



L-2011-376
10 CFR 52.3

September 12, 2011

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

Re: Florida Power & Light Company
Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
Response to NRC Request for Additional Information Letter 1107271
(RAI 5767 Revision 2) Related to ESRP Section 5.2 – Water Related Impacts

Reference:

1. NRC Letter to FPL dated July 27, 2011, Environmental Request for Additional Information Letter 1107271 Related to ESRP Section 5.2, Water Related Impacts, for the Combined License Application Review for Turkey Point Units 6 and 7

Florida Power & Light Company (FPL) provides, as an attachment to this letter, its response to the Nuclear Regulatory Commission's (NRC) Request for Additional Information (RAI) 5.2-1 through 5.2-4 provided in the referenced letter. The attachment identifies changes that will be made in a future revision of the Turkey Point Units 6 and 7 Combined License Application (if applicable).

If you have any questions, or need additional information, please contact me at 561-691-7490.

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

Executed on September 12, 2011.

Sincerely,

A handwritten signature in black ink, appearing to read 'W. Maher'.

William Maher
Senior Licensing Director – New Nuclear Projects

WDM/RFO

D097
NRW

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
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Attachment 1: FPL Response to NRC RAI No. 5.2-1 (RAI 5767 Revision 2)
Attachment 2: FPL Response to NRC RAI No. 5.2-2 (RAI 5767 Revision 2)
Attachment 3: FPL Response to NRC RAI No. 5.2-3 (RAI 5767 Revision 2)
Attachment 4: FPL Response to NRC RAI No. 5.2-4 (RAI 5767 Revision 2)

Enclosure: FPL Turkey Point Power Plant, Deep Injection Well System, Proposed
Monitoring Program

cc:

PTN 6 & 7 Project Manager, AP1000 Projects Branch 1, USNRC DNRL/NRO
Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant 3 & 4

NRC RAI Letter 1107271 Dated July 27, 2011

SRP Section: EIS 5.2 – Water Related Impacts

Question from Environmental Technical Support Branch

NRC RAI Number: EIS 5.2-1 (RAI 5767 Revision 2)

Provide site-specific measurements of the vertical and horizontal hydraulic conductivity and the thickness of the confining geologic unit that is expected to isolate the Boulder Zone from the overlying Upper Floridan aquifer at the site of wastewater injection wells.

FPL RESPONSE:

Site specific measurements of the vertical and horizontal hydraulic conductivity and the thickness of the confining geologic unit are not yet available. Several rock cores will be collected from the anticipated confining unit interval during construction of exploratory well EW-1, which is currently under way. Portions of the rock cores will be sent to a core testing laboratory, where vertical and horizontal measurements of the core samples will be made. Receipt of the core laboratory report containing the vertical and horizontal hydraulic conductivity measurements is anticipated to be within three months of well completion. The data will be submitted to the NRC as previously outlined by FPL (FPL, 2009).

This response is PLANT SPECIFIC.

References:

FPL, 2009. FPL Letter to NRC L-2009-265 dated November 24, 2009, Revised Hydrology Response to NRC; Request in COL Application Acceptance Review Letter Information.

ASSOCIATED COLA REVISIONS:

No COLA changes have been identified as a result of this response.

ASSOCIATED ENCLOSURES:

None

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 5.2-2 (RAI 5767 Revision 2)
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NRC RAI Letter 1107271 Dated July 27, 2011

SRP Section: EIS 5.2 – Water Related Impacts

Question from Environmental Technical Support Branch

NRC RAI Number: EIS 5.2-2 (RAI 5767 Revision 2)

Provide measurements of the temperature and specific gravity of groundwater within the depth interval of the Boulder Zone where wastewater will be injected.

FPL RESPONSE:

Temperature and specific gravity measurements for groundwater in the Boulder Zone are not yet available. Geophysical log data and a groundwater sample providing temperature measurements of the groundwater within the depth interval of the Boulder Zone will be collected. In addition, specific gravity measurements will be added to the testing plan. The data are anticipated to be available within three months of well completion and will be submitted to the NRC as previously outlined by FPL (FPL, 2009).

This response is PLANT SPECIFIC.

References:

FPL, 2009. FPL Letter to NRC L-2009-265 dated November 24, 2009, Revised Hydrology Response to NRC Information Request in COL Application Acceptance Review Letter.

ASSOCIATED COLA REVISIONS:

No COLA changes have been identified as a result of this response.

ASSOCIATED ENCLOSURES:

None

NRC RAI Letter 1107271 Dated July 27, 2011

SRP Section: EIS 5.2 – Water Related Impacts

Question from Environmental Technical Support Branch

NRC RAI Number: EIS 5.2-3 (RAI 5767 Revision 2)

Explain why upward leakage from the Boulder Zone to the Upper Floridan aquifer is not expected at the FPL wastewater injection wells in light of observed upward leakage at the Miami-Dade County South District Wastewater Treatment Plant.

FPL RESPONSE:

Upward leakage from the Boulder Zone to the Upper Floridan aquifer is not expected at the Underground Injection Control (UIC) wells proposed for Turkey Point Units 6 & 7 for the following reasons:

- Good confinement—approximately 800 feet of relatively low-permeability strata are anticipated to directly overlay the Boulder Zone at the site. These low permeability strata are regionally extensive and are effective at preventing fluids injected into the Boulder Zone from migrating vertically into the Upper Floridan Aquifer. This will be confirmed by data from the exploratory well currently underway.
- Good UIC well engineering design, construction techniques, and maintenance practices, in accordance with Florida Department of Environmental Protection's (FDEP's) comprehensive and rigorous EPA approved UIC permitting program.
- Appropriate monitoring of well operation and separate dual zone monitoring well system. Detection of any upward leakage would occur well in advance of any actual contamination of an Underground Source of Drinking Water (USDW) allowing adequate time to develop and implement corrective and/or preventive action in accordance with Florida Statutes and the Florida Administrative Code.

FPL has not conducted an independent evaluation or investigation concerning possible "upward leakage at the Miami-Dade County South District Wastewater Treatment Plant." According to one published paper, the upward leakage may be due to a construction-related issue - "If the reamed hole for a casing string diverged from the pilot hole, then the pilot hole may become a conduit for vertical fluid migration. However, well construction problems as a cause for vertical fluid migration have not yet been conclusively confirmed at any injection well site." (Maliva, 2007).

This response is PLANT SPECIFIC.

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References:

Maliva, 2007. Maliva, et al., Vertical Migration of Municipal Wastewater in Deep Injection Well Systems, South Florida, USA, 15 Hydrogeology J. 1387, 1395 (Sept. 2007).

ASSOCIATED COLA REVISIONS:

No COLA changes have been identified as a result of this response.

ASSOCIATED ENCLOSURES:

None

NRC RAI Letter 1107271 Dated July 27, 2011

SRP Section: EIS 5.2 – Water Related Impacts

Question from Environmental Technical Support Branch

NRC RAI Number: EIS 5.2-4 (RAI 5767 Revision 2)

Provide details of the planned operational monitoring of the deep injection wells including parameters, sampling frequency, reporting methods, action levels, and actions that will be taken if vertical migration of injected wastewater is detected.

FPL RESPONSE:

The enclosed table, extracted from Site Certification Application (SCA) Appendix 10.2.8.1, Attachment F (FPL, 2009), summarizes the monitoring plan for the deep injection well system that FPL anticipates proposing in the next phase of the Underground Injection Control (UIC) permitting process. The plan is subject to revision during the operational permitting process in accordance with permit conditions established by Florida Department of Environmental Protection (FDEP) following their review of the proposed monitoring plan.

Monitoring data will be submitted monthly to the FDEP in the form of a Monthly Operating Report (MOR). The MOR will include daily and monthly maximum, minimum and average injection flow rate, annulus pressure, and injection pressure for each injection well. The MOR will also include the results of all analyses of fluids to be injected and analyses of all groundwater samples collected from both monitoring zones of each dual-zone monitor well.

The MOR data will be reviewed each month with the purpose of identifying monitoring well water quality and water level trends that may be an indication of migration of injected fluids. Trends in the monitoring well monitoring zones such as a freshening (indicated by decreasing total dissolved solid [TDS], chloride, sodium and conductivity) and increased water level in the lower monitor zone would indicate potential migration of injected fluid. Other indicators of injected fluid migration may include trends of changing water quality parameters over time. This detection would occur well in advance of any actual contamination of an underground source of drinking water (USDW) allowing adequate time to develop and implement remedial measures.

In addition, the deep injection wells will undergo mechanical integrity testing every five years to demonstrate both internal and external mechanical integrity. Internal mechanical integrity will be tested by performing a video survey inspection of the injection tubing, pressure testing of the fluid filled annulus between the final well casing and the injection tubing, and high-resolution temperature logging. External mechanical integrity will be tested by performance of a radioactive tracer survey performed at the base of the final well casing to detect the presence of channels in the cement behind the final casing that could allow fluid to migrate

Proposed Turkey Point Units 6 and 7
Docket Nos. 52-040 and 52-041
FPL Response to NRC RAI No. 5.2-4 (RAI 5767 Revision 2)
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upward. A report providing an interpretation of the testing results as well as an interpretation of the injection well injection pressure, annulus pressure and injection flow rate data, dual-zone monitor well water level, and dual-zone monitor well analytical data will be submitted to FDEP for review and approval.

If vertical migration of injected wastewater were detected, FPL would be required to contact FDEP to notify them of the detected vertical fluid migration. It is anticipated that FDEP would then require corrective and/or preventive action in accordance with Florida Statutes and the Florida Administrative Code.

References:

FPL, 2009. Permit Application available at http://publicfiles.dep.state.fl.us/Siting/Outgoing/FPL_Turkey_Point/Units_6_7/Application/SCA%20Appendix%2010.2_Federal%20Permit%20Applications%20or%20Approvals/SCA%20APPENDIX%2010.2.8_UIC%20Exploratory%20Well%20Permit%20Application.pdf. (Accessed on September 1, 2011).

ASSOCIATED COLA REVISIONS:

No COLA changes have been identified as a result of this response.

ASSOCIATED ENCLOSURES:

FPL Turkey Point Power Plant, Deep Injection Well System, Proposed Monitoring Program

Enclosure

**Turkey Point Nuclear Plant Units 6 and 7
COL Application**

**ENVIRONMENTAL REPORT
NRC RAI No. 5.2-4 (RAI 5567 Revision 2)**

**FPL Turkey Point Power Plant, Deep Injection Well
System, Proposed Monitoring Program**

FPL Turkey Point Power Plant Deep Injection Well System Proposed Monitoring Program		
Monitoring Station	Parameter	Frequency
Injection Well	Primary/Secondary DWS/Minimum Criteria*	Prior to Start-up
	Flowrate	Continuous
	Wellhead Pressure	Continuous
	Annulus Pressure	Continuous
DZMW-1 both monitoring zones	Primary/Secondary DWS/ Minimum Criteria*	Prior to Start-up
	Water Level referenced to NAVD 88	Continuous
	Specific Conductivity	Weekly*
	pH	Weekly*
	Chloride	Weekly*
	Temperature	Weekly*
	Total Dissolved Solids (TDS)	Weekly*
	Total Phosphorous	Weekly*
	Sulfate	Weekly*
	Sodium	Weekly*
	Calcium	Weekly*
	Magnesium	Weekly*
	Potassium	Weekly*
	Carbonate	Weekly*
	Bicarbonate	Weekly*
	Gross Alpha	Monthly**
Radium-226	Monthly**	
Radium-228	Monthly**	
Wastestream	Total Dissolved Solids	Weekly*
	Chloride	Weekly*
	Specific Conductivity	Weekly*
	pH	Weekly*
	Temperature	Weekly*
DWS - Drinking Water Standards *Frequency decreased to monthly following operational testing and Department approval ** Frequency decreased to quarterly following operational testing and Department approval		

Note: The above monitoring program is proposed to be utilized following conversion of exploratory well EW-1 to Class I deep injection well IW-1.

*Minimum Criteria = Municipal Wastewater Minimum Criteria Ground Water Monitoring Parameters.