

December 10, 2009

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PROGRESS ENERGY FLORIDA, INC.)
) Docket Nos. 52-029 and 52-030
)
(Levy County Nuclear Site, Units 1 and 2))

NRC STAFF RESPONSE TO THE APPLICANT'S MOTION
TO COMPEL DISCLOSURE OF BASES WITH REGARD TO CONTENTION 4

INTRODUCTION

Pursuant to 10 C.F.R. § 2.323(c), the NRC staff (Staff) hereby responds to Progress Energy Florida, Inc.'s (Applicant) Motion to Compel Disclosure of Bases for Expert Opinion with Regard to Contention 4 (Motion). The Motion should be denied because there is no requirement that the Joint Intervenors disclose in the initial disclosures the bases for their expert opinion if it does not yet exist.

BACKGROUND

On July 8, 2009, the Atomic Safety and Licensing Board (Board) issued a Memorandum and Order admitting the Green Party of Florida (GPF), the Ecology Party of Florida (EPF), and Nuclear Information and Resource Service (NIRS) (collectively "Joint Intervenors") as a party and admitting three contentions. *Progress Energy Florida* (Levy County Nuclear Power Plant, Units 1 and 2) LBP-09-10, 70 NRC __ (July 8, 2009). In dispute here is Contention 4, a contention that challenges several aspects of the Applicant's environmental report. *Id.* at Appendix A.

On September 1, 2009, all parties made their initial disclosures. In its Initial Scheduling Order, the Board gave the parties until October 29, 2009, to file any challenges to the initial

disclosures. *Progress Energy Florida* (Levy County Nuclear Power Plant, Units 1 and 2), LBP-09-22, 70 NRC ___ (slip op. at 7) (August 27, 2009). In response to a joint motion by the Applicant and Joint Intervenors, the Board extended this deadline to November 30, 2009. Licensing Board Order (Granting Motion for Extension of Time) at 1 (October 27, 2009) (unpublished). On November 30, 2009, the Applicant timely filed its Motion seeking to compel discovery of the underlying facts and bases that support the expert opinion regarding Contention 4.

DISCUSSION

I. Legal Standards

At issue here are the requirements of Section 2.336(a)(1). That section states that within thirty days of the order granting a petition to intervene, all parties other than the Staff shall disclose and provide: "The name and, if known, the address and telephone number of any person, including any expert, upon whose opinion the party bases its claims and contentions and may rely upon as a witness, and a copy of the analysis or other authority upon which that person bases his or her opinion." 10 C.F.R. § 2.336(a)(1). Section 2.336 was added to the regulations in a 2004 final rule. Final Rule: Changes to Adjudicatory Process, 69 Fed. Reg. 2,182, 2,247 (January 14, 2004). The 2004 rulemaking was part of the Commission's continued effort to make the hearing process more efficient and effective; earlier milestones in this process include policy statements on the conduct of hearings in 1981 and 1998, and two rulemakings in 1989.¹ 69 Fed. Reg. at 2,182.

¹ The Commission's first policy statement on the conduct of hearings was published in 1981. Statement of Policy on Conduct of Licensing Proceedings, CLI-81-8, 13 NRC 452 (May 20, 1981); 46 Fed. Reg. 28,533 (May 27, 1981). This effort was followed by a final rule in 1989 that added a Subpart L, containing informal hearing procedures, to Part 2, and applied these procedures to materials license applications and amendments. Final Rule: Informal Hearing Procedures for Materials Licensing Adjudications, 54 Fed. Reg. 8,276 (Feb. 28, 1989). As (continued . . .)

The first major rulemaking change came in 1989, when the Commission strengthened its contention admissibility requirements, stating that

an intervenor will have to provide a concise statement of the alleged facts or expert opinion which support the contention and on which, at the time of filing, the intervenor intends to rely in proving the contention at hearing, together with references to the specific sources and documents of which the intervenor is aware and on which the intervenor intends to rely in establishing the validity of its contention.

54 Fed. Reg. at 33,170. The Commission stated that this amendment “ensures that the resources of all participants in NRC proceedings are focused on real issues and disputes among the parties and thus it is preferable to existing requirements.” 54 Fed. Reg. at 33,179.

The Commission made another major change to its regulations in 2004 by applying the informal hearing process in Subpart L to most licensing proceedings. 69 Fed. Reg. at 2,193. As part of this switch, the Commission eliminated the discovery techniques found in Subpart G of Part 2, interrogatories, requests for production of documents and depositions, from the other subparts. 69 Fed. Reg. at 2,194. In making these changes, the Commission stated that the mandatory disclosure requirements in the new Section 2.336, and the requirement in Subpart L for the Staff to update the hearing file, “will be sufficient in most proceedings to provide a party with adequate information to prepare its position and presentations at hearing . . . such that the discovery under Subpart G . . . is unnecessary.” 69 Fed. Reg. at 2,195.

In addition to the requirements in Section 2.336(a)(1), Section 2.336 has several other subsections applicable to this dispute. Under Section 2.336(a)(2), the Applicant and Joint Intervenors must disclose “all documents and data compilations in the possession, custody, or

discussed further below, the Commission also heightened its contention admissibility standards in 1989. Final Rule: Rules of Practice for Domestic Licensing Proceedings—Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168 (August 11, 1989). In 1998, the Commission issued another policy statement on the conduct of hearings, 63 Fed. Reg. 41, 872, and it discussed comments on this policy statement in the 2004 final rule. See 69 Fed. Reg. at 2,186-190.

control of the party that are relevant to the contentions.” Section 2.336(c) requires that “each party and the NRC staff shall make its initial disclosures under paragraphs (a) and (b) of this section based on the information and documentation then reasonably available to it.” For a party’s “continuing unexcused failure to make disclosures,” the Board “may impose sanctions, including dismissal of specific contentions, dismissal of the application or proposed action, or the use of the discovery provisions in Subpart G of this part against the offending party.”

10 C.F.R. § 2.336(e). Finally, Section 2.336(f) states that the disclosures provided in this section constitute the sole discovery permitted for NRC proceedings unless the proceeding is under a subpart that provides for further discovery, or unless the Commission provides otherwise.

II. Argument

In its Motion, the Applicant seeks to compel the Joint Intervenors to “supplement their initial disclosure with the analyses or other authority that provide bases for allegations in their Petition with regard to Contention 4 as admitted.” Motion at 1. The Motion should be denied because: (1) There is no requirement for the Joint Intervenors to produce an analysis or other authority that provides the bases for the allegations in their Petition until such an analysis is in their possession, custody or control; (2) Even if there was a requirement to provide this information in the initial disclosures, the Bacchus affidavit is sufficient; and (3) The Applicant’s argument regarding the reliability of the Joint Intervenors’ expert opinion is premature; any challenges to reliability must be made when a party attempts to submit evidence or testimony.

A. There is No Requirement to Produce the Compelled Information with the Initial Disclosures if the Information Does not Exist.

The Applicant argues that the plain language of Section 2.336(a)(1), “the supporting explanation by the Commission, and the regulatory structure” requires the Joint Intervenors to provide the facts and opinions supporting their expert affidavit in the initial disclosures. Motion at 5. The Staff disagrees with the Applicant that the Joint Intervenors must produce this

supporting information in their initial disclosures, unless the Joint Intervenors have this information in their possession, custody or control. The Joint Intervenors have stated in their affidavit supporting their initial disclosures that they have made a good faith effort to produce all relevant documents.² Because there is no requirement to disclose information that does not exist, the Motion should be denied.

While, as stated by the Applicant,³ Section 2.336(a)(1) is written with absolute language, not the conditional language in Section 2.336(a)(2), it must be read in conjunction with Section 2.336(c). Section 2.336(c) states that “[e]ach party and the NRC staff shall make its initial disclosures under paragraphs (a) and (b) of this section, based on the information and documentation *then reasonably available to it.*” (emphasis added). Because a party must only disclose information in 2.336(a)(1) “reasonably available” to it, parties are not required to disclose opinions and underlying facts that do not exist. This interpretation is further supported by the statement of consideration for the 2004 rulemaking. In response to comments regarding the sufficiency of discovery mechanisms provided in the rule, the Commission stated

The final rule provides that in all adjudicatory proceedings (whether formal or informal), the parties must exchange relevant documents and other information at the beginning of the proceeding. See §§ 2.336, 2.704. Parties other than NRC staff are also required to exchange the identity of expert witnesses, as well as *existing reports* of their opinions.

69 Fed. Reg. at 2,189 (footnote omitted) (emphasis added). The use of the term “existing reports” shows that the Commission does not expect the initial disclosures to contain every report on which an expert may eventually rely, but only those that exist. There is no regulation that requires Ms. Bacchus to create and disclose her supporting facts and expert opinion if it

² See Attachment 1.

³ Motion at 5, fn. 10.

does not yet exist.⁴ This does not excuse the Joint Intervenors from eventually disclosing their underlying facts because Section 2.336(d) requires parties to continually update their mandatory disclosures.

Because there is no requirement to produce the facts or analysis supporting an expert opinion in the initial disclosures unless those facts or analysis exist, there is no basis to grant a motion to compel. If the Joint Intervenors do not yet have this information, there is no information to compel, and there is no regulation that requires them to create this information for the initial disclosures. Consequently, the Motion should be denied.

B. Even if the Supporting Analysis is Required with the Initial Disclosures, the Joint Intervenors Provided Sufficient Information.

Assuming, *arguendo*, that the Joint Intervenors must produce the analysis or other authority supporting Ms. Bacchus' opinion, whether this information exists or not, it appears that the Joint Intervenors' disclosures meet this requirement.⁵ In their Petition to Intervene, the Joint Intervenors included an Exhibit K, "List of Bacchus Exhibits and References" and an expert declaration by Dr. Bacchus.⁶ These documents provided Ms. Bacchus' curriculum vitae, a list of her published documents, and her "statement of issue[s]" regarding the Application.⁷ In

⁴ The Board recently made this same point in ruling on the Joint Intervenors' and Applicant's Joint Motion for Extension of Time. Licensing Board Order (Granting Motion for Extension of Time) at 2, fn. 3 (October 27, 2009) (unpublished). ("We note, however, that 10 C.F.R. § 2.336(a)(1) . . . (b) does not require the existence or creation (and thus disclosure) of an expert "analysis" at the time of the initial mandatory disclosures . . .").

⁵ As noted by the Applicant, the Joint Intervenors did state that they complied with section 2.336(a)(1). Motion at 12. The Staff does not challenge this statement because, as discussed in the previous section, the Staff believes that the Joint Intervenors can comply with Section 2.336(a)(1) without providing supporting evidence in the initial disclosures if it does not exist.

⁶ Attachment 2.

⁷ Much of this information was restated in the Joint Intervenors' initial disclosures.

several portions of the declaration, Ms. Bacchus provided references to specific documents that support her opinion.⁸ This information appears sufficient to meet the requirements in Section 2.336(a)(1) that only requires parties to disclose “the name and, if known, the address and telephone number of any person, including any expert, upon whose opinion the party bases its claims and contentions and may rely upon as a witness, and a copy of the analysis or other authority upon which that person bases his or her opinion.” Conversely, if the Commission meant to require more specific information in the mandatory disclosures in Subpart C, it could have used the more specific disclosure language used in Subpart G. In Subpart G, the regulations state that in proceedings where there is not pre-filed testimony, disclosures

must be accompanied by a written report prepared and signed by the witness, containing: A complete statement of all opinions to be expressed and the basis and reasons therefor; the data or other information considered by the witness in forming the opinions; any exhibits to be used as a summary of or support for the opinions; the qualifications of the witness, including a list of all publications authored by the witness within the preceding ten years; and a listing of any other cases in which the witness has testified as an expert at trial or by deposition within the preceding four (4) years.

10 C.F.R. § 2.704(b)(2).

While the Bacchus affidavit may be vague in many areas, this vagueness goes more to its quality as a potential piece of evidence, as opposed to whether it meets Section 2.336(a)(1). The Applicant points out that the Joint Intervenors list many documents in their disclosures that actually support, not contradict, the Application,⁹ but at this point in the proceeding there is no

⁸ See e.g. Attachment 2 at p. 8 regarding cumulative impacts of evaporative loss, stating “See Bacchus Exhibit E and the following references for examples of peer-reviewed scientific publications and citations on dewatering in support of my statements of fact, opinion and conclusions of these contentions.”

⁹ Motion at 12-13.

requirement to explain how these documents relate to the points made in the Bacchus Declaration.

The Applicant cites several cases that it states provide support for the proposition that the Applicant is entitled to further discovery against the Joint Intervenors, “given the information provided by the applicant in a docketed application.” Motion at 6. Because of the fundamental changes in the hearing process since these cases were decided, the Staff does not believe they are still good law.

All of the cases cited in this section of the Applicant’s brief are from before the 1989 rulemaking that strengthened the contention admissibility standards, and the 2004 rulemaking that made most hearings informal and eliminated most formal discovery. In enacting stricter contention admissibility requirements, the Commission stated that this change “ensures that the resources of all participants in NRC proceedings are focused on real issues and disputes among the parties.” 54 Fed. Reg. at 33,179. In 2004, the Commission stated that using less formal hearing processes “along with a requirement for well-supported specific contentions in all cases can improve NRC hearings, limit unproductive litigation, and at the same time ease the burdens in hearing preparation and participation for all participants.” 69 Fed. Reg. at 2,188. In addition, the Commission stated that “the public access to documents afforded by § 2.390, the mandatory disclosures required by § 2.336, and the requirements for the NRC staff to maintain a hearing file under §§ 2.336(b) and 2.1203 . . . are sufficient discovery in most NRC adjudications.” 69 Fed. Reg. at 2,195. The Commission also places a prohibition on discovery beyond that required in Section 2.336, unless there is specific discovery provided in that proceeding’s subpart. 10 C.F.R. § 2.336(f). By strengthening the contention admissibility standards, the Commission sought to limit contentions to specific issues, making the wide ranging discovery needed before the 1989 rulemaking to determine the bases of a contention unnecessary. Additionally, the prohibition on discovery in Section 2.336(f) applies to all parties,

including the Applicant. Therefore, it appears the Commission no longer endorses the view that the Applicant is entitled to greater discovery rights.

C. The Addition of the Word “Unreliable” to Section 2.319 is Not Applicable to the Initial Disclosures.

The Applicant also argues that the Joint Intervenors have the burden going forward in this proceeding, and it relies on the Commission’s addition of the word “unreliable” to Section 2.319 to support the proposition that the Joint Intervenors must provide further information at this point so that the Applicant will be able to assess the reliability of the Joint Intervenors’ expert opinion. Motion at 7-9. While the Staff agrees with the Applicant that the Board has the power to strike unreliable evidence, the Staff does not agree that this correlates to any requirement to produce in the initial disclosures supporting materials that do not exist.

First, the Applicant argued that the Joint Intervenors “have the burden of going forward,” quoting from the 2004 rulemaking that “a party sponsoring a contention bears the burden of going forward with evidence sufficient to show that there is a material issue of fact or law, such that the applicant/proponent must meet its burden of proof.”¹⁰ 69 Fed. Reg. at 2,213. The Commission went on to state that “where cross-examination is not permitted, each party must bear its burden by going forward with affirmative evidentiary presentations and testimony, its rebuttal evidence and rebuttal testimony, and well-developed questions that the party suggests the presiding officer to post to the witnesses.” *Id.* The Commission made this statement in response to comments from the public that the right to cross-examine witnesses in Subpart L proceedings should be included in the final rule. *Id.*

¹⁰ The Staff is uncertain exactly what the Applicant means by “burden going forward.” The Board found that the Joint Intervenors met their burden with regard to contention admissibility; beyond continuing to provide updates to their mandatory disclosures, the Staff is unaware of any other “burdens” Joint Intervenors must meet before the hearing. Arguments regarding lack of specificity in the Bacchus affidavit (Motion at 11-14) appear to be more properly arguments against contention admissibility.

The Commission made the above statements in the 2004 rulemaking as part of its larger point that cross-examination by the parties is unnecessary, in part because all parties must meet their burden of proof “by going forward with affirmative evidentiary presentations and testimony.” *Id.* In other words, parties cannot rely only on cross-examination to meet their burden of proof; they must put forth affirmative evidence. The language in this section of the final rule discusses “affirmative evidentiary presentations and testimony,” “rebuttal evidence,” “rebuttal testimony” and “well-developed questions that the party suggests the presiding officer to post to the witnesses.” All of the above quoted actions occur leading up to the hearing and at the hearing; there is no discussion of a “duty going forward” related to the mandatory disclosures. If the Applicant is concerned about being surprised at the hearing, there is protection against this in Section 2.336(e)(2). That section allows presiding officers to strike from the record any evidence that was not produced in the mandatory disclosures.

The Applicant also argues that the inclusion of the word “unreliable” to Section 2.319(d) requires the disclosures of the Joint Intervenors’ “analysis or other authority adequate to provide an evidentiary basis for the intervenors’ expert opinions,” otherwise “the applicant cannot prepare a challenge to the reliability of an expert; and hence the expert’s credibility.” Motion at 8-9. Section 2.319(d) states that the presiding officer can strike any portion of a written presentation or a response to a written question that is unreliable. Section 2.319(e) states that the presiding officer can restrict unreliable evidence and/or arguments. At this point, the Joint Intervenors have not made any written responses to Board questions, nor have they proffered any evidence. When a party submits evidence in this proceeding, or responds to Board questions, the evidence must be reliable, or under Section 2.319 the Board may strike it from the record. Further, Section 2.319(d) makes clear that the Board may strike the evidence either “on motion, or on its own initiative.” This regulation simply means that if any party attempts to submit unreliable evidence, the other parties may move to exclude it or the Board may exclude

it on its own initiative. It does not provide support for the proposition that the bases for this underlying evidence must be disclosed in the initial disclosures.

If the Applicant does not believe the Joint Intervenors have disclosed enough information to make their expert testimony reliable, then the Applicant may move to exclude that testimony under Section 2.319 when it is presented. The Joint Intervenors, however, are not required to provide all of the background information they will eventually use at this point and they still have time before the hearing to discover further information to support any future testimony or exhibits. If any party attempts to include exhibits that were not disclosed in the mandatory disclosures, thus making it impossible for the other parties to examine the reliability of that information, then the Board may prohibit the admission of this new evidence into the record. 10 C.F.R. § 2.336(e)(2). This provision protects the parties from being surprised with new information at the eleventh hour.

CONCLUSION

The Applicant's Motion to compel should be denied because there is no requirement in Section 2.336(a)(1) for the Joint Intervenors to disclose the analysis or other authority that form the bases of their expert opinion if this information does not yet exist.

CERTIFICATION

I certify that I have made a sincere effort to contact the other parties in this proceeding, to explain to them the factual and legal issues raised in this motion, and to resolve those issues and that my efforts to resolve the issues have been unsuccessful.

Respectfully submitted,

/Signed (electronically) by/

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Dated at Rockville, Maryland
This the 10th day of December, 2009

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
)
PROGRESS ENERGY FLORIDA, INC.) Docket Nos. 52-029 and 52-030
)
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(Levy County Nuclear Site, Units 1 and 2))

CERTIFICATE OF SERVICE

I hereby certify that copies of the "Staff's Response to the Applicant's Motion to Compel Disclosure of Bases with Regard to Contention 4" have been served on the following persons by Electronic Information Exchange on this 10th day of December, 2009:

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Attachment 1

September 1, 2009¹

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY LICENSING BOARD

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| _____ |) | |
| In the Matter of |) | |
| |) | |
| PROGRESS ENERGY FLORIDA |) | |
| |) | Docket Nos. 52-029 COL |
| |) | 52-030 COL |
| (Levy County Nuclear Station |) | |
| Units 1 & 2) |) | |
| _____ |) | |

Co-Interveners Mandatory Disclosure of Documents September 1, 2009,
Levy County Units 1 & 2 COL

Affidavit of Mary Olson

Under 10 CFR 2.336 (a)(1) the Green Party of Florida, the Ecology Party of Florida and Nuclear Information and Resource Service disclose the following and the attached documents (A - F) information to Progress Energy of Florida via Counsel John O'Neal at Pillsbury, Winthrop, Shaw, Pittman, LLP and to the Staff of the Nuclear Regulatory Commission via Office of General Counsel, Jody Martin and Sara Kirkwood.

I, Mary Olson, as representative of the interveners personally attest that to my knowledge this disclosure (including attachments A- F) is current as of August 31, 2009, that it is the result of an honest and good-faith effort of all reflected herein to catalog and report the relevant documents and experts with whom we are working as of

August 31, 2009.

(Electronically signed by) _____
Mary Olson, NIRS Southeast Regional Coordinator
on behalf of
The Green Party of Florida,
The Ecology Party of Florida and
Nuclear Information and Resource Service

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September 1, 2009
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY LICENSING BOARD

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|------------------------------|---|------------------------|
| In the Matter of |) | |
| |) | |
| PROGRESS ENERGY FLORIDA |) | |
| |) | Docket Nos. 52-029 COL |
| |) | 52-030 COL |
| (Levy County Nuclear Station |) | |
| Units 1 & 2) |) | |

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "Co-Interveners Mandatory Disclosure of Documents September 1, 2009" from the Green Party of Florida, The Ecology Party of Florida and Nuclear Information and Resource Service were provided via email to those individuals listed below 1st day of September, 2009.

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/signed electronically by Mary C Olson/
Mary C. Olson

Attachment 2

EXHIBIT K **List of Bacchus Exhibits and References**

- A. Bacchus, Ph. D., Curriculum Vitae
- B. 1997 Cumulative Effects Report Synopsis:
Council on Environmental Quality. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Executive Office of the President; What are Cumulative Impacts? Synopsis of the U. S. Council on Environmental Quality
- C. LNP ER Fig. 4.1-4 100-Year Flood Zone Map
- D. Florida Department of Environmental Protection letter for Tarmac Mine application, 11/19/08
- E. Nonmechanical Dewatering of the Regional Floridan Aquifer System. 2006
- F. SWFWMD Water Use Permit Application for LNP, 6/2/08
- G. Scientists point to forests for carbon storage solutions. 2008
- H. Sea-level Rise from Global Climate Disruption Impacts,12/3/08
- I-1 Florida Solar Energy Center: Rooftop Solar PV
- I-2 California Solar Energy Center: Rooftop Solar PV
- J. Decoupling Alternative: Stimulating Smarter Utilities, 1/30/09
- K. List of Exhibits

Bacchus References

Bacchus. 1998. Determining Sustainable Yield in the Southeastern Coastal Plain: A Need for New Approaches. pp. 503-519 in: J. Borchers and C. D. Elifrits (eds.) Current Research and Case Studies of Land Subsidence: Proceedings of the Joseph F. Poland Symposium.

Bacchus. 2000. Uncalculated impacts of unsustainable aquifer yield including evidence of subsurface interbasin flow. *Journal of American Water Resources Association* 36(3):457-481.

Bacchus et al. 2003. Near infrared spectroscopy of a hydroecological indicator: New tool for determining sustainable yield for Floridan aquifer system. *Hydrological Processes* 17:1785-1809.

Bacchus, S. T., D. D. Archibald, K. O. Britton, and B. L. Haines. 2005. Near infrared model development for pond-cypress subjected to chronic water stress and *Botryosphaeria rhodina*. *Acta Phytopathologica et Entomologica Hungarica* 40(2-3):251-265.

Bacchus, S. T. 2007. More inconvenient truths: Wildfires and wetlands, SWANCC and Rapanos. *National Wetlands Newsletter* 29(11):15-21.

Swancar, A., T.M. Lee and T.M. O'Hare. 2000. Hydrogeologic setting, water budget, and preliminary analysis of ground-water exchange at Lake Starr, a seepage lake in Polk County, Florida. U.S. Geological Survey Water-Resources Investigations Report 00-4030. 65 pp.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY OF THE COMMISSION

In the Matter of)
Progress Energy Florida, Inc.;)
Application for the Levy County)
Nuclear Power Plant Units 1 and 2)
Combined Operating License)

Docket No. 52-029 and 52-030

**EXPERT DECLARATION BY DR. SYDNEY T. BACCHUS IN SUPPORT OF
PETITIONERS' STANDING TO INTERVENE IN THIS PROCEEDING**

Under penalty of perjury, I, Sydney T. Bacchus, Ph. D., declare as follows:

A. EDUCATION, RESEARCH, AND PROFESSIONAL WORK EXPERIENCE

1. **Name** - My name is Sydney Bacchus and I am a third-generation Floridian. I was a full-time Florida resident for approximately 40 years and a part-time Florida resident for approximately the past decade, while completing my doctoral degree. My business address is P. O. Box 174, Athens, Georgia 30603-0174.

2. **Advanced degrees** - I received a Bachelor of Science degree (1972) and a Master of Science degree (1977) from Florida State University (Department of Biological Sciences). My Masters research involved evaluating the changes in wetland and aquatic plant community composition in response to changing salinity regimes and changes in hydroperiod. Hydroperiod components include: a) the depth or stage of fluctuating ground and surface water; b) the duration of the water level at a given depth and stage; and c) the periodicity and seasonality of the water level fluctuations. My minor field of study was chemistry.

3. **Multidisciplinary doctoral program** - I completed graduate-level (predoctoral) courses in Hydrology, Hydrogeology, Geochemistry and Water Quality at the University of South Florida, then transferred to the University of Georgia (Athens) to complete more extensive graduate-level courses (e.g., Soil Physics, Geophysics, Forest Hydrology, Forest Pathology, Tree Physiology and various aspects of Ecology) for a multidisciplinary doctoral degree program in Hydroecology. Hydroecology is a multidisciplinary field that combines both physical and life sciences. It is the study of the interaction between living organisms and the water-related aspects (both quantity and quality) of their environment.

4. **Research focus** - The focus of my doctoral research was adverse environmental impacts (aka effects) associated with anthropogenic (man-induced) groundwater alterations. I received my Doctorate degree from the University of Georgia (Institute of Ecology) in 1999, after successfully defending my Dissertation titled, "New Approaches for Determining Sustainable Yield from the Regional Karst Aquifer of the Southeastern Coastal Plain." My research was conducted through representative subregions of the regional Floridan aquifer system. That regional aquifer system extends throughout the entire State of Florida and the coastal plains portions of Georgia, South Carolina and Alabama.

5. **Grants** - During my doctoral program, I received several grants from state agencies in Florida and federal agencies that supported my doctoral research. One of my grants from United States Geological Survey (USGS) supported geophysical research to evaluate the degree of connection between the Floridan aquifer and depressional wetlands throughout Florida and south Georgia. Other grants supported a controlled experiment, observing responses of native tree species to prolonged water stress and fungal pathogens. Those grants are listed in my Curriculum Vitae (CV) and incorporated into my affidavit. *See* Bacchus Exhibit A.

6. **Published literature** - I am familiar with the body of published literature relevant to my multidisciplinary area of expertise. Specifically, these include the fields of Hydrology, Hydrogeology, Submarine Groundwater Discharge, Geochemistry, Water Quality, Geophysics, Forest Hydrology, Forest Pathology, Tree Physiology and various aspects of Ecology, as they relate to Florida's wetlands, other special aquatic sites and native wildlife habitat. I have authored or co-authored approximately 40 refereed (peer-reviewed) papers in those fields, specifically regarding groundwater/surfacewater interactions, karst aquifers, and flood plains/wetlands (aka special aquatic sites). My publications have been based on research I have conducted in wetlands (special aquatic sites) and other ecosystems, including marine, estuarine, and freshwater aquatic ecosystems throughout Florida. I also have served as a peer reviewer for manuscripts (related to the fields referenced above) that have been submitted to professional journals for publication. A list of my relevant peer-reviewed publications, awards and recognition of my work in the fields described above, as well as a description of my professional experience and affiliations with professional societies and other organizations, are provided in my CV (Bacchus Exhibit A).

B. OMISSIONS, MISREPRESENTATIONS AND FAILURES OF PROPOSED LEVY NUCLEAR PLANT (LNP) ENVIRONMENTAL REPORT (ER) TO ADDRESS ADVERSE DIRECT, INDIRECT AND CUMULATIVE ENVIRONMENTAL IMPACTS

B.1. Statement of issue

7. **Direct, indirect and cumulative environmental impacts** – The LNP Units 1 and 2 COL Application Part 3, Environmental Report (ER) failed to address adverse direct, indirect and cumulative environmental impacts of the proposed LNP facility.

B.1. Explanation of basis

8. **Addressing direct, indirect and cumulative environmental impacts** – In 1997, the U.S. Council on Environmental Quality (Council) published a report defining and describing the approach for addressing adverse direct, indirect and cumulative effects (aka impacts), as required by federal law. The title of the report is “Considering Cumulative Effects Under the National Environmental Policy Act.” A synopsis of the Council’s report, relevant to the scope of this proceeding is attached hereto as Bacchus Exhibit B. The citation for the report is: Council on Environmental Quality. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Executive Office of the President; What are Cumulative Impacts? Synopsis of the U. S. Council on Environmental Quality. The executive summary of that report is available at: <http://ceq.hss.doe.gov/nepa/ccenepa/exec.pdf>

B.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

9. **Direct, indirect and cumulative environmental impacts in site vicinity and**

region– I have long-term knowledge of both the “vicinity” (9.7 km (6 mi) radius) and “region” (extending from the vicinity perimeter to 80 km (50 mi)) of the proposed 1,257 hectare (3,105 acre) LNP site, as defined on page 1-viii of the Environmental Report (ER). I also have long-term knowledge of the Withlacoochee River, extending from the headwaters in the Green Swamp to the Gulf of Mexico and designated as an Outstanding Florida Water (OFW), as defined on page 1-ix of the Environmental Report (ER). I have conducted research and numerous site inspections in those areas. I also have reviewed the ER report for the proposed LNP, including, but not limited to, Chapters 1, 4, 5, 6 and 10. It is my professional opinion that the ER has failed to address significant adverse direct, indirect and cumulative environmental impacts that would occur if the proposed LNP is constructed and operated as proposed.

10. **Examples of specific omissions, misrepresentations and failures** – By comparing the Council’s approach for addressing adverse direct, indirect and cumulative impacts and the impacts described in the following sections, specific examples of the significant omissions, misrepresentations and failures to address environmental impacts are apparent in Table 4.6-1 of the LNP ER (page 4-90 through 4-97). A summary of the adverse impacts during construction of the proposed LNP project, identified by the LNP ER, is provided below. The only impacts addressed in that LNP ER table are characterized as “SMALL” impacts, with the exception of a ranking of “SMALL-MODERATE” for the two subsections noted by an asterisk:

Land Use Impacts

Land Use Category

Long-Term Land Use Restrictions and Physical Changes of Site and Vicinity – for Levy County
Short-Term Physical Changes in Land Use and Mitigation – associated with access roadway upgrades
Construction Impacts on the Geologic Environment – impacts on mineral resources
Transmission Corridors – for 3 new transmission corridors, 3 new substations and a 500-kV switchyard
Off-Site Areas – on nearby structures and roadways
Historic Properties – on or near archeological or historic properties

Water-Related Impacts

Erosion/Sediment, Surface Water, Groundwater and/or Water Use Categories

Freshwater Streams – at the LNP site, transmission corridors and pipeline routes
Lakes and Impoundments – on surface water bodies, including impoundments
Cross Florida Barge Canal – impacts on the CFBC
Groundwater – Hydrologic alterations from construction of the LNP
Wetlands - Hydrologic impacts from construction in wetlands
Freshwater Water Bodies – impacts on CFBC and other surface water bodies
Wetlands – impacts at the LNP site
Groundwater Use – impacts on groundwater use

Ecological Impacts

Terrestrial Ecosystem and/or Aquatic Ecosystem Categories

Plant Site – impacts on terrestrial ecology associated with the LNP site*
On-site Pools – impacts of LNP construction on aquatic ecosystems in the LNP site
Cooling Water Intake Structure – impacts on the CFBC shoreline on aquatic ecology
Cooling System Blowdown Discharge Pipeline – pipeline corridor construction impacts on aquatic ecology

Socioeconomic Impacts

Noise, Air Quality, Traffic, Socioeconomic and/or Other Categories

Air Quality – impacts from construction activities on air quality

Visual Aesthetic Disturbances – impact of construction activities on visual aesthetic disturbances [sic]

Social Structure – impacts on social structure

Housing – impacts on housing availability from construction

Educational System – impacts to educational systems from construction

Recreation – impacts of construction to recreational facilities and opportunities

Public Services and Facilities – impacts of construction to public services and facilities

Security Services – impacts on site security and access restrictions

Water and Wastewater Services – impacts on water and wastewater services

Transportation Facilities – “SMALL” impacts on primary transportation routes providing access to the site
“MODERATE” impacts on traffic related to construction of the LNP*

Distinctive Communities – impacts on special or distinctive communities

Minority Populations – impacts on racial, ethnic, and special groups in the region

Low Income Populations – impacts on low income populations

Radiation Exposure to Workers

Effluents/Wastes and “Rad Exp to Const Wkrs” Categories

Radiation Protection and ALARA Program – impacts on construction workers from direct radiation and to radioactive effluents from LNP routine operation

C. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN THREATS TO WETLANDS, FLOOD PLAINS, SPECIAL AQUATIC SITES AND WATERS DUE TO FAILURE TO CONSIDER ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS

C.1. Statement of issue

11. **Constructing in flood plains** - The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing the proposed LNP facility within flood plains and on wetlands, special aquatic sites and waters.

C.1. Explanation of basis

12. **Increasing elevations** - Figure 4.1-4 and page 4-6 of the LNP ER’s “Environmental Impacts of Construction” chapter confirm that the proposed nuclear units 1 and 2 would be constructed in the 100-year flood zone. *See* Bacchus Exhibit C. In fact, LNP Figure 4.1-4 confirms that the majority of the site and the 6-mile radius “vicinity” of the proposed LNP are within the 100-year flood zone. Page 4-6 of the ER further confirms that during the proposed construction, the ground elevation would be raised to a level up to 2.7 m (9 ft) higher than the existing level. The “plant site” is described in the ER as “approximately 121 ha (300 ac.) near the center of the LNP site” (page 1-viii).

C.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

13. **Fill for proposed LNP construction site in flood zone** - Based on the proposed

impacts described under “Explanation of basis,” above, approximately 2.7 m (9 ft) of aggregate material (aka “fill”) would be placed over “approximately 121 ha (300 ac.)” at the proposed LNP site in the flood zone. The ER fails to identify the source of this significant aggregate fill. The most logical sources for this aggregate fill are the existing and proposed mines in Levy and Citrus Counties. Existing mines include the Cemex Inglis Quarry mine, in northwest Citrus County). Proposed mines include the Tarmac (aka Titan King Road) mine, approximately 5 km (3 mi) northwest of the proposed LNP site, and the Nature Coast Mine in northwest Citrus County.

14. **State agency concerns regarding mining impacts** - Some of the significant and myriad concerns regarding adverse environmental impacts that would occur if those proposed mines are permitted are expressed in the Florida Department of Environmental Protection’s letter to Tarmac America, dated November 19, 2008. A copy of that letter is incorporated herein as Bacchus Exhibit D.

15. **Published literature describing environmental impacts from mining** – The mechanisms by which mining irreversibly alters the natural hydroperiod in the vicinity surrounding mines are described in peer-reviewed, published literature, such as the paper titled, “Nonmechanical dewatering of the regional Floridan aquifer system.” A copy of that publication is incorporated herein as Bacchus Exhibit E. That publication also describes irreversible adverse environmental impacts that occur as a result of natural hydroperiod alterations from mining. Those impacts are illustrated in the case study of four mining sites located throughout Florida. These adverse impacts occur to terrestrial ecosystems, as well as to wetlands, flood plains, special aquatic sites and other waters.

16. **Unaddressed adverse impacts from mining of fill** - It is my professional opinion that the mining of the aggregate material to fill the proposed LNP site in the flood zone will result in the destruction and other irreversible adverse impacts to terrestrial ecosystems, as well as to wetlands, flood plains, special aquatic sites and other waters throughout and beyond the proposed plant site, vicinity and region, as described on page 1-viii of the ER. These hydroperiod and related adverse environmental impacts were not addressed in the ER.

C.2. Statement of issue

17. **Construction materials** - The ER failed to address adverse direct, indirect and cumulative environmental impacts on flood plains, wetlands, special aquatic sites and waters from additional mining for the production of raw materials, such as aggregate for concrete, to construct the proposed LNP facility.

C.2. Explanation of basis

18. **Concrete foundation, units and other structures** – “Foundations and other structures will require substantial amounts of concrete” (LNP ER page 4-56). Concrete components of the proposed LNP project include the “cooling water intake structure” (LNP ER page 4-54). “The large volume requirements will require the installation and operation of a temporary concrete batch plant on the site during the construction period. While there will be air emissions from the concrete batch plant, they are expected to consist primarily of PM (from cement and aggregate handling and storage) and diesel exhaust emissions from trucks accessing the batch plant during operations” (LNP ER page 4-56). “The structures will be supported with engineered foundations. The foundations will normally consist of either direct buried structures with concrete backfill or reinforced concrete drilled piers” (LNP ER page 3-86). In addition, the

LNP ER suggests the following related activities will be conducted **prior to** the “approval of the COLA” under a “Limited Work Authorization” (page 4-106, emphasis added):

Prepare nuclear island foundation surface with dental **concrete**

Place roller compacted **concrete** under the nuclear islands

Install mud mat under the nuclear islands

Install rebar in the nuclear island **concrete** foundations

Erect safety related **concrete** placement forms

Install Turbine Building foundation drilled shafts

Install Annex Building foundation drilled shafts

Install Radwaste Building foundation drilled shafts

Install circulating water piping between the cooling tower basins and the entrance point to the turbine building condensers

Install the raw water system intake structure and make-up line to the cooling tower basin.

C.2. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

19. **Raw materials for concrete foundation, units and other structures** - The ER fails to identify the source of the mined raw materials (aggregate) for the extensive concrete required to construct the proposed LNP project. The most logical sources for this mined raw material are the existing and proposed mines in Levy and Citrus Counties, listed above.

20. **Mining impacts from raw materials for concrete** – The concerns over the significant and myriad adverse environmental impacts that would occur if those proposed mines are permitted, as expressed in Bacchus Exhibit D, respectively, are valid regardless of whether those mines would be producing aggregate for fill or aggregate as a raw material to make concrete.

21. **Published literature describing environmental impacts from mining** – The mechanisms by which mining irreversibly alters the natural hydroperiod in the vicinity surrounding mines, as described in Bacchus Exhibit E, are the same, regardless of whether those mines would be producing aggregate for fill or aggregate as a raw material to make concrete. These adverse impacts occur to terrestrial ecosystems, as well as to wetlands, flood plains, special aquatic sites and other waters. A related scientific publication describing excessive loss of water through evaporation occurring from large bodies of water, such as mine pits, is:

Swancar, A., T.M. Lee and T.M. O’Hare. 2000. Hydrogeologic setting, water budget, and preliminary analysis of ground-water exchange at Lake Starr, a seepage lake in Polk County, Florida. U.S. Geological Survey Water-Resources Investigations Report 00-4030. 65 pp.

22. **Unaddressed adverse impacts from mining raw materials for concrete** - It is my professional opinion that the mining of the aggregate material to make concrete for the proposed LNP foundation, units and other structures will result in the destruction and other irreversible adverse impacts to terrestrial ecosystems, as well as to wetlands, flood plains, special aquatic sites and other waters throughout and beyond the proposed plant site, vicinity and region, as described on page 1-viii of the ER. These hydroperiod and related adverse environmental impacts were not addressed in the ER.

C.3. Statement of issue

23. **On-site mining and dewatering** - The ER failed to address adverse direct, indirect and cumulative environmental impacts on flood plains, wetlands, special aquatic sites

and waters of on-site mining (excavation) and dewatering to construct and operate the proposed LNP and all associated components.

C.3. Explanation of basis

24. **Embedment and related dewatering on site** – Page 4-34 of the LNP ER’s “Environmental Impacts of Construction” chapter confirms that on-site mining would occur to a depth of “approximately 75 ft.” for the “embedment” and that the excavation depth for that embedment “is below the static water table.” The LNP ER also confirmed that ground water “will need to be removed based on the embedment depth” and that the dewatering will cause “groundwater depressions” (page 4-34). Page 4-33 of the LNP ER also states, “Hydrologic alteration will result from construction activities including a change in groundwater levels within the LNP site resulting from grading and construction of a series of stormwater drainage ditches” and that a “series of stormwater drainage ditches will be created around and within the construction area to direct stormwater away from LNP facilities” and “into three stormwater retention/infiltration ponds.” The LNP ER also acknowledges that the on-site mining and dewatering may alter water quality (page 4-34). The LNP ER further asserts that “excessive dewatering effects” can be prevented by installing and monitoring “[T]emporary groundwater wells” (page 4-34).

25. **Dewatering from water use on site** – “The LNP will require water for both plant cooling and operational uses. The plant will use two independent circulating water systems (CWSs) with seawater used for the CWS that cools the turbine-generator, and freshwater used for the service water system (SWS)... Freshwater from the raw water system (RWS) will also be used for the other water services required for operation.... The RWS supply will be from supply wells installed into the freshwater aquifer at the site... The RWS supply will be from supply wells installed into the freshwater aquifer at the site.... Per Table 3.3-2, it is estimated that the normal consumptive water use from cooling tower evaporation is 2.3 m³/s (81.4 ft³/sec) or 30,427 gpm. Consumptive water use from service water cooling tower evaporation is 0.08 m³/s (2.8 ft³/sec) or 1248 gpm (Table 3.3-2). Water consumption for fuel cycle activities would require approximately 43,067 million L (11,377 million gal.) of water (Table 10.1-2).” *See* LNP Application Part 3, 10.2.1.2. A copy of the Water Use Permit (WUP) application submitted on June 2, 2008 by Progress Energy Florida, Inc. to the Southwest Florida Water Management District (SWFWMD) for the proposed LNP project is incorporated herein as Bacchus Exhibit F. This application would allow maximum withdrawals of approximately 6 Million Gallons per Day (MGD) from the proposed LNP site. Groundwater withdrawals from Floridan aquifer “supply wells” would be allowed for fire protection, potable and sanitary needs of 800 workers/visitors. All (100% of the water withdrawn would be discharged/disposed of to another location. Four groundwater supply wells have been requested to be located at the proposed LNP site. *See* Bacchus Exhibit F. The precise locations of those proposed wells were not provided in the LNP ER. Page 4-34 of the LNP ER’s “Environmental Impacts of Construction” chapter also confirms that groundwater withdrawals would occur on the proposed LNP site for the following purposes and rates:

- Soil compaction – 300,000 gallons per day (gpd)
- Dust and erosion control – 100,000 gpd
- Concrete mixing – 100,000 gpd
- Miscellaneous – 50,000 gpd

C.3. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

26. Impacts of on-site excavations, water-use, cooling towers and other dewatering -

Based on my scientific research and professional experience of more than 30 years in evaluating adverse impacts to wetlands, flood plains, special aquatic sites and other waters, it is my professional opinion that any of the proposed on-site water use, dewatering and excavations, including for embedment and stormwater ponds, whether considered individually or cumulatively, would result in irreversible destruction of the wetlands, flood plains, special aquatic sites and other waters. The irreversible destruction would occur throughout and beyond the site and vicinity of the proposed LNP project, as described on page 1-viii of the LNP ER. Additionally, it is my professional opinion that that “excessive dewatering effects” cannot be prevented by installing and monitoring groundwater wells, regardless of whether those wells are temporary or permanent, as claimed in the LNP ER (page 4-34). Therefore, in my professional opinion, any of the proposed on-site water use, dewatering and excavations described above, whether considered individually or cumulatively, would result in “LARGE” rather than “SMALL” impacts to wetlands, flood plains, special aquatic sites and other waters throughout and beyond the site and vicinity of the proposed LNP project.

27. Cumulative impacts of evaporative loss - If the 30,427 gallons per minute of evaporative loss (identified in the LNP report) is multiplied by 60 minutes per hour and 24 hours per day, the total daily evaporative loss from the cooling towers is 43,814,880 gallons per day (gpd) or 43.8 MGD. *See* LNP Application Part 3, 10.2.1.2. That astronomical evaporative loss will include salt drift, which will be contaminating the surrounding wetlands, flood plains, special aquatic sites and other waters throughout and beyond the site and vicinity of the proposed LNP project. Damage from salt drift would be more significant at this proposed LPN facility because the LNP facility is proposed to be located inland, rather than on the coast. Based on all of the above, it is my professional opinion that it is not possible to mitigate those “LARGE” impacts. *See* Bacchus Exhibit E and the following references for examples of peer-reviewed scientific publications and citations on dewatering in support of my statements of fact, opinions and conclusions of these contentions:

Bacchus, S. T., D. D. Archibald, K. O. Britton, and B. L. Haines. 2005. Near infrared model development for pond-cypress subjected to chronic water stress and *Botryosphaeria rhodina*. *Acta Phytopathologica et Entomologica Hungarica* 40(2-3):251-265

Bacchus et al. 2003. Near infrared spectroscopy of a hydroecological indicator: New tool for determining sustainable yield for Floridan aquifer system. *Hydrological Processes* 17:1785-1809.

Bacchus, S. T. 2000. Uncalculated impacts of unsustainable aquifer yield including evidence of subsurface interbasin flow. *Journal of American Water Resources Association* 36(3):457-481.

C.4. Statement of issue

28. Wetlands connected to the Floridan aquifer system - The ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing the proposed LNP facility within wetlands that are connected to the underlying Floridan aquifer system via relict sinkholes.

C.4. Explanation of basis

29. Preferential connections to the Floridan aquifer system – The LNP ER failed to

acknowledge that the pond-cypress (*Taxodium ascendens*) wetlands and those associated with other natural waters on the site and within the vicinity and region of the proposed LNP project are connected to each other and the underlying Floridan aquifer system through a network of relict sinkholes.

C.4. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

30. **Adverse impacts beyond proposed site** - The pond-cypress wetlands and those associated with other natural waters on the site and within the vicinity and region of the proposed LNP project are connected to each other and the underlying Floridan aquifer system through a network of relict sinkholes. Therefore, adverse direct, indirect and cumulative impacts to pond-cypress wetlands proposed by the LNP project would result in adverse impacts beyond the proposed LNP site. See Bacchus Exhibit E and references provided above. Off-site wetlands, flood plains, special aquatic sites and other waters, such as Outstanding Florida Waters (OFW) and Shellfish Harvesting Areas (SHA), that would be irrevocably affected by the proposed LNP project would include, but not be limited to:

Levy Blue Spring and associated wetlands and uplands
Withlacoochee River (OFW) and associated wetlands and uplands
Waccasassa River (OFW) and associated wetlands and uplands
Waccasassa Bay (SHA) and associated wetlands and uplands
Gulf Hammock
Big Bend Seagrasses Aquatic Preserve (SHA)
Waccasassa Bay Preserve State Park
Goethe State Forest
Big King Spring and associated wetlands and uplands
Little King Spring and associated wetlands and uplands
Turtle Creek and associated wetlands and uplands
Spring Run Creek and associated wetlands and uplands
Smith Creek and associated wetlands and uplands
Demory Creek and associated wetlands and uplands
Tomes Creek and associated wetlands and uplands
Ten Mile Creek and associated wetlands and uplands
Withlacoochee Bay (SHA) and associated wetlands and uplands

C.5. Statement of issue

31. **Outstanding Florida Waters** - The ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project on “Outstanding Florida Waters” (OFW).

C.5. Explanation of basis

32. **Dewatering of Outstanding Florida Waters** – The LNP ER did not address the adverse direct, indirect and cumulative environmental impacts of the mining/excavations, water use and other dewatering required for the proposed LNP project, as referenced above, on OFWs, such as the Withlacoochee and Waccasassa Rivers and associated wetlands and uplands.

C.5. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

33. **Highest standard of protection violated** – In Florida, the highest standard of protection are provided to “Outstanding Florida Waters.” *See* Sections 62-302.700(9(a)(3), 9(b)(17) of 9 the Florida Administrative Code. In my professional opinion, the adverse direct, indirect and cumulative environmental impacts of the mining/excavations, water use and other dewatering required for the proposed LNP project, as referenced above, will dewater the Withlacoochee and Waccasassa Rivers and associated wetlands and uplands. These OFWs and associated wetlands and uplands are aquatic and terrestrial ecosystems, as referenced in the LNP ER, including Table 4.6-1. By dewatering these OFWs and associated aquatic and terrestrial ecosystems, the proposed LNP project would result in “LARGE” and irreversible adverse impacts, rather than the “SMALL” impacts reported in the LNP ER.

D. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN IRREPARABLE HARM TO WATER QUALITY FROM ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS

D.1. Statement of issue

34. **Alteration of nutrient concentrations** - The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project on nutrient concentrations in wetlands, flood plains, special aquatic sites and other waters resulting from dewatering.

D.1. Explanation of basis

35. **Nutrient concentrations altered by dewatering** – The LNP ER did not address the adverse direct, indirect and cumulative environmental impacts of the mining/excavations, water use and other dewatering required for the proposed LNP project, as referenced above, on nutrient concentrations in wetlands, flood plains, special aquatic sites and other waters.

D.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

36. **Imbalances in natural populations of aquatic flora and fauna** – By dewatering the wetlands, flood plains, special aquatic sites and other waters throughout the site, vicinity and region of the proposed LNP project, all existing nutrient concentrations will increase relative to any water that remains, even in the absence of any new addition of nutrients. Therefore, it is my professional opinion that the dewatering caused by the proposed LNP project would violate Florida’s narrative water quality standard for nutrients. *See* Rule 62-302.530(47)(b), Florida Administrative Code, because the dewatering would result in imbalances in natural populations of aquatic flora and fauna in the wetlands, flood plains, special aquatic sites and other waters listed above, as well as in others not listed above, throughout the proposed LNP site, vicinity and region.

D.2. Statement of issue

37. **Destructive wildfires as a new source of nutrients** - The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project on destructive wildfires in wetlands, flood plains, special aquatic sites and other waters and destructive wildfires as a new source of nutrients to those wetlands, flood plains, special aquatic sites and other waters.

D.2. Explanation of basis

38. **Destructive wildfires caused by dewatering** – The LNP ER did not address the scientific causal connection between dewatering of the type, nature and magnitude that would result from the proposed LNP project, as referenced above, on destructive wildfires in wetlands, flood plains, special aquatic sites and other waters. Additionally, the LNP ER failed to address the impacts of this new source of nutrients would have on the dewatered in wetlands, flood plains, special aquatic sites and other waters.

D.2. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

39. **New addition of nutrients from destructive wildfires** – By dewatering the wetlands, flood plains, special aquatic sites and other waters throughout the site, vicinity and region of the proposed LNP project, those areas will be subjected to destructive wildfires that will destroy the trees and organic soils. As the trees and organic soils are consumed by the destructive wildfires, nutrients are released into the air and water. This new source of nutrients, combined with water reductions in the wetlands, flood plains, special aquatic sites and other waters from the mining/excavations, water use and other dewatering associated with the proposed LNP project, will result in increased nutrient concentrations and subsequent imbalances in natural populations of aquatic flora and fauna. The following reference is an example of peer-reviewed scientific publications supporting my conclusions:

Bacchus, S. T. 2007. More inconvenient truths: Wildfires and wetlands, SWANCC and Rapanos. National Wetlands Newsletter 29(11):15-21.

D.3. Statement of issue

40. **Salt drift from cooling towers as a water quality contaminant-** The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project, with cooling towers that would use coastal waters, at an inland location in and surrounded by freshwater wetlands, flood plains, special aquatic sites and other waters that would be adversely affected by dewatering from the construction and operation of the LNP project if it is licensed.

D.3. Explanation of basis

41. **Water quality contamination caused by cooling-tower salt drift** – The LNP proposes to use coastal waters for cooling towers located inland, in and surrounded by freshwater wetlands, flood plains, special aquatic sites and other waters that would be dewatered by the construction and operation of the proposed LNP. Yet the LNP ER failed to address: a) the adverse direct, indirect and cumulative environmental impacts of saltwater drift on inland water quality and b) the increased threat of inland water quality contamination that would occur from new sources of saltwater contaminants via salt-drift deposition from the LNP cooling towers on inland waters, aquatic and terrestrial ecosystems that would be dewatered by the construction and operation of the proposed LNP.

D.3. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

42. **Unavoidable water quality contamination caused by cooling-tower salt drift** – “Operation-Related Unavoidable Adverse Environmental Impacts” described in the LNP ER include “salt

drift from cooling towers” (LPN page 10-26). The site and vicinity of the proposed LNP project is an inland, freshwater flood plain, with extensive freshwater wetlands, special aquatic sites and other waters, including freshwater aquatic ecosystems. *See* LNP ER Figure 4.1-4 and Bacchus Exhibit C, incorporated herein. Despite these facts LNP’s conclusion regarding water quality impacts of these “Unavoidable Adverse Environmental Impacts” is “It is expected that normal releases of contaminants into the environment from the LNP will have negligible effects on surface and groundwater uses and will be in compliance with an approved NPDES permit issued by the Florida Department of Environmental Protection (FDEP)...” *See* LNP Application Part 3, 10.2.1.2.

43. **Abnormal releases of contaminants into the environment** – Although “salt drift from cooling towers” may constitute “normal releases of contaminants into the environment” for a nuclear facility, such facilities in Florida “normally” are located on the coast. For the proposed location of the LNP facility, in an inland, freshwater flood plain, with extensive freshwater wetlands, special aquatic sites and other waters, including freshwater aquatic ecosystems and Outstanding Florida Waters, salt drift and deposition of that magnitude does not constitute “normal releases of contaminants into the environment.” The evaporative loss from the proposed LNP cooling would be 43,814,880 gallons per day (gpd) or 43.8 MGD. *See* LNP Application Part 3, 10.2.1.2. This magnitude of evaporative loss is equivalent to the volume of water in municipal water supply for moderately large communities throughout Florida. Adverse impacts from the release of excessive salt from the proposed LNP project would not represent the sole environmental impact from the proposed LNP project. Release of that contaminant by LNP would occur in freshwater wetlands, special aquatic sites and other waters, including freshwater aquatic ecosystems that would be dewatered from the construction and operation phases of the proposed LNP project.

44. **Cooling-tower salt-drift contaminants into the environment would cause irreparable harm to water quality** – In my professional opinion, the state NPDES permit application review process would be fatally flawed if it ignored the catastrophic adverse impacts to water quality throughout the site, vicinity and region of the proposed LNP’s aerial “discharge” of large volumes of saline water into those inland, freshwater ecosystems, including Outstanding Florida Waters. Outstanding Florida Waters reportedly are provided the highest standard of protection under Sections 62-302.700(9(a)(3), 9(b)(17) of 9 the Florida Administrative Code. Despite the outcome of the state’s NPDES permit review process, in my opinion, the LNP ER was grossly negligent in ignoring the adverse direct, indirect and cumulative environmental impacts of saltwater drift on inland water quality and b) the increased threat of inland water quality contamination that would occur from new sources of saltwater contaminants via salt-drift deposition from the LNP cooling towers on inland waters, aquatic and terrestrial ecosystems that would be dewatered by the construction and operation of the proposed LNP. It is my professional opinion that the abnormal releases of cooling-tower salt-drift contaminants into the environment would cause irreparable harm to water quality throughout the site, vicinity and region of the proposed LNP project, including Outstanding Florida Waters.

E. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN IRREPARABLE HARM TO THE QUALITY OF THE NATION'S AIR RESOURCES FROM ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS, BY RELEASING STORED CARBON, THUS INCREASING GLOBAL CLIMATE DISRUPTION AND SEA-LEVEL RISE

E.1. Statement of issue

45. **Prematurely killing trees by discharging cooling-tower salt drift, dewatering, cutting, herbicide application and other means releases stored carbon** – The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts to the nation's air resources resulting from the premature death of countless inland trees throughout the site, vicinity and region of the proposed LNP project due to: a) dewatering of the site, vicinity and region of the proposed LNP project; b) destructive wildfires from dewatering of the site, vicinity and region of the proposed LNP project; c) cooling-tower salt-drift contaminants discharged in freshwater wetlands, flood plains, special aquatic sites and other waters, including aquatic and terrestrial ecosystems; d) filling and other construction within the flood zone for the proposed LNP project, and e) cutting, herbicide application and other means of prematurely killing trees in the transmission/utility corridors and other LNP areas in conjunction with the proposed construction and operation of the proposed LNP project.

E.1. Explanation of basis

46. **Trees store carbon and compensate for greenhouse gases that cause global climate disruption** – Trees represent a significant storage of carbon and are moderators of greenhouse gases that cause global climate disruption. *See* <http://www.sciencedaily.com/releases/2008/09/080908185330.htm> Aerial discharges of cooling-tower salt-drift contaminants throughout the inland site, vicinity and region of the proposed LNP project would kill countless native trees. Dewatering of the site, vicinity and region of the proposed LNP project during construction and operation and destructive wildfires caused by the dewatering would kill countless native trees. Filling and other construction within the flood zone for the proposed LNP project would kill countless native trees. Cutting, herbicide application and other means of prematurely killing trees also are proposed in transmission/utility corridors and other areas in conjunction with the construction and operation of the proposed LNP project. The premature death of those trees would occur from each of those proposed activities independently and cumulatively during the construction and operation of the proposed LNP project, in conjunction with other adverse direct, indirect and cumulative environmental impacts on those trees. The premature death of those trees would be tantamount to significant releases of greenhouse gases in the vicinity of the proposed LNP project.

E.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

47. **Forests as carbon-storage solutions for climate stabilization** - Scientists have estimated that natural forests can store an “average of 1,300 pounds of carbon per acre per year.” The estimated carbon storage capacity for forested areas in one state was determined to be “the equivalent of yearly emissions from about 225,000 cars.” Further, “the concept of using forests to store carbon has steadily gained attention among policymakers, especially since the Kyoto Protocol was adopted in 1997 as a global program to reduce greenhouse gas emissions.” *See* Bacchus Exhibit G, incorporated herein.

48. **Premature tree deaths from construction and operation of the proposed LNP project equivalent to greenhouse gas emissions** – The inland site, vicinity and region of the proposed LNP project is heavily forested with both upland and wetland trees. In fact, the proposed LNP site is in immediate proximity to the Goethe State Forest, the forested Gulf Hammock Wildlife Management Area and Wacasassa Bay State Preserve. The trees throughout the site, vicinity and region of the proposed LNP project are providing extensive carbon storage. *See* Bacchus Exhibit G. The preceding paragraphs include my opinions and documentation describing extensive premature tree death that would occur throughout the inland site, vicinity and region of the proposed LNP project during construction and operation of the nuclear facility. The causes of the premature tree deaths described above include: a) filling and other construction within the flood zone for the proposed LNP project; b) dewatering of the site, vicinity and region of the proposed LNP project; c) destructive wildfires from dewatering of the site, vicinity and region of the proposed LNP project; and d) cooling-tower salt-drift contaminants discharged in freshwater wetlands, flood plains, special aquatic sites and other waters, including aquatic and terrestrial ecosystems. In addition to those causes of premature tree deaths from the construction and operation of the proposed LNP project, described above, premature death of trees would occur from cutting, herbicide application and other means of prematurely killing trees in the transmission/utility corridors and other LNP areas in conjunction with the proposed construction and operation of the proposed LNP project. Page 4-12 of the LNP ER includes the following description under clearing right of ways:

Restrictive clearing will consist of the cutting and removal of all trees and growth with a mature height greater than 3.7 m (12 ft.), leaving all other vegetation in the ROW outside of the access road and structure pad areas. Trees will be cut to as low as possible or to existing water level. Stumps may be left in place to preserve the root mat, and treated with an approved herbicide to prevent regrowth.

The premature death of those trees will release stored carbon, comparable to releasing the “yearly emissions from about 225,000 cars” if the forests referenced in Bacchus Exhibit G were prematurely killed.

49. **Nuclear generation produces greenhouse gas emissions** – The following statements were included in the LNP ER: “The FPSC notes that nuclear generation is one generating technology that produces no greenhouse gas emissions” (p. 8-74). “The construction of new nuclear generation will not only increase fuel diversity but provide energy without the emission of greenhouse gases” (p. 8-74). “Given concerns in Florida and the rest of the south about climate change and carbon emissions, the LNP will serve another important need by reducing carbon emissions in the state” (p. 8-80). Because premature death of trees would occur throughout the site, vicinity and region of the proposed LNP project from construction and operation of the LNP project, release of that stored carbon is equivalent to yearly emissions of greenhouse gases from cars. Therefore, it is my opinion that those statements in the LNP ER are without factual basis.

50. **Irreparable harm from release of stored carbon from LNP construction and operation**– Significant air quality degradation is caused by the large-scale release of stored carbon due to the premature death of trees throughout the site, vicinity and region of the proposed LNP project. In my opinion, these carbon releases constitute irreparable harm to the quality of the Nation’s air resources.

51. **Release of stored carbon from LNP construction and operation increases climate disruption and sea-level rise** –This increase in carbon releases from large-scale

premature tree deaths also contributes to increased climate disruption, which increases sea-level rise. The LNP ER failed to address these and other adverse direct, indirect and cumulative environmental impacts to the nation's air resources resulting from the premature death of trees from the proposed LNP project. The magnitude and extent of existing and increasing sea-level rise in Florida, including some of the socioeconomic impacts, is described briefly in Bacchus Exhibit H, incorporated herein.

E.2. Statement of issue

52. **Additional air quality degradation from destructive wildfires** - The LNP ER failed to address adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project on the release of particulate matter (PM) from destructive wildfires in wetlands, flood plains, special aquatic sites and other waters.

E.2. Explanation of basis

53. **Increased particulate matter from destructive wildfires** – The LNP ER did not address the causal relationship between increased particulate matter (PM) and the destructive wildfires that would be caused by the construction and operation of the proposed LNP project. The LNP ER also did not address the direct, indirect and cumulative adverse impacts of releases of stored carbon and PM on the Nation's air quality.

E.2. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

54. **Decreased air quality from increased airborne particulate matter** – It is my professional opinion that the destructive wildfires that would occur throughout the site, vicinity and region of the proposed LNP project due to the construction and operation impacts described above, would convert trees and organic soils into significant airborne particulate matter that cannot be controlled, reduced or mitigated by PEF. A significant amount of this particulate matter ultimately will be deposited into the surrounding waters, resulting in water quality degradation, in addition to air quality degradation. *See* Bacchus Exhibit E and the following peer-reviewed scientific publication:

Bacchus, S. T. 2007. More inconvenient truths: Wildfires and wetlands, SWANCC and Rapanos. National Wetlands Newsletter 29(11):15-21.

F. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN IRREPARABLE HARM TO PUBLIC LANDS AND WATERS AND PRIVATE PROPERTY OWNED BY VARIOUS INTERVENERS AND OTHER INDIVIDUALS, DUE TO ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS

F.1. Statement of issue

55. **Irreparable harm to public lands and waters and private property not owned by PEF** - The LNP ER failed to address the adverse direct, indirect and cumulative environmental impacts, as described above, on public preserves, parks, forests, wildlife management areas, state sovereign lands, waters of the state and US and private property not owned by PEF from constructing and operating the proposed LNP project.

F.1. Explanation of basis

56. **Zone of impact for irreparable harm to public and private property not determined –** Because the LNP ER failed to address any of the adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project described above, the LNP ER likewise failed to identify the zone of environmental impact from the proposed LNP project. In fact, the LNP ER erroneously concluded that the environmental impacts from the proposed LNP project were insignificant or “SMALL” *See* Table 4.6-1 (LNP ER pages 4-90 through 4-97). Consequently, no attempt was made in the LNP ER to determine the zone of impact or the extent of irreparable harm for the proposed LNP project.

F.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

57. **Zone of impact for irreparable harm includes public preserves, parks, forests, wildlife management areas, state sovereign lands, waters of the state and US and private property –** The LNP ER erroneously concluded that the environmental impacts from the proposed LNP project were insignificant or “SMALL.” *See* Table 4.6-1 (LNP ER pages 4-90 through 4-97). This conclusion was made without consideration of the adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project described above. Based on the adverse impacts described above, in my professional opinion, all of the environmental impact categories addressed in Table 4.6-1 (LNP ER pages 4-90 through 4-97) should have been recorded as “LARGE.” In my professional opinion, those adverse impacts also are irreparable and incapable of being mitigated. Because the LNP ER failed to address any of the adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project described above, the LNP ER likewise failed to identify the zone of environmental impact from the proposed LNP project. In my professional opinion, the zone of impact and extent of irreparable harm for the proposed LNP project includes private property owned by various interveners and other individuals in Levy, Marion, Citrus and Alachua Counties. In my professional opinion, the zone of impact and extent of irreparable harm for the proposed LNP project also includes, but is not limited to the following public preserves, parks, forests, wildlife management areas, state sovereign lands, waters of the state and waters of the US:

Goethe State Forest

Levy Blue Spring and associated wetlands and uplands

Withlacoochee River (OFW) and associated wetlands and uplands

Waccasassa River (OFW) and associated wetlands and uplands

Waccasassa Bay (SHA) and associated wetlands and uplands

Gulf Hammock Wildlife Management Area

Big Bend Seagrasses Aquatic Preserve (SHA)

Waccasassa Bay Preserve State Park

Big King Spring and associated wetlands and uplands

Little King Spring and associated wetlands and uplands

Turtle Creek and associated wetlands and uplands

Spring Run Creek and associated wetlands and uplands

Smith Creek and associated wetlands and uplands

Demory Creek and associated wetlands and uplands

Tomes Creek and associated wetlands and uplands

Ten Mile Creek and associated wetlands and uplands

Withlacoochee Bay (SHA) and associated wetlands and uplands
Crystal River Preserve State Park
Florida Springs Coastal Greenway

58. **Zone of impact implications** – Because the LNP ER failed to address the adverse direct, indirect and cumulative environmental impacts, as described above, and erroneously concluded that the environmental impacts from the proposed LNP project were “SMALL,” Rather than “LARGE” and irreparable, the impacts to other categories must be reconsidered. For example, other categories of impacts addressed in Table 4.6-1 (LNP ER pages 4-90 through 4-97) included: Land Use Impacts and Socioeconomic Impacts. It is my professional opinion that the irreparable environmental problems described above will result in “LARGE” rather than “SMALL” Land Use and Socioeconomic Impacts.

G. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN IRREPARABLE HARM TO AND JEOPARDIZE SURVIVAL AND RECOVERY OF FEDERALLY LISTED SPECIES, FROM ADVERSE MODIFICATION OF CRITICAL HABITAT AND UNPERMITTED TAKING DUE TO FAILURE TO CONSIDER ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS

G.1. Statement of issue

59. **Jeopardized survival and recovery of federally listed species** - The LNP ER failed to address the adverse direct, indirect and cumulative environmental impacts, as described above, on the survival and recovery of federally listed species.

G.1. Explanation of basis

60. **Zone of impact for irreparable harm to and jeopardized survival and recovery of federally listed species** – Because the LNP ER failed to address any of the adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project described above, the LNP ER likewise failed to identify the zone of environmental impact from the proposed LNP project on federally listed species. In fact, the LNP ER should have concluded there were “LARGE” adverse impacts on numerous federally listed species.

G.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

61. **Federally listed species on public lands and waters** - The public lands and waters listed above, within the zone of impact for the proposed LNP project, support federally listed species and/or habitat critical to survival and recovery, including, but not limited to:

Eastern indigo (threatened)
Florida scrub jay (threatened)
Green turtle (endangered)
Manatee (endangered)
Red-cockaded woodpecker (endangered)
Wood stork (endangered)

62. **Habitat critical for survival and recovery of listed species** – Irreparable harm to the natural hydroperiod in Florida ultimately results in irreparable harm to habitat critical for the survival and recovery of species, such as wood storks, red cockaded woodpeckers and

Eastern indigo snakes. Wood storks (*Mycteria americana*) and red cockaded woodpeckers (*Picoides (=Dedrocopos) borealis*) are listed as endangered by the U.S. Fish and Wildlife Service (USFWS). Eastern indigo snakes (*Drymarchon corais couperi*) are listed as threatened by the USFWS. See “South Florida Multi-Species Recovery Plan” prepared for USFWS Southeast Region, Atlanta, GA, May 18, 1999.

63. **Depressional wetlands as habitat critical to the survival and recovery of wood storks** – Wood storks in Florida rely on natural depressional wetlands such as pond-cypress domes and sloughs and wet prairies for both foraging and nesting. Natural depressional wetlands in Florida are among the most sensitive wetlands to hydroperiod alteration. The adverse direct, indirect and cumulative impacts of the proposed LNP project would result in irreversible destruction of significantly more than ten acres of natural depressional wetlands which could be used by wood storks for foraging and nesting. See preceding paragraphs and Bacchus Exhibit E. Pond-cypress wetlands occur throughout the site, vicinity and region of the proposed LNP project. See LNP ER Appendix 2.2-2.

64. **Natural pine forests as habitat critical to the survival and recovery of red cockaded woodpeckers** – Successful nesting and reproduction of red cockaded woodpeckers require older growth stands of live native pine trees. Native species of pines are among the most sensitive native trees to hydroperiod alteration. The adverse direct, indirect and cumulative impacts of the proposed LNP project would result in irreversible destruction of significant stands of natural pine that could be used by red cockaded woodpeckers for nesting. See preceding paragraphs and Bacchus Exhibit E.

65. **Seagrass beds as habitat critical to the survival and recovery of green turtles** – Green turtles feed in seagrass beds in coastal areas within the zone of impact from the proposed LNP project. In my professional opinion, the adverse direct, indirect and cumulative impacts of the proposed LNP project would result in irreversible destruction of significant areas of seagrass beds that could be used by green turtles for survival and recovery. See preceding paragraphs and Bacchus Exhibit E.

66. **Violations of Sections 7 and 9 of the Endangered Species Act** – It is my professional opinion that Section 7 and Section 9 consultations with the U. S. Fish and Wildlife Service should be initiated for the species references above, pursuant to the Endangered Species Act for the site, vicinity and zone of impact. Such consultations cannot be initiated until the entire zone of impact from the proposed LNP project has been determined for these habitats. In the absence of those consultations, it is my professional opinion that the adverse direct, indirect and cumulative impacts of the proposed LNP project would result in the unlawful taking of federally endangered and threatened species, in violation of Sections 7 and 9 of the Endangered Species Act.

H. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD RESULT IN IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES AND THE INABILITY TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS DUE TO FAILURE TO CONSIDER ADVERSE DIRECT, INDIRECT AND CUMULATIVE IMPACTS

H.1. Statement of issue

67. **Irreversible and irretrievable commitments of resources and inability to mitigate adverse environmental impacts** – The LNP ER’s failure to address the adverse direct, indirect and

cumulative environmental impacts, as described above, would result in the irreversible and irretrievable commitments of resources and inability to mitigate adverse environmental impacts if the proposed LNP project is constructed and operated as proposed.

H.1. Explanation of basis

68. **Irreversible and irretrievable commitments of resources and inability to mitigate adverse environmental impacts** – The LNP ER’s failure to address any of the adverse direct, indirect and cumulative environmental impacts of constructing and operating the proposed LNP project described above, precluded them from identifying the zone of environmental impact from the proposed LNP project. Without a determination of the zone of impact, bona fide mitigation of the adverse environmental impacts cannot occur.

H.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

69. **Irreversible and irretrievable commitments of resources and inability to mitigate adverse environmental impacts** - It is my professional opinion that constructing and operating the proposed LNP project would result in irreversible and irretrievable commitments of resources throughout the site, vicinity and region of the proposed LNP project. It also is my professional opinion that environmental harm described above, that would occur from constructing and operating the proposed LNP project cannot be repaired or mitigated.

I. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD IGNORE ALTERNATIVES THAT HAVE NONE OF THE ADVERSE ENVIRONMENTAL IMPACTS ADDRESSED ABOVE

I.1. Statement of issue

70. **Alternatives without adverse environmental impacts of proposed LNP** – The LNP ER failed to address alternatives to the proposed LNP that are readily available and that would avoid the adverse direct, indirect and cumulative environmental impacts described above.

I.1. Explanation of basis

71. **Alternatives without adverse environmental impacts of proposed LNP** – Chapter 9 of the LNP ER addressed alternatives to the proposed action. Although solar power was addressed on page 9-13, that alternative was summarily dismissed as, “too large to construct at the LNP site.” The LNP ER’s “Alternatives to the Proposed Action” failed to address the decoupling alternative.

I.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

72. **“Footprints” of solar alternative and proposed LNP** – The LNP ER addressed solar power alternatives on page 9-13, but summarily dismissed solar alternatives, based on the statement below. This statement presumes a “footprint of approximately 28,600 ha (71,500 ac.) for PV and 13,200 ha (33,000 ac.) for solar thermal systems” and concludes those footprints are “much too large to construct at the LNP site.” It is my professional opinion that the subsurface “footprint” of the proposed LNP (e.g., hydroperiod impacts) would exceed the site and vicinity of the proposed LNP and simply would “take” surrounding public and private lands and waters, without compensation, for construction and operation of the proposed LNP.

Construction of solar power generating facilities has substantial impacts on wildlife habitat, land use, and aesthetics. As stated in the GEIS, land requirements are high: 14,000 ha (35,000 ac.) per 1000 MWe for PV and approximately 6000 ha (14,000 ac.) per 1000 MWe for solar thermal systems. This would require a footprint of approximately 28,600 ha (71,500 ac.) for PV and 13,200 ha (33,000 ac.) for solar thermal systems to produce a 2200-MWe baseload capacity. Both of these are much too large to construct at the LNP site.

73. **Solar alternative with smaller footprint than proposed LNP** – The Florida Solar Energy Center promotes the approach of utility companies constructing and/or maintaining solar collectors on existing residential and commercial roof tops for power generation rather than constructing the solar collectors on land in a natural state, farmlands or other land use. California has a similar program. *See* Bacchus Exhibits I-1 and I-2, incorporated herein. This approach is contrary to what was evaluated and summarily dismissed in the “Solar Power” alternatives section of the LNP ER, in part, due to “substantial impacts on wildlife habitat, land use, and aesthetics. The approach promoted by the Florida Solar Energy Center would have a far smaller physical and environmental impact “footprint” - zone of impact - than the proposed LNP, would require no water and would result in none of the adverse environmental impacts of the proposed LNP that I have described in the preceding paragraphs. Furthermore, in my opinion, the “wildlife habitat, land use, and aesthetics” impacts of the proposed LNP project far exceed those of the roof-top solar collectors alternative promoted by the Florida Solar Energy Center.

74. **Decoupling alternative without adverse environmental impacts of proposed LNP** – The LNP ER failed to address the decoupling alternative. The decoupling alternative is described by Dr. Joe Romm, senior fellow with the Center for American Progress, in Bacchus Exhibit J, incorporated herein. In my professional opinion, the decoupling alternative would have a far smaller “footprint” – zone of impact – than constructing and operating the proposed LNP project. Furthermore, it is my opinion that the decoupling alternative would have none of the adverse environmental impacts of the proposed LNP that I have described in the preceding paragraphs.

J. GRANTING A COMBINED LICENSE (COL) TO PROGRESS ENERGY FLORIDA (PEF) TO CONSTRUCT AND OPERATE PROPOSED LEVY COUNTY UNITS 1 AND 2 (LNP) WOULD BE INCONSISTENT WITH 40 CFR § 230

J.1. Statement of issue

75. **Proposed LNP is inconsistent with 40 CFR § 230** – The LNP ER failed to address the inconsistencies of the proposed LNP project with 40 CFR § 230.

J.1. Explanation of basis

76. **Inconsistencies of proposed LNP is with 40 CFR § 230** – The proposed LNP project is inconsistent with 40 CFR § 230 regarding at least the following, as described in the remaining paragraphs:

Productive and valuable public resources

Food chain production and general habitat and nesting sites for aquatic or land species

Study of the aquatic environment, sanctuaries and refuges

Natural drainage characteristics, salinity distribution, and other environmental characteristics

Natural storage areas for storm and flood waters

Natural groundwater discharge and recharge and water purification

Uniqueness

Failure to consider relevant information

Injury to property, invasion of other rights and superseding the rights and interests of the public

J.1. Statement of facts and opinions supporting the dispute and deficiencies within the scope of this proceeding

77. **Examples of inconsistencies of proposed LNP is with 40 CFR § 230** – The LNP ER failed to acknowledge that the construction and operation of the proposed LNP would be inconsistent with 40 CFR § 230, including 40 CFR § 230.41(b) and other provisions of 40 CFR § 230, as described below.

When disruptions in flow and circulation patterns occur, apparently minor loss of wetland acreage may result in major losses through secondary impacts.

Discharging fill material in wetlands as part of municipal, industrial or recreational development may modify the capacity of wetlands to retain and store floodwaters and to serve as a buffer zone shielding upland areas from wave actions, storm damage and erosion. (See 40 CFR § 230.41(b))

78. **Productive and valuable public resources** - Based on my personal knowledge, site inspections and review of historic and current documents of the site, vicinity and region of the proposed LNP project, the wetlands, flood plains, special aquatic sites and other waters that would be destroyed or otherwise affected directly, indirectly and cumulatively by all aspects of the proposed LNP project are a "productive and valuable public resource," as referenced in 40 CFR § 230.10.

79. **Food chain production and general habitat and nesting sites for aquatic or land species** – In my professional opinion, the wetlands, flood plains, special aquatic sites and other waters within the site, vicinity and region of the proposed LNP project perform functions important to the public interest, which include at least: food chain production and general habitat and nesting sites for aquatic or land species, as described by 40 CFR § 230.10.

80. **Study of the aquatic environment, sanctuaries and refuges** - Some of those wetlands, flood plains, special aquatic sites and other waters, have been set aside for study of the aquatic environment or as sanctuaries or refuges, as described in 40 CFR § 230.10. Examples include Outstanding Florida Waters (OFW) and Shellfish Harvesting Areas (SHA), such as, but not limited to, those in or associated with the following:

Goethe State Forest

Levy Blue Spring and associated wetlands and uplands

Withlacoochee River (OFW) and associated wetlands and uplands

Waccasassa River (OFW) and associated wetlands and uplands

Waccasassa Bay (SHA) and associated wetlands and uplands

Gulf Hammock Wildlife Management Area

Big Bend Seagrasses Aquatic Preserve (SHA)

Waccasassa Bay Preserve State Park

Big King Spring and associated wetlands and uplands

Little King Spring and associated wetlands and uplands

Turtle Creek and associated wetlands and uplands

Spring Run Creek and associated wetlands and uplands

Smith Creek and associated wetlands and uplands

Demory Creek and associated wetlands and uplands

Tomes Creek and associated wetlands and uplands

Ten Mile Creek and associated wetlands and uplands

Withlacoochee Bay (SHA) and associated wetlands and uplands

Crystal River Preserve State Park

Florida Springs Coastal Greenway

81. **Natural drainage characteristics, salinity distribution, and other environmental characteristics** – Construction of the proposed LNP project would result in the destruction or irreversible alteration of wetlands, flood plains, special aquatic sites and other waters that, in turn, would result in detrimental affects on natural drainage characteristics, salinity distribution, or other environmental characteristics, contrary to 40 CFR § 230.10.

82. **Natural storage areas for storm and flood waters** - Those wetlands, flood plains, special aquatic sites and other waters would be destroyed or altered as a result of the proposed LNP project are preventing both erosion and storm damage and serve as valuable storage areas for storm and flood waters, as described in 40 CFR § 230.10. Those benefits no longer would be provided in the vicinity and region of the proposed LNP.

83. **Natural groundwater discharge and recharge and water purification** - Those wetlands, flood plains, special aquatic sites and other waters would be destroyed or altered as a result of the proposed LNP project include areas that would not have a valid Individual Permit from the U.S. Corps of Engineers. Those wetlands, flood plains, special aquatic sites also are historic groundwater-discharge areas. Those areas maintained minimum baseflows important to aquatic resources and prime natural recharge areas, as described in 40 CFR § 230.10. Consequently, those environmentally sensitive natural areas also were serving significant water purification functions, as identified in 40 CFR § 230.10.

84. **Uniqueness** – It is my professional opinion that those wetlands destroyed or adversely altered as a result of the proposed LNP project are unique in nature compared to wetlands in virtually all other states in the United States (*See* 40 CFR § 230.10). I saw no indication that the ER addressed the uniqueness of those wetlands, or that those wetlands were intimately linked with the Floridan aquifer system. Likewise, I found no indication that a comprehensive (or, in fact, any) analysis had been conducted of the myriad significant cumulative effects that would result from the proposed LNP project, as described in 40 CFR § 230.10. Finally, I found no evidence that the ER had addressed the "section 404(b)(1) guidelines," as described in 40 CFR § 230.10.

85. **Failure to consider relevant information** – I saw no indication that the LNP ER addressed relevant information regarding the numerous adverse cumulative impacts that would occur in the vicinity and region if the proposed LNP project was constructed and operated as proposed. Categories in 40 CFR § 230.10 for consideration of information relevant to the cumulative impacts include fish and wildlife; water quality; historic, cultural, scenic, and recreational values; property ownership; activities affecting coastal zones; activities that may affect marine sanctuaries; compliance with other federal, state, or local requirements; floodplain management; water supply and conservation; energy conservation; environmental benefits; and economics. *See* all of the adverse impacts described in the preceding paragraphs related to those issues.

86. **Injury to property, invasion of other rights and superseding the rights and interests of the public** – In my professional opinion, construction of the proposed LNP project in the flood plain and wetlands will result in "injury to property or invasion of other rights" beyond the site and vicinity of the proposed LNP project, thus superseding the rights and interests of the public. In my professional opinion the adverse direct, indirect and cumulative impacts would extend to property not owned by LNP, contrary to the provisions of 40 CFR § 230.10. In my professional opinion the adverse direct, indirect and cumulative impacts would extend to environmentally sensitive land "protected" as public lands, including those listed above