

# MEMORANDUM

AGENDA ITEM #III.G

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DATE: MAY 7, 2012

TO: COUNCIL MEMBERS

FROM: STAFF

SUBJECT: TURKEY POINT EXPANSION - DRAFT AGENCY REPORT ON THE POWER PLANT AND NON-TRANSMISSION ASSOCIATED FACILITIES

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## Background

Florida Power and Light (FPL) is seeking approval to expand nuclear energy production at the Turkey Point Plant, in Miami-Dade County. The proposed "Turkey Point Expansion Project" consists of the construction of two new nuclear units, 6 and 7, and the placement of new transmission lines and other linear and non-linear facilities. The State of Florida will decide whether, and under what conditions, to license both the transmission facilities and new electrical power plants in one proceeding, pursuant to the State Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes. FPL has submitted applications for state and federal approvals for the project. If approved, the new units would add 2,200 megawatts of electrical generation capacity. Attachment 1 provides a general location map.

The South Florida Regional Planning Council is an affected agency, as identified in Florida Statute 403.407(2) (a), and has been actively involved in the review and comment phase during the Site Certification process. This provides the Council the opportunity to ensure the project's consistency with the *Strategic Regional Policy Plan for South Florida (SRPP)*.

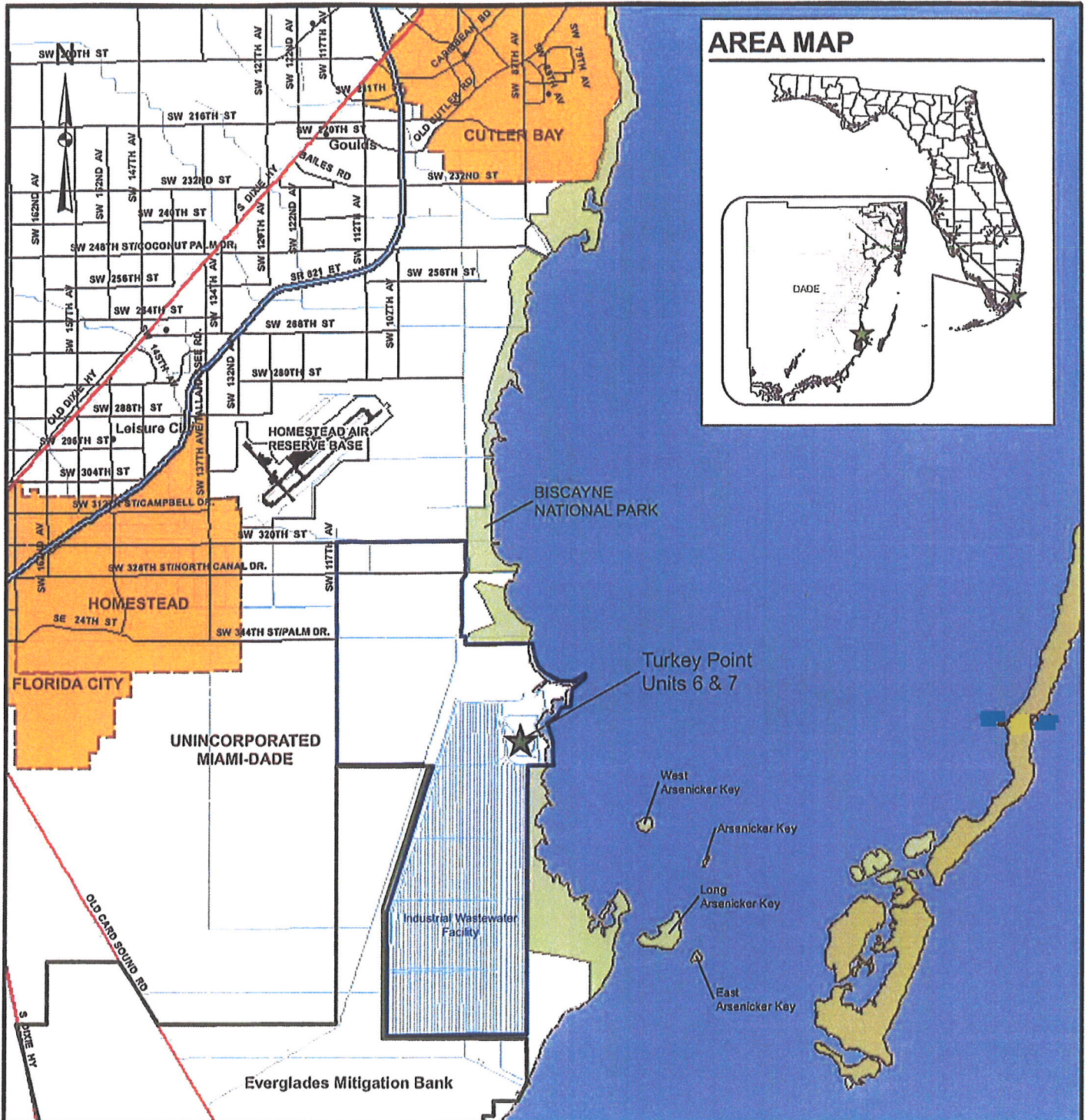
In June 2011 the Council submitted its Agency Report identifying issues related to the transmission line portion of the Site Certification Application. The Council must now submit its Agency Report for the power plant and non-transmission associated facilities, as to matters within its jurisdiction, which is due May 15, 2012.

## Issues in the Agency Report

Issues identified by Council staff that have not been adequately addressed in the Site Certification Application, and in several rounds of additional information requests, relate to the following concerns: (1) assurances about local hiring practices; (2) impacts to Natural Resources of Regional Significance, as identified in the *SRPP*; (3) the protection of water quality; and (4) the potential impacts of sea level rise over the useful life of the proposed facilities.

## Recommendation

Approve the attached Draft Agency Report on the plant and non-transmission associated facilities. Authorize staff to make revisions as directed by the Council and to forward the report to the Department of Environmental Protection.

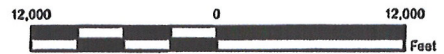



**LEGEND**

- ★ Turkey Point Units 6 & 7
- ▭ Turkey Point Plant Property
- ▭ Everglades Mitigation Bank
- ▭ Municipal Boundaries

**REFERENCES**

1. Local City Boundaries, Municipal Boundaries, Major Roads, Miami-Dade County GIS, 2006.



PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	LOCATION MAP	
	FILE No.	08387584B001
	REV.	0
	PLOT DATE	8/11/2009
		<b>FIGURE</b> 3.1.1-1

South  
Florida  
Regional  
Planning  
Council



May 15, 2012

Mr. Michael P. Halpin  
Program Administrator  
Office of Siting Coordination  
Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

RE: Agency Report for the Turkey Point Nuclear Power Plant Expansion (Units 6 and 7) – Power Plant and Non-Transmission Associated Facilities Site Certification Application

Dear Mr. Halpin:

Pursuant to 403.507(2)(a), Florida Statute (F.S.), the South Florida Regional Planning Council (SFRPC) presents the following Agency Report with regard to the proposed Turkey Point Power Plant and Non-Transmission Associated Facilities.

#### INTRODUCTION

Florida Power and Light (FPL) submitted a Site Certification Application to the Florida Department of Environmental Protection (DEP) on June 30, 2009. If approved, the application would allow FPL to expand nuclear energy production at its Turkey Point facility in Miami-Dade County. The proposed project consists of the construction of two new 1,100 megawatt (mW) nuclear reactor Units, 6 and 7, and supporting facilities; as well as the placement of new transmission lines. Although power plant siting and transmission lines are treated as separate processes in Chapter 403, F.S., they have been combined into one application by the Applicant. The review process will be conducted on separate but parallel tracks. The transmission lines are being reviewed in an earlier timeframe than the power plant, although the transmission lines will only be necessary if the Unit 6 and Unit 7 installations are approved.

Siting approval is generally made through a Final Order of Certification signed by the Secretary (agency head) of DEP. If the application is contested, Certification Hearings will be held. The presiding Administrative Law Judge (ALJ) issues a Recommended Order that contains findings of fact and conclusion of law about the matters raised at the hearing or in the application, along with the proposed Conditions of Certification, if certification is recommended. The Recommended Order is submitted to DEP for presentation to the Siting Board (Governor and Cabinet). The Board will decide whether to license both the transmission lines and new electrical power generation plants in one proceeding, pursuant to the State Power Plant Siting Act (PPSA), Chapter 403, Part II, (F.S.).

The South Florida Regional Planning Council is one of several affected agencies actively involved in the review and comment of the application, as identified in §403.507(2)(a) and §403.526 F.S. This process provides the Council the opportunity to assess the project's consistency with the *Strategic Regional Policy Plan for South Florida (SRPP)*. The Council's report contains recommendations to address impacts of the proposed project.

## PROJECT DESCRIPTION

The two nuclear generating units with supporting buildings, facilities and equipment are proposed to be located due south of the existing Turkey Point Units, on a parcel currently within the industrial wastewater /cooling canal system. Associated facilities proposed in or around the new or existing plant units include parking areas; a nuclear administration and training building; a reclaimed water treatment facility and treated reclaimed water delivery pipelines; radial collector wells and delivery pipelines for cooling water backup; and an equipment barge unloading area. A new electrical substation (Clear Sky) will be constructed on the Turkey Point site. A 230-kilovolt (kV) transmission line also will be needed to connect the new substation to the existing substation on the plant property.

## SFRPC REVIEW AND EVALUATION

The Council has identified issues that merit additional attention because of their potential impacts to the Region, in accordance with §403.5252 and §403.526, F.S., and public comments. After a careful review of the power plant and associated facilities of the site certification application and FPL's responses within the scope of five completeness requests for additional information, The Council reviewed how the proposed project would affect the 22 priority issues of the Region that form the *Strategic Regional Policy Plan for South Florida*. The relevant priority areas that may be affected by the proposed project are: **Workforce; Natural Resources; Water Quality; and Public Health, Safety, and Quality of Life.**

## ISSUE AND IMPACT ANALYSIS

### Work Force

The Council recognizes the economic impact the new units and facilities will have on the Region. The Site Certification indicates the Turkey Point expansion will provide employment opportunities to the Region. Approximately 2,430 workers skilled laborers will be needed for plant and associated facility construction and at the peak of construction activity there will be 3,600 workers. FPL anticipates that 610 of those construction jobs would be held locally and the remaining 1,820 workers would migrate into Miami-Dade County. Once Units 6 and 7 are constructed an estimated 806 employees will be needed to operate the new facilities. FPL has partnered with Miami-Dade College to have a trained workforce. FPL hiring methods should ensure that workers from the Region are utilized to the greatest extent possible in order to maximize the economic impacts captured locally and regionally.

- |             |   |
|-------------|---|
| Goal 1      | <b>Invest in the youth and workforce of the Region by providing quality education, workforce training, and targeted job creation.</b>   |
| Policy 1.5  | Provide an adequate, affordable, and accessible support system for the Region's diverse workforce, including housing, childcare, transportation, and language training.                       |
| Policy 1.9  | Encourage and expand partnerships among education providers, local governments, and the business community to develop curricula and provide training programs for the Region's workforce.     |
| Policy 1.10 | Encourage youth and workforce members to consider a diverse range of educational programs, including vocational and technical training, certificate programs, and two-year associate degrees. |

**Goal 2**            **Increase employment opportunities and support the creation of jobs with better pay and benefits for the Region’s workforce.**

Policy 2.6        Promote the location of publicly supported services within walking distance of regional transit services to make it possible for residents without access to private transportation to use those services in a convenient and timely fashion.

Protection of Natural Resources of Regional Significance

The proposed construction of two new nuclear reactors (Units 6 and 7) is expected to disturb more than 900 acres of sensitive coastal wetlands, 300 acres of which are situated within a mangrove protection area along Biscayne Bay and adjacent to Biscayne National Park, both identified by the *Strategic Regional Policy Plan for South Florida (SRPP)* as Natural Resources of Regional Significance.

The Council is concerned about the potential impacts of the proposed project on vegetation, wildlife, wetlands, natural forest communities and environmentally endangered lands. FPL has established the Florida Everglades Mitigation Bank (EMB) to mitigate expected impacts from construction of the new Units. Within the bank area, nearly 13,500 acres of wetlands are being returned to their natural, historical condition.

While the EMB is intended to provide mitigation credits to offset unavoidable wetlands impacts there is concern that all lost habitat and wildlife will not be comprehensively and adequately replaced. Currently, proposed mitigation strategies by FPL are focused on mitigating impacts to the areas south and east of the Turkey Point Cooling Systems. A more comprehensive approach is necessary, taking in account the Comprehensive Everglades Restoration Project (CERP) area, to address full impacts of this project.

**Goal 11**            **Encourage and support the implementation of development proposals that conserve the Region’s natural resources, rural and agricultural lands, green infrastructure and:**

- Utilize existing and planned infrastructure where most appropriate in urban areas;
- Enhance the utilization of regional transportation systems;
- Incorporate mixed-land-use developments;
- Recycle existing developed sites; and
- Provide for the preservation of historic sites.

**Goal 14**            **Preserve, protect, and restore Natural Resources of Regional Significance.**

Policy 14.1        Address environmental issues, including the health of our air, water, habitats, and other natural resources, that affect quality of life and sustainability of our Region.

Policy 14.3        Protect native habitat by first avoiding impacts to wetlands before minimizing or mitigating those impacts. Development proposals should demonstrate how wetland impacts are being avoided and what alternative plans have been considered to achieve that objective.

Policy 14.7        Restore, preserve, and protect the habitats of rare and state and federally listed species. For those rare and threatened species that have been scientifically demonstrated by past or site specific studies to be relocated successfully, without resulting in harm to the relocated or receiving populations, and where *in-situ* preservation is neither possible nor desirable from an ecological perspective, identify suitable receptor sites, guaranteed to be

preserved and managed in perpetuity for the protection of the relocated species that will be utilized for the relocation of such rare or listed plants and animals made necessary by unavoidable project impacts. Consistent use of the site by endangered species, or documented endangered species habitat on-site shall be preserved on-site.

- Goal 15**      **Restore and protect the ecological values and functions of the Everglades Ecosystem by increasing habitat area, increasing regional water storage, and restoring water quality.**
- Policy 15.1    Encourage land uses and development patterns that are consistent with Everglades Ecosystem restoration and with the protection of Natural Resources of Regional Significance.
- Goals 20**      **Achieve long-term efficient and sustainable development patterns that protect natural resources and connect diverse housing, transportation, education, and employment opportunities.**
- Policy 20.1    Provide for the compatibility of adjacent land uses and assess the impacts of land uses on the surrounding environment in comprehensive plans and development regulations.
- Goal 21**      **Assume a leadership role to enhance regional cooperation, multi-jurisdictional coordination, and multi-issue regional planning to ensure the balancing of competing needs and long-term sustainability of our natural, developed and human resources.**
- Policy 21.1    Implement better coordination of land use, natural resource, and infrastructure planning, with special attention to regional ecosystem management approaches.

Protection of Water Quality

Water is an important feature of the new plant's operations. Proposed water elements include six circulating water cooling towers, a reclaimed water treatment facility, radial wells that will supply approximately 86,400 Gallons Per Minute (gpm) of as a backup water source to the cooling towers, and water supply delivery pipelines for the radial collector wells and treated reclaimed water.

The cooling water sources are a combination of reclaimed, salt and potable water. Reclaimed water is the primary source of water for the circulating water system, with saltwater being the secondary source and potable water being a tertiary source. Although radial well water will not be treated, chemicals may be added (to control the pH level and prevent scaling). Cooling tower effluent and other site wastewater streams will be injected into deep wells. Stormwater runoff will be routed to the wastewater facility serving existing Units for treatment.

Deep injection wells will be located approximately 3000 feet below land surface. Injecting untreated cooling tower effluent into deep wells has the potential to adversely impact groundwater quality by increasing salinity levels and introducing non-naturally occurring chemicals. Because the radial collector wells withdraw water from the Biscayne Aquifer as backup water source for the cooling towers this could reduce the Region's fresh water supply.

The Council is concerned that the radial well operations, if approved, will seriously affect regional groundwater levels, exacerbate salt water intrusion and ultimately threaten the Biscayne Aquifer, potable water supplies and Everglades restoration efforts. The Council supports the use of a phased

implementation of the radial wells in order to provide opportunities to ensure the ability of this untested technology to be used without negative impacts.

- Goal 7**            **Protect, conserve, and enhance the Region’s water resources.**
- Policy 7.1        Develop a more balanced, efficient, and ecologically sustainable allocation and reservation of the water resources of the Region.
- Policy 7.6        Ensure that the recharge potential of land is not reduced as a result of a proposed modification in the existing uses by incorporation of open space, previous areas, and impervious areas in ratios which are based upon analysis of on-site recharge needs.
- Policy 7.7        Require all inappropriate inputs into Natural Resources of Regional Significance to be eliminated through such means as redirection of offending outfalls, treatment improvements, or retrofitting options.
- Policy 7.9        Restore and improve water quality throughout the system by:  
a. requiring stormwater treatment and management;  
b. protecting wetlands, native uplands, and identified aquifer recharge areas; and  
c. implementing best management practices, such as utilization of low phosphorus fertilizers.
- Policy 7.11       Encourage the implementation and further development of water conservation measures.
- Policy 7.12       Encourage additional water conservation techniques, which discourage excessive use of infrastructure and services in the Region while considering social and economic equity standards.
- Goal 15**        **Restore and protect the ecological values and functions of the Everglades Ecosystem by increasing habitat area, increasing regional water storage, and restoring water quality.**
- Policy 15.1       Encourage land uses and development patterns that are consistent with Everglades Ecosystem restoration and with the protection of Natural Resources of Regional Significance.
- Policy 15.2       Restore natural volume, timing, quality, and distribution of water to the Everglades, Florida Bay, Biscayne Bay, other estuaries, and the Atlantic Ocean by:  
a. implementing structural and operational modifications to the Central and Southern Florida Project including Modified Water Deliveries to Everglades National Park, the C-111 Project, and the Comprehensive Everglades Restoration Plan;  
b. implementing the East Coast Buffer/Water Preserve Areas; and  
c. implementing the Lower East Coast Water Supply Plan so that the needs of the natural system are met consistent with ecosystem restoration.
- Goal 16**        **Enhance and preserve natural system values of South Florida’s shorelines, estuaries, benthic communities, fisheries, and associated habitats, including, but not limited to, Florida Bay, Biscayne Bay, tropical hardwood hammocks, and the coral reef tract.**

Public Health, Safety, and Quality of Life

The Council is concerned that the proposal to build two new reactors at the Turkey Point site has not adequately assessed the potential impacts of sea level rise (SLR) over the useful life of the facilities. This concern has two dimensions: (1) the increasing hazard represented by storm events on the reactors and associated facilities as sea level increases in the coming 40-60 years; and (2) the impact of rising sea level on all of southern Miami-Dade County, including areas that host essential, auxiliary facilities and provide access to the new generating facilities.

FPL plans to raise the site of the proposed new reactors to a level that is above any of the levels projected by current sea level rise studies. However, there is insufficient discussion in the Application of the potential impacts of sea level rise on any of the associated facilities or on the potential users of FPL electricity, both of which are relevant to the decision to place the new reactors at the proposed site, which is in the Coastal High Hazard Area. The useful life of the proposed reactors (40 years, with an option to be renewed for up to an additional 20 years), puts the potential timeframe for their operation to 2080.

Consequences of sea level rise for the site (the reactors and associated facilities) and the surrounding region should be more thoroughly evaluated. The possible effects of sea level rise on auxiliary facilities at Turkey Point, including reclaimed water processing and waste water facilities, fuel storage facilities, the roadway network that will ensure access to the site, and the transmission lines that will carry electricity to consumers, should also be evaluated prior to approval of the Application. In addition, a discussion of the potential effects of storm events and associated storm surge on those same facilities should be evaluated both for current sea level and for the range of possible rise in sea level over the useful life of the proposed reactors. Council staff's attempts to elicit additional analysis of the potential impacts of sea level rise, including an assessment of potential inundation under extreme hurricane conditions, based on the planning parameters adopted by the Southeast Florida Regional Climate Change Compact (which includes Monroe, Miami-Dade, Broward and Palm Beach Counties), were unsuccessful during the sufficiency phase (see the US Army Corps of Engineers, July 2009 in Table 1 in "A Unified Sea Level Rise Projection for Southeast Florida").

The Council believes that this assessment of the site and the surrounding area should use the best available data, as well as analysis based on the most current elevation data and Sea, Lake and Overland Surges from Hurricanes (SLOSH) modeling (including a range of potential sea level rise). SLOSH modeling for the Biscayne Bay Basin in Miami-Dade County, conducted by the National Hurricane Center as part of the Statewide Regional Evacuation Study Program in 2010, used a more up-to-date version of the model than the one used by FPL in its Application. Surge analysis carried out by Council staff as part of the same study (see the Storm Tide Atlas at [www.sfrpc.com/sresp.htm](http://www.sfrpc.com/sresp.htm)) showed that projected surge water depths for a worst-case storm would generally be higher than those predicted with the previous version of the SLOSH model. Attached Figure 1 shows the potential water depth at the Turkey Point site and surrounding area for a worst case storm based on the analysis conducted by Council staff, **without consideration of sea level rise.**

The analysis should be revised to include sea level rise as part of the SLOSH analysis. According to staff at the National Hurricane Center, "the most accurate method would be to couple a general circulation model such as SLOSH with a coastal morphology model, as SLR would likely result in radical changes to the coastline, which would then alter the surge vulnerability." An analysis conducted under that approach for one or more sea level rise scenarios would enable Council staff to rerun the surge analysis and assess the potential impact on Turkey Point and the surrounding area more accurately than has been possible to date.



- Goal 3**            **Promote the health, safety, and welfare of South Florida’s residents.**
- Policy 3.7        Reduce exposure to environmental contaminants and hazards in the Region’s ground, air, and water.
- Goal 4**            **Enhance the economic and environmental sustainability of the Region by ensuring the adequacy of its public facilities and services.**
- Policy 4.3        Utilize the existing infrastructure capacity of regional facilities to the maximum extent consistent with applicable level of service standards before encouraging the expansion of facilities or the development of new capacity.
- Policy 4.10      Encourage the application of resource recovery, recycling, cogeneration, district cooling, water re-use systems, and other appropriate mechanisms where they are cost-effective and environmentally sound as a means of reducing the impacts of new development on existing public facilities and services and decreasing the costs of providing new public facilities and services.
- Goal 9**            **Develop clean, sustainable, and energy-efficient power generation and transportation systems.**
- Policy 9.7        Assess the impacts of global climate change and sea-level rise on South Florida’s resources and land uses.
- Goal 19**          **Direct future development away from areas most vulnerable to storm surges.**
- Policy 19.5      Incorporate buffer and conservation zones into site designs for new development and redevelopment in the storm surge areas to mitigate possible damage. Consider the inevitable rise in sea level in all decisions regarding the design, location, and replacement of coastal development or redevelopment.
- Policy 19.7      Require any development or redevelopment that occurs in a Coastal High Hazard Area to include features that mitigate hazard impacts and promote public safety and welfare.

#### **FINAL CONDITIONS AND RECOMMENDATION**

The Council has identified the priority issue areas and analyzed the impacts of the proposed project. The Council recommends that, if the application is approved, the applicant:

1. Ensure FPL training and hiring practices for the construction and operational phases of this project maximize the opportunities for employment of regional workers.
2. Apply comprehensive mitigation strategies that encompass the full range of impacts to CERP areas, and work to obtain interagency consensus on addressing impacts and mitigation strategies. These strategies should determine the extent of sensitive wildlife and vegetative communities in the vicinity of the project, protect habitat and mitigate disturbances, and minimize impacts to the natural systems to the greatest extent feasible. In addition, the Applicant should adequate protection of wildlife during the construction phase of the project through the inclusion of crossings, underpasses and fencing.
3. Implement a phased strategy for construction of the radial collector wells, testing and monitoring the impacts on ground and surface waters, rather than a full-scale implementation, in order to ensure this approach is scientifically sound and environmentally sustainable.

Mr. Michael P. Halpin

May 15, 2012

Page 8

4. Revise the analysis of the potential impacts due to sea level rise using the best available data and science to determine the potential impacts, within the range adopted by the Southeast Florida Regional Climate Change Compact, and agree to participate in an ongoing regional assessment of sea level rise calculations over the life of the project.

This will assist in reducing the cumulative impacts to infrastructure; implementing local comprehensive plans; and protecting people, animals, native plants and wetlands, consistent with the Goals and Policies of the *Strategic Regional Policy Plan for South Florida (SRPP)*.

If you require further information, please contact me or Karen Hamilton at 954-985-4416.

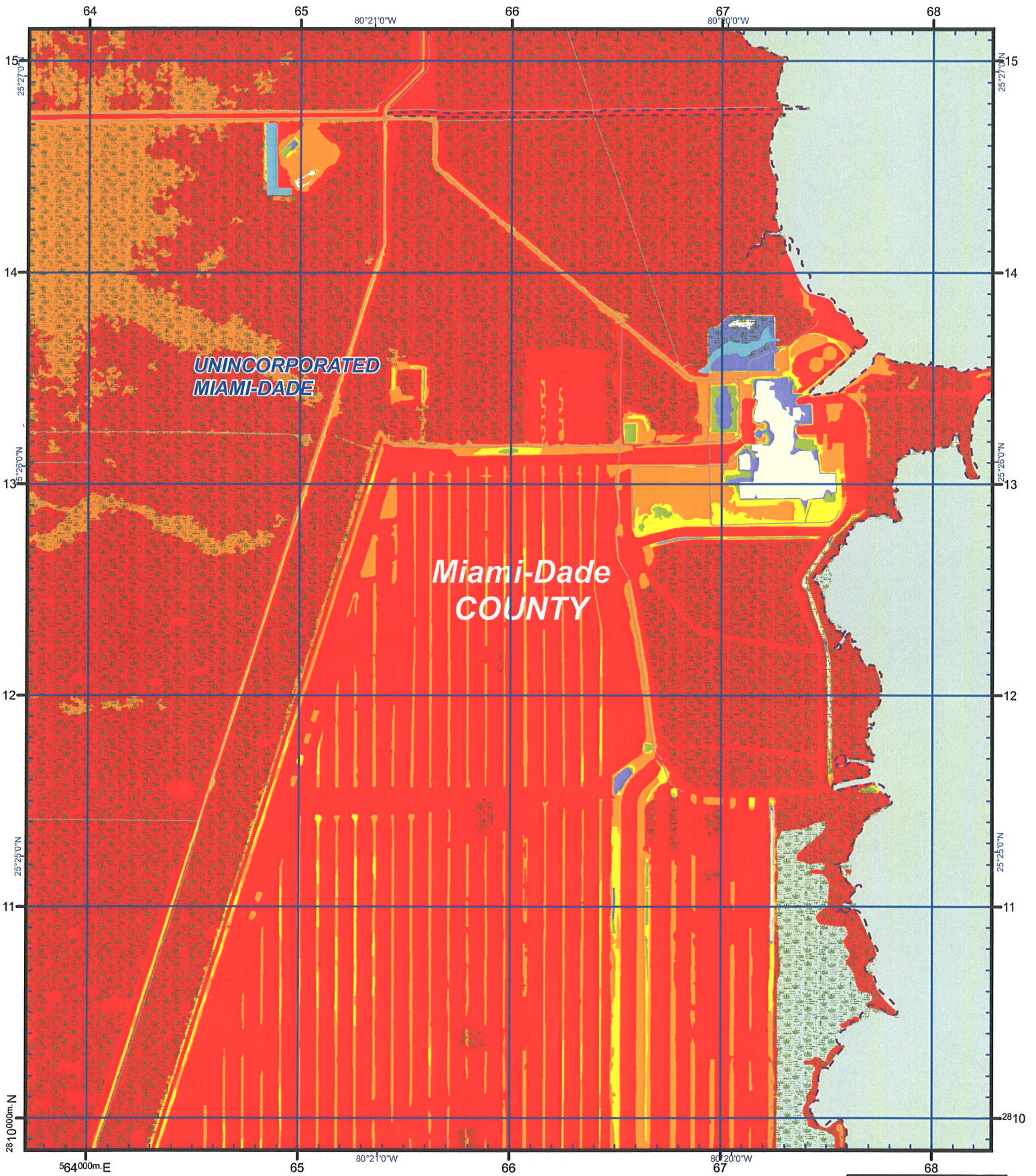
Sincerely,

James F. Murley  
Executive Director

JFM/kal

Attachments: Storm Tide Zones Map  
Statewide Regional Evacuation Study Project Depth Analysis Study Map

cc: Sam Goren, Esquire, Goren, Cherof, Doody & Ezrol, P.A.  
Michael Cirullo, Cherof, Doody, & Ezrol, P.A.  
Distribution List (via email)



US National Grid  
100,000-m Square ID  
**NJ**  
Grid Zone Designation  
**17R**  
Datum = NAD 1983, 1,000-m USNG

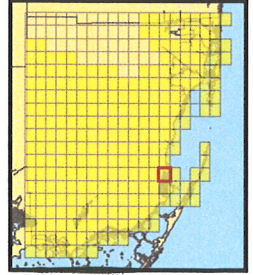


**Notes:**  
1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.  
2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.  
3. The Points of Reference are locations determined to be relevant to emergency management officials.

**ATLAS LEGEND**

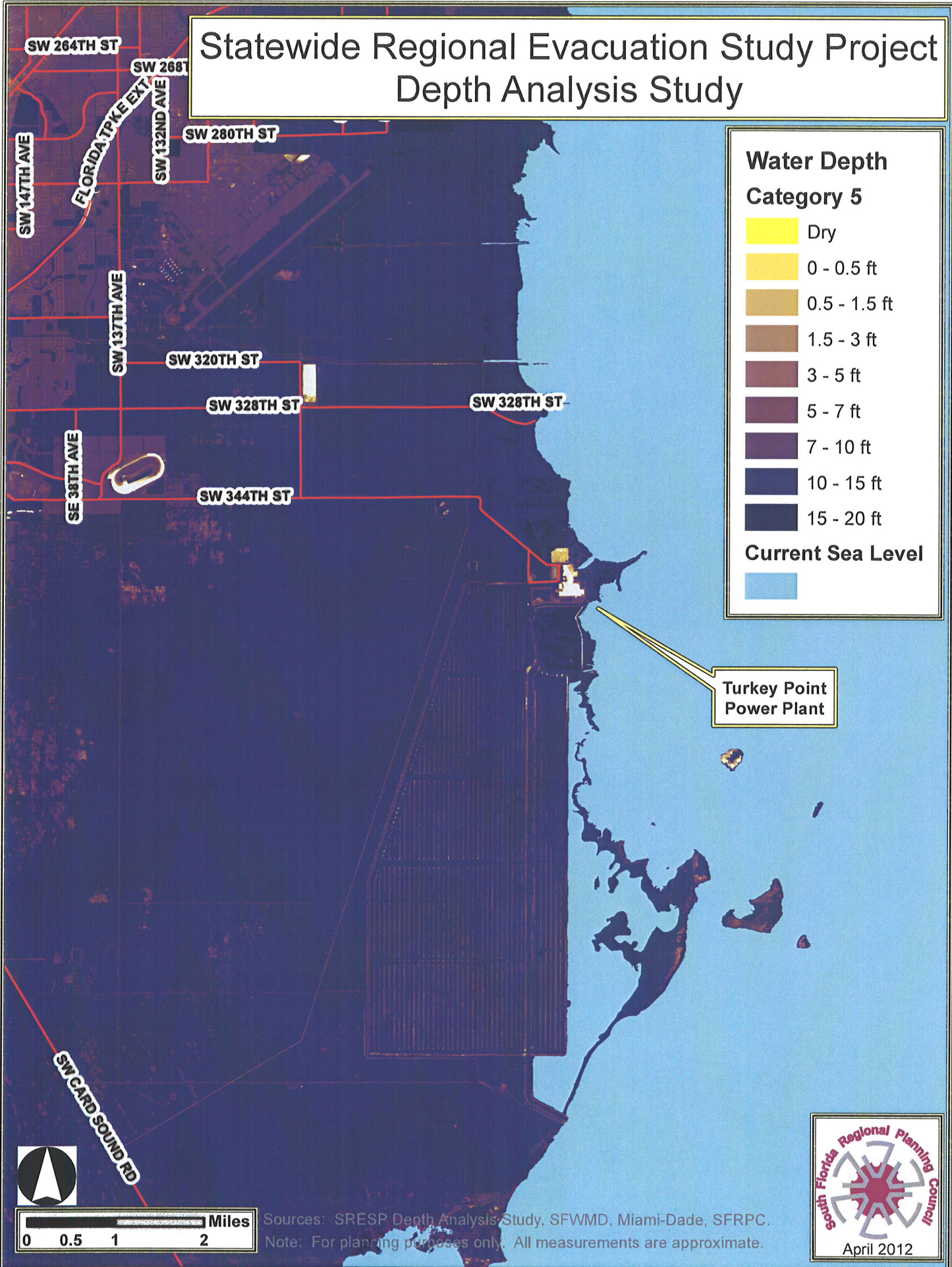
HOSPITAL	Points of Reference	Evacuation Route	City Limits	NHD Lakes	NHD Major Water
Cat 1	Cat 2	Cat 3	Cat 4	Cat 5	

**Storm Tide Zones**  
Miami-Dade County, 2010  
Scale - 1:24,000  
0 2,000 Feet  
USNG Page 17R NJ 64 10  
Map Plate 91



*This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.*

# Statewide Regional Evacuation Study Project Depth Analysis Study



**Water Depth  
Category 5**

- Dry
- 0 - 0.5 ft
- 0.5 - 1.5 ft
- 1.5 - 3 ft
- 3 - 5 ft
- 5 - 7 ft
- 7 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

**Current Sea Level**

- 

Turkey Point  
Power Plant



Sources: SRESP Depth Analysis Study, SFWMD, Miami-Dade, SFRPC.  
Note: For planning purposes only. All measurements are approximate.

