Attachment A

Supplemental Analysis

for

New Nuclear Baseload Generation Addition
Evaluation of Florida Sites (EFS)
October 2007
Appendix IV – McCallum-Turner Siting Study

Editorial Note: All references in this Supplemental Analysis to EFS section, appendix, table and figure numbers refer to Appendix IV of the EFS.

Several criteria used in the EFS to evaluate prospective nuclear power plant sites were based on the extent of wetlands present at each site. Ratings for these criteria were based on the number of acres of wetlands found within a 6,000-acre circle around the site center-point. The data source for wetlands acreages was the U.S. Fish & Wildlife Service National Wetlands Inventory (NWI) mapping system. Data extraction was accomplished using a mapping tool available on the NWI web site that is designed to provide wetlands acreages within a user-specified geographic area.

In the process of responding to requests for additional information on the Levy Nuclear Plant COL application, it was discovered that the NWI mapping tool did not report all wetlands within the specified geographic area, resulting in inaccurate enumeration of the wetland acreages. (A detailed description of the mapping tool issues is provided in the text box below.)

The NWI mapping tool results are typically provided in two forms: (1) a map showing the wetland polygons within a 6,000-acre circle for each potential site; and (2) a pop up screen that is intended to include the individual records (with wetland code/type and acreage) for each wetland polygon found within the 6,000-acre circle. It was discovered that the pop up screen only includes the first 15 records of data (an automatic default), where each record corresponds to a wetland polygon within the circle. If more than 15 wetland polygons are contained within a 6,000-acre area, records beyond the fifteenth record are excluded from the pop up screen shown to the user. There appears to be no consistent algorithm as to which records are included or excluded; the display does not appear to be based on size (e.g., including the largest ones first), location (all within a particular part of the circle), or type (all of one wetland type).

This Supplemental Analysis provides:

- Corrected data for wetlands at each site considered, and
- An analysis of effects of corrected wetlands acreages on site ratings and site selection process results, taking into account the corrected wetlands acreages.

A.1 Evaluation of Potential Sites and Identification of Candidate Sites [EFS Section 5.0]

Corrected wetlands acreages for each of the potential sites identified in EFS Section 5.0, are presented in Table A-1; also included are the resulting revised screening criterion ratings for the wetlands criterion and the year of record for the supporting NWI map.

Results of applying the evaluation process described in EFS Section 5.1 to the 20 potential sites using the revised acreages and ratings from Table A-1 are summarized in Table A-2 and Figure A-1.

As compared with the top eight sites identified in the EFS Section 5.2, only one change resulted from the revised analysis: Hillsborough is replaced by Liberty 1. This results from the corrected wetlands ratings for the two sites, as the corrected wetlands analysis indicated a higher wetlands criterion rating for Liberty (4 versus 1) and a lower one for Hillsborough (2 versus 5), as compared with the original EFS results. Using the composite ratings using corrected wetlands data, the revised table of top eight sites would then be as follows.

Taylor	Crystal River
Levy 2	Gilchrist
Levy 3	Dixie
Lafayette	Liberty 1

A revised version of EFS Table 5-3, showing results of the revised composite ratings in conjunction with the local knowledge analysis of potential concerns is presented in Table A-3. Based on this table, Highlands drops from Group 1 to Group 3; the revised grouping in order of suitability would be as shown below.

Group 1 – Minimal Concerns	Crystal River, Levy-2, Levy-3 and Taylor
Group 2 – Intermediate Concerns	Putnam-1, -2, and -3
Group 3 – One potential significant concern; favorable transmission	Dixie, Highlands, Lafayette, Levy-1 and Gilchrist
Group 4 – One or more potential significant concerns; no favorable transmission	Calhoun, Gulf, Hillsborough, Liberty-1 & -2, Manatee, Seminole, Volusia

As correlated with the EFS Section 5.2, the rationale for additions and deferrals of sites from the top eight sites listed above would remain as reported with the following exceptions:

Hillsborough is no longer among the top eight and would not be considered. Also note that it was deferred from further consideration at this stage in the EFS because of its proximity to the Tampa-St. Petersburg area, uncertainties about how water supply would be developed, and concerns about public support and the ability to provide effective transmission connections.

Highlands would be included for the reasons given in EFS Section 5.2: This site allows evaluation of a different direction of transmission approach to the load than any other site considered, and it also allows consideration of a separate water source in the Kissimmee River.

Liberty 1 would be deferred due to its unsuitability from a transmission perspective. The site did not rank high enough in the overall ratings, as compared with the top six sites, to offset these significant disadvantages.

Levy 1 (which rose to ninth rank) would not be added to the list because it has no significant advantages over Dixie and is located in proximity to Manatee Springs State Park.

Two other adjustments in the eight sites carried forward for more detailed study: Gilchrist was deferred and Putnam 3 was included as candidate sites for reasons noted in EFS Section 5.2, for the reasons summarized below:

- The Gilchrist site, located on the Santa Fe River near the confluence with the Suwannee River, would require either a supplemental reservoir if the Santa Fe River were used as the cooling water source or long water supply lines if the Suwannee River were used as the water source. It also does not offer significant advantages over the other two Suwannee River sites (Dixie and Lafayette).
- One Putnam site was added to the candidate list based on the fact that it allowed evaluation of an alternative water source (St. Johns River) and because its location provides for connecting with the Progress load centers from a different direction than the sites in western Florida. Transmission lines would also be less likely to be subject to single-event failures because they would be more distant from existing transmission corridors. Putnam 3 was selected over the higher ranked Putnam 2 site, located on the east side of the river, based on subsequently identified advantages in rail and transmission access (found on west side of river), as well as real estate considerations (see EFS, Attachment I, Technical Evaluation, pages 16-17)

Accordingly, the revised wetlands ratings would not affect the selection of eight sites identified for further study at this stage of the process; these sites are as follows.

Taylor	Crystal River
Levy 2	Dixie
Levy 3	Putnam 3
Lafayette	Highlands

A.2 Evaluation of Candidate Sites and Identification of Alternative Sites [EFS Section 6.0]

Corrected wetlands data from the NWI maps as they relate to the general siting criteria are provided in Table A-4; revised ratings derived from these data are shown in Tables A-5 through A-8, as follows:

- Table A-5 – Wetlands sub-criterion ratings for the Disruption of Important Species/Habitats and Wetlands criterion.
- Table A-6 – Rationale relating to ratings for the flexibility component of the Wetlands sub-Criterion; note that metrics for the other two components – total wetland acreage and total high quality wetland acreage – are provided in responses to Questions 9.3-4 and 9.3-9, respectively.
- Table A-7 – Composite ratings for the Disruption of Important Species/Habitats and Wetlands criterion.
- Table A-8 - Dewatering Effects on Adjacent Wetlands Criterion.

Results of applying the evaluation process described in EFS Section 6.1 to the eight candidate sites using the revised acreages in Table A-4 and ratings from Tables A-5 through A-8 are summarized in Table A-9 and Figure A-2.

The identity and order of the top five sites (Crystal River, Putnam 3, Levy 2, Taylor and Dixie) are unchanged from those reported in EFS Section 6.2. Among the bottom two sites, Lafayette moves ahead of Highlands by a very small margin, as compared with results described in EFS Section 6.2.

As discussed in EFS Section 6.2, selection of sites for detailed evaluation was based on analysis of the general site criteria results in conjunction with information obtained via aerial site reconnaissance. The reasons for deferring the Taylor, Levy 3 and Lafayette sites remain unchanged from those reported in the EFS. Accordingly, the corrected wetlands data do not affect the identity of the five sites selected for detailed analysis as described in EFS Section 6.2:

- Crystal River
- Highlands
- Dixie
- Levy 2
- Putnam 3

Table A-1 Wetlands Acreages for Potential Sites (Revised) [Appendix C, Criterion P6, page 107]

Site (date of NWI map)	Wetland Acres (within 6,000-acre site area)	Rating	Site (date of NWI map)	Wetland Acres (within 6,000-acre site area)	Rating
Liberty 1 (data from 1973)	80	4	Dixie (1983)	590-600	3
Calhoun (1979)	>1,200	1	Levy 3 (1984)	2,000	1
Gulf (1996)	>1,200	1	Hillsborough (1982)	700	2
Liberty 2 (1973)	>1,200	1	Highlands (1984)	800-900	2
Taylor (1983)	1,000	2	Seminole (1984)	>1,200	1
Gilchrist (1983)	900-1,000	2	Volusia (1984)	>1,200	1
Levy 1 (1984)	60-80	4	Putnam 1 (1983)	2,000	1
Levy 2 (1984)	1,500	1	Putnam 2 (1983)	1,600-1,700	1
Crystal River (1984)	1,000	2	Putnam 3 (1983)	1,100	2
Lafayette (1984)	370	3	Manatee (1972)	450	3

Table A-2 Screening Criterion Ratings (Revised) [EFS Table 5-2, page 64]

Potential Site Name	County	ST	Cooling Water Supply	Flooding	Population	Hazardous Land Uses	Ecology	Wetlands	Railroad Access	Transmission Access	Land Acquisition	Site Rating
			Weight Factor									
			9.8	4.4	8.6	5.9	5.6	5.6	6.7	7.4	6.3	
Liberty 1	Liberty	FL	4	5	4	2	1	4	4.9	1.3	5.0	**209.1**
Gulf	Gulf	FL	5	1	5	2	1	1	5.0	1.0	5.0	**191.6**
Calhoun	Calhoun	FL	2	1	4	2	2	1	4.8	1.1	5.0	**159.2**
Liberty 2	Liberty	FL	1	5	4	4	1	1	4.9	1.6	5.0	**177.1**
Taylor	Taylor	FL	5	4	5	3	2	2	4.4	2.9	5.0	**232.0**
Gilchrist	Gilchrist	FL	3	5	4	2	4	2	4.9	3.1	5.0	**218.4**
Levy 1	Levy	FL	3	4	3	2	2	4	4.9	3.3	5.0	**206.6**
Levy 2	Levy	FL	5	4	4	2	2	1	4.9	3.9	5.0	**222.4**
Crystal River	Citrus	FL	5	3	4	1	2	2	4.9	3.9	5.0	**217.9**
Lafayette	Lafayette	FL	3	5	5	2	3	3	4.8	3.1	5.0	**226.6**
Dixie	Dixie	FL	3	4	4	2	2	3	4.7	3.1	5.0	**207.6**
Levy 3	Levy	FL	5	2	5	2	2	1	4.7	3.5	5.0	**217.9**
Hillsborough	Hillsborough	FL	5	4	1	2	2	2	5.0	3.7	5.0	**201.6**
Highlands	Highlands	FL	2	4	3	2	1	2	4.9	3.6	5.0	**182.3**
Manatee	Manatee	FL	2	5	2	3	2	3	4.9	4.6	5.0	**202.8**
Seminole	Seminole	FL	2	4	1	2	3	1	4.9	4.7	5.0	**178.8**
Volusia	Volusia	FL	2	3	2	3	1	1	4.8	4.6	5.0	**176.6**
Putnam 1	Putnam	FL	3	2	3	3	3	1	5.0	4.0	5.0	**198.3**
Putnam 2	Putnam	FL	3	3	4	2	3	1	4.9	3.9	5.0	**204.7**
Putnam 3	Putnam	FL	3	2	3	3	3	2	5.0	3.9	5.0	**203.3**

= Revised Wetlands Rating

Figure A-1a Summary of Potential Site Composite Ratings (Revised) [EFS Figure 5-1, page 65]

Ranked by revised ratings

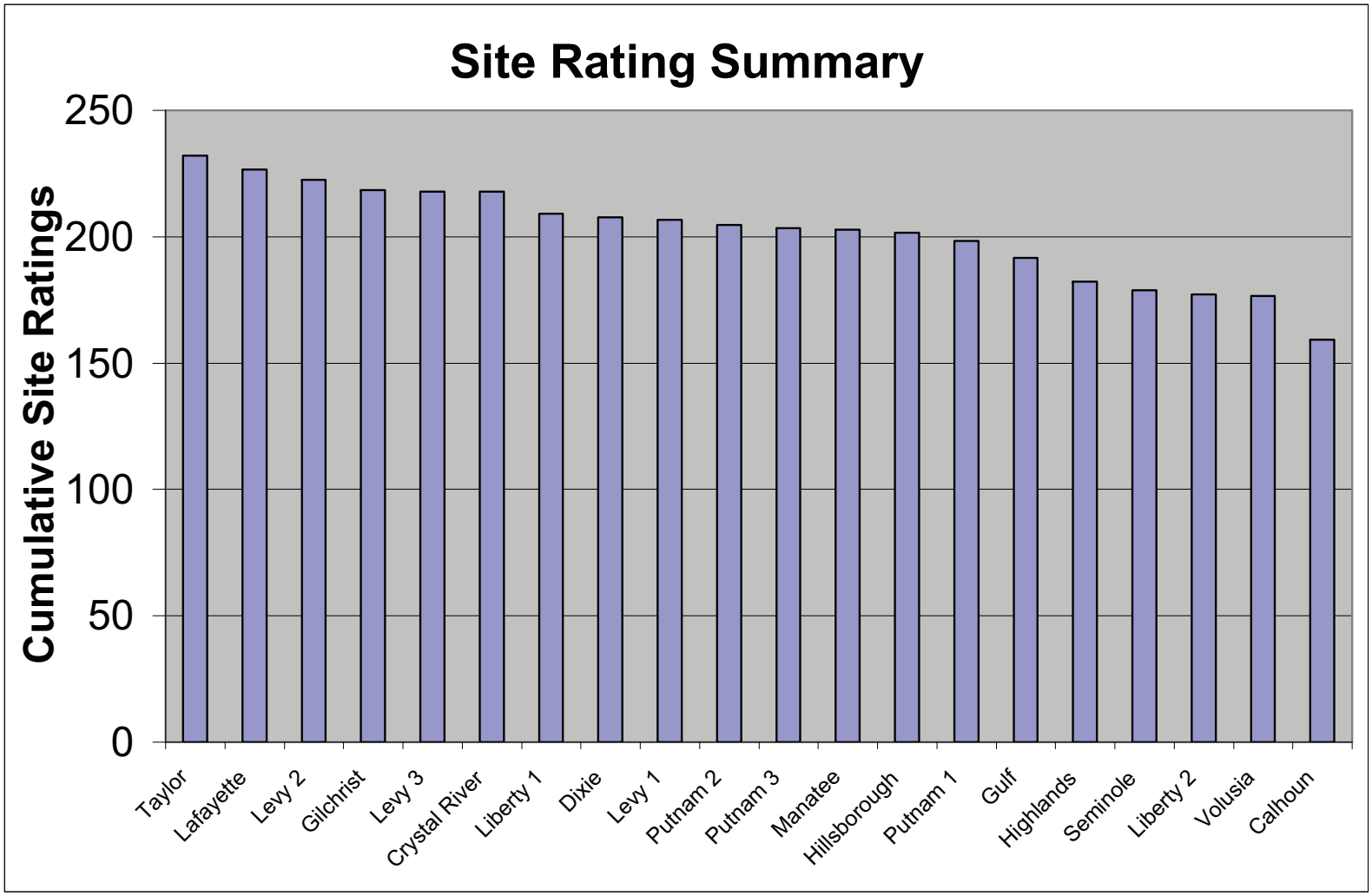

Figure A-1b Summary of Potential Site Composite Ratings (Revised) [EFS Figure 5-1, page 65]

Order as reported in EFS

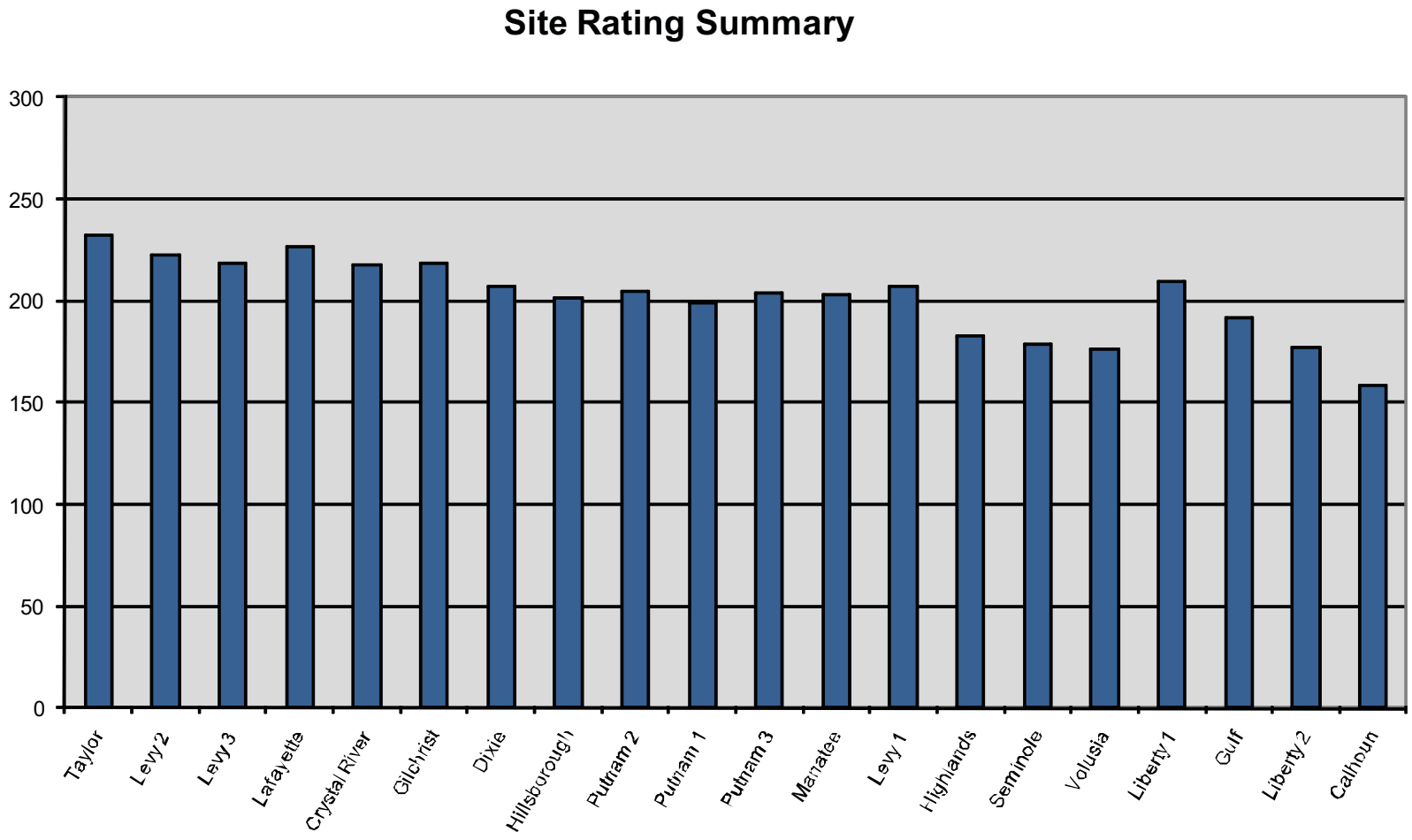

Table A-3 Potential Site Screening Evaluation Summary (Revised) [EFS Table 5-3, page 66]

Potential Site	Water Source	Composite Rating (Rank)	Transmission	Community Support	Economic Development	Environment	Legislative
Calhoun	Chipola River						
Crystal River	Gulf of Mexico						
Dixie	Suwannee River						
Gilchrist	Suwannee/Santa Fe						
Gulf	Gulf of Mexico						
Highlands	Kissimmee River	*					
Hillsborough	Tampa Bay						
Lafayette	Suwannee River						
Levy 1	Suwannee River						
Levy 2	Florida Barge Canal						
Levy 3	Gulf of Mexico						
Liberty 1	Apalachicola River	**					
Liberty 2	Ochlockonee River						
Manatee	Manatee River						
Putnam 1	St. Johns River						
Putnam 2	St. Johns River						
Putnam 3	St. Johns River						
Seminole	St. Johns River						
Taylor	Gulf of Mexico						
Volusia	St. Johns River						
		Green = top 8 Yellow = middle 6 Red = bottom 6	**GREEN** = not aware of any significant concerns YELLOW = some or potential concerns; proceed with caution RED = significant concerns with site				

Summary

1. No reds, several greens – Crystal River, Levy 2, Levy 3, Taylor (4 on Gulf of Mexico; 1 on Florida Barge Canal)
2. No reds, all yellow – Putnam 1, Putnam 2, Putnam 3 (3, all on St Johns River)
3. One Red with transmission green – Dixie, Gilchrist, Highlands, Lafayette, Levy 1 (Highlands on Kissimmee, rest on Suwannee River [Gilchrist also on Santa Fe])
4. One or more significant concerns; no favorable transmission – Calhoun, Gulf, Hillsborough, Liberty -1 & -2, Manatee, Seminole, Volusia

* - Revised from yellow to red based on revised site composite rating (rank dropped from middle 6 to bottom 6)

** - Revised from red to green based on revised site composite rating (rank rose from bottom 6 to top 8)

= Sites selected for further evaluation

Table A-4 Site Wetland Information for General Siting Criterion Evaluation (Revised) [EFS Page 107, no table number]

	Crystal River	Dixie **	High-lands	Lafay-ette	Levy 2**	Levy 3	Putnam 3 **	Taylor
Percent of wetland polygons mapped over 6000 acre area	17% (1,000 acres)	12% (730 acres)	14% (850 acres)	6% (370 acres)	25% (1,500 acres)	33% (2,000 acres)	18% (1,100 acres)	17% (1,000 acres)
Number of acres of high quality wetlands* within site area	750 (12.5%)	200 (3%)	260 (4%)	240 (4%)	1,400 (23%)	1,600 (27%)	1,090 (18%)	700 (12%)

* - Number of acres forested/shrub wetland polygons mapped

** - Optimized site locations

= Revised Wetland Information

Table A-5 Ratings – Wetlands Sub-Criterion of "Disruption of Important Species/Habitats and Wetlands" Criterion (Revised) [EFS Page 187, no table number]

	Crystal River	Dixie	High-lands	Lafay-ette	Levy 2	Levy 3	Putnam 3	Taylor
Total Acres	2	2	2	3	1	1	2	2
Acres of High quality wetlands	1	2	2	2	1	1	1	1
Flexibility* (based on % wetland polygons mapped over 6000 acres)	2.5	3	3	4	1	1	2	2.5
Overall Rating	**2**	**2**	**2**	**3**	**1**	**1**	**2**	**2**

* - See Table A-6

= Revised Ratings

Table A-6 Ratings – Flexibility Component of Wetlands Sub-Criterion (Revised) [No equivalent table in EFS]

Levy 2 and 3: rating of 1 – Site areas include 25% or higher total wetlands, 20% or higher forested wetlands, and wetlands are distributed throughout the sites.
Putnam 3: rating of 2 – Site area includes just under 25 percent total wetlands, although essentially all are forested wetlands (21% of site area); wetland distribution is grouped in large pockets, so avoidance of large wetlands areas is feasible.
Taylor and Crystal River: rating of 2.5 – Site areas include between 15 and 20% total wetlands and 12% forested wetlands; distribution is scattered but forested areas are generally grouped in pockets that could be avoided (i.e., slightly better conditions than Putnam 3).
Dixie, Highlands: rating of 3 – Site areas include less than 15% total coverage; less than 5% forested; distribution is scattered over the entire site although high quality wetlands are mostly grouped in pockets that could likely be avoided; greater scattering of emergent wetlands at Dixie, but all are small in size (mostly 10 acres or less). Rating of 3 assigned based on low percentage of high quality wetlands and lower percentage of total wetlands compared to other sites.
Lafayette: rating of 4 – Site has fewest wetlands (6% total), although majority are forested (4%); all are concentrated in the upper portion of the site with large areas to south and west containing no wetlands and offering large areas for plant siting with minimal impacts to wetlands.

Table A-7 Composite Ratings for "Disruption of Important Species/Habitats and Wetlands" Criterion (Revised) [EFS page 187, no table number]

	Crystal River	Dixie	High-lands	Lafay-ette	Levy 2	Levy 3	Putnam 3	Taylor
Species	**3**	**3**	**2**	**4**	**3**	**2**	**3**	**2**
Wetlands	**2**	**2**	**2**	**3**	**1**	**1**	**2**	**2**
Avg. Score/ Overall Rating	**2**	**2**	**2**	**3**	**2**	**1**	**2**	**2**

= Revised Ratings

Table A-8 Ratings for "Dewatering Effects on Adjacent Wetlands" Criterion (Revised) [EFS Page 188, no table number]

	Crystal River	Dixie	High-lands	Lafay-ette	Levy 2	Levy 3	Putnam 3	Taylor
Total Wetland Acreage	2	2	2	3	1	1	2	2
Acreage of Forested wetlands	1	2	2	2	1	1	1	1
Depth to Groundwater	3	3	3	4	3	2	4	2
Overall Rating	**2**	**2**	**2**	**3**	**2**	**1**	**2**	**2**

= Revised Ratings

Table A-9 General Site Criteria Ratings for Candidate Sites (Revised) [EFS Table 6-2, pages 70-72]

Criteria		Weight	Crystal River		Dixie		Highlands		Lafayette		Levy 2		Levy 3		Putnam 3		Taylor	
		Factor	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
A.1.1	Geology/Seismology	**3.77**	5	18.85	5	18.85	5	18.85	5	18.85	5	18.85	5	18.85	5	18.85	5	18.85
A.1.2	Cooling System Requirements	**3.27**	4	13.08	3	9.81	2	6.54	3	9.81	3	9.81	4	13.08	3	9.81	4	13.08
A.1.3	Flooding	**2.4**	2	4.8	3	7.2	1	2.4	2	4.8	5	12	3	7.2	5	12	3	7.2
A.1.4	Nearby Hazardous Land Uses	**3.35**	1	3.35	3	10.05	3	10.05	3	10.05	2	6.7	3	10.05	2	6.7	3	10.05
A.1.5	Extreme Weather Conditions	**2.36**	2	4.72	3	7.08	3	7.08	3	7.08	3	7.08	1	2.36	3	7.08	2	4.72
A.2	Accident Effect Related	**4.09**	4	16.36	4	16.36	4	16.36	4	16.36	3	12.27	4	16.36	4	16.36	4	16.36
A.3.1	Surface Water – Radionuclide Pathway	**2.5**	5	12.5	4	10	4	10	4	10	5	12.5	5	12.5	4	10	5	12.5
A.3.2	Groundwater Radionuclide Pathway	**2.55**	2	5.1	2	5.1	3	7.65	2	5.1	2	5.1	2	5.1	2	5.1	1	2.55
A.3.3	Air Radionuclide Pathway	**2.5**	5	12.5	4	10	4	10	4	10	4	10	5	12.5	4	10	5	12.5
A.3.4	Air-Food Ingestion Pathway	**2.5**	4	10	4	10	1	2.5	3	7.5	3	7.5	3	7.5	3	7.5	5	12.5
A.3.5	Surface Water-Food Radionuclide Pathway	**2.41**	5	12.05	4	9.64	3	7.23	4	9.64	5	12.05	5	12.05	4	9.64	5	12.05
A.3.6	Transportation Safety	**2.14**	3	6.42	3	6.42	3	6.42	3	6.42	3	6.42	3	6.42	3	6.42	3	6.42
B.1.1	Disruption of Important Species/Habitats	**2.64**	2	5.28	2	5.28	5	13.2	3	7.92	2	5.28	1	2.64	3	7.92	1	2.64
B.1.2	Bottom Sediment Disruption Effects	**2.14**	3	6.42	2	4.28	2	4.28	2	4.28	2	4.28	3	6.42	2	4.28	3	6.42
B.2.1	Disruption of Important Species/Habitats and Wetlands	**3.18**	2	6.36	2	6.36	2	6.36	3	9.54	2	6.36	1	3.18	2	6.36	2	6.36
B.2.2	Dewatering Effects on Adjacent Wetlands	**2.77**	2	5.54	2	5.54	2	5.54	3	8.31	2	5.54	1	2.77	2	5.54	2	5.54
B.3.1	Thermal Discharge Effects	**3.64**	3	10.92	2	7.28	3	10.92	3	10.92	3	10.92	3	10.92	3	10.92	3	10.92
B.3.2	Entrainment/Impingement Effects	**3.23**	3	9.69	3	9.69	4	12.92	3	9.69	3	9.69	3	9.69	3	9.69	3	9.69
B.3.3	Dredging/Disposal Effects	**2.36**	3	7.08	2	4.72	2	4.72	2	4.72	2	4.72	3	7.08	2	4.72	3	7.08
B.4.1	Drift Effects on Surrounding Areas	**2.36**	2	4.72	3	7.08	3	7.08	3	7.08	2	4.72	2	4.72	3	7.08	2	4.72

= Revised Ratings

Table A-9 General Site Criteria Ratings for Candidate Sites (Revised) (continued)

Criteria			Crystal River		Dixie		Highlands		Lafayette		Levy 2		Levy 3		Putnam 3		Taylor	
		Weight																
		Factor	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
C.1.1	Socioeconomics – Construction – Related Effects	**2**	4	8	3	6	5	10	3	6	4	8	4	8	5	10	3	6
C.3.1	Environmental Justice	**1.95**	5	9.75	5	9.75	5	9.75	5	9.75	5	9.75	5	9.75	5	9.75	5	9.75
C.4.1	Land Use	**3.8**	2	7.6	2	7.6	3	11.4	2	7.6	2	7.6	2	7.6	4	15.2	2	7.6
D.1.1	Water Supply	**3.7**	5	18.5	3	11.1	2	7.4	3	11.1	4	14.8	5	18.5	4	14.8	5	18.5
D.1.2	Pumping Distance	**3.05**	5	15.25	4	12.2	3	9.15	5	15.25	3	9.15	1	3.05	3	9.15	1	3.05
D.1.3	Flooding	**2.9**	2	5.8	3	8.7	2	5.8	2	5.8	5	14.5	3	8.7	5	14.5	3	8.7
D.1.5	Civil Works	**3.4**	3	10.2	3	10.2	3	10.2	4	13.6	3	10.2	3	10.2	3	10.2	3	10.2
D.2.1	Railroad Access	**2.6**	5	13	3	7.8	4	10.4	3	7.8	4	10.4	3	7.8	5	13	3	7.8
D.2.2	Highway Access	**2.8**	5	14	5	14	5	14	5	14	5	14	5	14	5	14	5	14
D.2.3	Barge Access	**2.85**	5	14.25	2	5.7	2	5.7	2	5.7	2	5.7	3	8.55	4	11.4	3	8.55
D.2.4	Transmission Access	**4.8**	3	14.4	4	19.2	4	19.2	4	19.2	5	24	4	19.2	4	19.2	4	19.2
D.3..1	Topography	**2.55**	5	12.75	5	12.75	5	12.75	4	10.2	5	12.75	5	12.75	3	7.65	4	10.2
D.3.2	Land Rights	**2.75**	5	13.75	4	11	3	8.25	1	2.75	2	5.5	1	2.75	3	8.25	4	11
D.3.3	Labor Rates	**3.3**	5	16.5	4	13.2	3	9.9	3	9.9	5	16.5	5	16.5	2	6.6	3	9.9
	Composite Site Rating			349		320		314		317		335		319		340		327

= Revised Ratings

Figure A-2a General Siting Criteria Ratings for Candidate Sites (Revised) [EFS Figure 6-1, page 73]

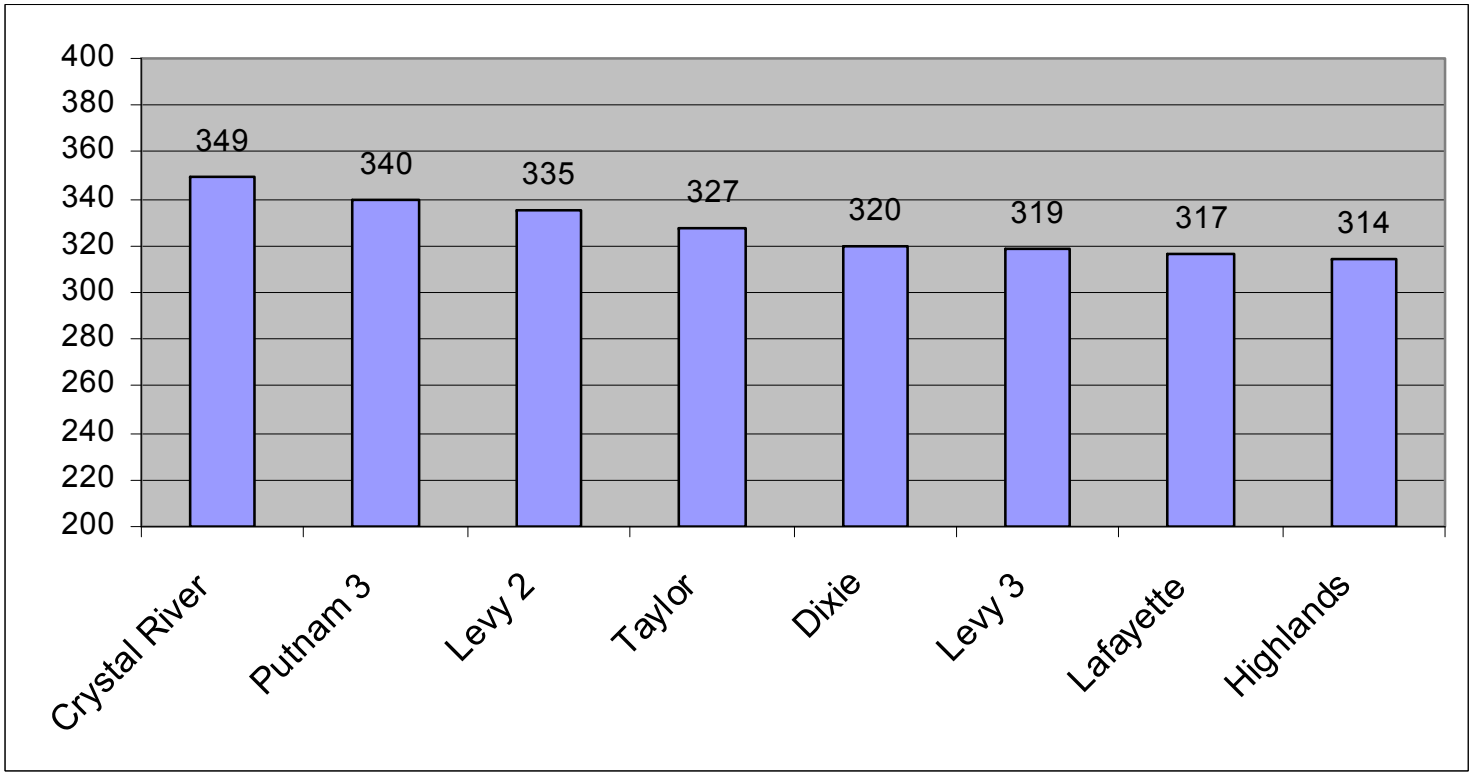

Figure A-2b General Siting Criteria Ratings for Candidate Sites (Revised) [EFS Figure 6-1, page 73]

Order as reported in EFS