhinga	*Anhinga anhinga*	LNP – flyover	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Bachman's Sparrow	*Aimophila aestivalis*	N/A	N/A
Bald Eagle	*Haliaeetus leucocephalus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Barn Swallow	*Hirundo rustica*	LNP	W
Barred Owl	*Strix varia*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Black Vulture	*Coragyps atratus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W

TABLE 2.4-3 (SHEET 2 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Blue-gray Gnatcatcher	*Polioptila caerulea*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Blue Jay	*Cyanocitta cristata*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Brown-headed Nuthatch	*Sitta pusilla*	LNP	F, W, Sp
Brown Pelican	*Pelecanus occidentalis*	N/A	N/A
Brown Thrasher	*Toxastoma rufa*	Blowdown Pipeline Corridor	W
Carolina Chickadee	*Parus carolinensis*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Carolina Wren	*Thryothorus ludovicianus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Catbird	*Dumetella carolinensis*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Cattle Egret	*Bubulcus ibis*	Blowdown Pipeline Corridor	W
Cedar Waxwing	*Bombycilla cedrorum*	N/A	N/A

TABLE 2.4-3 (SHEET 3 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Common Crow	*Corvus brachyrhynchos*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Common Nighthawk	*Chordeiles minor*	LNP	Sp
Cooper's Hawk	*Accipiter cooperii*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Double-crested Cormorant	*Phalacrocorax auritus*	LNP – flyover	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Downy Woodpecker	*Picoides pubescens*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Eastern Bluebird	*Sialia sialis*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Eastern Kingbird	*Tyrannus tyrannus*	LNP	Sp
Eastern Meadowlark	*Sturnella magna*	LNP	F, W, Sp, S
Eastern Phoebe	*Sayornis phoebe*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Eastern Screech Owl	*Otus asio*	LNP	W

TABLE 2.4-3 (SHEET 4 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Fish Crow	*Corvus ossifragus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Great Blue Heron	*Ardea herodias*	Blowdown Pipeline Corridor	W
Great-crested Flycatcher	*Miarchus crinitus*	LNP	Sp
Great Egret	*Ardea alba*	Blowdown Pipeline Corridor	W
Great-horned Owl	*Bubo virginianus*	N/A	N/A
Green Heron	*Butorides virescens*	Blowdown Pipeline Corridor	W
Hermit Thrush	*Catharus guttatus*	LNP	W
House Wren	*Troglodytes aedon*	LNP	W
		Blowdown Pipeline Corridor	W
Indigo Bunting	*Passerina cyanea*	LNP	Sp
Little Blue Heron	*Egretta caerulea*	Blowdown Pipeline Corridor	W
Marsh Wren	*Cistothorus palustris*	LNP	W
		Blowdown Pipeline Corridor	W

TABLE 2.4-3 (SHEET 5 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Mourning Dove	*Zenada macrona*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Northern Bobwhite	*Colinus virginianus*	LNP	F, W, Sp
Northern Cardinal	*Cardinalis cardinalis*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Northern Mockingbird	*Mimus polyglottos*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Osprey	*Pandion haliaetus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Palm Warbler	*Dendroica palmarum*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Pileated Woodpecker	*Dryocopus pileatus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Pine Warbler	*Dendroica pinus*	LNP	F, W, Sp
Red-bellied Woodpecker	*Melanerpes carolinus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Red-eyed Vireo	*Vireo olivaceus*	LNP	Sp

TABLE 2.4-3 (SHEET 6 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Red-headed Woodpecker	*Melanerpes erythrocephalus*	LNP	F, W, Sp
Red-shoulder Hawk	*Buteo lineatus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Red-tailed Hawk	*Buteo jamaicensis*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Redwing Blackbird	*Agelaius phoeniceus*	LNP	F, W, Sp
Ring-billed Gull	*Larus delawarensis*	LNP – flyover	F, W, Sp
		Blowdown Pipeline Corridor	W
Robin	*Turdus migratorius*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Ruby-crowned Kinglet	*Regulus calendula*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Ruby-throated Hummingbird	*Archilochus colubris*	N/A	N/A
Rufous-sided Towhee	*Pipilo erythrophthalmus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Sandhill Crane	*Grus canadensis*	LNP	F, W, Sp

TABLE 2.4-3 (SHEET 7 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
Sharp-shinned Hawk	*Accipiter striatus*	LNP	W
		Blowdown Pipeline Corridor	W
Snowy Egret	*Egretta thula*	Blowdown Pipeline Corridor	W
Solitary Vireo	*Vireo solitarius*	LNP	W
		Blowdown Pipeline Corridor	W
Southeastern American Kestrel	*Falco sparverius paulus*	N/A	N/A
Summer Tanager	*Piranga rubra*	LNP	Sp
Swallow-tailed Kite	*Elanoides forficatus*	LNP	Sp
Tree Swallow	*Tachycineta bicolor*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Tri-colored Heron	*Egretta tricolor*	Blowdown Pipeline Corridor	W
Tufted Titmouse	*Parus bicolor*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Turkey Vulture	*Cathartes aura*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W

TABLE 2.4-3 (SHEET 8 OF 8)
BIRD SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

Common Name	Scientific Name	Observed On Site[a]	Season Observed[b, c]
White-eyed Vireo	*Vireo griseus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
White Ibis	*Eudocimus albus*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
White Pelican	*Pelecanus erythrorhynchos*	Blowdown Pipeline Corridor	W
Wild Turkey	*Meleagris gallopavo*	LNP	F, W, Sp, S
		Blowdown Pipeline Corridor	W
Wood Duck	*Aix sponsa*	LNP	F, W, Sp
Wood Stork	*Mycteria americana*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Woodcock	*Scolopax minor*	LNP	W
Yellow-rumped Warbler	*Dendroica coronata*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Yellow-throated Vireo	*Vireo flavifrons*	LNP	Sp
Yellow-throated Warbler	*Dendroica dominica*	N/A	N/A

Notes:

LNP = Levy Nuclear Plant Site, including south property down to barge slip.

N/A Not directly observed

a) The species not directly observed were based on ER Reference 2.4-009.
b) F = Fall, W = Winter, Sp = Spring, S = Summer
c) Blowdown Corridor observations based on winter survey only.

TABLE 2.4-4 (SHEET 1 OF 3)
REPTILE AND AMPHIBIAN SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

COMMON NAME	SCIENTIFIC NAME	OBSERVED ON SITE[(A)]	SEASON OBSERVED[(B, C)]
Black Racer	*Coluber constrictor*	LNP	F, W, Sp
Pygmy Rattlesnake	*Sistrurus miliarius*	N/A	N/A
Eastern Cottonmouth	*Agkistrodon piscivorus*	LNP	Sp
Eastern Indigo Snake	*Drymarchon couperi*	N/A	N/A
Common Garter Snake	*Thamnophis sirtalis*	LNP	F, W, Sp
Red Rat Snake	*Elaphe guttata guttata*	N/A	N/A
Yellow Rat Snake	*Elaphe obsoleta quadrivittata*	N/A	N/A
Ringneck Snake	*Diadophis punctatus punctatus*	N/A	N/A
Scarlet Kingsnake	*Lampropeltis triangulum elapsoides*	N/A	N/A
American Alligator	*Alligator mississippiensis*	LNP	Sp
Green Anole	*Anolis carolinensis*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Fence Lizard	*Sceloporus undulatus*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W
Oak Toad	*Bufo quercicus*	LNP	F, W, Sp
Narrowmouth Toad	*Gastrophryne carolinensis*	N/A	N/A
Southern Toad	*Bufo terrestris*	LNP	F, W, Sp
Diamondback Rattlesnake	*Crotalus adamanteus*	LNP	Sp
Eastern Glass Lizard	*Ophisaurus ventralis*	N/A	N/A--
Peninsula Ribbon Snake	*Thamnophis sauritus sackenii*	N/A	N/A
Ground Skink	*Scincella lateralis*	LNP	F, W, Sp
		Blowdown Pipeline Corridor	W

TABLE 2.4-4 (SHEET 2 OF 3)
REPTILE AND AMPHIBIAN SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

COMMON NAME	SCIENTIFIC NAME	OBSERVED ON SITE[A]	SEASON OBSERVED[B, C]
Broadhead Skink	*Eumeces laticpes*	LNP	F
Five-lined Skink	*Eumeces fasciatus*	N/A	N/A
Southeastern Five-lined Skink	*Eumeces inexpectatus*	N/A	N/A
Florida Cooter	*Pseudemys floridana floridana*	LNP	F
Box Turtle	*Terrapene carolina major*	LNP – shells Blowdown Pipeline Corridor - Shells	N/A[d]
Striped Mud Turtle	*Kinostemon bauri*	N/A	N/A
Gopher Tortoise	*Gopherus polyphemus*	LNP	F, W, Sp
Snapping Turtle	*Chelydra serpentine*	LNP	W
Southern Leopard Frog	*Rana sphenocephala utricularia*	LNP	F, W, Sp
Little Grass Frog	*Pseudacris ocularis*	LNP Blowdown Pipeline Corridor	F, W, Sp W
Southern Cricket Frog	*Acris gryllus*	LNP	F, W, Sp
Southern Chorus Frog	*Pseudacris nigrita*	LNP	F, W, Sp
Pinewoods Treefrog	*Hyla femoralis*	LNP	F, W, Sp
Barking Treefrog	*Hyla gratiosa*	N/A	--
Squirrel Treefrog	*Hyla squirella*	LNP	F, W, Sp
Green Treefrog	*Hyla cinerea*	LNP	F, W, Sp
Greenhouse Frog	*Eleuthrodactylus planirostris*	LNP Blowdown Pipeline Corridor	F, W, Sp W

TABLE 2.4-4 (SHEET 3 OF 3)
REPTILE AND AMPHIBIAN SPECIES LIKELY TO OCCUR ON THE LNP AND BLOWDOWN PIPELINE CORRIDOR SITES

COMMON NAME	SCIENTIFIC NAME	OBSERVED ON SITE[A]	SEASON OBSERVED[B, C]
Ornate Chorus Frog	*Pseudacris ornata*	N/A	N/A
Eastern Spadefoot Toad	*Scaphiopus holbrooki holbrooki*	N/A	N/A
Gopher Frog	*Rana capito*	N/A	--

Notes:

LNP = Levy Nuclear Plant Site, including south property down to barge slip.

N/A Not directly observed.

a) The species not directly observed were based on ER Reference 2.4-009.
b) F = Fall, W = Winter, Sp = Spring, no survey conducted during Summer.
c) Observations along Blowdown Corridor based on winter survey only.
d) Shells would not convey any information about season since they would have been on-site for an indeterminate amount of time, so season was disregarded.

Table 2.4-5
Important Species Identified as Potentially Occurring on the LNP and Blowdown Pipeline Corridor Sites

Species	Scientific Name	Importance Criteria	Observed on Site[a]	Season Observed[b, c]
American Alligator	*Alligator mississippiensis*	State-listed Species of Special Concern	LNP	Sp
Eastern Indigo Snake	*Drymarchon couperi*	Federally and State-listed Threatened	N/A	N/A
Florida Black Bear [d]	*Ursus americanus floridanus*	State-listed Threatened	N/A	N/A
Gopher Tortoise	*Gopherus polyphemus*	State-listed Threatened	LNP	F, W, Sp, S
White Ibis	*Eudocimus albus*	State-listed Species of Special Concern	LNP Blowdown Pipeline Corridor	F, W, Sp, S W
Wood Stork	*Mycteria americana*	Federally and State-listed Endangered	LNP Blowdown Pipeline Corridor	F, W, Sp W
Northern Bobwhite	*Colinus virginianus*	Recreationally important game species	LNP	F, W, Sp
White-tailed deer	*Odocoileus virginianus*	Recreationally important game species	LNP Blowdown Pipeline Corridor	F, W, Sp, S W
Wild Turkey	*Meleagris gallopavo*	Recreationally important game species	LNP Blowdown Pipeline Corridor	F, W, Sp, S W

Notes:
LNP = Levy Nuclear Plant Site, including south property down to barge slip.
N/A Not directly observed.

a) The species not directly observed were based on ER Reference 2.4-009.
b) F = Fall, W = Winter, Sp = Spring, S = Summer
c) Observations along Blowdown Corridor based on winter survey only.
d) Unconfirmed and anecdotal report of bear along northwestern property boundary in March 2007.

Table 2.4.1-1-001 (Sheet 1 of 5)
Herbaceous, Shrub, Tree, and Woody Vine Species Commonly Observed at the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name
Boxelder	*Acer negundo*
Red maple	*Acer rubrum*
Oppositeleaf spotflower	*Acmella oppositifolia (syn. S. americana)*
Peppervine	*Ampelopsis arborea*
Blue maidencane	*Amphicarpum muhlenbergianum*
Bushy bluestem	*Andropogon glomeratus*
Purple bluestem	*Andropogon glomeratus var. glaucopis*
Broomsedge bluestem	*Andropogon virginicus*
Chalky bluestem	*Andropogon virginicus var. glaucus*
Wiregrass	*Aristida stricta var. beyrichiana*
Carpetgrasses	*Axonopus sp.*
Salt bush	*Baccharis halimifolia*
Rattan vine	*Berchemia scandens*
Marsh beggartick; small-fruit	*Bidens mitis*
Pineland rayless goldenrod	*Bigelowia nudata*
Crossvine	*Bignonia capreolata*
Trumpet vine	*Campsis radicans*
Golden canna	*Canna flaccida*
Caric sedges	*Carex sp.*
Sugarberry	*Celtis laevigata*
Spadeleaf	*Centella asiatica*
Buttonbush	*Cephalanthus occidentalis*
Sawgrass	*Cladium jamaicense*
Wild taro	*Colocasia esculenta*
Swamp dogwood	*Cornus foemina*
Sharp edge sedge	*Cyperus haspan*
Pinebarren flatsedge	*Cyperus retrorsus*
Flatsedges	*Cyperus sp.*
Witchgrass	*Dichanthelium sp.*

Table 2.4.1-1-001 (Sheet 2 of 5)
Herbaceous, Shrub, Tree, and Woody Vine Species Commonly Observed at the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name
Starrush	*Dichromena sp.*
Pink sundew	*Drosera capillaris*
Tenangle pipewort	*Eriocaulon decangulare*
Pipeworts	*Eriocaulon sp.*
Dogfennel	*Eupatorium capillifolium*
Mohr's thoroughwort	*Eupatorium mohrii*
Roundleaf thoroughwort; false horehound	*Eupatorium rotundifolium*
Slender flattop goldenrod	*Euthamia caroliniana*
Pop ash	*Fraxinus caroliniana*
Umbrellasedge	*Fuirena sp.*
Loblolly bay	*Gordonia lasianthus*
Hedgehyssop	*Gratiola sp.*
Sunflower	*Helianthus sp.*
Water pennywort	*Hydrocotyle sp.*
Roundpod St. John's-Wort	*Hypericum cistifolium*
Peelbark St. John's-Wort	*Hypericum fasciculatum*
Dwarf St. John's-Wort	*Hypericum mutilum*
Fourpetal St. John's-Wort	*Hypericum tetrapetalum*
Musky mint; clustered bushmint	*Hyptis alata*
Dahoon holly	*Ilex cassine*
Gallberry	*Ilex glabra*
Rushes	*Juncus sp.*
Soft rush	*Juncus effusus*
Shore rush	*Juncus marginatus (Syn. J. biflorus, J. aristulatus)*
Largeheaded rush	*Juncus megacephalus*
Redroot	*Lachnanthes caroliniana*
Bog buttons	*Lachnocaulon sp.*
Blazing star, dense gayfeather	*Liatris spicata*
Savannah false pimpernel	*Lindernia grandiflora*
Sweetgum	*Liquidambar styraciflua*
Lobelia	*Lobelia sp.*

Table 2.4.1-1-001 (Sheet 3 of 5)
Herbaceous, Shrub, Tree, and Woody Vine Species Commonly Observed at the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name
Water primrose, primrosewillow	*Ludwigia sp.*
Fetterbush	*Lyonia lucida*
Rusty staggerbush	*Lyonia ferruginea*
Coastalplain staggerbush	*Lyonia fruticosa*
Baby's-tears	*Micranthemum sp.*
Climbing hempweed	*Mikania scandens*
Southern bayberry; wax myrtle	*Myrica cerifera*
Swamp tupelo	*Nyssa sylvatica var. biflora*
Clustered mille graines	*Oldenlandia uniflora (syn. H. uniflora)*
Cinnamon fern	*Osmunda cinnamomea*
Royal fern	*Osmunda regalis*
Pink woodsorrel	*Oxalis sp.*
Fall panicgrass	*Panicum dichotomiflorum*
Maidencane	*Panicum hemitomon*
Woolly panicum	*Panicum scabriusculum (syn. Dichanthelium strigosum)*
Warty panicgrass	*Panicum verrucosum*
Panicgrasses	*Panicum sp.*
Virginia creeper	*Parthenocissus quinquefolia*
Paspalum	*Paspalum sp.*
Red bay	*Persea borbonia var. borbonia*
Swamp bay	*Persea palustris*
Red chokeberry	*Photinia pyrifolia (syn. A. arbutifolia)*
Slash pine	*Pinus elliottii*
Resurrection fern	*Pleopeltis polypodioides (syn. Polypodium polypodioides)*
Sweetscent	*Pluchea odorata*
Knotweed	*Polygonum spp.*
Pickerelweed	*Pontederia cordata*
Marsh mermaidweed	*Proserpinaca palustris*
Combleaf mermaidweed	*Proserpinaca pectinata*
Bracken fern	*Pteridium aquilinum.*
Laurel oak; diamond oak	*Quercus laurifolia*

Table 2.4.1-1-001 (Sheet 4 of 5)
Herbaceous, Shrub, Tree, and Woody Vine Species Commonly Observed at the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name
Live oak	*Quercus virginiana*
Pale meadowbeauty	*Rhexia mariana*
Shortbristle horned beaksedge	*Rhynchospora corniculata*
Inundated beakrush	*Rhynchospora inundata*
Beakrushes, hornedrushes	*Rhynchospora sp.*
Swamp rose	*Rosa palustris*
Sawtooth blackberry	*Rubus argutus*
Blackberry	*Rubus sp.*
Sabal palm	*Sabal palmetto*
Giant plumegrass, sugarcane plumegrass	*Saccharum giganteum (syn. Erianthus giganteus)*
American cupscalegrass	*Sacciolepis striata*
Grassy arrowhead	*Sagittaria graminea*
Duck potato	*Sagittaria lancifolia*
Broadleaf arrowhead	*Sagittaria latifolia*
Carolina willow	*Salix caroliniana*
Water fern	*Salvinia minima*
Elderberry	*Sambucus nigra (syn. S. canadensis)*
Lizard'stail	*Saururus cernuus*
Yellow bristlegrass, knotroot foxtail	*Setaria parviflora (syn. S. geniculata)*
Earleaf greenbrier	*Smilax auriculata*
Laurel greenbrier	*Smilax laurifolia*
Goldenrod	*Solidago spp.*
Baker's cordgrass	*Spartina bakeri*
Rice button aster	*Symphyotrichum dumosum (syn. A. dumosus)*
Yellow hatpins	*Syngonanthus flavidulus*
Pond-cypress	*Taxodium ascendens*
Bald-cypress	*Taxodium distichum*

Table 2.4.1-1-001 (Sheet 5 of 5)
Herbaceous, Shrub, Tree, and Woody Vine Species Commonly Observed at the LNP and Blowdown Pipeline Corridor Sites

Common Name	Scientific Name
Woodsage; Canadian germander	*Teucrium canadense*
Eastern poison ivy	*Toxicodendron radicans*
St. John's-wort	*Triadenum virginicum*
Eastern gamagrass, Fakahatcheegrass	*Tripsacum dactyloides*
Cattail	*Typha sp.*
American elm	*Ulmus americana*
Bog white violet	*Viola lanceolata*
Muscadine grape	*Vitis rotundifolia*
Summer grape	*Vitis aestivalis*
Netted chain fern	*Woodwardia areolata*
Virginia chain fern	*Woodwardia virginica*
Baldwin's yelloweyed grass	*Xyris baldwiniana*
Shortleaf yelloweyed grass	*Xyris brevifolia*
Elliott's yelloweyed grass	*Xyris elliottii*
Richard's yelloweyed grass	*Xyris jupicai*
Tall yelloweyed grass	*Xyris platylepis*
Yelloweyed grasses	*Xyris spp.*

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.1-2

Text of NRC RAI: Provide additional information on waterfowl resources on-site and along the transmission corridor (up to the first substation).

No discussion of waterfowl resources is presented for either the Levy site or the associated facilities in ER Section 2.4.1. Provide a description of waterfowl concentration areas and habitats on-site and along the transmission corridors (up to the first substation).

PGN RAI ID #: L-0103

PGN Response to NRC RAI:

Based upon field investigations, no waterfowl concentration areas were identified at the LNP site or in the vicinity of the associated facilities. Wood Ducks (*Aix sponsa*) were infrequently observed in cypress swamps on the LNP site (see RAI 2.4.1-1, Table 2.4-3), and American Coot (*Fulica americana*) were occasionally seen in the CFBC during field surveys.

Many lakes and ponds in Florida serve as waterfowl concentration areas by providing critical foraging resources for large numbers of both resident and wintering migratory ducks. Generally, waterfowl hunting in Florida is permitted on any water body that has public access, unless it is closed for a specific reason, such as a location within a park or in an area where the discharge of firearms is prohibited. No waterfowl concentration areas are located within the proposed transmission corridors; however, descriptions of some of the adjacent areas that provide potential waterfowl concentration areas are outlined below.

- Lake Rousseau

Lake Rousseau is a 12-mile-long, approximately 3700-ac. man-made impoundment in Citrus County that lies on the trace of the Withlacoochee River. It is part of the Marjorie Harris Carr Cross Florida Greenway and is fed by both the Rainbow River and Lake Panasoffkee to the east. The proposed transmission corridor lies to the west of this 12-mile-long man-made impoundment. No impact to this regional waterfowl concentration area is anticipated.

- Lake Tsala Apopka

Lake Tsala Apopka is an approximately19,000-ac. system of heavily vegetated, interconnected freshwater marshes and shallow lakes in Citrus County. The northern-most portion of the lake system (Hernando Pool) is located south of State Road 200 and south of the proposed transmission corridor. No impacts to this waterfowl concentration area are anticipated.

- Lake Panasoffkee

Lake Panasoffkee and the Lake Panasoffkee Wildlife Management Area are located in Sumter County, south of State Road 44 and west of Interstate 75. This approximately 9000-ac. lake outfalls to the Withlacoochee River to the west. The proposed transmission

corridor is located north of both Lake Panasoffkee and the management area; therefore, no impacts to this waterfowl concentration area are anticipated.

Impact Avoidance, Minimization, and Mitigation

In order to avoid and/or minimize impacts to waterfowl concentration areas, the transmission corridors have been selected to avoid significant surface water features. No structures, access roads, or aerial crossings of significant waterfowl concentration areas will occur. In order to minimize wetland impacts further, transmission lines will be collocated within existing ROWs whenever possible. Any unavoidable wetland impacts will be mitigated in consultation with the FDEP and USACE. Wetland mitigation will ensure that the loss of wetland functions associated with construction of the project, including wildlife habitat, are appropriately replaced through enhancement, restoration, and/or preservation of wetland habitat or through the purchase of wetland mitigation credits from an agency-approved mitigation bank that will promote conservation of wetland resources within the Central Florida region. Through the project's avoidance, minimization, and mitigation efforts, no significant adverse impacts to waterfowl or waterfowl concentration areas are anticipated.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.1-3

Text of NRC RAI: Provide additional information needed to update and complete the baseline characterization and impact assessment for wetland resources.

Wetlands descriptions in ER Section 2.4.1 were based on the Florida Land Use and Cover Classification System (FLUCCS), as interpreted and mapped by SWFWMD and field verified by PEF. Wetland delineations for the Levy site and verification by the U.S. Army Corps of Engineers is ongoing. Reference is made in ER Sections 5.2.1.5 and 5.2.2.3 to groundwater pumping that could adversely affect wetlands, but little detail is provided. Provide the following items:

- A new wetlands map (clearly reproducible in black-and-white) for the site and south of the site that includes jurisdictional and non-jurisdictional wetlands, as well as an overlay of the limits of ground disturbance. Identify the project facilities and features depicted on the map.
- A new table with the existing acreage of wetlands, including jurisdictional and non-jurisdictional wetlands.
- A new wetland impacts table with the acreage of jurisdictional and non-jurisdictional wetlands broken out by temporary and permanent impacts and by facilities (see ER Land Use Tables 4.1-4 and 4.1-5 for a breakdown of facilities).
- A discussion to explain the Unified Mitigation Assessment Method (UMAM) functional assessment for impact wetlands and for mitigation wetlands.
- A qualitative discussion on the effects of construction dewatering on wetlands, including the disposition of water during construction.
- Discussions addressing groundwater drawdown due to operations and any wetlands monitoring that would be implemented.
- Estimated groundwater drawdown isopleths (minimum 1-foot elevation interval) resulting from operational water withdrawal overlaid on the wetland delineation map (clearly reproducible in black-and-white).
- A discussion to describe and explain estimates of wetland loss due to the drawdown, as well as information on how impacts can be minimized and why impacts are unavoidable.
- Updated estimates of wetland and upland impacts along the transmission lines (up to the first substation).

PGN RAI ID #: L-0104

PGN Response to NRC RAI:

A new wetlands map (clearly reproducible in black and white) for the site and property south of the site that includes jurisdictional and non-jurisdictional wetlands (all wetlands are currently considered jurisdictional until wetland determinations are completed with USACE

and FDEP), as well as an overlay of the limits of ground disturbance, is provided as 013_Attachment 2.4.1-3A.pdf. The map includes Project facilities and features.

Table 2.4.1-3-001 presents the existing acreage of wetlands on the LNP site categorized by the Florida Land Use and Land Cover Classification System (FLUCCS). Because the final jurisdictional determinations from the USACE and the FDEP have not yet been received, all wetlands on-site are at this time considered to be jurisdictional and the potential impact numbers are preliminary.

Table 2.4.1-3-001
Total Wetland Acreage on the LNP Site

FLUCCS	Acres
Cypress	1,582.8
Mixed Wetland Hardwoods	435.7
Wet Prairies	18.4
Wetland Forested Mixed	0.8
Total	**2,037.7**

Table 2.4.1-3-002 presents the potential wetland impact acreage by temporary and permanent impacts and by facilities.

Table 2.4.1-3-002 (Sheet 1 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
Misc Structures	On-Site	Permanent	Cypress	621	33.0	13.4
Misc Structures	On-Site	Permanent	Mixed Wetland Hardwoods	617	5.6	2.3
Misc Structures	On-Site	Permanent	Wet Prairies	643	0.8	0.3
Pond A	On-Site	Permanent	Cypress	621	43.7	17.7
Pond A	On-Site	Permanent	Mixed Wetland Hardwoods	617	0.7	0.3
Pond B	On-Site	Permanent	Cypress	621	7.5	3.0
Pond B	On-Site	Permanent	Wet Prairies	643	0.1	0.1
Pond C1	On-Site	Permanent	Cypress	621	3.5	1.4
Pond C2	On-Site	Permanent	Cypress	621	5.1	2.1
Pond C2	On-Site	Permanent	Wet Prairies	643	0.1	0.1
Site Access Roads	On-Site	Permanent	Cypress	621	10.5	4.2
Site Access Roads	On-Site	Permanent	Freshwater Marshes	641	0.3	0.1
Site Access Roads	On-Site	Permanent	Mixed Wetland Hardwoods	617	1.3	0.5
Site Access Roads	On-Site	Permanent	Wet Prairies	643	0.3	0.1
Switchyard	On-Site	Permanent	Cypress	621	12.4	5.0
Switchyard Connection	On-Site	Permanent	Cypress	621	11.1	4.5
Unit 1	On-Site	Permanent	Cypress	621	9.9	4.0

Table 2.4.1-3-002 (Sheet 2 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
Unit 2	On-Site	Permanent	Cypress	621	8.3	3.3
Heavy Haul Road	Off-Site	Permanent	Cypress	621	22.4	9.1
Heavy Haul Road	Off-Site	Permanent	Cypress-Pine-Cabbage Palm	624	0.2	0.1
Heavy Haul Road	Off-Site	Permanent	Streams and Waterways	510	0.1	0.0
Heavy Haul Road	Off-Site	Permanent	Wet Prairies	643	0.5	0.2
Pipeline CFBC To CREC	Off-Site	Both	Freshwater Marshes	641	8.4	3.4
Pipeline CFBC To CREC	Off-Site	Both	Reservoirs	530	0.0	0.0
Pipeline CFBC To CREC	Off-Site	Both	Saltwater Marshes	642	5.4	2.2
Pipeline CFBC To CREC	Off-Site	Both	Streams and Waterways	510	2.6	1.0
Pipeline CFBC To CREC	Off-Site	Both	Wetland Forested Mixed	630	3.3	1.3
Pipeline LNP To CFBC	Off-Site	Both	Cypress	621	25.7	10.4
Pipeline LNP To CFBC	Off-Site	Both	Cypress-Pine-Cabbage Palm	624	0.2	0.1
Pipeline LNP To CFBC	Off-Site	Both	Wet Prairies	643	0.7	0.3
Transmission Corridor	Off-Site	Permanent	Cypress	621	165.8	67.1
Transmission Corridor	Off-Site	Permanent	Cypress-Pine-Cabbage Palm	624	18.5	7.5
Transmission Corridor	Off-Site	Permanent	Wet Prairies	643	2.6	1.1

Table 2.4.1-3-002 (Sheet 3 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
50' Buffer To CFBC	Both	Temp	Cypress	621	85.0	34.4
50' Buffer To CFBC	Both	Temp	Cypress-Pine-Cabbage Palm	624	0.6	0.2
50' Buffer To CFBC	Both	Temp	Freshwater Marshes	641	0.8	0.3
50' Buffer To CFBC	Both	Temp	Mixed Wetland Hardwoods	617	10.7	4.3
50' Buffer To CFBC	Both	Temp	Streams and Waterways	510	1.5	0.6
50' Buffer To CFBC	Both	Temp	Wet Prairies	643	1.3	0.5
					510.4	206.6
	On-Site				**154.2**	**62.4**
	Off-Site				**256.4**	**103.8**
	50' Buffer Temp Impacts				**99.79**	**99.8**
					510.4	**206.6**

Uniform Mitigation Assessment Method (UMAM)

The Uniform Mitigation Assessment Method (UMAM), developed by the FDEP and contained in Chapter 62-345, F.A.C., was used to evaluate the function of uplands and wetlands identified within the study area in regards to expected wildlife species in accordance with guidelines set forth in Chapter 62-345, F.A.C. (014_Attachment 2.4.1-3B.pdf). The intent of UMAM is to provide a standardized procedure for assessing wetland functions, the degree of functional loss due to an impact, and the amount of mitigation needed to offset those losses. UMAM has been used as the quantitative tool for determining wetland mitigation requirements in a wide range of projects permitted through the USACE in Florida. There is a minor difference between the way the State of Florida and the USACE calculate the timing associated with mitigation maturity using UMAM.

Three main parameters are assessed under the UMAM protocol. Each parameter is given a score between 0 (lowest) and 10 (highest) in increments of 1.0, with specific scoring considerations and criteria described in the FDEP guidance to ensure consistency. The final score is a weighted average. UMAM variables considered for each wetland include: Location and Landscape, Water Environment, and Community Structure. Assessment areas were scored based on the current condition ("Without Project" scenario) and compared with proposed impact or mitigation ("With Project" scenario) scores to determine the Relative Functional Gain for the project. UMAM calculations also provide for quantitative consideration of the likelihood of success of the proposed mitigation ("risk") and the time expected to attain the desired conditions ("temporal factor"). Under UMAM, a project must result in at least a balance between the functional loss from impacts and the functional gain from mitigative actions.

UMAM results for on-site impact and proposed mitigation wetlands are summarized in the Wetland Mitigation Plan, which is included as 015_Attachment 2.4.1-3C.pdf to this response.

Wetland Impact Areas

Without Project – Assessment areas were generally given a 4 for the Location and Landscape Support category due to limited habitat availability in surrounding landscapes, wildlife access being limited by distance and barriers, area land uses having adverse effects on wildlife, and hydrologic impediments that limit assessment areas from providing benefits downstream. Water Environment scores ranged from 2 to 10 and were based on the differences in land management practices, including ditching, bedding, haul roads, and their effects on the habitat. Community Structure scores ranged from 2 to 9 and were based on the degree of regeneration/recruitment, cover of desirable species, species diversity, and the quality of structure available to wildlife. Wetland areas typically scored toward the higher range of the category.

With Project – Impacts to assessment areas are considered to be direct and permanent resulting in a total loss of function according to UMAM and receiving a score of zero.

Potential Mitigation Areas

Without Project – In general, conditions at mitigation areas were similar to impact areas as described above. Mitigation areas were generally given a 4 for the Location and Landscape Support based on ongoing land management practices and support to wildlife as described above. Water Environment scores ranged from 4 to 10 and Community Structure scores ranged from 3 to 10.

With Project – Mitigation areas were scored under optimal conditions based on identified restoration, enhancement, or preservation opportunities. Location and Landscape Support scores for wetland mitigation areas were 9 for increased optimal habitat availability and removal of current land uses (silviculture). Water Environment scores were only slightly greater than the "Without Project" scenario due to few hydrologic enhancement opportunities. The exception was in planted pine wetland areas, which scored a 9 based on improvements to the habitat once silviculture activities end. Community Structure scored a 9 based on removal of slash pine from wetlands and natural regeneration/recruitment particularly in transition communities, along with changes in current land use such as logging. Uplands mitigation areas scored a 9 based on optimal structural habitat, regeneration/recruitment potential, and typical age/size distribution of vegetation species once desired land management plans are implemented.

The amount of time for mitigation implementation to maturity between the "Without Project" and "With Project" scenarios was based on forested wetlands and ranged from 5 to 15 years. Herbaceous wetlands were assigned 5 years to reach maturity. Risk factors ranged from 1.5 (high) for planted pine wetlands to 1.25 (low) for all other wetlands and upland assessment areas.

Effects of Construction Dewatering on Wetlands

Dewatering during construction will be conducted so as to minimize potential impacts to adjacent wetlands. For the foundation of each nuclear island, the underlying bedrock will be sealed by drilling and pressure grouting and the area will be excavated. Reinforced diaphragm walls will be installed around each nuclear island perimeter so that only the interior of the excavation will require dewatering. The reinforced diaphragm walls will prevent significant drawdowns from occurring in the surficial aquifer system outside of the excavation area. Thus, the reinforced diaphragm walls will prevent the construction dewatering from impacting wetlands. Pumped water will be discharged to an infiltration basin sized for the estimated flow rate.

Additional construction dewatering will also be necessary in some locations for installation of the pipelines and other facilities. Construction-related dewatering activities will be evaluated and approved by FDEP and the SWFWMD as part of the post-certification review period, following submittal of final construction designs. A construction dewatering plan will be provided to the SWFWMD for approval 6 months prior to dewatering. The plan will include details of the dewatering system, discharge quantities and location, a monitoring plan, and other details as appropriate to demonstrate that the plans meet the SWFWMD proposed Conditions of Certification, and comply with all applicable Environmental Resource Permit construction dewatering requirements. Preliminary dewatering details are found in the Preliminary Sitewide Dewatering Plan, a copy of which is available in the Progress Energy-provided Reading Room.

Operational Groundwater Withdrawal

The use of brackish water from the CFBC for cooling, instead of groundwater, drastically reduces the LNP's use of fresh water. Additionally, PEF worked closely with the SWFWMD in designing and modeling the wellfield to avoid and minimize potential impacts resulting from groundwater withdrawal. Based on revised modeling results, as discussed in the SWFWMD Staff Recommendations for Conditions of Certification, the wellfield was relocated from the northeast portion of the site to higher transmissivity areas of the Floridan aquifer in the southern portion of the property. A figure depicting modeled groundwater drawdown isopleths resulting from operational water pumpage is attached as 016_Attachment 2.4.1-3D.pdf.

Groundwater withdrawal cannot cause unacceptable adverse impacts to wetlands or other surface waters, in accordance with the SWFWMD Basis of Review for WUPs and Condition 21 of the SWFWMD Conditions of Certification. The following performance standards apply:

- Wet season water levels shall not deviate from their normal range.
- Wetland hydroperiods shall not deviate from their normal range and duration to the extent that wetlands plant species composition and community zonation are adversely impacted.
- Wetland habitat functions, such as providing cover, breeding, and feeding areas for obligate and facultative wetland animals shall be temporally and spatially maintained, and not adversely impacted as a result of withdrawals.
- Habitat for threatened or endangered species shall not be altered to the extent that use by those species is impaired.

To confirm that water use associated with operations of the LNP does not cause adverse environmental impacts, PEF has agreed as part of the Conditions of Certification to develop and implement an environmental monitoring plan (based on the SWFWMD Wetland Assessment Procedure) to evaluate the relative condition of surface waters and wetlands in areas potentially affected by groundwater withdrawals. Monitoring will continue for a minimum of 5 years after groundwater withdrawals reach 1.25 mgd on an annual average basis.

A table of updated estimates of wetland and upland impacts along the transmission lines (up to the first substation) is provided below. A map showing the locations of transmission line segments is provided in 017_Attachment 2.4.1-3E.pdf.

Table 2.4.1-3-003
Estimates of Wetland and Upland Impacts along Transmission Lines from LNP Site to First Substation

Segment	Land Use (FLUCCS)	Wetland Type	Area (ac.)
Segment 1	411	PINE FLATWOODS	16.1
	434	HARDWOOD - CONIFER MIXED	48.2
	441	CONIFEROUS PLANTATIONS	138.9
		Subtotal	**203.3**
Segment 2	412	LONGLEAF PINE - XERIC OAK	82.1
	434	HARDWOOD - CONIFER MIXED	102.4
		Subtotal	**184.5**
Segment 3	412	LONGLEAF PINE - XERIC OAK	0.9
	434	HARDWOOD - CONIFER MIXED	45.9
		Subtotal	**46.8**
Segment 4	411	PINE FLATWOODS	6.2
	412	LONGLEAF PINE - XERIC OAK	14.1
	413	SAND PINE	31.3
	421	XERIC OAK	56.4
	427	LIVE OAK	6.7
	434	HARDWOOD - CONIFER MIXED	109.8
	441	CONIFEROUS PLANTATIONS	62.3
		Subtotal	**286.9**
Total			**721.4**

Segment 1 – North Levy Nuclear Plant to Levy/Citrus County Line

Segment 2 – Levy/Citrus County Line to Citrus Substation
Segment 3 – Citrus Substation to Crystal River Energy Complex
Segment 4 – Citrus Substation to Proposed Central Florida South Substation

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See the following attachments:

- 013_Attachment 2.4.1-3 A.pdf
- 014_Attachment 2.4.1-3 B.pdf
- 015_Attachment 2.4.1-3 C.pdf
- 016_Attachment 2.4.1-3 D.pdf
- 017_Attachment 2.4.1-3 E.pdf

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.1-4

Text of NRC RAI: Provide additional information on the value and utility of retained forest buffers on the project site as future wildlife habitat.

No discussion is presented in ER Section 5.1 on the potential future wildlife use of retained forest buffers on the LNP site. Depending on how these buffers are managed, they could provide suitable habitat for many wildlife species, including important species. Discuss how preserved forest buffers would be managed, including both forest and general land management practices, and how these practices could benefit wildlife. Provide a copy of the Timber Management and Mitigation Plan for the site, when available.

PGN RAI ID #: L-0105

PGN Response to NRC RAI:

As discussed in ER Subsection 4.3.1.1, most of the LNP site (approximately 2455 ac.) will remain undeveloped as vegetated buffer following construction of the LNP. Some or all of this area may be enhanced and restored as part of the project's wetland mitigation program. Land management details will be provided in the final Mitigation Plan, expected in approximately March 2010, and the Forest Management Plan, expected May 2009. Land management activities are expected to include thinning of planted pine, controlled burns, and limited earthwork to restore historical hydrologic connections and native communities.

As discussed in ER Subsection 2.4.1, conversion of the historical mosaic of pine flatwoods, wet prairie and cypress swamp to monospecific stands of short-rotation slash pine have reduced the suitability of the property for many wildlife species. Restoration back to pine flatwoods, wet prairie, and cypress swamp will enhance the habitat value for a greater diversity of native wildlife species.

A copy of the Wetland Mitigation Plan is provided as 015_Attachment 2.4.1-3C.pdf. A copy of the Forest Management Plan will be provided when available.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 015_Attachment 2.4.1-3C.pdf

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.4.1-5

Text of NRC RAI: Provide additional information on the ongoing studies of important species and their habitat on-site and along the transmission corridor (up to the first substation).

ER Sections 2.4.1.1.3.2 and 2.4.1.2.2.1 indicate that studies of important species are ongoing at the Levy site and at the early infrastructure facilities. Provide a list of all ongoing and proposed future studies for terrestrial species and habitats identified as important in the ER.

PGN RAI ID #: L-0106

PGN Response to NRC RAI:

PEF conducted pedestrian and vehicular field reconnaissance within accessible areas of each proposed transmission corridor up to the first substation to verify/update vegetative habitat classifications, including wetland locations, type, and extent, as well as to document occurrences of listed species or their habitats. As the ROWs are finalized, PEF will conduct more detailed surveys to verify the habitats and perform detailed wetland delineation.

Ongoing and proposed future studies for important terrestrial species and habitats at the LNP site and early infrastructure facilities include the following:

- Wetland delineations and functional assessments
- Habitat evaluation, restoration, and monitoring
- Wetland monitoring associated with groundwater withdrawal
- Gopher tortoise surveys

Wetland delineations and wetland functional assessments (Unified Wetland Assessment Method) have been completed for approximately 4300 ac. of both the LNP site and the adjacent property to the south. As stated in ER Subsection 2.4.1.1.5, formal jurisdictional determinations of wetlands on both the LNP site and the adjacent property by the FDEP Wetland Evaluation and Delineation Section are ongoing. Results of the wetland delineations and functional assessments are currently under review by the State of Florida as part of Power Plant Site Certification (403.501-.518, Florida Statutes) and by the USACE as part of the Section 404 Permit process.

As part of wetland mitigation for the project, some on-site wetlands may be enhanced and subsequently monitored in accordance with Section 404 and State of Florida Environmental Resource Permit Guidelines. An Environmental Monitoring Plan based on the SWFWMD's Wetland Assessment Procedure will be developed and implemented to evaluate the condition of surface waters and wetlands in areas potentially affected by the project.

Where previous site investigations identified the potential for occurrence of threatened and endangered species, surveys will be conducted for those species in accordance with applicable state and federal survey guidelines. As discussed in ER Subsection 2.4.1.1.3.2.2, surveys for the gopher tortoise, which is listed as threatened by the State of Florida, were

conducted on the LNP site and in the early infrastructure areas. These surveys will be repeated between 30 and 90 days prior to construction, in accordance with Florida Fish and Wildlife Conservation Commission survey guidelines (see 018_Attachment 2.4.1-5A.pdf).

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 018_Attachment 2.4.1-5A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-1

Text of NRC RAI: Provide additional information needed to complete the impact assessment for terrestrial and wildlife resources.

ER Section 4.3.1 provides an impact assessment for terrestrial resources. However, several important pieces of information were missing and some project features have since been modified or dropped (e.g., rail line). Provide the following information:

- An updated habitat impacts table (Tables 4.3-1 and 4.3-2) with the acreage of temporary and permanent impacts broken out by facility (see ER Land Use Tables 4.1-4 and 4.1-5 for a breakdown of facilities).
- A figure (clearly reproducible in black-and-white) showing the limits of construction disturbance overlaid onto habitats. Identify the project facilities and features depicted on the figure.
- The proposed best management practices (BMPs) for restoration of temporary impacts on the Levy site, including information on seed mixtures for erosion control, and on invasive species monitoring and control.
- An approximate quantitative assessment of the proportion of habitats on-site that would be impacted compared to availability of similar habitats in the vicinity (6-mile radius).
- A qualitative discussion of the relative abundance of habitats along the transmission corridors (up to the first substation) compared to the ½-mile buffer.
- A qualitative assessment of potential wildlife impacts (including important species) resulting from new roads and traffic associated with plant construction and operation.
- A qualitative discussion of the potential for the three stormwater retention ponds to provide habitat for waterfowl, shorebirds, amphibians and other wildlife.

PGN RAI ID #: L-0107

PGN Response to NRC RAI:

An updated habitat impacts table (Tables 4.3-1 and 4.3-2) with the acreage of temporary and permanent impacts broken out by facility (see ER Land Use Tables 4.1-4 and 4.1-5 for a breakdown of facilities):

Table 4.3.1-1-001 is an updated habitat impacts table with the acreage of potential wetland impacts (temporary and permanent) by facility.

Table 4.3.1-1-001 (Sheet 1 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
Misc Structures	On-Site	Permanent	Cypress	621	33.0	13.4
Misc Structures	On-Site	Permanent	Mixed Wetland Hardwoods	617	5.6	2.3
Misc Structures	On-Site	Permanent	Wet Prairies	643	0.8	0.3
Pond A	On-Site	Permanent	Cypress	621	43.7	17.7
Pond A	On-Site	Permanent	Mixed Wetland Hardwoods	617	0.7	0.3
Pond B	On-Site	Permanent	Cypress	621	7.5	3.0
Pond B	On-Site	Permanent	Wet Prairies	643	0.1	0.1
Pond C1	On-Site	Permanent	Cypress	621	3.5	1.4
Pond C2	On-Site	Permanent	Cypress	621	5.1	2.1
Pond C2	On-Site	Permanent	Wet Prairies	643	0.1	0.1
Site Access Roads	On-Site	Permanent	Cypress	621	10.5	4.2
Site Access Roads	On-Site	Permanent	Freshwater Marshes	641	0.3	0.1
Site Access Roads	On-Site	Permanent	Mixed Wetland Hardwoods	617	1.3	0.5
Site Access Roads	On-Site	Permanent	Wet Prairies	643	0.3	0.1
Switchyard	On-Site	Permanent	Cypress	621	12.4	5.0
Switchyard Connection	On-Site	Permanent	Cypress	621	11.1	4.5
Unit 1	On-Site	Permanent	Cypress	621	9.9	4.0

Table 4.3.1-1-001 (Sheet 2 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
Unit 2	On-Site	Permanent	Cypress	621	8.3	3.3
Heavy Haul Road	Off-Site	Permanent	Cypress	621	22.4	9.1
Heavy Haul Road	Off-Site	Permanent	Cypress-Pine-Cabbage Palm	624	0.2	0.1
Heavy Haul Road	Off-Site	Permanent	Streams and Waterways	510	0.1	0.0
Heavy Haul Road	Off-Site	Permanent	Wet Prairies	643	0.5	0.2
Pipeline CFBC to CREC	Off-Site	Both	Freshwater Marshes	641	8.4	3.4
Pipeline CFBC to CREC	Off-Site	Both	Reservoirs	530	0.0	0.0
Pipeline CFBC to CREC	Off-Site	Both	Saltwater Marshes	642	5.4	2.2
Pipeline CFBC to CREC	Off-Site	Both	Streams and Waterways	510	2.6	1.0
Pipeline CFBC to CREC	Off-Site	Both	Wetland Forested Mixed	630	3.3	1.3
Pipeline LNP To CFBC	Off-Site	Both	Cypress	621	25.7	10.4
Pipeline LNP To CFBC	Off-Site	Both	Cypress-Pine-Cabbage Palm	624	0.2	0.1
Pipeline LNP To CFBC	Off-Site	Both	Wet Prairies	643	0.7	0.3
Transmission Corridor	Off-Site	Permanent	Cypress	621	165.8	67.1
Transmission Corridor	Off-Site	Permanent	Cypress-Pine-Cabbage Palm	624	18.5	7.5
Transmission Corridor	Off-Site	Permanent	Wet Prairies	643	2.6	1.1

Table 4.3.1-1-001 (Sheet 3 of 3)
Wetland Impacts by Facility

Facility	Location	Impact	Wetland Type	FLUCCS	Impact Area (ac.)	Impact Area (ha)
50' Buffer To CFBC	Both	Temp	Cypress	621	85.0	34.4
50' Buffer To CFBC	Both	Temp	Cypress-Pine-Cabbage Palm	624	0.6	0.2
50' Buffer To CFBC	Both	Temp	Freshwater Marshes	641	0.8	0.3
50' Buffer To CFBC	Both	Temp	Mixed Wetland Hardwoods	617	10.7	4.3
50' Buffer To CFBC	Both	Temp	Streams and Waterways	510	1.5	0.6
50' Buffer To CFBC	Both	Temp	Wet Prairies	643	1.3	0.5
					510.4	206.6
	On-Site				**154.2**	**62.4**
	Off-Site				**256.4**	**103.8**
	50' Buffer Temp Impacts				**99.79**	**99.8**
					510.4	**206.6**

A figure (clearly reproducible in black-and-white) showing the limits of construction disturbance overlaid onto habitats. Identify the project facilities and features depicted on the figure.

022_Attachment 4.3.1-1A.pdf depicts the limits of construction disturbance overlaid onto habitats.

The proposed best management practices (BMPs) for restoration of temporary impacts on the Levy site, including information on seed mixtures for erosion control, and on invasive species monitoring and control.

On areas of the site and associated facilities, including transmission corridors, where temporary impacts will occur, PEF will analyze the potentially impacted habitats and develop best management practices (BMPs) to minimize impacts to terrestrial, wetland, and wildlife resources. These BMPs could include the use of sedimentation and erosion control measures to limit erosion into wetland areas. Typical BMPs include the placement of silt fencing around disturbed areas and using temporary silt fencing or hay bales as energy dissipators in the roadway ditches during construction. These same, or similar, sediment and erosion control measures can be used to limit vehicle access into sensitive areas (for example, wildlife habitat or wetland areas). PEF may also limit construction activities to non-nesting seasons for certain wildlife species, or if construction must occur during these periods, monitor the nesting wildlife and reduce the duration of the construction. PEF will also use existing access roads in wetland areas to the greatest extent practicable to reduce the amount of wetlands impacted by the project. In accordance with provisions of Florida Statute (FS) 163.3209, vegetation management will be supervised by PEF or qualified licensed or certified contractors under control of the utility.

In temporarily impacted wetland areas, both on-site and within transmission corridors, PEF does not generally plant a specific seed mixture. PEF allows the seed bank already present to revegetate these areas. This method is extremely effective due to the 365-day growing season in Florida. The success of wetland restoration will be monitored on a regular basis; generally semi-annually or annually. If required to promote restoration to desired conditions, exotic species may be culled either manually or through the use of herbicides registered with the EPA and selectively applied by a licensed contractor to targeted vegetation.

In purchasing the ROWs for the construction of transmission lines, PEF will often purchase only an easement that grants the right to construct, operate, and maintain the transmission line. The remaining land rights remain with the underlying fee owner of the property. To address temporary impacts in upland areas, PEF works with the underlying fee owner to restore the ROW for their approval. PEF also employs this method where the ROWs may cross public lands. PEF will work with the land manager of that parcel to restore the ROW to their specifications. In addition, PEF may not have the right to conduct wildlife management or enhancement practices within the ROWs. In portions of the transmission system where PEF is the fee owner of the property or where the ROWs may cross public lands, PEF has worked with the public land manager and/or the National Wild Turkey Federation to enhance wildlife management by planting feed plots for wildlife.

An approximate quantitative assessment of the proportion of habitats on-site that would be impacted compared to availability of similar habitats in the vicinity (6-mile radius).

Potential impacts to habitats on the LNP site were compared with the availability of similar habitats in the vicinity (6-mile radius), and the ratio of the two was determined. Land uses (FLUCCS) within a 6-mile radius of the project site are presented in 023_Attachment 4.3.1-1B.pdf. Areas of potentially impacted habitats on-site were less than 1 percent of the available similar habitat areas in the vicinity for all major FLUCCS classifications. The impacts to habitats on-site will not significantly reduce the availability of those habitats in the vicinity of the LNP. This determination does not include the enhancement to a variety of habitats on and near the LNP site expected to result from implementation of the wetland mitigation program. A summary table is provided below.

Table 4.3.1-1-002 (Sheet 1 of 2)
Onsite Impacts and Availability of Similar Land Uses in the Vicinity of the LNP

FLUCCS		Onsite Impacts (ac.)	*Vicinity Totals (ac.)	Impact / Vicinity (%)
170	Institutional	0.00	60.29	0.0%
180	Recreational	0.00	121.67	0.0%
190	Open Land	0.00	2,771.42	0.0%
210	Cropland And Pastureland	0.00	2,730.31	0.0%
214	Row Crops	0.00	69.85	0.0%
250	Specialty Farms	0.00	345.94	0.0%
260	Other Open Lands <Rural>	45.14	4,431.64	1.0%
320	Shrub And Brushland	0.00	908.29	0.0%
330	Mixed Rangeland	0.00	68.32	0.0%
410	Upland Coniferous Forest	0.00	8,157.96	0.0%
411	Pine Flatwoods	0.00	848.04	0.0%
412	Longleaf Pine - Xeric Oak	0.00	1,507.85	0.0%
420	Upland Hardwood Forests	0.00	5.53	0.0%
434	Hardwood Conifer Mixed	0.00	3,839.44	0.0%
440	Tree Plantations	101.44	18,257.16	0.6%
510	Streams And Waterways	0.00	309.03	0.0%
520	Lakes	0.00	120.66	0.0%
530	Reservoirs	0.00	2,459.36	0.0%
540	Bays And Estuaries	0.00	0.31	0.0%
610	Wetland Hardwood Forests	0.00	201.10	0.0%

Table 4.3.1-1-002 (Sheet 1 of 2)
Onsite Impacts and Availability of Similar Land Uses in the Vicinity of the LNP

FLUCCS		Onsite Impacts (ac.)	*Vicinity Totals (ac.)	Impact / Vicinity (%)
615	Stream And Lake Swamps (Bottomland)	0.00	1,369.38	0.0%
617	Mixed Wetland Hardwoods	7.63	438.53	1.7%

Table 4.3.1-1-002 (Sheet 2 of 2)
Onsite Impacts and Availability of Similar Land Uses in the Vicinity of the LNP

FLUCCS		Onsite Impacts (ac.)	*Vicinity Totals (ac.)	Impact / Vicinity (%)
620	Wetland Coniferous Forests	0.00	81.29	0.0%
621	Cypress	146.71	6,751.25	2.2%
624	Cypress-Pine-Cabbage Palm	0.00	30.06	0.0%
630	Wetland Forested Mixed	0.02	4,665.35	0.0%
641	Freshwater Marshes	0.44	1,893.64	0.0%
642	Saltwater Marshes	0.00	2.78	0.0%
643	Wet Prairies	1.39	434.04	0.3%
644	Emergent Aquatic Vegetation	0.00	236.94	0.0%
653	Intermittent Ponds	0.00	12.96	0.0%
740	Disturbed Land	0.00	54.26	0.0%
810	Transportation	0.14	285.81	0.0%
830	Utilities	0.19	311.39	0.1%

*Vicinity includes up to a 6-mile radius of the LNP site.

A qualitative discussion of the relative abundance of habitats along the transmission corridors (up to the first substation) compared to the ½-mile buffer.

The ecological review of the preliminary candidate corridors used existing land use/land cover GIS data and Florida Natural Areas Inventory (FNAI)-listed species occurrence data for the study areas. Protected species (flora and fauna), eagle nests, upland forests, forested wetland areas, and herbaceous wetland areas were mapped and entered into the GIS database. Listed species that were not directly observed or identified in the FNAI database but considered likely to occur based upon available habitat within the corridors were described and their protective status identified.

A comprehensive evaluation was conducted on quantitatively high ranked candidate corridors to determine the most suitable candidate corridors based on the environmental and land use considerations, suitability for construction, operation and maintenance, safety, public acceptance, cost, and electric system needs. Emphasis was placed on avoiding

cultural resources and minimizing impacts to wetlands. Additionally, other important corridor selection criteria that avoided and minimized wetland impacts included the following:

- Maximize co-location with existing PEF transmission lines.
- Maximize co-location with other linear features including arterial and collector roads, major canals, and railroads.
- Maximize following previously disturbed alignments (roads, trails, canals, ditches, etc.) through Florida Managed Areas (FMA), wetlands and upland forested areas.
- Minimize river and canal crossings where no crossing (road, railroad, transmission or other utility crossing) already exists.
- Encourage location close to existing industrial and extractive land uses.

The result of the quantitative evaluation was the selection of the corridors listed below, which were selected to maximize inclusion of previously disturbed habitats. For each corridor, the vegetative communities and listed species habitat located within the ½-mile buffer area of these segments are of higher quality when compared with areas within the chosen corridors. The corridors follow existing linear features, which allow for reduction in the amount of new ROW clearing and access road construction, thereby minimizing impacts to undisturbed habitat.

- LNP to Proposed Citrus Substation (LPC)

Habitats outside of the Levy/Citrus Common corridor are generally either of higher quality, contain greater concentration of residential land uses, or include greater amounts of wetland habitat. Significant nearby features within a ½-mile buffer of the corridor include Lake Rousseau, which lies approximately ¼ mile to the east.

- LNP to Crystal River Energy Complex Switchyard (LCR)

Continuing west from the proposed Citrus Substation area, the LCR corridor is collocated with existing transmission line rights-of-way, maximizing utilization of previously disturbed areas. Significant areas within the ½-mile buffer surrounding the LCR corridor west of the Citrus Substation include large areas of high quality forested wetlands associated with the Crystal River Preserve State Park.

- LNP to Proposed Central Florida South Substation (LCFS)

The LCFS corridor follows the Common Corridor from the LNP to the area of the proposed Citrus Substation, then traverses east to the proposed Central Florida South Substation. The LCFS corridor is collocated with existing linear features, specifically the existing PEF 500/230-kV transmission line ROW that extends eastward from the CREC and the Florida Turnpike. Maximizing inclusion of these existing disturbed areas reduces impacts to higher-quality upland and wetland habitats adjacent to the corridor. Significant areas within the ½-mile buffer around the corridor include large areas of wetlands associated with the Withlacoochee River, the Withlacoochee State Forest Twomile Preserve, Ross Prairie State Forest, and the floodplain of Lake Panasoffkee, which provide high value wildlife habitat when compared with the habitat within the LCFS corridor.

A qualitative assessment of potential wildlife impacts (including important species) resulting from new roads and traffic associated with plant construction and operation.

Construction of new roads and traffic associated with plant construction and operation may increase mortality in some local wildlife species as a result of vehicular strikes. The elevated risk is expected to correlate with construction and subsequent operational activity levels at the LNP site. The level of human disturbance during construction will likely discourage wildlife from using the areas; however, some wildlife mortality resulting from construction traffic may be unavoidable.

Construction workers will be advised about the potential presence and appearance of listed species (e.g., the gopher tortoise and eastern indigo snake) and instructed to observe caution in areas where listed species may occur to minimize the potential for accidental vehicular strikes. If such areas are identified, additional mitigative measures may be implemented, such as road signs or temporary barriers.

A qualitative discussion of the potential for the three stormwater retention ponds to provide habitat for waterfowl, shorebirds, amphibians and other wildlife.

The stormwater ponds on the LNP site will be constructed in accordance with the SWFWMD Basis of Review for Environmental Resource Permitting, which requires a shallow littoral zone component. This littoral zone will be seeded or planted in native hydrophytic species, which will support the development of a biotic community. Given the absence of permanent open water features on the LNP site, the stormwater ponds are expected to be environmental amenities, potentially providing foraging habitat for waterfowl and wading birds through the creation of habitat for invertebrates, fish, and amphibians.

Associated LNP COL Application Revisions:

Revise ER Section 4.3 to incorporate information provided in the response.

Attachments/Enclosures:

See 022_Attachment 4.3.1-1A.pdf and 023_Attachment 4.3.1-1B.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-2

Text of NRC RAI: Provide additional information on the potential for bird collisions with elevated construction equipment, cooling towers and transmission towers.

ER Section 4.3.1 states that the use of elevated construction equipment will be managed to reduce the potential for avian collisions during project construction, but no discussion on the likelihood of avian collisions with project structures is provided and no measures to minimize avian collisions are described. Provide the following items to assess the potential for bird collisions with elevated construction equipment, cooling towers, and transmission towers:

- A qualitative discussion of the potential for bird collisions with project structures and mitigation measures that would be taken to avoid or reduce bird collisions.
- A description of the avian protection plan for the transmission line corridors being negotiated by PEF with the Florida Fish and Wildlife Conservation Commission (FFWCC).
- A copy of the agency report issued by the Florida Department of Environmental Protection (FDEP) for the transmission line corridor.

PGN RAI ID #: L-0108

PGN Response to NRC RAI:

Avian mortality from collisions with transmission structures and transmission lines has become more of a common occurrence as such facilities become more common. Avian collisions with man-made structures are the result of numerous factors related to species characteristics, such as flight behavior, age, habitat use, seasonal and diurnal habitats, and to environmental characteristics, such as weather, topography, land use, and orientation of the structures. Avian collisions with transmission structures cannot be ruled out, but collisions are not expected to be a significant source of mortality for most species. Avian collisions with transmission lines and related structures during construction are expected to pose little threat to migrating birds.

As stated in ER Subsection 4.3.1.1, the use of elevated construction equipment, such as cranes, will be restricted only to the area and duration necessary to minimize the potential for avian collisions. Although the activity associated with the use of elevated construction equipment activity at LNP will be considerable at some point, this activity will likely be short-lived. Bird collisions with elevated construction equipment during operation would likely be minimal because of the slow speeds the equipment will operate in the area and the noise associated with operation. To reduce collisions during non-operation time periods, some form of deterrent device, such as colored tape, bird flappers, or diverters to make the construction equipment more visible to birds, could be used.

As discussed in ER Subsection 5.3.3.1.1, the mechanical draft cooling towers associated with LNP 1 and LNP 2 will be 56 feet high; therefore, the proposed cooling towers are not expected to cause substantial bird mortality due to collisions. Although natural draft cooling

towers have been associated with bird kills, the relatively low height of mechanical draft cooling towers pose little threat to bird mortality. Therefore, impacts to bird species from collisions with the cooling towers are expected to be SMALL and would not warrant mitigation.

The construction of overhead transmission lines could injure birds if they collide with the new conductors or towers. Regularly occurring noise from human activity will also discourage frequent visitation by birds. Avian mortality resulting from collisions with transmission lines was evaluated in NUREG-1437. The impacts were found to be of small significance at operating nuclear power plants. Although avian collisions with transmission lines are recognized as a cause of bird species mortality, overall impacts are anticipated to be SMALL.

The review of literature shows that there are many accepted mitigation measures used to reduce bird collisions. These measures include the following:

- Marking transmission lines with some form of deterrent devices, such as colored balls or tape, bird flappers, or diverters to make transmission lines more visible to birds.
- Scheduling construction activities during periods of least impact to wildlife (e.g., avoid nesting season).
- Setting up buffer zones between the transmission line and areas of ecological importance to reduce disturbance, and diverting birds over or away from the transmission line.
- Following existing transmission corridors and routes.
- Placing the power line parallel rather than perpendicular to predominant lines of flight.
- Following natural and existing barriers.
- Locating conductors parallel to prevailing winds.
- Limiting the use of guy wires.

Over 90 percent of the new transmission lines to be constructed to integrate the LNP to the existing grid are collocated with existing transmission lines, which will reduce the risk of collisions. PEF expects certification of the project by the Florida Siting Board in the third quarter of 2009. A proposed Condition of Certification (XXXIX.F) with the State of Florida requires PEF to develop an Avian Protection Plan (APP) for the transmission lines being constructed to support the LNP. PEF will develop this plan to address each of the transmission lines as the design and construction of the transmission lines move forward. The development of the APP will include the analysis of the lines to be constructed and address the issues raised above.

A copy of the agency report issued by the FDEP for the transmission line corridor, "Staff Analysis Report, Levy Nuclear Power Plant Units 1 and 2 Site Certification, Transmission Line Portion, Progress Energy Florida," is provided as 024_Attachment 4.3.1-2A.pdf to this response.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 024_Attachment 4.3.1-2A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-3

Text of NRC RAI: Provide additional information needed to assess the potential effects of the transmission lines (up to the first substation) on terrestrial and wildlife resources.

ER Sections 4.3.1 and 5.6.1 provides a limited discussion of how construction activities, maintenance, and BMPs applicable to the transmission lines would affect terrestrial and wildlife resources. Provide the following information to assess the potential for adverse impacts from transmission lines (up to the first substation) on terrestrial habitats:

- Proposed BMPs to minimize impacts to terrestrial, wetland and wildlife resources on the transmission corridors.
- Proposed BMPs for restoration of temporary impacts on transmission corridors (including information on seed mixtures for erosion control and on invasive species monitoring and control).
- Proposed wildlife enhancement practices or management along transmission lines to benefit important wildlife.

PGN RAI ID #: L-0109

PGN Response to NRC RAI:

Once the ROWs are selected within the transmission line corridors, PEF will analyze the habitats and develop BMPs to minimize impacts to terrestrial, wetland, and wildlife resources. These BMPs could include the use of sedimentation and erosion control measures to limit erosion into wetland areas. These same sediment and erosion control measures can be used to limit vehicle access into sensitive areas (that is, wildlife habitat or wetland areas). PEF may also limit construction activities to non-nesting seasons for certain wildlife species, or if construction must occur during these periods, monitor the nesting wildlife and reduce the duration of the construction. PEF will also use existing access roads in wetland areas to the greatest extent practicable to reduce the amount of wetlands impacted by the project. PEF is also proposing to collocate many of the new transmission lines with existing transmission lines, which will reduce the amount of new ROWs needed.

Invasive species monitoring and control for ROWs is generally addressed on a case-by-case basis by PEF. Invasive species control within the ROWs is often ineffective unless invasive species management is practiced in adjacent properties. PEF frequently works with land managers to control invasive species where ROWs cross public lands, because such properties usually have invasive species control programs in place.

In purchasing the ROWs for the construction of transmission lines, PEF will often purchase only an easement that grants the right to construct, operate, and maintain the transmission line. The remaining land rights remain with the underlying fee owner of the property. PEF uses BMPs, including those for sedimentation and erosion control, to minimize impacts on the transmission line ROWs. In wetland areas, PEF does not plant a specific seed mixture

after clearing; instead, PEF allows the seed bank already present to revegetate these areas. This method is extremely effective due to the 365-day growing season in Florida. In the upland areas, PEF works with the underlying fee owner to restore the ROW for their approval. PEF also employs this method where the ROWs may cross public lands. PEF will work with the land manager of that parcel to restore the ROW to their specifications. In addition, PEF may not have the right to conduct wildlife management or enhancement practices within the ROWs. In portions of the transmission system where PEF is the fee owner of the property or where the ROWs may cross public lands, PEF has worked with the public land manager and/or the National Wild Turkey Federation to enhance wildlife management by planting feed plots for wildlife.

Information regarding BMPs for maintaining ROW corridors is described in PEF Procedure MNT-TRMX-00176, Rev. 5, "Transmission Vegetation Management Program," which is available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-4

Text of NRC RAI: Provide additional information needed to assess the potential impacts of noise on wildlife.

The effects of noise on wildlife are addressed in a limited manner in ER Sections 4.3.1 and 5.3.4.2. Although noise modeling was conducted for the LNP, the effects analysis was focused toward human noise impacts (see ER Section 5.3.4.2). Provide a qualitative assessment of construction (temporary) and operational (permanent) noise impacts (short-term and long-term) on wildlife, with a focus on important species identified in the ER.

PGN RAI ID #: L-0110

PGN Response to NRC RAI:

Construction noise (temporary) is expected to be typical of other power plants in regards to schedule, equipment used, and other activities. Construction activity noise can potentially range from 73 dB to 104 dB at 50 ft. and 43 dB to 74 dB at 1,500 ft. Examples of construction noise include heavy vehicle traffic, blasting, engine and generator operation, and pile driving. Operational noise impacts (permanent) are primarily associated with the cooling towers, heavy vehicle traffic, pumps, generators, and common road traffic. The estimated noise levels during normal plant operation are expected to be below the Levy County noise limits (55 dB night and 65 dB daytime) at off-site locations. Near the LNP plant, noise levels are estimated at 45 dB for normal operation.

General sensitivities of various groups of wildlife to noise are as follows:

- Mammals <10 Hz to 150 kHz; sensitivity to -20 dB
- Birds 100 Hz to 8-10 kHz; sensitivity at 0-10 dB
- Reptiles 50 Hz to 2 kHz; sensitivity at 40-50 dB
- Amphibians 100 Hz to 2 kHz; sensitivity from 10-60 dB

To avoid potential disturbance to bald eagles, the design for the transmission line route on the LNP site was shifted east of, and greater than the USFWS-recommended guidance distance from, a known bald eagle nest on the south property. As discussed in ER Subsection 2.4.1.1.2, wildlife species commonly occurring at the LNP site and vicinity (see RAI 2.4.1-1) are species generally accustomed to human presence and disturbance, including whitetail deer, coyote, feral hog, and opossum. Important species known to occur on-site include American alligator and gopher tortoise, both of which commonly occur in close proximity to human activity. Based on potential noise levels cited above from the Noise Assessment Report which was attached to the SCA, typical wildlife species are not expected to be impacted from LNP construction and operation activities. Reported noise levels are likely to disturb animals in close proximity to the construction activities, causing the most

sensitive, mobile animals (mammals and birds) to leave the vicinity. Over time, noise levels may result in lower densities of wildlife near the plant.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-5

Text of NRC RAI: Provide additional information on the fate of displaced wildlife and on the potential for invasive species introduction.

ER Sections 4.3.1 and 5.6.1 suggest that displaced wildlife, particularly more mobile species, could avoid impacts associated with project construction and operation by moving to adjacent suitable habitats. Because adjacent suitable habitats are likely occupied by wildlife at carrying capacity, the fate of displaced wildlife is questionable. The extensive land disturbance that would occur with project construction would provide conditions suitable for the establishment and spread of invasive species. However, there is limited discussion on this potential issue in ER Section 4.3.1. NRC staff requests an expanded qualitative discussion on the fate of wildlife displaced by the project (with focus on important species) and on the potential for introduction of invasive plants.

PGN RAI ID #: L-0111

PGN Response to NRC RAI:

Construction and operation of the LNP will require the displacement of wildlife habitat and animals currently occupying the development footprint. This displacement may temporarily disrupt some local wildlife populations and habitats that may be already at carrying capacity. No significant long-term impacts to regional populations of wildlife species are expected as a result of the LNP project, partly because of the small area of disturbance relative to the abundance of similar habitat, both on-site and regionally, but also as a result of the overall ecological improvements to be affected through the wetland mitigation program. The mitigation program provides for habitat improvement within wetland boundaries as well as in surrounding upland areas, increasing carrying capacity for at least some species.

Additionally, a wildlife corridor extending from the Goethe State Forest to the south property may be established as part of mitigation activities. As discussed in ER Subsection 4.3.1.1, approximately 21 percent of the total LNP property will be developed. The areas that will be developed have been disturbed previously through silviculture, and the land use categories, such as pine plantation and mixed forest, are common in the region (see ER Table 2.2-2). Human presence associated with site investigations is likely to have already altered wildlife use patterns in the central portion of the site. Over the long term, cessation of silviculture and the improvement and maintenance of vegetative conditions on undeveloped portions of the site will improve overall habitat quality (see ER Subsection 4.3.1.1.2).

Land disturbance associated with project construction increases the potential for establishment and spread of invasive species. The following types of BMPs will be implemented during construction to minimize this potential:

- Minimizing soil disturbance and retaining desirable vegetation to the extent possible.
- Use of weed-free mulch and hay.

- Use of local, native material, including seed mixes, plugs, and sods where appropriate and available.
- Monitor and evaluate the success of revegetation, as appropriate.

Success criteria for the Wetland Mitigation Plan will include an invasive species component, and the vegetative composition of mitigation areas on the LNP site will be monitored for timely identification and control of invasive species.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-6

Text of NRC RAI: Provide additional information on the post-certification process for addressing listed species along the proposed transmission corridor (up to the first substation).

Very little of the proposed transmission corridors have been surveyed for listed species. ER Section 5.6.1.1 states that the finalized rights-of-way for the transmission corridors will be surveyed as part of a post-certification process pursuant to state certification under the Florida Electrical Power Plant Siting Act. Provide additional information and a schedule for the post-certification process for addressing listed species along the proposed transmission corridors (up to the first substation).

PGN RAI ID #: L-0112

PGN Response to NRC RAI:

PEF performed pedestrian and vehicular field reconnaissance within accessible areas of each proposed transmission corridor to verify/update vegetative habitat classifications, including wetland locations, type, and extent, as well as to document occurrences of listed species or their habitats. Once the final ROW is selected within the corridor, PEF will conduct more detailed surveys to verify the habitats.

PEF anticipates approval of the State of Florida SCA by the Florida Siting Board in August-September 2009. This approval will include certification of PEF's proposed electrical transmission line corridors. A proposed condition of certification (XXXV) sets out the process for reviewing and finalizing the ROW locations. This condition requires PEF to submit the final proposed ROWs to various state agencies for review post-certification. Once this condition is satisfied, the ROWs can be finalized.

Once the final ROWs are selected, PEF will map the habitats and conduct a listed species survey to determine the occurrence and relative abundance of species considered Endangered, Threatened, or of Special Concern by the Florida Fish and Wildlife Conservation Commission (FFWCC) under Chapter 68A-27.002-004, F.A.C., or as Endangered or Threatened by the United States Fish and Wildlife Service under 50 CFR 17. Preliminary listed species surveys should be completed by the end of 2009. Appropriate listed species permits, if necessary, will be obtained prior to site work.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.3.1-7

Text of NRC RAI: Provide additional information on the potential effects of off-site fill procurement on terrestrial and wildlife resources.

No discussion of the impacts associated with the acquisition of project fill is presented in ER Section 4.3.1. PEF indicated in its response to Information Need TE-A that fill generated from on-site activities would provide much of the needed fill, that as much as 1,200,000 cubic yards of fill would be purchased off-site and hauled to the site, and that material stockpiled by the State of Florida from construction of the CFBC would be the likely source of purchased fill. NRC staff requests a general, qualitative evaluation of the effects of off-site fill procurement on terrestrial and wildlife resources.

PGN RAI ID #: L-0113

PGN Response to NRC RAI:

The source of the off-site fill has not been determined. A qualitative evaluation of the effects of off-site fill procurement on terrestrial resources, including wildlife, will be provided when the source information is available. However, as indicated in response to Information Need TE-A, it is expected that if off-site fill material is required, it will come from existing stockpiled material. If existing stockpiled material can be used, then no new borrow pits off-site would be needed, thus minimizing off-site impacts. Once the final amount and source of off-site material is known, these impacts can be further described.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.7-2

Text of NRC RAI: Provide information on cumulative impacts to terrestrial resources for proposed activities that may impact terrestrial resources, such as the proposed US19 bridge expansion, Tarmack quarry, and the proposed Suncoast Parkway extension.

NRC staff requests additional, specific information on potential cumulative impacts relative to flora and fauna in the site vicinity, especially for important species and habitats identified in the ER. The cumulative assessment should consider reasonably foreseeable regional projects such as the proposed Tarmac quarry, the proposed U.S. Highway 19 bridge upgrade, and the proposed Suncoast Parkway extension.

PGN RAI ID #: L-0114

PGN Response to NRC RAI:

Planned, Potential and Existing Projects in Area of Proposed LNP with the Potential to Affect Terrestrial Resources

The following is a list of projects known at the present time (March 2009) to be either planned or potentially implemented in the Levy County and Citrus County areas, within the site and vicinity of the LNP site.

- Proposed Expansion of the CEMEX—Inglis Rock Quarry

An application for the creation of a special zoning district that would have exempted the Hollins property, currently leased to CEMEX, from most of the land use regulations in Citrus County, was submitted to the Citrus PDRB. After hearing objections from area residents, the PDRB members accepted the staff's recommendation to deny the proposed change, and this proposed denial action was forwarded to the Citrus County Board of County Commissioners. The application was subsequently withdrawn in August 2007. In May 2007, CEMEX also withdrew its application to the FDEP to expand the mine and is completing a hydrological evaluation of the area. The existing rock quarrying operation holds NPDES Permit No. FLR 05 F854.

- Proposed Tarmac King Road Limestone Mine

This proposed mining operation is expected to provide construction-grade aggregate that meets the Florida DOT specifications for buildings and infrastructure. The proposed mine is to provide this aggregate for Tarmac America's and its customer's use in the west central area of Florida. In September 2007, the USACE Jacksonville, Florida Division received a Section 404 permit application to impact wetlands for limestone mining on a 9400-ac. site in Levy County. The mining site location is to the west of the LNP site on the west side of Highway 19 and north of the town of Inglis and the CFBC. Under the proposed action, Tamarac America plans to mine approximately 30 ac. a year on a tract along King Road in southern Levy County. The tract covers 4800 ac.: 800 ac. of wetlands that will be set aside;

1300 ac. for the quarry, processing plant, roads, and buffers; and the remaining 2700 ac. for mining activity over approximately 100 years.

- Hydropower Project, FERC Project No. 12783 Draft License Application

Inglis Hydropower, LLC, proposes to install electrical generation at the existing Inglis Bypass Spillway. The project plans to generate 2000 kilowatts and use existing facilities to minimize or eliminate additional environmental impacts. The project would make use of the existing Inglis Bypass Spillway. The spillway is presently and will continue to be owned by the State of Florida with the needed land for the project to be leased from the State. Proposed project facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and an existing transmission line. Note: A separate hydropower project exists on the Bypass Channel by the Southern Hy-Power Corporation. The Southern Hy-Power Corporation has an existing lease from the State of Florida for .61 ac. This project is in addition to, and potentially competes with, the Inglis Hydropower, LLC project; however, Southern Hy-Power Corporation's project is not actively pursuing permits.

- Suncoast Parkway Expansion

The Suncoast Parkway, a four-lane toll road (also known as Toll Road 589), currently extends from the Veterans Expressway in Tampa to U.S. Highway Hernando-Citrus county line, a distance of approximately 42 miles. The proposed Suncoast would extend northward approximately 27 miles through Hernando and Citrus counties. The FTE is now proceeding toward 60% design plans. It is anticipated that a design public hearing will be scheduled for the late spring of 2009. The public hearing timeframe is subject to change based on design activities.

- Widening of Route 19 Bridge Crossing the CFBC

This Florida DOT project is designed to allow for the construction of two additional lanes on the Route 19 bridge across the CFBC. The plan is to add another two-lane bridge immediately west and adjacent to the existing two-lane bridge span. When completed, four lanes of bridge crossing will exist over the CFBC. The project is in the early construction phase, and road preparation for the approaches to the new bridge was underway as of the week of February 20, 2009. The exact schedule for completion was not available from publicly accessible Florida DOT information.

- Proposed Filling of the Inglis Lock

This project was originally proposed by the FDEP to allow for the permanent closing of the Inglis Lock, since the cost of repairs and future maintenance was above projected future budget limitations. However, following 2008 permit approval from the USACE, FDEP has recently (January 2009) removed this potential project from future planning due to state budget shortfalls. The previously completed bulkhead re-enforcement will now serve as the permanent closing mechanism until future state budgets allow for re-consideration of the filling option.

Potential Terrestrial Resource Impacts from Listed Projects

- Proposed Expansion of the CEMEX Inc.—Inglis Rock Quarry

The proposed expansion of mining operations will require a zoning change in Citrus County to be approved by the Citrus County Board of County Commissioners. The proposed zoning change application was withdrawn by the owner of the land proposed for the mining

expansion. Therefore, because no mining permit application is active, no increases in potential cumulative impacts to terrestrial resources are anticipated.

- Proposed Tarmac King Road Limestone Mine

The USACE determined that the proposed action could have significant impacts on the environment and that an Environmental Impact Statement (EIS) must be prepared under NEPA. According to the USACE's March 2008 scoping meeting presentation, the Draft EIS is planned for release in early 2009. As of this writing, the Draft EIS has not been released. Following a 45-day comment period from the date of the release of the Draft EIS, a Final EIS would likely be issued in late spring 2009 with a ROD anticipated in early summer 2009.

Although the Draft EIS will consider the effects on federally listed threatened and endangered species, health and safety, socioeconomics, aesthetics, general environmental concerns, wetlands (and other aquatic resources), historic properties, cultural resources, fish and wildlife values, land use, transportation, recreation, water supply and conservation, water quality, energy needs, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people, other issues identified through scoping, public involvement, and interagency coordination, the USACE is primarily concerned about the loss of wetland functions and value, mitigation of such losses, and the effect of proposed mining on groundwater and surface water quality and on transportation.

Potential direct impacts to area terrestrial resources include alteration and/or loss of valuable wetland and upland habitats. These potential impacts, if not avoided or mitigated, could adversely affect local freshwater wetland habitat areas and near-shore Gulf salt marsh resources. It is anticipated that if the project is approved, the USACE and FDEP permits would require avoidance of impacts and effective mitigation of unavoidable impacts. The USACE and FDEP could place conditions on permits (if granted) to ensure no net loss of wetland functions and values, including to wildlife habitats. The agencies could also establish permit conditions that result in periodic evaluation of restoration activities. It is highly unlikely that the USACE or the FDEP would issue permits that allow adverse impacts to occur. The magnitude of potential direct impacts to terrestrial resources is unknown until the ROD and other final agency actions are issued.

Tarmac America proposes to preserve about 4600 ac. adjacent to the mine at its western boundary, next to the Wacasassa Bay State Park. Tarmac also plans to initiate a vegetation management program to promote native species diversity and wetlands enhancement in the area.

- Hydropower Project, FERC Project No. 12783 Draft License Application

The proposed hydropower project will make use of the existing Inglis Bypass Spillway. The spillway is presently and will continue to be owned by the State of Florida with the needed land for the project to be leased from the State. Proposed project facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and a re-constructed existing transmission line.

The project site was modified in the 1960s-1970s by the USACE's construction of the CFBC. As a result, the main habitats in the park and project area are upland grassland and scrub trees. The entire area was excavated and graded during the construction of the CFBC. Therefore, there is very little topsoil to support plant life well. Away from the immediate area of the project, the soil supports large trees, brush, and grasses. The wooded areas, in

general, are relatively undisturbed and support a mix of trees. There is a public-use paved access road into the site that runs along the north side of the Inglis Lock Bypass Channel.

This area of Florida is known as the coastal lowlands. The land in this area is forested with trees. Pines and oaks predominate, with cypress common in low wet areas and along the river's banks. Open areas typically are covered with native grasses. Palmetto and other shrub type plants, as well as weeds, are also common below the trees and are dispersed through the grassy areas. However, the project will only disturb a grassy area. This grass was planted after the Bypass Channel had been dug. Therefore, no trees or shrubs will be disturbed by this project.

There is a variety of wildlife in the area, but since it is in the town limits of Inglis, small species predominate. Squirrels, rabbits, rats, mice, armadillos, skunks, opossum, raccoons, and snakes are the most common. These animals reside in the wooded areas and would not be affected by construction of this project.

The Red Cockaded Woodpecker, a terrestrial rare, threatened, or endangered species, is known to occur in areas south of the project site, but there are no known Red Cockaded Woodpeckers living in the area of the project. It is possible that other protected species exist in the project area, but have yet to be observed and recorded.

Impacts to wildlife and plants from this project are not expected to be significant because of the small size of the project and use of existing facilities. The project will require the removal of about 3 ac. of grass and weeds for construction of the powerhouse, and reconductoring power lines. Some tree trimming may be needed along the 4/10-mile power line. However, the project will minimize the removal of vegetation by using existing facilities as much as possible and by keeping the footprint of the project as small as possible. Appropriate planting of grasses can also mitigate potentially negative effects from the removal of grass during construction activities. The state Office of Greenways and Trails (OGT) has specified that, "The site is an earthen dam and plants are not permitted to grow. Only grass to stabilize the top soil from erosion" will be allowed.

Some measures that could be put in place to mitigate potential terrestrial impacts include appropriate permitting and controls to mitigate soil erosion and sedimentation will be implemented during construction and planting grass to mitigate impacts on botanical resources and aesthetics.

- Suncoast Parkway Expansion

Based on the alignment map provided by the FTE, it appears the Suncoast Parkway Expansion (also known as Toll Road 589) project will stop short (south) of the CFBC. A contribution to direct cumulative terrestrial impacts to any part of the LNP project from this roadway project is not anticipated. A wildlife (deer, alligator, raccoon, wild turkey, and Florida black bear) crossing is being designed in the area where the Annutteliga Hammock is located on both sides of the power lines between U.S. Highway 98 and County Road 480. This is the only location where a corridor of substantial habitat exists on both sides of the power lines. Documented wetland losses from highway alignment and construction activities will be mitigated according to established FDEP and USACE permit requirements and guidelines.

Potential secondary impacts of induced development growth by the Suncoast Parkway Expansion (also known as Toll Road 589) project cannot be predicted with certainty and will be based on general future national and state economic activity, future human population movement patterns, and county and local planning and zoning activities.

- Widening of Route 19 Bridge Crossing the CBFC

The bridge widening project involves the construction of an additional two lanes crossing the CFBC. The new span will be located immediately to the west (towards the Gulf) of the existing two-lane span. Two additional highway lanes will be added to the new bridge approaches in both directions.

The new span, like the existing span, will not involve in-water construction activities, and the new bridge span will be supported by on-shore pilings on both the north and south approaches to the new bridge. Therefore, the potential impacts of the new bridge will be limited to short-term runoff and erosion impacts from construction activities and long-term potential oil, grease and sediment contaminant impacts from road runoff.
The short-term impacts will be mitigated by the required use of erosion and runoff control devices and by the low erosion potential of the existing sandy and shell fragment sediments in the proposed road approach and bridge abutment/piling construction areas. Long-term runoff impacts will be mitigated by the direction of road runoff to a collection system that directs runoff towards the north and south ends of the new bridge span and away from direct flows to the CFBC.

It is not anticipated that the construction of the Route 19 bridge widening project will adversely affect terrestrial resources nor add measureable cumulative impacts.

- Proposed Filling of the Inglis Lock

The project has been canceled due to state budget shortfall and it is uncertain when or if the project will be revisited in the future. The area proposed for fill is currently isolated from both Lake Rousseau and the CFBC by lock gates and it is assumed that any construction activities would be subject to permit conditions which would include stormwater management and erosion control measures. In any case, the projected cumulative impacts to terrestrial resources from the filling of the Inglis Lock would be small.

To summarize, based on a review of the reasonably foreseeable construction in the vicinity of the LNP site, there will be no adverse cumulative impacts to regionally significant flora and fauna.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.3.3.2-1

Text of NRC RAI: Provide additional information needed to assess the potential effects of salt deposition from the cooling tower operation on terrestrial, wetland and wildlife resources.

ER Section 5.3.3.2 describes the results of modeling for particle drift from the cooling tower. However, no isopleth maps of salt drift are provided, and discussion regarding the potential effects to biota from salt accumulation over time is limited. NRC staff requests the following items to assess the potential for impacts from cooling tower operation on terrestrial habitats:

- Isopleth maps of seasonal high projected salt drift and deposition (in kilogram per hectare per month [kg/ha/mo]) for the project site and vicinity.
- A discussion of potential impacts to flora and fauna from salt deposition or accumulation over the license period.
- Any studies on the impacts of salt accumulation on wetlands, plants, and wildlife (if such studies are available).
- The final report prepared for the salt deposition study at CREC.

PGN RAI ID #: L-0115

PGN Response to NRC RAI:

Isopleths depicting the maximum predicted monthly average deposition rate (in grams/m^2/month [g/m^2/mo]) are provided in 040_Attachment 5.3.3.2-1A.pdf. Figures 1 through 5 in the attachment depict the maximum predicted monthly average deposition rates for each of the 5 years that were modeled (2001 through 2005) as described in ER Subsections 5.3.3.1 and 5.3.3.2. Deposition rates shown in the figures are based on 1.0 cycles of concentration in the cooling tower circulating water. Since normal operation of the cooling towers will be 1.5 cycles of concentration, all values in the isopleths should be multiplied by 1.5 to estimate deposition rates during normal operation. To convert the deposition rates in each figure from g/m^2/mo to kilogram/hectare/month (kg/ha/mo), values should be multiplied by 10.

As discussed in ER Subsection 5.3.3.2.1, results of a deposition analysis showed a maximum predicted off-site deposition rate of 6.81 kilogram per hectare per month (kg/ha/mo) of total solids at the nearest property boundary, below the NUREG-1555 threshold limit of 10 kg/ha/mo. This threshold limit is the value above which an adverse impact to vegetation may occur. The maximum predicted on-site deposition (during normal plant operation) is 10.75 kg/ha/mo, slightly above the offsite regulatory threshold.

With regard to the salt deposition study that was performed at CREC, the study was performed at the request of FDEP as a condition of the facility's site certification, as well as its NPDES and PSD permits. The study was conducted from 1981 through 1995 to evaluate the physical impacts of salt deposition from that facility's natural and mechanical draft

cooling towers on vegetation surrounding the CREC. The results of the study demonstrated that there were no significant impacts to vegetation in the area surrounding the plant resulting from cooling tower operation. In 1995 Florida Power Corp. (FPC, now PEF) requested approval to terminate the study. In March 1996, FDEP concluded that there were no significant impacts to vegetation due to salt drift from the plant and authorized FPC to discontinue the study. 041_Attachment 5.3.3.2-1B.pdf contains a copy of FPC's May 24, 1995 letter to FDEP requesting approval to terminate the study, FDEP's March 20, 1996 response granting the request, and an excerpt of the last annual report on the study results.

Long-term effects of salt drift on terrestrial habitats are poorly understood. Precipitation, humidity, species composition and photoperiod are known to influence salt tolerance, and extrapolating experimental salt deposition effects on vegetation to natural conditions is imperfect due to the complexities of a natural habitat response.

As previously discussed, results of the 14-year CREC field study evaluating the effects of cooling tower drift on communities in the vicinity of the CREC show no significant impacts to the vegetative communities of maritime hammock, salt marsh, and pine flatwoods. Results of the CREC may be applicable to the LNP pine plantations, which shares common vegetative assemblages with the CREC.

Adverse impacts of salt drift on vegetation generally decrease with increasing distance from the cooling tower. Most areas in the immediate vicinity of the LNP cooling towers will be impacted as part of plant development. Many of the vegetative communities on the LNP site but beyond the immediate plant area are proposed for enhancement or restoration as part of the wetland mitigation program and will be monitored in accordance with the Conditions of Certification and Section 404 Permitting Guidelines.

Literature evaluating the long-term effects of salt accumulation on wetlands, plants, and wildlife is scarce. Studies that address the effects of salt drift and/or salt tolerance on terrestrial biota are a Salt Deposition Study at CREC, which is attached to this response as 041_Attachment 5.3.3.2-1B.pdf, and "Review of Potential Biological Impacts of Cooling Tower Salt Drift" and "Effect of Photoperiod, Temperature, and Relative Humidity on Chloride Uptake of Plants Exposed to Salt Spray," which are available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See the following attachments:

- 040_Attachment 5.3.3.2-1A.pdf (Figures 1 through 5, Maximum Predicted Monthly Average Deposition Rates)
- 041_Attachment 5.3.3.2-1B.pdf (Crystal River Salt Deposition Study and Correspondence With FDEP)

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.1-1

Text of NRC RAI:

Identify specific data tables that were used from cited U.S. Census Bureau web pages for ER Tables 2.5-1 through 2.5-4, 2.5-6, and 2.5-7.

Specify which data tables were used from U.S. Census Bureau web pages cited as sources for Tables 2.5-1 through 2.5-4, 2.5-6, and 2.5-7 in the ER. The U.S. Census Bureau citations in the ER lead to a menu of tables that does not allow the reader to determine which specific table was used in each case. This information will enable NRC staff to verify the baseline demographic data.

PGN RAI ID #: L-0116

PGN Response to NRC RAI:

The population data presented in ER Section 2.5 were compiled from the U.S. Census Bureau, Census 2000 Summary Files. The information from the U.S. Census Bureau was further manipulated as described in ER Section 2.5 and the calculation LNG-0000-XOC-001, Rev. 0, "Calculation of Population Distribution," which has been made available in the Progress Energy-provided Reading Room. The data from the U.S. Census Bureau were analyzed using a geographic information system (GIS) to extract census block group or block data based on the block group or blocks location within the 10- and 50-mile sector grid.

The following U.S. Census Bureau tables were used in preparing the residential population estimates for ER Tables 2.5-1 through 2.5-4, 2.5-6, and 2.5-7:

- Table 2.5-1
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.1: Total Population for all census blocks within Levy, Citrus and Marion counties.
  2. Bureau of Economic and Business Research, Warrington College of Business, University of Florida, "Florida Statistical Abstract 2006, Fortieth Edition," Table: Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and All of Its Counties, 2005-2030 – All Races. Counties used: Levy, Citrus, and Marion.
- Table 2.5-2
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.1: Total Population for all census blocks within Levy, Citrus and Marion counties.
  2. Bureau of Economic and Business Research, Warrington College of Business, University of Florida, "Florida Statistical Abstract 2006, Fortieth Edition," Table:

Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and All of Its Counties, 2005-2030 – All Races. Counties used: Levy, Citrus, and Marion.

- Table 2.5-3
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.1: Total Population for all census blocks within Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter counties.
  2. Bureau of Economic and Business Research, Warrington College of Business, University of Florida, "Florida Statistical Abstract 2006, Fortieth Edition," Table: Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and All of Its Counties, 2005-2030 – All Races. Counties used: Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter.
- Table 2.5-4
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.1: Total Population for all census blocks within Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter counties.
  2. Bureau of Economic and Business Research, Warrington College of Business, University of Florida, "Florida Statistical Abstract 2006, Fortieth Edition," Table: Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and All of Its Counties, 2005-2030 – All Races. Counties used: Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter.
- Table 2.5-6
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.7: Race – Universe (Total Population) for all census blocks within Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter counties.
  2. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.8: Hispanic or Latino by Race – Universe (Total Population) for all census blocks within Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter counties.
- Table 2.5-7
  1. U.S. Census Bureau, American Factfinder 2001, Census 2000 Summary File 1, 100-Percent Data – Table P.52: Household Income in 1999 – Universe (Households) for all census block groups within Alachua, Citrus, Dixie, Gilchrist, Hernando, Lake, Levy, Marion, Pasco, Putnam, and Sumter counties.

Transient population estimates developed for ER Tables 2.5-1 through 2.5-4 are from multiple sources. The calculation LNG-0000-XOC-001, Rev. 0, "Calculation of Population Distribution," is available in the Progress Energy-provided Reading Room and provides the complete transient population calculation for the 10-mile and 50-mile areas.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.2-1

Text of NRC RAI: Provide a more complete description of communities around project site.

ER Section 2.5 describes community socioeconomic characteristics at the county level and provides some data for some specific communities in additional detail. However, integrated data are not provided for individual communities. To enable NRC staff to evaluate social impacts on surrounding communities, especially those closest to the site and access routes, provide a more complete description of Inglis, Yankeetown, Crystal River, and Dunnellon. For each community, provide an integrated discussion of variables such as size, population, public services and infrastructure, major sources of income and employment, and governance. Include data on housing availability, school capacity, availability of water, and wastewater treatment.

PGN RAI ID #: L-0117

PGN Response to NRC RAI:

TM 338884-TMEM-080, Rev 0, "Assessment of Community Services near Proposed Levy Nuclear Plant, Florida," which is available in the Progress Energy-provided Reading Room, provides an integrated discussion of variables such as size, population, public services and infrastructure, major sources of income and employment, and governance for the communities of Inglis, Yankeetown, Crystal River, and Dunnellon.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.2-2

Text of NRC RAI:

Provide additional detail on sources of baseline data on public services.

The ER does not cite the source of its data in Section 2.5.2.8.2 about police, fire, emergency services and medical facilities. Identify the specific agencies contacted and the information obtained in documentation that can be cited as a reference in the NRC staff's EIS. This information will enable NRC staff to verify the baseline data for public services.

PGN RAI ID #: L-0118

PGN Response to NRC RAI:

Information from ER Subsection 2.5.2.8.2 describing police, fire, emergency management services, and medical facilities capabilities was obtained from the contacts and agencies described in the following table.

	Levy	Citrus	Marion
Police	By email from Patty Galyean with the Levy County Sheriff's Office on 9/18/07	By phone calls to Judy Botts and Julie Witten with the Citrus County Sheriff's Department, and to Martha Langston with the City of Crystal River Police Department on 9/18/07	By phone call to Linda Binera with Marion County Sheriff's Department on 9/18/07, to Laurie with Dunnellon Police Department on 9/18/07, to Michelle with Belleview Police Department on 9/18/07, and to Francis Hunter in Ocala Police Department on 9/20/07
Fire	By phone calls to Fred Moody, Levy County Manager, on 9/19/07, and to Tony Turner with Inglis Fire Department #73 on 9/11/07	By phone call to Courtney Tepolt with Citrus County Fire Rescue on 9/07/07	By phone calls to Angela Kinsler and Heather Danenhower with Marion County Fire Rescue on 9/07/07, to Chris Castleberry with City of Dunnellon Fire Department on 8/31/07, and to Captain Gary Lackey with Rainbow Lakes Estates on 9/07/07

	Levy	Citrus	Marion
EMS	By phone call to Mark Johnson with Levy County EMS on 9/17/07	By phone call to Bret Lee Jordan with Citrus County EMS on 8/28/07	By phone call to Chip Wildy with Marion County EMS on 8/28/07
Medical Facilities	By phone calls to Mark Johnson with Levy County EMS on 9/17/07, to Karla Dafs with Nature Coast Hospital on 8/29/07, to Debbie Pittman with Shands Alachua General Hospital on 9/27/07, to Brenda Brown with Levy County Health Department on 9/25/07, and to Becky Mullins with Shands Teaching Hospital and Clinic on 9/27/07	By phone calls to Christian Strouken with Seven Rivers Regional Medical Center on 8/29/07, and to Charlene August with Citrus Memorial Hospital on 8/29/07	By phone calls to Sandra with West Marion Hospital on 8/29/07, to Ray Hopkins on 12/26/07, to Cynthia Peese with Monroe Regional Hospital on 12/13/07, and to Carol Jubelirer with Marion County Health Department on 9/25/07

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.2-3

Text of NRC RAI:

Provide transient population data and projections by county.

The ER currently provides transient population baseline and projections in Tables 2.5-1 through 2.5-4 by sector, but other social and economic data are provided by county. Provide transient population baseline and projections by county to enable NRC staff to evaluate potential impacts of project-related population change.

PGN RAI ID #: L-0119

PGN Response to NRC RAI:

Baseline transient population information by county is provided for the components that can be readily broken out for each county in the region. Components not readily available by county for the region include business populations, special populations, and festivals. Summary Table 1 below provides baseline seasonal populations, migrant workers, and recreational area daily capacities for each county in the region. To enable NRC staff to evaluate potential impacts of project-related transient population change, Summary Table 2 below provides the growth percentages by county. These percentages were also used to predict the transient population growth in ER Subsection 2.5.1.

Summary Table 1
Baseline Transient Populations

County In Region[a]	Alachua County	Citrus County	Dixie County	Gilchrist County	Hernando County	Lake County	Levy County	Marion County	Pasco County	Putnam County	Sumter County
Seasonal	1699	12,824	3396	948	8808	16,601	2680	12,982	36,840	7299	5639
Hotel/Motel[b]	1425	715	N/A	N/A	560	450	610	2085	220	N/A	275
Recreational Areas[c]	4496	8258	0	0	N/A	622	4854	2849	0	0	980
Migrant Workers	111	5	0	70	67	319	25	10	35	77	56

Sources: Calculation LNG-0000-XOC-001, Population Distribution. This calculation will be available in the NRC Reading Room.

Notes:

N/A = Not Available

a) Levy, Citrus, and Marion counties are within a 10-mile radius of the LNP site.

b) Hotel/motel information displayed as N/A for counties where there were no hotels/motels identified within a 50-mile radius of the LNP site.

c) Values represent the sum of daily capacities for all the recreational areas found in each regional county.

Summary Table 2

Population Projections and Growth Percentages by Decade.

Geographic	Census	Estimates [a]		Projections [b]						
Area	2000	2005		2010		2020		2030		Avg.
Alachua	217,955	240,764	10.47%	260,751	19.64%	295,115	13.18%	321,090	8.80%	13.87%
Citrus	118,085	132,635	12.32%	147,437	24.86%	173,576	17.73%	195,037	12.36%	18.32%
Dixie	13,827	15,377	11.21%	16,973	22.75%	19,820	16.77%	22,174	11.88%	17.13%
Gilchrist	14,437	16,221	12.36%	18,583	28.72%	22,734	22.34%	26,284	15.62%	22.22%
Hernando	130,802	150,784	15.28%	169,976	29.95%	204,408	20.26%	232,695	13.84%	21.35%
Lake	210,528	263,017	24.93%	313,154	48.75%	403,774	28.94%	480,109	18.91%	32.20%
Levy	34,450	37,985	10.26%	42,411	23.11%	50,271	18.53%	56,861	13.11%	18.25%
Marion	258,916	304,926	17.77%	350,923	35.54%	433,076	23.41%	501,227	15.74%	24.89%
Putnam	70,423	73,764	4.74%	76,957	9.28%	82,785	7.57%	87,677	5.91%	7.59%
Sumter	53,345	74,052	38.82%	92,211	72.86%	125,498	36.10%	154,116	22.80%	43.92%
Florida	15,982,378	17,918,227	12.11%	19,920,348	24.64%	23,475,838	17.85%	26,419,166	12.54%	18.34%

Source: Bureau of Economic and Business Research, Warrington College of Business, University of Florida, "Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and Its Counties, 2005-2030," 2006

Notes:

a) The percent growth for the county level population, 2005 Estimate, was calculated using Census 2000 population as a baseline. This percent change represents the percent growth from 2000 to 2005.

b) The percent growth for the county level population projections were calculated using the previous decade as a baseline. For example, 2010 percent growth was based on population growth from 2000 to 2010, 2020 was based on growth from 2010, and 2030 was based on growth from 2020.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures to Response to NRC:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.2-4

Text of NRC RAI: Verify the availability of water and wastewater treatment services in potentially affected counties.

ER Sections 2.5.2.8.1 and 2.5.2.8.2 provide data about sources of potable water and wastewater treatment practices by county. In Section 4.4.2.9, the ER states that the "excess capacity in housing implies that there is an excess capacity for water and wastewater services," but does not relate the capacity conclusion to data in Sections 2.5.2.8.1 and 2.5.2.8.2. Document the availability of water and capacity of wastewater treatment services in potentially affected counties. These data will enable NRC staff to assess project-related impacts on the availability of water and wastewater treatment services.

PGN RAI ID #: L-0120

PGN Response to NRC RAI:

TM 338884-TMEM-080, Rev. 0, "Assessment of Community Services near Proposed Levy Nuclear Plant, Florida" builds on the information found in the ER by providing additional documentation of current water withdrawals and projected water demands for Levy, Citrus, and Marion counties. It also specifically discusses water and wastewater capacity and services in the proximate communities, as well as two pending wastewater permit applications with FDEP. A copy of the TM is available in the Progress Energy-provided Reading Room, which should enable NRC staff to assess project-related impacts on the availability of water and wastewater treatment services.

Based on the very small increases in demand noted in ER Subsection 4.4.2.9 (based on half of the peak workforce and their families as a proportion of the 2015 projected population for each county), the existing or planned water and wastewater facilities for the impacted area described in ER Subsections 2.5.2.8.1 and 2.5.2.8.2 and in TM 338884-TMEM-080 will have adequate capacity to serve the construction workforce. Therefore, the impact of the LNP is anticipated to be SMALL.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 2.5.4-1

Text of NRC RAI:

Provide locations of block groups with specific minority populations of more than 20 percent above the state average.

Provide locations for each minority group that is found in one or more block groups within the region at a population density more than 20 percent above the state average. This will supplement data on ER Figure 2.5-14 that lumps multiple categories into a single "minority population." These data will enable NRC staff to assess potential environmental justice effects on specific minority populations.

PGN RAI ID #: L-0121

PGN Response to NRC RAI:

The attached figures (019_Attachment 2.5.4-1A.pdf and 020_Attachment 2.5.4-1B.pdf) show the respective block group locations for African-American and Hispanic populations of more than 20 percent above the state average found in the region based on the methodology described in ER Subsection 2.5.4. Minority populations are considered significant if the block group's minority population is at least 20 percentage points higher than the minority population of the geographic area chosen for comparison. The State of Florida has been chosen as the geographic comparison area for this study. Therefore, the criteria for identifying significant minority populations will be any block groups in which the minority populations exceed 20 percent above the state population of 0.3 percent of the population as American Indian or Alaskan Native; 1.7 percent Asian; 0.05 percent Native Hawaiian or other Pacific Islander; 14.6 percent African-American; 3.0 percent all other single minorities; 2.4 percent multi-racial; 22.1 percent aggregate of minority races; and 16.8 percent Hispanic ethnicity, or 20.3, 21.7, 20.05, 34.6, 23.0, 22.4, 42.1, and 36.8 percent, respectively.

The attached figures (019_Attachment 2.5.4-1A.pdf and 020_Attachment 2.5.4-1B.pdf) present the census block groups for each county from within the 80-km (50-mi.) radius that exceed the threshold for the African-American and Hispanic minority populations. The block groups shaded peach represent the minority population greater than 20 percent above the state average. There were no census block groups whose minority populations of American Indian or Alaska Native, Asian, Hawaiian or other Pacific Islander, other single race, or multi-racial exceeded 20 percent greater than the state averages or the 50 percent criteria; therefore, figures for these ethnic groups were not provided in this response.

Sixty block groups within the 80-km (50-mi.) radius have African-American populations that are 20 percent greater than the state average (or greater than 34.6 percent). Of those 60 block groups, 41 have African-American populations of 50 percent or more. There are no block groups that exceed this threshold within a 6-mile radius, with the closest block group

being located slightly south and east of the LNP in Citrus County between Dunnellon and Citrus Springs.

One census block group within the 80-km (50-mi.) radius, located in the far southeastern sector of the region near the Pasco and Hernando county lines, has Hispanic ethnicity populations that are 20 percent greater than the state average (or greater than 36.8 percent) and exceed the 50 percent criteria.

Fifty-six census block groups within the 80-km (50-mi.) radius have aggregate minority populations (includes the small populations of American Indian or Alaska Native, Asian, Hawaiian or other Pacific Islander, other single race, or multi-racial) that are 20 percent greater than the state average (or greater than 42.1 percent). Of those 56 block groups, 44 have aggregate minority populations of 50 percent or more.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 019_Attachment 2.5.4-1A.pdf and 020_Attachment 2.5.4-1B.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-1

Text of NRC RAI:

Provide data regarding the availability of construction workers, disaggregated by craft.

ER Section 2.5 provides information about available workers in the construction industry as a whole. Supplement the data in ER Table 2.5-9 by disaggregating construction workers by craft, as provided in Bureau of Labor statistics. These data are will enable NRC staff to estimate how many of the required craft workers would come from outside the region.

PGN RAI ID #: L-0122

PGN Response to NRC RAI:

This RAI supplements the data in ER Table 2.5-9 by disaggregating construction workers by craft, as provided in Bureau of Labor statistics' May 2007 National Industry-Specific Occupational Employment and Wage Estimates. These national industry-specific occupational employment and wage estimates are calculated with data collected from employers of all sizes, in metropolitan and non-metropolitan areas for North American Industry Classification System (NAICS) 237000 - Heavy and Civil Engineering Construction. NAICS 237000 consists of jobs related to:

- NAICS 237100 - Utility System Construction
- NAICS 237200 - Land Subdivision
- NAICS 237300 - Highway, Street, and Bridge Construction
- NAICS 237900 - Other Heavy and Civil Engineering Construction

NAICS 237000, Heavy and Civil Engineering Construction, includes 20 Major Groups, of which the following were selected to be summarized in Table 4.4.2-1-001 of this RAI and listed by craft in the attachment (025_Attachment 4.4.2-1A.pdf) as most representative of the trades that could be directly employed in the construction of the LNP:

- 17-0000 Architecture and Engineering Occupations
- 47-0000 Construction and Extraction Occupations
- 49-0000 Installation, Maintenance, and Repair Occupations
- 51-0000 Production Occupations
- 53-0000 Transportation and Material Moving Occupations

Table 4.4.2-1-001 summarizes the workforce for all occupations as compared with these five Major Groups for the Gainesville, FL Metropolitan Statistical Area (MSA), the Ocala, FL MSA, the Tampa-St. Petersburg-Clearwater, FL MSA, and the Northeast Florida Non-Metropolitan Statistical Areas (Non-MSA). Employment for these areas is provided in total to capture all eight counties with a majority of their land area within the LNP region; Table 4.4.2-1-001 notes which of the LNP counties are within which MSA or Non-MSA. The total employment was summed to represent the total heavy construction employment in the LNP region, as well as the percent of workers per MSA and Non-MSA.

025_Attachment 4.4.2-1A.pdf summarizes all occupations (desegregated by craft) for these five Major Groups, the occupation code (OCC-code), and total employment for each of these MSAs and Non-MSA.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 025_Attachment 4.4.2-1A.pdf.

Table 4.4.2-1-001
Summary of Representative Employment by Major Trade Groups within NAICS 237000, Heavy and Civil Engineering Construction

MSA	OCC Code	Gainesville, FL	Northeast Florida nonmetropolitan area	Ocala, FL	Tampa-St. Petersburg-Clearwater, FL	Total
Counties in MSA		Alachua and Gilchrist	Bradford, Citrus, Columbia, Dixie, Flagler, Hamilton, Lafayette, Levy, Madison, Putnam, Sumter, Suwannee, Taylor, and Union	Marion	Hernando, Hillborough, Pasco, Pinellas	
Counties with a Majority of their Area within the LNP Region		Alachua and Gilchrist	Citrus, Dixie, Levy, Sumter	Marion	Hernando	
All Occupations	00-0000	121,080	159,940	102,200	1,252,430	1,635,650
Architecture and engineering occupations	17-0000	1790	1900	1450	19,660	24,800
Construction and extraction occupations	47-0000	4790	11,960	7650	75,760	100,160
Installation, maintenance, and repair occupations	49-0000	4760	7460	4410	50,710	67,340
Production occupations	51-0000	4290	9960	7850	62,230	84,330
Transportation and material moving occupations	53-0000	4640	10,830	6800	74,870	97,140
Total		**20,270**	**42,110**	**28,160**	**283,230**	**373,770**
Percent of Total Workers		**5%**	**11%**	**8%**	**76%**	

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-2

Text of NRC RAI:

Indicate whether union or nonunion labor would be used.

The ER does not specify whether union or non-union labor would be used for construction. Indicate whether PEF or its construction management contractor intends to use union or non-union labor. This information will allow NRC staff to consider how incoming construction workers would be sourced and what their patterns of residency would be.

PGN RAI ID #: L-0123

PGN Response to NRC RAI:

Construction oversight for LNP 1 and LNP 2 will be performed by The Shaw Group, Inc. Shaw provided the following information regarding the construction workforce: "The construction workforce will be open shop. Shaw direct hires will be non-union employees."

An "open shop" is typically a workforce that does not restrict its employees to union members, whereas a "closed shop" is used to signify a workforce that employs only members of a labor union.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-3

Text of NRC RAI:

Provide the most current estimate of numbers of workers, by labor category, needed for construction; and provide revised impact analyses that reflect this estimate.

Section 4.4.2 of the ER provides an estimate of the construction workforce from 2010 through 2017, specifying welders, fabricators, carpenters, millwrights, electricians, ironworkers, laborers, and pipefitters as typical of the workforce. Verify that the ER reflects the most current estimate of numbers of workers needed for construction, according to the manufacturer of the reactor. If applicable, provide an updated estimate of workforce numbers broken down by craft labor categories used in Bureau of Labor statistics with estimated numbers of each category per year. If appropriate, revise impact analyses based on the revised estimate. These data will enable NRC staff to assess socioeconomic impacts associated with employment and population change.

PGN RAI ID #: L-0124

PGN Response to NRC RAI:

Construction oversight for LNP 1 and LNP 2 will be performed by The Shaw Group, Inc. Shaw provided 026_Attachment 4.4.2-3A.pdf, which includes their current estimated number of Shaw workers, by labor category, needed for construction of the LNP. As a result, the last column of ER Table 4.4-1 will be revised to reflect this estimate; however, these additional 300 workers (3300 - 2700 = 600/2) who will migrate in during the peak year of construction do not change the overall impact findings noted in ER Section 4.4.

Associated LNP COL Application Revisions:

1. Replace the text of ER Subsection 4.4.2 with the following text:

4.4.2 SOCIAL AND ECONOMIC IMPACTS

The following subsections discuss social and economic impacts in the vicinity and region. Impacts from both construction activities and the construction labor force are addressed.

ER Subsection 4.4.2.1 — Economic Characteristics

ER Subsection 4.4.2.2 — Tax Impacts

ER Subsection 4.4.2.3 — Social Structure

ER Subsection 4.4.2.4 — Housing

ER Subsection 4.4.2.5 — Educational System

ER Subsection 4.4.2.6 — Recreation

ER Subsection 4.4.2.7 — Public Facilities and Services

ER Subsection 4.4.2.8 — Security Services

ER Subsection 4.4.2.9 — Water and Wastewater Services

ER Subsection 4.4.2.10 — Transportation Facilities

ER Subsection 4.4.2.11 — Distinctive Communities

Social and economic impacts associated with constructing the LNP include impacts on the economy, tax and social structure, housing, educational, recreational, and public services and facilities, transportation facilities, and distinctive communities. Most of these subsection headings are self-explanatory. However, some types of impacts have been grouped together. ER Subsection 4.4.2 addresses the anticipated population settlement pattern. ER Subsection 4.4.2.1 includes a discussion of utilization of private sector regional materials, products, and services, as well as regional labor. ER Subsection 4.4.2.3 also addresses impacts on local planning-political decision processes, and ecological and land use impacts, including human displacement.

PEF anticipates that the combined construction workforce for both units will reach its peak of 3300 workers during 2014. It is estimated that the peak workforce by year during construction will be:

2010: 750 workers

2011: 1000 workers

2012: 1950 workers

2013: 3100 workers

2014: 3300 workers

2015: 2900 workers

2016: 1250 workers

2017: 100 workers

There would be a gradual ramp up in the construction workforce beginning with 700 workers during the first three quarters of the site preparation phase. This would increase to 800 workers by the end of the 18-month site preparation phase. The first quarter of the construction phase would require about 950 workers. This figure would

increase for about 30 months until it reached the peak workforce of 3300 workers for two units during the first two quarters of 2014. Thereafter, the number of workers would decline for the duration of the construction and testing periods as described in ER Subsection 1.1.7. It is anticipated that there would be a 1-year overlap between the construction workforce for LNP 2 and the operations workforce of LNP 1. A combined workforce of 600 workers is estimated for 2017 based on the 200 remaining construction workers at LNP 2 noted above and an initial operations work force of 500 for LNP 1. PEF estimates the 2008 cost of constructing LNP 1, is $5.6 billion, LNP 2 is $3.7 billion, and the transmission corridors are $2.5 billion. Financing costs add $3.4 billion to the total.

This evaluation assesses impacts of construction and of demands placed by the construction workforce on the 80-km (50-mi.) region. This assessment is limited to the construction period. In addition, to the extent of available data, and when needed for the purpose of employing conservative assumptions, impacts at smaller regions that make up one or more counties within the 80-km (50-mi.) region were evaluated. Conservative assumptions were based on avoiding overestimating positive impacts and underestimating negative impacts.

The major factor determining social and economic impacts is the number of construction workers who choose to relocate to the region. Typical construction workers anticipated to be needed for LNP construction include welders, fabricators, carpenters, millwrights, electricians, ironworkers, laborers, and pipefitters. As discussed in ER Subsection 2.5.2, the size of the total construction workforce in the region is over 39,000 workers. While unemployment rates have historically been low, the current slowdown in the construction industry, as well as efforts on the part of Workforce Florida and PEF to grow the local construction workforce within the region, supports the assumption that 50 percent of the 3300-person construction workforce will come from the existing construction workforce while the balance will migrate from outside the region. (References 4.4-001, 4.4-002, and 4.4-003) To assess the higher potential impacts of 100 percent in-migration of the construction work force multiply the results in the following discussion by two.

Because of the temporary nature of the construction jobs, it is assumed that the construction workers will tend to settle in the areas that are most accessible to a wide range in job opportunities; that are within commuting distance of the LNP site; and that have available housing, including rental properties and suitable places for motor homes. This set of assumptions has led to allocating workers to counties in the following proportions: Levy (5 percent), Citrus (17 percent), Marion (35 percent), Alachua (35 percent), Dixie (2 percent), Gilchrist (2 percent), Hernando (2 percent), and Sumter (2 percent) as presented in Table 4.4-1. These percentages are closely tied to the share of the available housing in the region, with slight adjustments for convenience of road access to the site. During peak construction, it is estimated that 1650 workers will migrate to the region (50 percent of 3300 construction workforce) and will be distributed across the region as shown in Table 4.4-1.

It is recognized that the specialized component of the construction workforce may be in relatively scarce supply both within and outside the region as the nuclear industry continues to grow. PEF and other industry representatives have initiated partnerships and created programs with schools to develop educational programs and attract students to help fill these gaps (Reference 4.4-003).

The average household size for the State of Florida (2.49) was applied to the peak assumption for incoming construction workers (1650) as a conservative assumption that some would bring their families due to the length of the construction period (Reference 4.4-004). This resulted in an estimate of 4109 people migrating to the region. Based on these estimates of changes in the workforce and demographics, likely bounds can be placed on the extent of positive and negative social and economic impacts from construction.

The economic impacts fall into the positive category because increases in jobs, earnings, and output are generally viewed as beneficial to the economic well-being of the community. The employment impacts are estimated at the regional level, but assumed to be spread over the entire 80-km (50-mi.) region based on the estimated settlement pattern as presented in Table 4.4-1. Another factor affecting the economic impacts is the share of the construction expenditures spent on the purchase of goods and services that are produced within the region. The increased spending on capital and private sector goods and materials produced within the region will positively contribute to output. However, goods and services that are imported from outside the region do not count toward the region's output. The economic analysis is based on the assumption that 50 percent of the non-labor purchases related to the construction of the AP1000 will come from outside the region due to their highly specialized character; however, PEF is committed to purchasing as much locally as is feasible.

To the extent that population shifts occur as a result of constructing the LNP site, this can cause a strain on the existing housing, roads, schools, infrastructure, and public services. An attempt was conducted to examine the potential negative impacts by using the above reasonable assumptions for allocating project-induced population shifts to each of the counties. Based on the small size of the construction workforce in relation to the population of the region, any impacts on these resources would not be apparent at the regional scale. However, closer examination of potential impacts from construction in Levy County is warranted because most of the construction activity will take place there.

Economic Characteristics

The economic impacts from construction of the LNP site depend on the new jobs that are brought to the region as well as on the purchases of private sector materials, products, and services that are produced within the region.

Employment

As stated in ER Subsection 4.4.2, the estimate of the peak workforce for the LNP site is 3300 construction workers and 50 percent of these workers would be new to the region. This would generate an additional 1650 direct jobs in the construction sector within the eight counties of the 80-km (50-mi.) region. Because this influx of new workers would spend part of their income on housing, food, entertainment, and other goods and services in the region, additional indirect jobs would be created through the multiplier effect. The value of the 2005 Regional Input-Output Modeling System (RIMS) II jobs multiplier for the construction sector in this eight-county region is 1.7. The derivation of the RIMS II multiplier is described Bureau of Economic Analysis

(BEA) (Reference 4.4-005). Based on the 1.7 job multiplier, 2805 (1650 multiplied by 1.7) new jobs would be created for the region. It is assumed that the 1155 indirect, or induced, jobs (2805 minus 1650), would be filled by workers who would be unemployed absent the project. These indirect jobs would be filled by people already residing in the 80-km (50-mi.) region.

Earnings

The average annual income for workers in heavy construction in Florida is approximately $45,919 in 2007 dollars. This estimate is for power and communications system construction contractors and was based on 2006 information developed by the Employ Florida Banner Center for Energy and Florida Agency for Workforce Innovation Labor Market Statistics Center using the price index to convert the 2006 dollars to 2007 dollars (References 4.4-003, 4.4-006, and 4.4-007). Preliminary studies by PEF indicate that additional costs should be considered when planning for total construction labor requirements and the ability to attract skilled labor. Per diems must be factored into craft compensation to compete for labor resources and performance-based or position-specific based (certifications) incentive programs are often included in the compensation package to attract and maintain a skilled labor force. An estimate of $75.8 million (45,919 multiplied by 1650) in peak earnings will be generated from construction. Along with direct earnings, there would be additional indirect earnings over the construction period through the multiplier effect. The RIMS II earnings multiplier for the construction sector is 1.57 (Reference 4.4-005). Therefore, the total earnings would increase by $119.0 million ($75.8 million multiplied by 1.57) during the peak construction year. The earnings would be lower in the nonpeak years. Total earnings in the eight counties of the 80-km (50-mi.) region were over $14 billion in 2005 (Reference 4.4-001). Overall, the peak year of construction would contribute less than 1 percent in earnings to the region.

The distribution of the new workers within the region is the primary driver for earnings impacts distribution among the eight counties. The earnings are estimated to be distributed as follows: Levy (5 percent), Citrus (17 percent), Marion (35 percent), Alachua (35 percent), Dixie (2 percent), Gilchrist (2 percent), Hernando (2 percent) and Sumter (2 percent). This increase in earnings is a temporary positive impact. After the construction period, the 1650 new construction workers are assumed to gradually migrate back out of the region or to find other jobs within the region. To the extent that the workers tend to leave the region, this will offset some of the small positive impact on jobs and earnings that was created during their tenure in the region.

Output

In addition to jobs and earnings, the construction of the LNP would contribute positively to the regional economy through purchases of private sector materials, products, and services that are produced in the region. As stated in ER Subsection 4.4.2, the total cost of constructing two units at the LNP site, including labor, is estimated at $9.3 billion in 2008 dollars. Most of the capital and materials are specialized. To the extent that they are produced outside the region, these construction expenditures would not have a positive impact on the regional economy. However, PEF, when possible, will purchase local goods and services. It is assumed

that 10 percent of the total construction costs, or $930 million over the 6-year construction period, will be for local expenditures. Based on this assumption, direct local construction expenditures would average $155 million per year ($930 million divided by 6 years) over the 6-year construction period. These direct expenditures would tend to be distributed over the eight counties in the region in rough proportion to the sizes of their existing economies. In addition to the direct expenditures, the local economy would benefit from increased indirect expenditures as a result of the multiplier effect. The RIMS II output multiplier for the eight-county region is 1.7 (Reference 4.4-005). Therefore, on average for each of the 6 years of construction, the total increase in local output would be $263 million ($155 million multiplied by 1.7).

Based on this information, a temporary, small beneficial economic impact is expected because of the increased employment of regional construction workforce and earnings, and the purchase of local goods and services.

Tax Impacts

Increased tax payments from constructing the LNP site are viewed as a benefit to the state and the local jurisdictions in the region. Construction-related activities would generate sales tax revenue from direct and indirect construction purchases, and from the purchases of households receiving wages from the direct and indirect construction jobs. Corporate income taxes are a second source of revenue for the state, while property taxes are primarily paid to Levy County. The State of Florida does not have a personal income tax. (Reference 4.4-008)

Sales Tax

As stated in ER Subsection 4.4.2, PEF estimates a peak construction labor force of 2700, and 50 percent are assumed to migrate to region with their families. During the construction period, these 1650 new workers and their families would spend part of their income in the region on taxable items from restaurants, hotels, and retail shops, contributing to tax revenue. Their expenditures would also result in higher personal income for current residents in the region as described in ER Subsection 4.4.2.1.2. As these residents experience an increase in earnings, they also would spend some of the increase in their disposable income on taxable goods in the region.

Increased sales and use tax could result from the purchase of taxable materials and services to construct the LNP site. Most of these purchases of equipment and materials will qualify for Florida's steam production and pollution control sales tax exemption. Only nonexempt purchases would be taxed. The total tax rate on taxable purchases would be 7 percent, including the 6 percent state tax, plus a 1 percent sales tax surcharge collected by Levy County.

Taxable goods and services in the state are subject to a 6 percent sales tax. The sales tax revenue is remitted to the state, which collected over $27 billion in sales tax revenue in 2006 (Reference 4.4-009). Sales and use tax collections from constructing the project will contribute less than 1 percent to Florida sales tax revenue. Some of this revenue will be returned to the counties to help fund local services.

One additional source of sales tax revenue that would accrue to local jurisdictions is the local tourism tax. To the extent that construction workers use local hotels, they would be subject to this tax, which in Levy County is 2 percent. These tax collections would be disbursed among the eight counties in the region according to the location decisions of the migrant construction workers and the shares who choose hotels instead of one of their other living arrangements as discussed in ER Subsection 4.4.2.4.

2. Replace ER Table 4.4-1 with the table provided below:

Table 4.4-1
Regional Housing and Residential Distribution for Construction Workers

County	Spatial Percent of Region	Permanent Housing	Owner Occupied Housing	Housing Units Theoretically Available to Rent or Purchase	RV/ Camping Capacity [a]	2005-2006 Mobile Homes [a]	Public Lodging Units	Total Units Available to Workers	Percent of Total Regional Units	Allocated Workers During Construction[b]
Levy[c]	20%	16,570	11,591	4979	1752	1303	936	8970	3%	83 or 5%
Citrus[d]	11%	73,609	51,176	22,433	6008	5829	2269	36,539	13%	281 or 17%
Marion[e]	24%	152,858	101,381	51,477	14,095	15,637	12,851	94,060	32%	578 or 35%
Alachua[f]	12%	106,746	51,942	54,804	3244	3545	31,771	93,364	32%	578 or 35%
Dixie	6%	7363	4498	2865	294	239	187	3585	1%	33 or 2%
Gilchrist	4%	5906	4331	1575	244	741	130	2690	1%	33 or 2%
Hernando	9%	77,423	56,709	20,714	5310	5823	2968	34,815	12%	33 or 2%
Sumter	8%	25,195	17,972	7223	5445	2577	1859	17,104	6%	33 or 2%
Total		**465,670**	**299,600**	**166,070**	**36,392**	**35,694**	**52,971**	**291,127**	--	**1650 or 100%**

Notes:

a) Data were obtained from Figure 2.5-6.

b) Reflects in-migration of 50 percent of 3300 peak construction work force.

c) Town of Inglis, 5 miles or 6 minutes, and Yankeetown, 6.6 miles or 10 minutes driving time from LNP site.

d) City of Crystal River, 15 miles or 20 minutes driving time from LNP site.

e) Town of Dunnellon, 19 miles and 27 minutes, and City of Ocala, 38 miles or 1 hour driving time from LNP site.

f) City of Gainesville, 50 miles or 1 hour 10 minutes driving time from LNP site.

Sources: References 4.4-004 and 4.4-009

Attachments/Enclosures:

See 026_Attachment 4.4.2-3A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-4

Text of NRC RAI:

Provide the most current assumptions about residential locations of incoming construction workers and provide revised impact analyses that reflect these assumptions.

Section 4.4.2 of the ER identifies the quantity of available housing by county as the key variable in estimating where incoming construction workers might reside, with limited consideration of convenient road access to the site. Explain the basis for this approach. If more appropriate, revise the residence methodology by weighting commuting time more heavily than the current level in Table 4.4-1 of the ER, to account for the fact that each county has more housing available than the expected total need for in-migrants. Provide the most current assumptions about residential locations of incoming construction workers. If the conclusions in Table 4.4-1 of the ER change as a result of a revised methodology, revise those impact analyses that relied on prior assumptions about worker residence. These data will enable NRC staff to evaluate socioeconomic impacts associated with population change.

PGN RAI ID #: L-0125

PGN Response to NRC RAI:

While ER Subsection 4.4.2 identifies the quantity of available housing by county as a key variable in estimating where incoming construction workers might reside, convenient road access to the site was also taken into consideration, as discussed in the third paragraph of ER Subsection 4.4.2. Footnotes (c) through (f) of ER Table 4.4-1 provide additional context for these assumptions by noting the fastest driving distance to the towns closest to the LNP by county. The basis for weighting the availability of housing more heavily than convenient road access is the limited likelihood that substantial amounts of new housing will be constructed prior to the start of construction of the LNP. While some construction of additional housing closer to the site is possible, it is assumed that this new construction will be limited due to the existence of an adequate supply of existing housing within a 30-minute to 1-hour drive of the LNP.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-5

Text of NRC RAI:

Present expected construction worker salaries, the basis for these estimates, and associated analyses of earnings impacts during construction.

Section 4.4.2.1.2 of the ER presents an average construction salary based on heavy construction for power and communication systems, not specifically for nuclear power construction. The ER mentions per diems and incentive programs that would be included in some compensation packages, but these are not factored into the average salary used to estimate earnings impacts. Verify the average salary presented in the ER in light of these factors, and the associated analysis of economic impacts during the construction phase. These data will enable NRC staff to assess earnings impacts during construction.

PGN RAI ID #: L-0126

PGN Response to NRC RAI:

As is reported in ER Subsection 4.4.2.1.2, "The average annual income for workers in heavy construction in Florida is approximately $45,919 in 2007 dollars. This estimate is for power and communications system construction contractors and was based on 2006 information developed by the Employ Florida Banner Center for Energy and Florida Agency for Workforce Innovation Labor Market Statistics Center using the price index to convert the 2006 dollars to 2007 dollars (References 4.4-003, 4.4-006, and 4.4-007)."

This represents the best available estimate of the construction wage, which is the more appropriate type of construction worker compensation than a "salary". Nonetheless, it is recognized that economic conditions that prevail at the time of construction may require adjustments to this figure. During boom times, it can be necessary to use incentive programs to attract construction workers. However, such incentives would not be necessary under all economic conditions. Without knowing the economic conditions that will prevail at the time of construction, the unadjusted figure is the most defensible estimate.

Estimated earnings at $45,919 times the number of construction workers over the construction period would follow the same pattern as the construction workforce employment estimates. From ER Subsection 4.4.2, this pattern is as follows:

- 2010: 750 workers – $34,439,250 direct earnings
- 2011: 1000 workers – $45,919,000 direct earnings
- 2012: 1950 workers – $89,542,050 direct earnings
- 2013: 3100 workers – $142,348,900 direct earnings
- 2014: 3300 workers – $151,532,700 direct earnings

- 2015: 2900 workers – $133,165,100 direct earnings
- 2016: 1250 workers – $57,398,750 direct earnings
- 2017: 100 workers – $4,591,900 direct earnings

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-6

Text of NRC RAI:

Identify potential traffic impacts to roads other than US-19.

The ER provides data on many federal and state roads in the region; however, it only assesses project impacts on the major north/south route closest to the site, US-19. The ER does not address impacts on east/west roads likely to see increased traffic because of use by workers and haulers, such as SR-121 and US-41. To enable NRC staff to assess impacts on traffic and transportation infrastructure other than US-19, identify potential use levels and associated traffic impacts on roads that would be used by workers and freight haulers to access US-19.

PGN RAI ID #: L-0127

PGN Response to NRC RAI:

Kimley Horn and Associates, Inc. is developing a Traffic Impact Analysis (TIA) for Shaw on behalf of PEF that will include an analysis of CR-121 and US-41. While this TIA is not yet available for inclusion in this RAI response, a copy of the report will be provided to the NRC when it is completed. It is anticipated that the TIA will be available in the second quarter of 2009.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-7

Text of NRC RAI:

Verify the assumption about an overlap of workers in operations and construction phases.

The ER on page 4-60 shows an overlap of operations workers with construction workers only in the last year of construction of LNP 2. At other facilities, one-third of operations workers come on-site for training once a training facility is built, while other construction continues. Verify the ER figures for the overlap of workers in the construction and operation phases and revise tables and conclusions, as needed, if the assumption in the ER requires correction. These data will enable NRC staff to assess impacts associated with population and employment.

PGN RAI ID #: L-0128

PGN Response to NRC RAI:

Construction oversight for LNP 1 and LNP 2 will be performed by The Shaw Group, Inc. Shaw provided Attachment 4.4.2-7A, which includes their current estimated number of workers during construction, by labor category. In addition to the Shaw-employed workers noted in the attachment, PEF anticipates assigning a maximum of 140 engineers to the LNP project during construction, of which a varying number, likely less than half, will be physically on-site at any one time. As indicated by the "UNIT 1 TESTING & STARTUP SUPPORT" and "UNIT 2 TESTING & STARTUP SUPPORT" rows in the attachment, testing will start in Q2 of 2013 for LNP 1 and Q2 of 2014 for LNP 2. These testing and startup activities for LNP 1 and LNP 2 will overlap from Q2 2014 to Q2 2016 or approximately 27 months.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 027_Attachment 4.4.2-7A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-8

Text of NRC RAI:

Provide a basis for the assumption that 100 percent of operations workers would come from outside region.

Provide a basis for the assumption in ER Section 5.8.2.1.1 that all operations phase jobs would be filled by workers from outside the region. This will allow NRC staff to determine what figures to use in assessing population and employment impacts of the operations phase. Based on the existing operations phase jobs at CREC, it seems likely that some operations phase jobs could be filled from the regional workforce.

PGN RAI ID #: L-0129

PGN Response to NRC RAI:

The assumption in ER Subsection 5.8.2.1.1 is that from 50 to 100 percent of the operation workforce will be filled by workers from outside the region. The economic impact calculations are based on the 100 percent figure, but the reader is informed that "these estimates would be halved to correspond to the lowest value (50 percent) of the migration assumption" (LNP ER Rev. 0, p. 5-126). It is reasonable to report this range due to uncertainty. However, it is worth noting that jobs that are filled by workers living in the region contribute to new employment to the extent that those workers would otherwise be unemployed or vacate jobs that are then filled by otherwise unemployed workers.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-9

Text of NRC RAI:

Quantify projected sales tax revenues.

The ER concludes in Section 4.4.2.2.1 that construction-related sales tax will be less than 1 percent of state sales tax revenue. The ER provides no estimate of sales tax for operations-related expenditures. To provide input to NRC staff's benefit-cost analysis, quantify the expected project-related sales tax revenues discussed in ER Sections 4.4.2.2.1 and 5.8.2.2.1 and explain the basis for the figures provided, specifying contributions from in-migrant worker expenditures and from owner purchase of local materials.

PGN RAI ID #: L-0130

PGN Response to NRC RAI:

The project-related sales tax revenues reflect the assumption that, as stated in ER Subsection 4.4.2.2.1, "Most of these purchases of equipment and materials will qualify for Florida's steam production and pollution control sales tax exemption." This means that there may not be a quantifiable increase in Florida sales tax revenue as a result of the owner's purchase of local materials.

To characterize the additional sales tax receipts generated by the in-migrant portion of the construction workforce, the calculations in ER Subsection 4.4.2.1.2 were revised to reflect updated peak construction workforce estimate of 3300 (see LNP ER NRC RAI 4.4.2-3). This resulted in a total earnings estimate of $119.0 million during the peak construction year. Only a portion of these earnings are available as disposable income and not all of the disposable income would be spent on goods and services in the region. Assuming 25 percent of the $119 million, or about $30 million of the expenditures, is subject to state and local sales taxes, total sales tax receipts could increase by about $2 million during the peak construction year and less during the non-peak years. About $0.29 million would go to the counties in rough proportion to the distribution of the construction workforce, as presented in ER Table 4.4-1. The remaining $1.71 million would go to the state, which would send some of the funds (0.5 percent) back to the local area to fund local services. These incremental increases in sales tax revenue represent a small benefit to the region and the state.

The results are similar for the sales tax receipts from the operations phase of the project. The increase in earnings amounts to less than 1 percent of total earnings within the region. Thus, the increase in sales tax receipts would also be less than 1 percent of total sales tax receipts in the region. This represents a small benefit to the region and the state.

Associated LNP COL Application Revisions:

Revise the first paragraph of ER Subsection 4.4.2.1.2 from:

> An estimate of $62 million (45,919 multiplied by 1350) in peak earnings will be generated from construction. Along with direct earnings, there would be additional indirect earnings over the construction period through the multiplier effect. The RIMS II earnings multiplier for the construction sector is 1.57 (Reference 4.4-005). Therefore, the total earnings would increase by $97.3 million ($62 million multiplied by 1.57) during the peak construction year. The earnings would be lower in the nonpeak years.

to:

> An estimate of $75.8 million (45,919 multiplied by 1650) in peak earnings will be generated from construction. Along with direct earnings, there would be additional induced earnings over the construction period through the multiplier effect. The RIMS II earnings multiplier for the construction sector is 1.57 (Reference 4.4-005). Therefore, the total earnings would increase by $119.0 million ($75.8 million multiplied by 1.57) during the peak construction year. The earnings would be lower in the non-peak years.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.4.2-10

Text of NRC RAI:

Provide the most current estimate of percent and value of construction supplies and materials to be purchased locally.

Provide the most current estimate of percent and value of construction supplies and materials to be purchased locally. Address the apparent contradiction of ER Section 4.4.2.1.3, referring to 10 percent; with Section 4.4.2, 2nd paragraph before ER Section 4.4.2.1; which implies that 50 percent of materials and supplies may come from within the region. If the 50 percent figure is correct, verify whether this is realistic by indicating the types, quantities, and rough value of required materials that would be available locally. These data will enable NRC staff to assess the economic impacts of construction.

PGN RAI ID #: L-0131

PGN Response to NRC RAI:

ER Subsection 4.4.2.1.3 provides the most current estimate of percent, 10 percent, and value of construction supplies and materials to be purchased locally. In a future revision of the ER, the last sentence of the 10th paragraph of Subsection 4.4.2 (LNP ER, Rev. 0, p. 4-62) will be revised to be consistent with ER Subsection 4.4.2.1.3.

Associated LNP COL Application Revisions:

In ER Subsection 4.4.2, revise the last sentence of the tenth paragraph (page 4-62 of Rev.0) from:

> The economic analysis is based on the assumption that 50 percent of the non-labor purchases related to the construction of the AP1000 will come from outside the region due to their highly specialized character;...

to:

> The economic analysis is based on the assumption that 90 percent of the non-labor purchases related to the construction of the AP1000 will come from outside the region due to their highly specialized character;...

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.7-3

Text of NRC RAI: Identify past, present, and reasonably foreseeable federal, nonfederal and private actions that could have meaningful cumulative impacts with construction of the LNP and provide information on cumulative impacts of relevant actions.

ER Section 4.7 states that the "identification of past, present, and reasonably foreseeable federal, nonfederal and private actions that could have meaningful cumulative impacts with the proposed action" and "information on cumulative impacts of relevant actions within the identified geographic area" were used to identify cumulative impacts. However, the section does not identify such actions nor provide such information. This information is needed to enable NRC staff to assess cumulative socioeconomic impacts of construction.

PGN RAI ID #: L-0132

PGN Response to NRC RAI:

Planned, Potential and Existing Projects in Area of Proposed LNP with the Potential to Affect the Construction of the LNP

The following list describes projects known as of March 2009 to be either planned or potentially implemented in the surrounding counties that include the proposed LNP.

- Proposed Expansion of CEMEX Inc.'s – Inglis Rock Quarry

An application for the creation of a special zoning district that would have exempted the Hollins property, currently leased to CEMEX, from most of the land use regulations in Citrus County, was submitted to the Citrus PDRB. After hearing objections from area residents, the PDRB accepted the staff's recommendation to deny the proposed change and this proposed denial action was forwarded to the Citrus County Board of County Commissioners. The application was subsequently withdrawn in August 2007. In May 2007, CEMEX also withdrew its application to the FDEP to expand the mine and is completing a hydrological evaluation of the area.

The proposed expansion of mining operations will require a zoning change in Citrus County to be approved by the Citrus County Board of County Commissioners. The proposed zoning change application was withdrawn by the owner of the land proposed for the mining expansion. Therefore, because no mining permit application is active, no increases in potential cumulative impacts with construction of the LNP site are anticipated.

- Proposed Tarmac King Road Limestone Mine

This proposed mining operation is expected to provide construction-grade aggregate that meets the Florida DOT specifications for buildings and infrastructure. The proposed mine is to provide this aggregate for Tarmac America's and its customer's use in the west central

area of Florida. In September 2007, the USACE Jacksonville, Florida Division received a Section 404 permit application to impact wetlands for limestone mining on a 9400-ac. site in Levy County. The mining site location is to the west of the LNP site on the west side of Highway 19 and north of the town of Inglis and the CFBC. Under the proposed action, Tamarac America plans to mine about 30 ac. a year on a tract along King Road in southern Levy County. The tract covers 4800 ac.: 800 ac. of wetlands that will be set aside; 1300 ac. for the quarry, processing plant, roads, and buffers; and the remaining 2700 ac. for mining activity over about 100 years.

The USACE determined that the proposed action could have significant impacts on the environment and that an EIS must be prepared under NEPA. According to the USACE's March 2008 scoping meeting presentation, the Draft EIS is planned for release in early 2009. As of this writing, the Draft EIS has not been released. Following a 45-day comment period from the date of the release of the Draft EIS, a Final EIS would likely be issued in late spring 2009, with a ROD anticipated in early summer 2009.

Although the Draft EIS will consider the effects on federally listed threatened and endangered species, health and safety, socioeconomics, aesthetics, general environmental concerns, wetlands (and other aquatic resources), historic properties, cultural resources, fish and wildlife values, land use, transportation, recreation, water supply and conservation, water quality, energy needs, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people, other issues identified through scoping, public involvement, and interagency coordination, the USACE is primarily concerned about the loss of wetland functions and value, mitigation of such losses, and the effect of proposed mining on groundwater and surface water quality and on transportation.

Upon approval, full mine operations are expected to begin sometime in early 2010. This proposed operation is estimated to require a local workforce of 60 during the construction phase and about 35 during regular operation. The workforce needed for construction will most likely be workers with different skill sets; therefore, the potential impact for available local workforce should be small. Tarmac anticipates that construction equipment and materials will be purchased from or provided by local suppliers. Consequently, construction activities would likely result in an increase of needed construction material supplies to accommodate building construction and framing, including complete mechanical, electrical, and life/safety systems installation. In addition, given the volatility of the market for materials and labor costs associated with any construction project, overall impacts as a result of costs will likely depend on the ability of local suppliers to maintain an adequate inventory of needed construction materials. Overall, impacts to availability and value of construction material and supplies from this project are anticipated to be small.

For Levy County, the King Road Mine would offer a significant economic boost in the form of jobs and tax revenues. The mine is expected to generate more than $1 billion in new revenue for Levy County during the first decade of operation. That revenue is a result of the combined economic impact of investments in construction, employee spending on goods and services, and job growth in other sectors. Tarmac plans for about 500 truck trips a day, exiting at King Road to U.S. 19, heading north and south, and dispersing to Gainesville, Ocala, Tampa and Orlando. This truck travel route is expected to result in minimal traffic on any county or local rounds; truck travel would rely on highways that are expected to be able to handle the extra truck traffic capacity. Traffic studies by Tarmac indicate that the additional trucks on U.S. 19 would not adversely affect local traffic.

It is anticipated that if the project is approved, the FDEP, the SWFWMD, other Florida agencies, the USACE, and other federal agencies approvals and permits would require avoidance of impacts and effective mitigation of unavoidable impacts. Additionally, it is highly unlikely that permits would be issued that allow adverse impacts to occur. The magnitude of potential direct and secondary impacts with construction of the LNP is unknown until the ROD and other final agency actions are issued.

- Hydropower Project, FERC Project No. 12783 Draft License Application

Inglis Hydropower, LLC, proposes to install electrical generation at the existing Inglis Bypass Spillway. The project plans to generate 2000 kilowatts and use existing facilities to minimize or eliminate additional environmental impacts. The project would make use of the existing Inglis Bypass Spillway. The spillway is presently and will continue to be owned by the State of Florida with the needed land for the project to be leased from the State. Proposed project facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and an existing transmission line.

The proposed hydropower project plans to coordinate with SWFWMD during periods of high tides to regulate flow through the project and, therefore, is not expected to add to tidal flooding or change the flow of water that passes down the river. The proposed power project is also expected to use minimal excavation depth and not cause a change in flow in the Withlacoochee River flow, thereby having no effect on the Floridan aquifer. The proposed project will not involve consumptive water use and is not expected to have an impact on exiting or proposed uses of the project water, including the Withlacoochee River and its drainage basin, Lake Rousseau, and CFBC. The proposed project is not expected to change the existing downstream gradient.

The Bypass Channel and spillway area support a variety of recreational activities, including hiking, jogging, biking, bird watching, picnicking, and fishing. Boating is not allowed in the Bypass Channel but is allowed in the river below the project. The area along the Bypass Channel and spillway is currently used primarily for fishing. There are also several shelters with picnic tables near the banks of the channel. Foot traffic access across the spillway bridge to the south side of the channel will be maintained during and after project construction. The public access road to the park may be restricted from time to time during construction but it will be temporary and of short duration. The project is not expected to need any other public services.

This project will not have any significant impact on land use. The dam and impoundment already exist. Any noise from the project will be much less than the noise now coming from the water falling at the spillway. The additional structures are similar to the bypass spillway and are not significant in terms of overall land use. The proposed land uses are consistent with existing and historical uses of the project area as a water control facility. The project is too small to cause significant secondary changes in land use, such as commercial or residential development.

This project will have socio-economic benefits. This project will generate electrical energy for approximately 2,000 homes without burning fossil fuels, creating solid wastes, discharging wastewater, or resulting in air emissions. Ultimately, the project will be help to reduce dependence on foreign fossil fuels. Construction of the project will result in the employment of 5 to 10 full-time employees and numerous sub-trades from the area. Once construction is completed, the project will have one full-time and several part-time employees. The project will pay tangible personal property tax to both Levy County and the Town of Inglis totaling

over $30,000 per year. Inglis Hydropower is a Florida company, so economic benefits will remain in the area. Because Inglis Hydropower is a Florida company, it is anticipated that construction equipment and materials will be purchased from or provided by local suppliers. The scale of this project is not expected to pose cumulative impacts with the overall construction of the LNP.

In addition, there is a separate hydropower project on the Bypass Channel by the Southern Hy-Power Corporation. The Southern Hy-Power Corporation has an existing lease from the State of Florida for 0.61 ac. This project is in addition to, and potentially could compete with, the Inglis Hydropower, LLC project; however, Southern Hy-Power Corporation's project is neither actively pursuing permits nor has a preliminary permit or exemption from licensing from the Federal Energy Regulatory Commission (FERC).

- Suncoast Parkway Expansion

The Suncoast Parkway, a four-lane toll road (also known as Toll Road 589), currently extends from the Veterans Expressway in Tampa to U.S. Highway Hernando-Citrus county line, a distance of approximately 42 miles. The proposed Suncoast Parkway would extend northward approximately 27 miles through Hernando and Citrus counties. The FTE organization is now proceeding toward 60% design plans. It is anticipated that a public hearing on the design will be scheduled for late spring of 2009. The public hearing timeframe is subject to change based on design activities.

Based on the alignment map provided by the FTE, it appears the project will stop short (south) of the CFBC. Potential secondary impacts of induced development growth by the Suncoast Parkway Expansion (also known as Toll Road 589) project cannot be predicted with certainty and will be based on general future national and state economic activity, future human population movement patterns, and county and local planning and zoning activities. After evaluating its ridership and revenue forecasts and projected continued reduction in revenues, the FTE has determined that, upon completion of the 60% design phase, the Suncoast Parkway Phase 2 project will be suspended. Therefore, it is anticipated that this roadway project will not contribute to cumulative impacts with construction of the LNP.

- Widening of Route 19 Bridge Crossing the CFBC

This FDOT project is designed to allow for the construction of two additional lanes on the Route 19 bridge across the CFBC. The plan is to add another two-lane bridge immediately west and adjacent to the existing two-lane bridge span. When completed, four lanes of bridge crossing will exist over the CFBC. The new span, like the existing span, will be supported by on-shore pilings on both the north and south approaches to the new bridge. Therefore, the potential impacts of the new bridge will be limited to short-term runoff and erosion impacts from construction activities and long-term potential oil, grease and sediment contaminant impacts from road runoff.

The short-term impacts will be mitigated by the required use of erosion and runoff control devices and by the low erosion potential of the existing sandy and shell fragment sediments in the proposed road approach and bridge abutment/piling construction areas. Long-term runoff impacts will be mitigated by the direction of road runoff to a collection system that directs runoff towards the north and south ends of the new bridge span and away from direct flows to the CFBC.

The project is in the early construction phase, and road preparation for the approaches to the new bridge was underway as of the week of February 20, 2009. The exact schedule for completion was not available from publicly accessible FDOT information. The projected completion date for this effort is expected to be fall 2010. Due to the expected completion date, it is anticipated that this roadway project will not contribute to or add measurable cumulative impacts with construction of the LNP.

- Proposed Filling of the Inglis Lock

This project was originally proposed by the FDEP to allow for the permanent closing of the Inglis Lock, since the cost of repairs and future maintenance was above projected future budget limitations. However, following 2008 permit approval from the USACE, FDEP removed this potential project from future planning due to state budget shortfalls. The previously completed bulkhead re-enforcement will now serve as the permanent closing mechanism until future state budgets allow for re-consideration of the filling option. Therefore, at the present time, no increases in potential cumulative impacts with construction of the LNP are anticipated.

Potential to Affect the Percent and Value of Construction Supplies Locally Purchased from Listed Projects

- Proposed Expansion of the CEMEX Inc.—Inglis Rock Quarry
- Proposed Tarmac King Road Limestone Mine
- Hydropower Project, FERC Project No. 12783 Draft License Application
- Suncoast Parkway Expansion
- Widening of Route 19 Bridge Crossing the CBFC
- Proposed Filling of the Inglis Lock

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.11-1

Text of NRC RAI: Provide information on cumulative impacts of actions that were identified as reasonably foreseeable federal, nonfederal and private actions that could have meaningful cumulative impacts with operation of the LNP.
ER Section 5.11.1.2 refers to discussions of land use plans and regional developments that identify actions that could have cumulative impacts with operation of LNP. It does not provide information about the expected impacts of those actions. This information is needed for NRC staff to verify ER conclusions about cumulative socioeconomics impacts of operation.

PGN RAI ID #: L-0133

PGN Response to NRC RAI:

Planned, Potential and Existing Projects in Area of Proposed LNP with the Potential to Affect LNP Operation

The following list describes projects known as of March 2009 to be either planned or potentially implemented in the surrounding counties that include the proposed LNP.

- Proposed Expansion of CEMEX Inc.'s Inglis Rock Quarry

An application for the creation of a special zoning district that would have exempted the Hollins property, currently leased to CEMEX, from most of the land use regulations in Citrus County, was submitted to the Citrus PDRB. After hearing objections from area residents, the PDRB accepted the staff's recommendation to deny the proposed change and this proposed denial action was forwarded to the Citrus County Board of County Commissioners. The application was subsequently withdrawn in August 2007. In May 2007, CEMEX also withdrew its application to the FDEP to expand the mine and is completing a hydrological evaluation of the area.

The proposed expansion of mining operations will require a zoning change in Citrus County to be approved by the Citrus County Board of County Commissioners. The proposed zoning change application was withdrawn by the owner of the land proposed for the mining expansion. Therefore, because no mining permit application is active, no increases in potential cumulative impacts with operation of the LNP site are anticipated.

- Proposed Tarmac King Road Limestone Mine

This proposed mining operation is expected to provide construction-grade aggregate that meets the Florida DOT specifications for buildings and infrastructure. The proposed mine is to provide this aggregate for Tarmac America's and its customer's use in the west central area of Florida. In September 2007, the USACE Jacksonville, Florida Division received a Section 404 permit application to impact wetlands for limestone mining on a 9400-ac. site in Levy County. The mining site location is to the west of the LNP site on the west side of Highway 19 and north of the town of Inglis and the CFBC. Under the proposed action, Tamarac America plans to mine about 30 ac. a year on a tract along King Road in southern

Levy County. The tract covers 4800 ac.: 800 ac. of wetlands that will be set aside; 1300 ac. for the quarry, processing plant, roads, and buffers; and the remaining 2700 ac. for mining activity over about 100 years.

The USACE determined that the proposed action could have significant impacts on the environment and that an EIS must be prepared under NEPA. According to the USACE's March 2008 scoping meeting presentation, the Draft EIS is planned for release in early 2009. As of this writing, the Draft EIS has not been released. Following a 45-day comment period from the date of the release of the Draft EIS, a Final EIS would likely be issued in late spring 2009, with a ROD anticipated in early summer 2009.

Although the Draft EIS will consider the effects on federally listed threatened and endangered species, health and safety, socioeconomics, aesthetics, general environmental concerns, wetlands (and other aquatic resources), historic properties, cultural resources, fish and wildlife values, land use, transportation, recreation, water supply and conservation, water quality, energy needs, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people, other issues identified through scoping, public involvement, and interagency coordination, the USACE is primarily concerned about the loss of wetland functions and value, mitigation of such losses, and the effect of proposed mining on groundwater and surface water quality and on transportation.

Upon approval, full mine operations are expected to begin sometime in early 2010. This proposed operation is estimated to require a local workforce of 60 during the construction phase and about 35 during regular operation. Tarmac anticipates that construction equipment and materials will be purchased from or provided by local suppliers.

For Levy County, the King Road Mine would offer a significant economic boost in the form of jobs and tax revenues. The mine is expected to generate more than $1 billion in new revenue for Levy County during the first decade of operations. That revenue is a result of the combined economic impact of investments in construction, employee spending on goods and services, and job growth in other sectors. Tarmac plans for about 500 truck trips a day, exiting at King Road to U.S. 19, heading north and south, and dispersing to Gainesville, Ocala, Tampa and Orlando. This truck travel route is expected to result in minimal traffic on any county or local rounds; truck travel would rely on highways that are expected to be able to handle the extra truck traffic capacity. Traffic studies by Tarmac indicate that the additional trucks on U.S. 19 would not adversely affect local traffic.

It is anticipated that if the project is approved, the FDEP, SWFWMD, other Florida agencies, the USACE, and other federal agencies approvals and permits would require avoidance of impacts and effective mitigation of unavoidable impacts. Additionally, it is highly unlikely that permits would be issued that allow adverse impacts to occur. The magnitude of potential direct and secondary impacts with operation of the LNP is unknown until the ROD and other final agency actions are issued.

- Hydropower Project, FERC Project No. 12783 Draft License Application

Inglis Hydropower, LLC, proposes to install electrical generation at the existing Inglis Bypass Spillway. The project plans to generate 2000 kilowatts and use existing facilities to minimize or eliminate additional environmental impacts. The project would make use of the existing Inglis Bypass Spillway. The spillway is presently and will continue to be owned by the State of Florida with the needed land for the project to be leased from the State. Proposed project

facilities and components include a new powerhouse, intake structure, penstock, intake and discharge channels, turbines, and an existing transmission line.

The proposed hydropower project plans to coordinate with SWFWMD during periods of high tides to regulate flow through the project and is therefore not expected to add to tidal flooding or change the flow of water that passes down the river. The proposed power project is also expected to use minimal excavation depth and not cause a change in flow in the Withlacoochee River flow, therefore have no effect on the Floridan aquifer. The proposed project will not involve consumptive water use and is not expected to have an impact on exiting or proposed uses of the project water, including the Withlacoochee River and its drainage basin, Lake Rousseau, and CFBC. The proposed project is not expected to change the existing downstream gradient.

The Bypass Channel and spillway area supports a variety of recreational activities including hiking, jogging, biking, bird watching, picnicking, and fishing. Boating is not allowed in the Bypass Channel but is allowed in the river below the project. The area along the Bypass Channel and spillway is currently used primarily for fishing. There are also several shelters with picnic tables near the banks of the channel. Foot traffic access across the spillway bridge to the south side of the channel will be maintained during and after project construction. The public access road to the park may be restricted from time to time during construction but it will be temporary and of short duration. The project is not expected to need any other public services.

This project will not have any significant impact on land use. The dam and impoundment already exist. Any noise from the project will be much less than the noise now coming from the water falling at the spillway. The additional structures are similar to the bypass spillway and are not significant in terms of overall land use. The proposed land uses are consistent with existing and historical uses of the project area as a water control facility. The project is too small to cause significant secondary changes in land use such as commercial or residential development.

This project will have socio-economic benefits. This project will generate electrical energy for approximately 2,000 homes without burning fossil fuels, creating solid wastes, discharging wastewater, or resulting in air emissions. Ultimately, the project will help reduce dependence on foreign fossil fuels. Construction of the project will result in the employment of 5 to 10 full-time employees and numerous sub-trades from the area. Once construction is completed, the project will have one full-time and several part-time employees. The project will pay tangible personal property tax to both Levy County and the Town of Inglis totaling over $30,000 per year. Inglis Hydropower is a Florida company, so economic benefits will remain in the area. The scale of this project is not expected to pose cumulative impacts with the operation of the LNP.

In addition, there is a separate hydropower project on the Bypass Channel by the Southern Hy-Power Corporation. The Southern Hy-Power Corporation has an existing lease from the State of Florida for 0.61 ac. This project is in addition to, and potentially could compete with, the Inglis Hydropower, LLC project; however, Southern Hy-Power Corporation's project is neither actively pursuing permits nor has a preliminary permit or exemption from licensing from the FERC.

- Suncoast Parkway Expansion

The Suncoast Parkway, a four-lane toll road (also known as Toll Road 589), currently extends from the Veterans Expressway in Tampa to U.S. Highway Hernando-Citrus county line, a distance of approximately 42 miles. The proposed Suncoast Parkway would extend northward approximately 27 miles through Hernando and Citrus counties. The FTE organization is now proceeding toward 60% design plans. It is anticipated that a public hearing on the design will be scheduled for late spring of 2009. The public hearing timeframe is subject to change based on design activities.

Based on the alignment map provided by the FTE, it appears the project will stop short (south) of the CFBC. Potential secondary impacts of induced development growth by the Suncoast Parkway Expansion (also known as Toll Road 589) project cannot be predicted with certainty and will be based on general future national and state economic activity, future human population movement patterns, and county and local planning and zoning activities. After evaluating its ridership and revenue forecasts and projected continued reduction in revenues, the FTE has determined that, upon completion of the 60% design phase, the Suncoast Parkway Phase 2 project will be suspended. Therefore, it is anticipated that this roadway project will not contribute to cumulative impacts with operation of the LNP.

- Widening of Route 19 Bridge Crossing the CFBC

This FDOT project is designed to allow for the construction of two additional lanes on the Route 19 bridge across the CFBC. The plan is to add another two-lane bridge immediately west and adjacent to the existing two-lane bridge span. When completed, four lanes of bridge crossing will exist over the CFBC. The new span, like the existing span, will be supported by on-shore pilings on both the north and south approaches to the new bridge. Therefore, the potential impacts of the new bridge will be limited to short-term runoff and erosion impacts from construction activities and long-term potential oil, grease and sediment contaminant impacts from road runoff.

The short-term impacts will be mitigated by the required use of erosion and runoff control devices and by the low erosion potential of the existing sandy and shell fragment sediments in the proposed road approach and bridge abutment/piling construction areas. Long-term runoff impacts will be mitigated by the direction of road runoff to a collection system that directs runoff towards the north and south ends of the new bridge span and away from direct flows to the CFBC.

The project is in the early construction phase, and road preparation for the approaches to the new bridge was underway as of the week of February 20, 2009. The exact schedule for completion was not available from publicly accessible FDOT information. The projected completion date for this effort is expected to be fall 2010. Due to the expected completion date, it is anticipated that this roadway project will not contribute to or add measurable cumulative impacts with operation of the LNP.

- Proposed Filling of the Inglis Lock

This project was originally proposed by the FDEP to allow for the permanent closing of the Inglis Lock, since the cost of repairs and future maintenance was above projected future budget limitations. However, following 2008 permit approval from the USACE, FDEP removed this potential project from future planning due to state budget shortfalls. The previously completed bulkhead re-enforcement will now serve as the permanent closing mechanism until future state budgets allow for re-consideration of the filling option.

Therefore, at the present time, no increases in potential cumulative impacts with operation of the LNP are anticipated.

- County Comprehensive Land Use Plans

Each of the three counties (Levy, Citrus, and Marion) located within the LNP project site have prepared comprehensive land use plans that discuss the current and future land use classifications. Current and future land use classifications are part of comprehensive land use plans developed at the local level in the State of Florida. The comprehensive land use plans are discussed in ER Chapter 2.

As a result of the potential impacts from the listed projects, it is expected that the largest changes between current and future land use types will be the reduction in agricultural land and forested wetlands. The largest increases in land use types are anticipated to be in the medium and low density residential categories. These changes, including commercial, industrial, public/quasi-public, and recreational uses, are expected to change in the LNP project vicinity at a rate dependent upon population growth, the overall economy, and government decisions. As development occurs and land uses change in the LNP project vicinity, it is expected that open space will be preserved by a number of measures.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 5.8.2-1

Text of NRC RAI:

Provide an explanation for how the projected distribution of operations workers was developed.

The ER estimates that most operations workers would live in Levy, Marion and Citrus counties because of the proximity to the site. Provide an explanation as to why commute time is the primary factor for where operations workers would live. Is the projected distribution of operations workers shown in ER Section 5.8.2.4 consistent with the distribution of current workers at CREC? This information will enable NRC staff to assess operations impacts associated with population.

PGN RAI ID #: L-0134

PGN Response to NRC RAI:

Commute time was only one of the factors considered for the distribution of the operation workforce with in the region. ER Subsection 5.8.2 (LNP ER, Rev. 0, p. 5-125) notes:

> The rationale for this assumed distribution is that the LNP site is located at the apex of these three surrounding counties, and there is sufficient availability of housing units to accommodate the operations workforce and their families.

With sufficient housing and a range of amenities provided in the vicinity of the LNP, it is reasonable to assume that most of the operation workforce will choose to live within Levy, Marion, and Citrus counties versus regularly commuting over an hour to work (see ER Table 4.4-1). This distribution of 90 percent of the workers to the three vicinity counties is further supported by the current CREC workforce distribution, of which approximately 83 percent reside nearby in Citrus County.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.4.1-1

Text of NRC RAI:

Provide a detailed description as to how impact levels were determined for system alternatives.

Provide a detailed description of the bases for determination of the level of impact (SMALL, MODERATE, and LARGE) for system design alternatives.

PGN RAI ID #: L-0135

PGN Response to NRC RAI:

The basis for the determination of the level of impact (SMALL, MODERATE, and LARGE) for the system design alternatives described in LNP ER Subsection 9.4.1 is identified in LNP ER Subsection 9.2.2 as follows:

> Throughout this chapter, environmental impacts of the alternatives are assessed using the NRC three-level standard of significance: SMALL, MODERATE, or LARGE. This standard of significance was developed using the Council on Environmental Quality guidelines set forth in the footnotes to Table B-1 of 10 Code of Federal Regulations (CFR) 51, Subpart A, Appendix B:
>
> **SMALL** — Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are considered SMALL.
>
> **MODERATE** — Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
>
> **LARGE** — Environmental effects are clearly noticeable and are sufficient to destabilize any important attributes of the resource.
>
> The impact categories evaluated in this chapter are the same as those used in the GEIS, NUREG-1437, Volumes 1 and 2.

The specific level of impact for the system design alternatives (heat dissipation, circulating water, and power transmission) described in LNP ER Section 9.4 are identified as follows:

The selected heat dissipation system would have SMALL to MODERATE impacts based on the discussion contained in LNP ER Subsection 9.4.1 and in LNP ER Table 9.4-1 "Summary of Environmental Impacts of the Heat Dissipation System Alternatives."

The selected circulating water system (cooling water intake structure and associated pipelines for the makeup water at the CFBC) would have a SMALL to MODERATE impact due to the impacts described throughout LNP ER Subsection 9.4.2.1.

Overall, the transmission system would have an overall SMALL impact since existing corridors and existing PEF-owned or other ROWs are expected to be utilized, as described in LNP ER Subsection 9.4.3. Line construction activities will include erosion control, ROW preparation, construction and placement of foundations, assembly and erection of structures, and installation of conductors. In its ROW selection and construction of the new lines, PEF will minimize effects on human populations, water bodies and wetlands, archaeological and historic sites, vegetation, and wildlife to the extent practicable by complying with state and federal regulatory requirements, including the specifications in the current Florida DOT Utility Accommodation Manual. To the extent PEF is able to locate the proposed transmission lines, either wholly or partly, within existing ROWs, the use of adjacent undisturbed areas will be minimized. In general, the entire width of the ROW will be completely cleared except in wetlands. For areas where existing ROW widths are insufficient for placement of the proposed transmission lines, additional clearing will be necessary. Clearing will be determined by existing conditions, environmental constraints, and line design requirements. The actual ROW width and alignment within the corridors will depend on adjacent land uses, property boundaries, ownership patterns, structure types and height and span lengths. In general, activities related to construction and water body crossings in the transmission corridors will follow regulatory and permit requirements; erosion and sediment control measures, revegetation practices for disturbed land; approved BMPs, and practices that result in minimized clearing and ground disturbance.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.4.1-2

Text of NRC RAI:

Provide additional explanation for why once-through cooling is not a viable option.

1. ER Section 9.4.1.1 states: "Based on the LNP configuration and size, the once-through cooling alternative would not support the cooling requirements for the LNP." This statement seems to imply that a once-through system may be incapable of supporting the proposed generation capacity. Provide an explanation for why once-through cooling is not a viable option.

2. ER Section 9.4.1.1 states: "Once-through cooling would pose risks of thermal effects and have the potential to damage aquatic organisms. Therefore, this alternative is subject to the requirements of the 316(b) Phase I rules governing new power generating facilities. USEPA regulations (40 CFR 125) governing CWIS under Section 316(b) of the Clean Water Act (CWA) make the use of once-through cooling systems difficult for steam power generating facilities. As a result, once-through cooling water would require approval from the USEPA Regional Director. For these reasons, impacts from once-through cooling systems were considered SMALL to LARGE, and therefore, were eliminated from further consideration." Explain how impacts from a once-through cooling system were determined to range from SMALL to LARGE.

PGN RAI ID #: L-0136

PGN Response to NRC RAI:

The NRC requested clarification to adequately describe the reasons why once-through cooling is not a viable option, regarding the following statement in ER Subsection 9.4.1.1.1: "Based on the LNP configuration and size, the once-through cooling alternative would not support the cooling requirements for the LNP" and "Explain how impacts from a once-through cooling system were determined to range from SMALL to LARGE."

The environmental impacts associated with the once-through cooling heat dissipation system are described as follows: Land use impacts would be SMALL due to the on-site requirements of land and terrain considerations; water use impacts would be LARGE due to the volume of makeup water and the potential impacts to aquatic biota from the intake system; atmospheric impacts would be SMALL to MODERATE due to waste heat fogging associated with the discharge canal; thermal and physical effects would be LARGE due to the size of the intake and discharge structures, as well as the quantity of offshore piping; legislative restrictions are complex due to the potential compliance issues regarding Section 316(b) of the Clean Water Act and compliance with NPDES thermal discharge requirements surrounding discharge back into the CREC discharge canal. This alternative is subject to the requirements of the 316(b) Phase I rules governing new power generating facilities. EPA regulations (40 CFR 125) governing CWIS under Section 316(b) of the Clean Water Act

(CWA) make the use of once-through cooling systems difficult for steam power generating facilities. As a result, the use of a once-through cooling water system would require approval from the EPA Regional Director. The overall environmental impacts associated with the use of a once-through cooling system would be LARGE due to the reasons discussed above. Therefore, the use of a once-through cooling system is not a viable cooling system option and was eliminated from further consideration. A summary of the environmental impacts of the once-through cooling heat dissipation system alternative is provided in ER Table 9.4-1.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.4.2-1

Text of NRC RAI:

Provide descriptions of: 1. all alternatives for the intake system, 2. how the additional LNP blowdown discharge may impact operational flexibility of CREC, and 3. how alternative water treatment systems were considered.

ER Section 9.4.2.1 describes the alternative intake systems for the LNP project. NRC staff needs the following additional information to have a complete understanding of all alternatives that PEF considered and the bases for why some alternatives were rejected:

1. Provide a description of all alternatives for the intake system considered for the proposed LNP facility. Also provide a description of the bases used to reject alternatives other than the proposed intake system.
2. ER Section 9.4.2.1.1.3 states: "There is the potential that NPDES permit compliance would be an issue with the blowdown to the CREC discharge canal. The CREC discharge canal receives discharge from the five CREC generating units, and additional loading of this system could limit operational flexibility. CREC has implemented helper cooling towers to meet thermal limits without cutting back on power generation." Provide a description of how the additional LNP blowdown to the CREC discharge canal may impact operational flexibility of CREC.
3. Provide a description of alternative water treatment systems considered. Also provide a description of the bases used to reject alternatives other than the proposed water treatment system.

PGN RAI ID #: L-0137

PGN Response to NRC RAI:

1. Several potential intake (makeup) water alternatives were identified based on a preliminary consideration of engineering, regulatory, and environmental factors. In evaluating these makeup water alternatives, a simple ranking system was employed, the intent of which was to allow the information associated with each alternative to be summarized and compared on a relative basis. Some of the factors used in the analysis involved subjective considerations based on a combination of available information and best professional judgment.

Key environmental considerations in determining the viability of source water alternatives were the ability to route a pipeline to the source location, water quantity, the reliability of future supply, water quality, and environmental impacts. The overall feasibility of a given makeup water alternative included the consideration of a variety of factors, including the following:

- Quantity/Quality – Refers to the availability of water in sufficient quantity and of sufficient quality to support the proposed project.

- Engineering – Refers to the perceived degree of difficulty in implementing and constructing a given alternative.
- Natural Resources – Refers to the perceived potential affect of a given alternative on the natural environment.
- Regulatory – Refers to the perceived degree of difficulty in obtaining required regulatory permits and/or approvals.
- Cost – Evaluates the potential cost of a given alternative.

PEF identified and considered freshwater and saltwater alternatives for the source of LNP's makeup water, as set forth in Tables 9.4.2-1-001 and 9.4.2-1-002, respectively. The tables summarize each makeup water alternative evaluated by PEF.

Table 9.4.2-1-001
Summary of Freshwater Makeup Water Alternatives Considered for LNP

Alternative	Description
Surficial Aquifer	Generally extends to a depth of 6.1 to 12.2 m (20 to 40 ft.). Limited capacity of the surficial aquifer would not supply sufficient makeup water to the LNP and therefore was not considered as a viable alternative.
Upper Floridan Aquifer	An unconfined or semi-confined aquifer extending from approximately 15.2 to 182.9 m (50 to 600 ft.) and probably contains freshwater in the upper 61.0 to 91.4 m (200 to 300 ft.), and the water is expected to be more brackish with depth.
Lower Floridan Aquifer	Extends from approximately 243.8 m (800 ft.) to approximately 548.6 m (1800 ft.).
Fresh Surface Water	The Withlacoochee River and Lake Rousseau are the fresh surface waters within the LNP site vicinity. The Withlacoochee River is designated as an Outstanding Florida Water (OFW) and is therefore afforded a high degree of regulatory protection. The Withlacoochee River Basin Board has made the restoration of Lake Rousseau and the Lower Withlacoochee River a priority in their Fiscal Year 2006 Basin Priorities Statement. Additionally, both surface waters contribute to the Green Swamp, a major groundwater recharge area.
Reuse Water	Generally considered domestic or industrial treated wastewater considered for alternative uses to offset the demand of potable water. Because there is a relatively low population and little industry in the region, the review identified no sources of reuse water in the LNP site vicinity sufficient to support LNP requirements. Reuse of municipal wastewater, if it were available, is consistent with state policy and would be strongly supported by the regulatory agencies; however, challenges may occur when considering the concentration and disposal aspects of a reuse water source. Nutrient concentrations could be a significant issue, depending on the location of the blowdown discharge.

Table 9.4.2-1-002
Summary of Saltwater Makeup Water Alternatives Considered for LNP

Alternative	Description
CFBC near Inglis Lock	Makeup water pipeline would draw water from the CWIS located on the CFBC just below the Inglis Lock, near the upstream end of the CFBC.
Nearshore of Withlacoochee Bay	A makeup water pipeline would extend into Withlacoochee Bay, within 1.6 km (1 mi.) of the shoreline. The specific location and design would be selected to meet environmental and engineering criteria. The dredged portions of the CFBC extend into Withlacoochee Bay and beyond.
Offshore of Withlacoochee Bay	A makeup water pipeline would connect to the CWIS located in coastal waters at a distance 4.8 to 8 km (3 to 5 mi.) from the Withlacoochee Bay shore. The specific location would be selected to meet environmental and engineering criteria. The dredged portions of the CFBC extend into the Withlacoochee Bay and beyond.
CREC Intake Canal	Draw makeup water from the CREC intake canal.
CREC Discharge Canal	Draw makeup water from the CREC discharge canal.

A discussion of the freshwater and saltwater makeup source water alternatives is presented in ER Subsections 9.4.2.1.1.1 and 9.4.2.1.1.2, respectively. In addition, a detailed evaluation of potential sources of makeup water is presented in the TM 338884-TMEM-073, Rev. 0, "Environmental Review of Potential Cooling Tower Makeup Water Sources and Blowdown Alternatives, Levy Nuclear Plant (LNP), Levy County, Florida" (June 30, 2008). This TM is available in the Progress Energy-provided Reading Room.

2. The CREC discharge canal is currently permitted for discharge (Crystal River Plant Units 1, 2, and 3–Permit No. FL0000159; Crystal River Plant Units 4 and 5–Permit No. FL0036366). The CREC point of discharge is located at latitude 28°58'00" N, longitude 82°41'40" W. One of the CREC permits will be modified to include the LNP discharge.

Blowdown from the proposed LNP cooling tower will be discharged into the CREC discharge canal. The LNP discharge will be permitted to discharge into the CREC system as an internal point of discharge. Additionally, the total residual chemical concentrations in the discharges to the Gulf will be subject to discharge permit limits established by the FDEP in an approved NPDES permit. Additional permit modifications for the CREC facility are anticipated as a result of this application but will be filed separately when those permits are renewed in their next cycle. The LNP project is consistent with the following permit conditions under applicable Florida antidegradation considerations:

- Specifically, by having an internal discharge to the CREC facility, the potential environment impacts have already been accounted for in an existing NPDES permit.
- The expected LNP discharge temperature is lower than the CREC permit limits, and in fact, the LNP discharge is expected to cool the existing flows.
- The LNP discharge is expected to have a minor affect on existing CREC discharge conditions and no significant impacts to aquatic biota in the CREC discharge canal vicinity are expected.

- There is no surface water improvement and management (SWIM) plan in place for the CREC discharge canal. Therefore, the LNP discharge to the CREC discharge canal is designed to avoid any SWIM or other sensitive water bodies.

3. A description of the proposed intake water treatment system (cooling water) is provided in LNP ER Subsection 3.3.2.

The LNP discharges will typically include, but are not limited to, cooling tower blowdown, liquid waste, and treated sanitary waste. These discharge streams are typically monitored for multiple constituents, such as temperature, flow, pH, fecal coliform, free available chlorine, oxidants, total residual chlorine, total suspended solids, hydrazine, oil and grease, total nickel, total manganese, total chromium, total zinc, total copper, total nitrogen, total phosphorus, total mercury, total selenium, and total iron. For wastes discharged to surface waters, PEF comply with an NPDES permit issued by the FDEP. The chemicals that will be used will be subject to review and approval for use by the FDEP.

Sargent & Lundy performed an engineering evaluation to select water treatment chemicals for the Circulating Water System (CWS) as well as other systems in support of a COLA for Levy. In this evaluation, Sargent & Lundy considered various alternatives. In general, the specific types of treatment chemicals were selected based on an evaluation of water chemistry and treatment requirements, accepted industry practices, and relevant industry operating experience with similar waters.

A detailed discussion of the alternatives considered and the rationale for treatment chemical selection was described in "Evaluation of Oxygen Scavenger, pH Control Agent, Potable Water Biocide, and Cooling Water Chemicals" (see 042_Attachment 9.4.2-1A.pdf). Evaporation of water from cooling towers leads to an increase in chemical and solids concentrations in the circulating water, which in turn increases scaling tendencies of the water. A water treatment system would be required at the LNP to minimize bio-fouling, prevent or minimize growth of bacteria (especially *Legionella*, in the case of cooling towers), and inhibit scale on system heat transfer surfaces. Water treatment will be required for both influent and effluent water streams. Considering that water sources for the LNP are the same as those for the CREC, treatment methodologies for the two plants will be similar.

The proposed circulating water treatment system provides treated water for the cooling water system and consists of three phases: makeup treatment, internal circulating water treatment, and blowdown treatment. Makeup treatment will consist of a biocide injected into makeup water influent during spring, summer, and fall months to minimize marine growth and to control fouling on surfaces of the heat exchangers. Treatment will improve the quality makeup water and will allow increased cycles of concentration in the cooling tower. Similar to the CREC, an environmental permit to operate this treatment system will be obtained from the State. For prevention of *Legionella*, treatment for internal circulating water components (that is, piping between the new intake structure and condensers) will include existing power-industry control techniques that consist of hyperchlorination (chlorine shock) in combination with intermittent chlorination at lower levels, biocide (for example, bromine), and scale-sludge inhibitor. Blowdown treatment will depend on water chemistry but is anticipated to include application of an acid, biocide, and scale inhibitor to control pH, biogrowth, and scaling, respectively.

Sanitary systems installed for pre-construction activities include portable toilets, which will be supplied and serviced by an off-site vendor. During construction and operation of the LNP, sanitary system wastes will be treated by a waste treatment facility and will be discharged in accordance with agreements with the FDEP. Sanitary system discharges will

be via the blowdown lines to the CREC discharge canal and then to the Gulf of Mexico. Discharges will be controlled in compliance with an approved NPDES permit for the LNP, which will be issued by FDEP.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

See 042_Attachment 9.4.2-1A.pdf.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.4.2-2

Text of NRC RAI:

Describe the metrics used for low flow and flooding.

ER Table 9.3-2 provides a summary of screening criteria used for the evaluation of potential sites. Provide additional information for the following criteria that were used in this table to evaluate the potential sites:

1. Describe the metric used for "low flow for the period of record" that was used to evaluate potential sites to identify candidate sites.
2. Describe the metric used for the "difference between mean site elevation and mean water elevation." Specifically, describe how mean water elevation was determined at each alternative site.

PGN RAI ID #: L-0138

PGN Response to NRC RAI:

The NRC requested additional information regarding the basis for using low flow, mean site elevation, and mean water elevation level metrics as evaluation criteria for the potential sites. The following information provides clarification:

Mean Flow Data: The analysis in "Progress Energy, New Nuclear Baseload Generation Addition, Evaluation of Florida Sites," (proprietary document; Progress Energy Florida, Inc., October 2007) used the full available period of record (daily mean discharge) of USGS streamflow data for the gage nearest each of the alternative sites (where available). From these data, the lowest mean daily flow that occurred during the period of record (in some cases over a 100-year period) was identified. This was considered a very conservative approach based on a review of the data.

Mean Water Level: The flooding evaluations conducted in the "Progress Energy, New Nuclear Baseload Generation Addition, Evaluation of Florida Sites," (proprietary document; Progress Energy Florida, Inc., October 2007) siting report were based on elevation differences between mean site elevation and mean water elevation of the closest water body, as shown on USGS topographic maps - 1:100,000 scale, or 1:24,000 scale later in the process. Table 5-1 in the siting report (relating to screening criteria evaluations) also references USGS gaging station measurements. The gaging stations and the USGS topographic maps all refer to National Geodetic Vertical Datum of 1929 (NGVD 1979) or the updated North American Vertical Datum of 1988 (NAVD 88), depending on the age of topographic maps. These reflect elevations above or below mean sea level.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.4.2-3

Text of NRC RAI:

Verify or revise the number of intake plan views in ER Section 9.4.2.1. Provide TM 0018 for NRC staff's review.

Verify or revise the number of intake plan views in ER Section 9.4.2.1. PEF stated during the site audit that information related to selection of the proposed intake and discharge structures from a set of alternatives was contained in TM 0018. The NRC staff requests that this document be made available for review. ER Section 9.4.2.1 states, "A number of intake plan views are presented in Appendix D (316[b] Demonstration) of the Site Certification Application (SCA) and in ER Section 3.3." However, section 3.3 does not contain a number of intake plan views. Revise ER Section 9.4.2.1 or provide a number of intake plan views in ER Section 3.3.

PGN RAI ID #: L-0139

PGN Response to NRC RAI:

LNP ER Subsection 9.4.2.1 will be revised to state correctly that conceptual designs of the LNP CWIS are presented in Figures 2-1 and 2-2 and Attachment 2 of Appendix 10.2.2 (316b Demonstrations) of the SCA.

TM 018 has been superseded by TM 338884-TMEM-073, Rev. 0, "Environmental Review of Potential Cooling Tower Makeup Water Sources and Blowdown Alternatives, Levy Nuclear Plant (LNP), Levy County, Florida" (June 30, 2008), which is available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

In LNP ER Subsection 9.4.2.1, revise the following text from:

> A number of intake plan views are presented in Appendix D (316[b] Demonstration) of the Site Certification Application (SCA) and in ER Section 3.3.

to:

> Conceptual designs of the LNP cooling water intake structure (CWIS) are presented in Figures 2-1 and 2-2 and Attachment 2 of Appendix 10.2.2 (316b Demonstration) of the Site Certification Application (SCA).

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.3-1

Text of NRC RAI:

Provide the siting study.

Provide a referenceable version of the "Progress Energy, New Nuclear Baseload Generation Addition, Evaluation of Florida Sites," October 2007 (proprietary reference) report. Submit as proprietary information or redacted as appropriate.

PGN RAI ID #: L-0140

PGN Response to NRC RAI:

A copy of a proprietary version of the "Progress Energy, New Nuclear Baseload Generation Addition, Evaluation of Florida Sites," (Progress Energy Florida, Inc., October 2007) report is available in the Progress Energy-provided Reading Room. The proprietary document was submitted under separate cover (Serial No. NPD-NRC-2009-037, dated March 16, 2009) in accordance with criteria for withholding materials per 10 CFR 2.390.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 9.3.2.1-1

Text of NRC RAI:

Clarify the upper limit of acreage used in the screening process and confirm consistency with the description provided in the siting study.

Clarify the following statement in ER Section 9.3.2.1 to indicate whether the use of 6,000 acres was the upper limit of acreage used in the screening: "Potential sites were generally 2424 ha (6000 ac) in size, although favorable sites as small as 809 ha (2000 ac) were considered." Ensure that any revision to the above sentence is consistent with the description provided in the Siting Study.

PGN RAI ID #: L-0141

PGN Response to NRC RAI:

For the purposes of initial site screening, 2424 ha (6000 ac.) was used as an upper limit when evaluating potential sites, although sites as small as 809 ha (2000 ac.) were also considered. The sentence referenced in the comment will be revised in a future revision of the LNP ER to provide this clarification.

Associated LNP COL Application Revisions:

Revise the third paragraph of ER Subsection 9.3.2.1.3 from:

> Potential sites were generally 2424 ha (6000 ac.) in size, although favorable sites as small as 809 ha (2000 ac.) were considered.

to:

> Potential sites that ranged from 809 ha (2000 ac.) to 2424 ha (6000 ac.) were considered in the site evaluation process.

No revisions are required for the FSAR.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 3.7-1

Text of NRC RAI:

Provide GIS files of the planned transmission corridors expected to be impacted as a result of the proposed action for corridors going to the first substation.

Provide GIS-based transmission corridor analysis and data for NRC's review for transmission lines going to the first substation. The response to audit information needs included only the existing transmission lines. Describe the extent of any planned transmission routing and corridor widening activities.

PGN RAI ID #: L-0142

PGN Response to NRC RAI:

The separate layers for GIS files were submitted under separate cover via letter NPD-NRC-2008-088 on December 17, 2008, as supplemental information to "Responses to Information Needs Levy Nuclear Plant Environmental Site Audit, December 2-5, 2008." The GIS data files related to transmission routes and corridors are located on the Vector_1_of_1 disc:

VECTOR\07389573D.gdb

This folder is an ESRI file geodatabase. It is important to note that these files need to be viewed using ESRI software. The names of the files in this folder that pertain to transmission corridor data include the following:

Data\Corridors
Data\Corridors_Buffer_halfmi
Data\Corridors_Buffer_quartmi
Data\Corridors_mask_LC
Data\Corridors_mask_LFCS
Data\Corridors_mask_LCR
Data\ExistingHVTransmission
Data\LandUse_AndersonII_Golder
Data\LandUse_AndersonII_Golder_LCFS
Data\LandUse_AndersonII_Golder_LCR
Data\LandUse_AndersonII_Golder_LPC
Data\LandUse_FLUCFCS_and_AndersonII_Golder_predissolve
Data\LandUse_FLUCFCS_Golder
Data\LUBBW230
Data\LU_CB230
Data\LU_CCRE
Data\LU_ISIO
Data\LU_KLT230

Data\LU_LCFS
Data\LU_LCR
Data\LU_LPC
Data\Substations
Data\Substations_Proposed_Areas

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 3.7-2

Text of NRC RAI:

Provide an overall schedule for the transmission line studies and surveys for lines going to the first substation.

Provide a schedule and plan for when the transmission line studies and surveys (e.g., cultural resources, terrestrial ecology) for transmission lines going to the first substation will be completed. Indicate whether the studies will be completed for inclusion in the Final EIS.

PGN RAI ID #: L-0143

PGN Response to NRC RAI:

PEF anticipates approval of the State of Florida SCA by the Siting Board in August-September 2009. PEF has a condition of certification (XXXV), which is the process for review of the ROW location. This requires PEF to submit the final proposed ROW to various state agencies for review and compliance with the conditions of certification. Once this condition is complete, the ROW can be finalized and the detailed reviews of cultural resources and terrestrial ecology will be completed. The cultural resources reviews should be completed by the end of 2009. The detailed review of terrestrial ecology should also be completed by the end of 2009.

Based on the current NRC schedule (September 2010) for completion of the LNP COLA Final EIS, it is anticipated that cultural resource reviews and terrestrial resource reviews will be completed in time for inclusion in the Final EIS. Upon completion, PEF will make the cultural resources and terrestrial ecology reviews for the transmission corridor ROW available to the NRC.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 4.8.3-1

Text of NRC RAI:

Provide the construction material amounts that are specific to an AP1000 constructed at LNP and Alternative Sites.

The basis for the construction material amounts in Section 10.2.2.1 of the ER is reference MPR-2610. Although the construction technologies discussed in MPR-2610 appear to be applicable to an AP1000, the construction material amounts used in the ER from MPR-2610 do not appear to be specific to an AP1000 constructed at the Levy or Alternative Sites. Provide construction material amounts that are specific to an AP1000 constructed at LNP and Alternative Sites. This includes materials such as fill that would be used at the LNP and Alternative Sites, and should be apportioned into the pre-construction and construction phases.

PGN RAI ID #: L-0144

PGN Response to NRC RAI:

It is assumed that the construction material used to construct the AP1000 generating units and associated facilities at the LNP site would be generally the same for each of the three alternative sites.

Construction material that is anticipated to be used to construct the AP1000 generating units at the LNP site is identified in the Westinghouse AP1000 Design Control Document Rev. 16 (Public Version).

The primary material used for constructing the AP1000 generating units will include concrete, steel rebar, cable, and piping. The use of these materials is not expected to vary substantially between the LNP site and the alternative sites.

The predominant material that will be most affected during the construction process for the LNP site will be fill material. The LNP site will require approximately 2,700,000 cubic yards (cy) of earthen fill. Approximately 900,000 cy of fill will be excavated from the locations of the proposed water storage ponds; approximately 300,000 cy of fill will be excavated during the site grading and excavation phase as required for LNP 1 and LNP 2; and approximately 300,000 cy of fill will be excavated from the barge slip area and hauled to the site for reuse. The remaining 1,200,000 cy of fill will be purchased off-site. It is anticipated that the additional fill may be purchased from the State of Florida, which has sufficient fill material currently stockpiled on State lands from the construction of the CFBC. In addition, fill may be purchased from mining operations in the surrounding region.

Detailed site plans were not developed for each of the three alternative sites; however, given that all of the sites are relatively flat, the amount of fill that would be required at each of the alternative sites is not expected to be substantially different from the amount required for the LNP site. Fill will be used to raise the elevation of the site in the general vicinity of the

nuclear islands, primarily to preclude flooding during an extreme flood event. The nuclear islands will not be built on this fill material, rather those components will be constructed on a base of roller compacted concrete (RCC) and fill material will be used to raise the elevation surrounding the structures. As a result, fill material will be used primarily during the "pre-construction" activities of the project. The amount of RCC that will be used for the base of the two nuclear islands is expected to total approximately 99,000 cy. The amount of concrete that will be used for the construction of the rest of the plant is estimated in ER Subsection 10.2.2.1 "Construction Materials" to be approximately 24,500 cy.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

NRC Letter No.: ER-NRC

NRC Letter Date: February 24, 2009

NRC Review of Environmental Report

NRC RAI #: 6.2-1

Text of NRC RAI:

Provide the latitude and longitude of alternative sites.

In order for the NRC staff to verify the proximity of the alternative sites to existing transportation nodes in the TRAGIS computer code (used for transportation routing), the latitudes and longitudes of the alternative sites are necessary.

PGN RAI ID #: L-0145

PGN Response to NRC RAI:

Geographical information pertaining to the proximity of the alternative sites to transportation nodes is provided in "New Nuclear Baseload Generation Addition, Evaluation of Florida Sites," (Proprietary; Progress Energy Florida, Inc., October 2007), which was available for review during the December 2008 audit and is available in the Progress Energy-provided Reading Room. In addition, the proximity of the alternative sites considered by PEF to existing nodes in the TRAGIS computer code are available in calculation LNG-GW-GLC-001, which is also available in the Progress Energy-provided Reading Room.

Associated LNP COL Application Revisions:

None.

Attachments/Enclosures:

None.

Listing of Files Included on CD Provided as Attachment 1

Filename	Description
001_Attachment 2.3.1-1A.pdf	Existing 100 Year Flood Zone at LNP Site
002_Attachment 2.3.1-1B.pdf	Existing 100 Year Flood Zone Potentially Disturbed by the LNP Site
003_Attachment 2.3.1-1C.pdf	Q3 Flood Data Users Guide, Draft, March 1996
004_Attachment 2.3.1-1D.pdf	FEMA Flood Insurance Rate Maps 1996
005_Attachment 2.3.1-5A.pdf	Aquifer Test Data Figures (1 - 38)
006_Attachment 2.3.3-1A.pdf	CREC Water Quality Sampling Stations Figure
007_Attachment 2.3.3-1B.pdf	Table 1 - Summary of Water Quality Sampling Events
008_Attachment 2.3.3-1C.pdf	Table 2 - Analyte Lists - Surface Water Quality Sampling
009_Attachment 2.3.3-1D.pdf	Table 3 - Field Sampling Data at Crystal River Energy Complex
010_Attachment 2.3.3-1E.pdf	Table 4 - General Chemistry Sampling Data at CREC
011_Attachment 2.3.3-1F.pdf	Table 5 - Metals Sampling Data at CREC
012_Attachment 2.3.3-1G.pdf	Table 6 - Priority Pollutant Sampling Data at CREC
013_Attachment 2.4.1-3A.pdf	Wetlands & Potential Areas of Disturbance on the LNP Site
014_Attachment 2.4.1-3B.pdf	Uniform Mitigation Assessment Method
015_Attachment 2.4.1-3C.pdf	Wetland Mitigation Plan
016_Attachment 2.4.1-3D.pdf	Wetland Map with Simulated Incremental Drawdown Contours
017_Attachment 2.4.1-3E.pdf	LNP Transmission Line Segments
018_Attachment 2.4.1-5A.pdf	Available Options to Adddress the Presence of Gopher Tortoises on Lands Slated for Development
019_Attachment 2.5.4-1A.pdf	Regional Minority Population Exceedance - African-American Population
020_Attachment 2.5.4-1B.pdf	Regional Minority Population Exceedance - Hispanic Population
021_Attachment 3.3-1A.pdf	Water Balance Diagram
022_Attachment 4.3.1-1A.pdf	Limits of Construction and Potential Habitat Impacts on LNP Site
023_Attachment 4.3.1-1B.pdf	FLUCCS Habitat Types in Vicinity of LNP Site
024_Attachment 4.3.1-2A.pdf	FDEP Staff Analysis Report - LNP - Transmission Line Portion
025_Attachment 4.4.2-1A.pdf	Representative Employment by Major Trade Groups Within NAICS 23700, Heavy and Civil Engineering Construction
026_Attachment 4.4.2-3A.pdf	Levy Project Staffing
027_Attachment 4.4.2-7A.pdf	LNP Construction Workers by Quarter and Position

Filename	Description
028_Attachment 5.2.2-1A.pdf	TMEM-079, Estimated Salinity Changes in the Cross Florida Barge Canal and Old Withlacoochee River Channels after LNP Intake Operation
029_Attachment 5.2.2-2A.pdf	SWFWMD Agency Report - LNP - Staff Recommendation
030_Attachment 5.2.2-3A.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 1
031_Attachment 5.2.2-3B.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 2
032_Attachment 5.2.2-3C.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 3
033_Attachment 5.2.2-3D.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 4
034_Attachment 5.2.2-3E.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 5
035_Attachment 5.2.2-3F.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 6
036_Attachment 5.2.2-3G.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 7
037_Attachment 5.2.2-3H.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 8
038_Attachment 5.2.2-3I.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 9
039_Attachment 5.2.2-3J.pdf	SWFWMD DWRM2 TMR Groundwater Model - Figure 10
040_Attachment 5.3.3.2-1A.pdf	Maximum Predicted Monthly Average Deposition Rates - LNP Cooling Tower Operation - Figures 1 - 5
041_Attachment 5.3.3.2-1B.pdf	Crystal River Salt Drift Study, May 1995
042_Attachment 9.4.2-1A.pdf	LNP Report: Evaluation of Oxygen Scavenger, pH Control Agent, Potable Water Biocide, and Cooling Water Chemicals

Enclosure 3

Pre-Flight Report for Files Included on CD Provided as Attachment 1

ELECTRONIC SUBMISSION/PREFLIGHT REPORT: LNP ER RAI SUBMITTAL - NRC

This table serves as the electronic submission/preflight report for the LNP ER RAI submittal in support of the LNP COLA. The following files where checked for items related to electronic submission/preflight acceptance. The results of the review are shown below. For files that do not pass preflight, the reason for the error is provided, however all files within this submittal are deemed compliant with the NRC electronic requirements as noted.

	Files Checked		Acceptance Review				Preflight Review		
			CTRL A						
Item #	File Name	File Size (MB)	Word Searchable? (Y/N)	Fast Web View ? (Y/N)	No Security? (Y/N)	Fonts Embedded? (Y/N)	Preflight (Pass/Fail)	Failure Reason	Comments
1	001_Attachment 2.3.1-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
2	002_Attachment 2.3.1-1B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
3	003_Attachment 2.3.1-1C.pdf	<15MB	Y	Y	Y	Y	FAIL	300 PPI	FIGURES ON 2 PAGES <300 PPI; CLEAR AND LEGIBLE. WEB SOFTWARE MANUAL, NO FURTHER ACTION POSSIBLE.
4	004_Attachment 2.3.1-1D.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
5	005_Attachment 2.3.1-5A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
6	006_Attachment 2.3.3-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
7	007_Attachment 2.3.3-1B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
8	008_Attachment 2.3.3-1C.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
9	009_Attachment 2.3.3-1D.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
10	010_Attachment 2.3.3-1E.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
11	011_Attachment 2.3.3-1F.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
12	012_Attachment 2.3.3-1G.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
13	013_Attachment 2.4.1-3A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
14	014_Attachment 2.4.1-3B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
15	015_Attachment 2.4.1-3C.pdf	>15, <50	Y	Y	Y	Y	FAIL	300 PPI	LOGOS, FIGURES AND PHOTOGRAPHS <300 PPI; ALL CLEAR AND LEGIBLE; >15MB, NO LOGICAL BREAK POINTS TO REDUCE FILE SIZE. HISTORICAL DOCUMENT PREPARED FOR STATE OF FLORIDA; NO FURTHER ACTION POSSIBLE.
16	016_Attachment 2.4.1-3D.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
17	017_Attachment 2.4.1-3E.pdf	<15MB	Y	Y	Y	Y	FAIL	300 PPI	LOGO ON FIGURE <300 PPI; CLEAR AND LEGIBLE
18	018_Attachment 2.4.1-5A.pdf	<15MB	Y	Y	Y	Y	FAIL	300 PPI	LOGO AND FIGURES <300 PPI, CLEAR AND LEGIBLE; GOVERNMENT PUBLISHED WEB DOCUMENT; NO FURTHER ACTION POSSIBLE.
19	019_Attachment 2.5.4-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
20	020_Attachment 2.5.4-1B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
21	021_Attachment 3.3-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
22	022_Attachment 4.3.1-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
23	023_Attachment 4.3.1-1B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
24	024_Attachment 4.3.1-2A.pdf	>15, <50	Y	Y	Y	N	FAIL	300 PPI AND FONTS	DOCUMENT CONTAINS SCANNED AND ELECTRONIC FILES; SCANNED PORTIONS CONTAIN UNEMBEDDED FONTS (OCR); <300 PPI FOR FIGURES, IMAGES AND SIGNATURES; CLEAR AND LEGIBLE. NO LOGICAL PLACE TO BREAK INTO SMALLER FILES. GOVERNMENT PUBLISHED WEB DOCUMENT; NO FURTHER ACTION POSSIBLE.
25	025_Attachment 4.4.2-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
26	026_Attachment 4.4.2-3A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
27	027_Attachment 4.4.2-7A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
28	028_Attachment 5.2.2-1A.pdf	<15MB	Y	Y	Y	Y	FAIL	300 PPI	SIGNATURES AND FIGURES <300 PPI; HISTORICAL DOCUMENT PREPARED FOR STATE OF FLORIDA; NO FURTHER ACTION POSSIBLE.
29	029_Attachment 5.2.2-2A.pdf	<15MB	Y	Y	Y	N	FAIL	300 PPI AND FONTS	SCANNED DOCUMENT (OCR - UNEMBEDDED FONTS); SIGNATURES <300 PPI, CLEAR AND LEGIBLE. GOVERNMENT PRODUCED DOCUMENT; NO FURTHER ACTION POSSIBLE.
30	030_Attachment 5.2.2-3A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
31	031_Attachment 5.2.2-3B.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
32	032_Attachment 5.2.2-3C.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
33	033_Attachment 5.2.2-3D.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
34	034_Attachment 5.2.2-3E.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
35	035_Attachment 5.2.2-3F.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
36	036_Attachment 5.2.2-3G.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
37	037_Attachment 5.2.2-3H.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A

Item #	Files Checked File Name	File Size (MB)	Acceptance Review CTRL A Word Searchable? (Y/N)	Fast Web View ? (Y/N)	No Security? (Y/N)	Fonts Embedded? (Y/N)	Preflight Review Preflight (Pass/Fail)	Failure Reason	Comments
38	038_Attachment 5.2.2-3I.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
39	039_Attachment 5.2.2-3J.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
40	040_Attachment 5.3.3.2-1A.pdf	<15MB	Y	Y	Y	Y	PASS	N/A	N/A
41	041_Attachment 5.3.3.2-1B.pdf	<15MB	Y	Y	Y	N	FAIL	300 PPI AND FONTS	SCANNED DOCUMENT (OCR - UNEMBEDDED FONTS); FIGURES <300 PPI; CLEAR AND LEGIBLE; HISTORICAL DOCUMENT PREPARED FOR STATE OF FLORIDA; NO FURTHER ACTION POSSIBLE.
42	042_Attachment 9.4.2-1A.pdf	>15, <50	Y	Y	Y	N	FAIL	300 PPI AND FONTS	SCANNED DOCUMENT (OCR - UNEMBEDDED FONTS); SCANNED IMAGES <300 PPI, CLEAR AND LEGIBLE. NO LOGICAL BREAK POINTS TO REDUCE FILE SIZE. HISTORICAL DOCUMENT PREPARED FOR STATE OF FLORIDA; NO FURTHER ACTION POSSIBLE.