APPENDIX 10.9

DEWATERING PLAN
FPL PORT EVERGLADES ENERGY CENTER
Revision 1

March 2012

APPENDIX 10.9
DEWATERING PLAN

Florida Power & Light (FPL) proposes to modernize Units 1 through 4 (i.e., conventional dual-fuel fired generating units and support facilities) at the existing Port Everglades Power Plant into a modern, highly efficient, lower-emission next-generation clean energy center using the latest combined cycle technology. The existing Port Everglades Power Plant is expected to be renamed the Port Everglades Energy Center (PEEC) with an in-service date for the modernized Plant of June 2016.

The existing Port Everglades Power Plant is located at 8100 Eisenhower Road, Fort Lauderdale, Broward County, Florida. The Port Everglades Plant began operating in the 1960s. FPL plans to demolish the existing power plant and construct PEEC on the site. Construction of PEEC will begin in 2013 and be completed by 2016. Demolition of the existing plant and construction of the PEEC will require dewatering of the surficial aquifer.

This report describes the dewatering plan and the geohydrologic model that was used to calculate the dewatering rates, the volumes of water produced and the potential impacts associated with dewatering operations. The purpose is to provide reasonable assurance that the dewatering plan is technically feasible and will not impact offsite areas pursuant to Rule 2.5.2 of the Basis of Review for Water Use Permits.

AVAILABLE HYDROGEOLOGIC DATA

Hydrogeologic data specific to the Port Everglades Power Plant site was obtained from on-site boring logs, potentiometric maps of Broward County, water elevation data from the South Florida Water Management District (SFWMD) DBHYDRO data base, and from other publicly available sources.

Ardaman & Associates, Inc. performed subsurface exploration drilling at the site. The drilling occurred over a period of two months from December 2003 to January 2004. Eight borings were drilled, logged, and sampled. Samples from the borings were collected for grain size analysis. Golder used these data, the lithological descriptions, and depths from the boring logs to establish the model layer thicknesses and elevations.

Groundwater elevations at the up-gradient model boundaries were estimated from Broward County water table maps. Based on data from the U.S. Department of Commerce National Oceanic and Atmospheric Administration (NOAA), mean sea level at the Port Everglades harbor is approximately 0.7 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29). Water level data from a USGS monitoring well (G-561_G) located in the Port northeast of PEEC, shows the dry season water table elevation to be approximately 1.3 to 1.5 ft NGVD29. Wet season water table elevations in this well are approximately 2.6 ft NGVD29. This data was used to adjust the vertical hydraulic conductivity of the semi-confining layer (model layer 2). All elevations used in the model are referenced to NGVD 29.

Surficial and Biscayne Aquifer hydrologic characteristics were based on information obtained from U.S. Geological Survey (USGS) and SFWMD. Three wells listed in SFWMD's database (wells BEPD-124, BEPD-127 and BEPD-299) with total depths of 10 to 15 ft are located near the site. The surficial aquifer hydraulic conductivity determined from testing these wells is between 2.1 and 4.3 feet per day (ft/day).

DEWATERING PLAN

A schedule of the proposed work is presented in Table 1. The project dewatering plan has three sequential phases; one for demolition and two for construction. The phases and their durations are as follows:

- Demolition (2 months)
- Intake circulating water pipe construction (3 months)
- Discharge circulating water pipe construction (4 months)

During the demolition phase the existing circulating water pipes will be removed. Construction of the new intake pipes is estimated to take 3 months, while construction of the new discharge pipes is estimated to take 4 months. These areas require dewatering below the water table, and the intake and discharge pipes will be dewatered sequentially.

The model simulates the demolition and construction dewatering that will occur below the water table. Most of the remaining demolition and construction work will occur above the water table elevation. One minor exception is the steam turbine condensate pumps and blowdown tank, which are a few feet deeper than the majority of work. However, these areas are of limited horizontal extent and the aquifer in this area will be dewatered from previous construction activities. Consequently, significant additional dewatering is not required for these areas and these components were not included in the model.

MODEL SET-UP

The dewatering analysis was based on calculations using the numerical model MODFLOW 2000. This model uses a finite-difference approach to approximate the partial-differential flow equations and is based on flow through a three dimensional array of cells. The graphic pre- and post-processor program, Groundwater Vistas Version 6 (Scientific Software Group), was used to facilitate model input and output.

The grid that was developed for the simulation consists of 6 layers with 138 columns and 131 rows in each layer, resulting in 108,468 total model cells. The cell dimensions range from a minimum of 17 feet (ft) by 18 ft in the area of interest to a maximum of 88 ft by 97 ft at the model boundaries. The total model domain covers an area of approximately 57 million square feet (2.05 square miles).

The 6-layer model was used to match the stratigraphy and the vertical extent of impermeable sheet piling found around the port and canals. The stratigraphy is based on the boring logs and SFWMD aquifer data. The top elevation of the model is set to 16 ft NGVD 29, based on survey data provided by FPL for the area where construction dewatering will be required. The thickness of each layer is as follows:

- Layer 1 – 20 ft;
- Layer 2 – 5 ft;
- Layer 3 – 12.5 ft;
- Layer 4 – 12.5 ft;
- Layer 5 – 15 ft; and
- Layer 6 – 200 ft.

This yields a total model thickness of 265 ft. Layers 3, 4, and 5 represent one stratigraphic unit that has been subdivided to match boundary conditions.

The four stratigraphic units are listed below:

- Layer 1: Water table aquifer, fill material composed of sand and limestone (20 ft thick; 16 ft to −4 ft NGVD 29);
- Layer 2: Confining Layer, sandy silt with high organic content (5 ft thick; −4 ft to −9 ft NGVD 29);
- Layer 3-5: Biscayne Aquifer, fine-grained sand (40 ft thick; −9 ft to −49 ft NGVD 29); and
- Layer 6: Biscayne Aquifer, limestone with sand and shell (200 ft thick; −49 ft to −249 ft NGVD 29).

The model implicitly places no-flow boundaries at the bottom of the lowest layer. No flow boundaries were also applied to areas where sheet pile bulkheads limit flow into or out of the aquifer. This boundary was estimated to extend down to the bottom of model layer 5 (Figure 1). The Port's design depth is -38 ft and the top of rock is found at the bottom of layer 5 (-49 ft NGVD29). It is reasonable to assume the design would place the bottom of the bulkhead into the top of the lime rock for structural support and stability.

Low hydraulic conductivity walls were applied to simulate the sheet piles along the canal. Construction drawings for the existing power plant show that sheet piles along the discharge canal extend down to 23 ft below mean water level (mwl), which would be approximately -22 ft NGVD29. On the intake side, the intake structure extends down to 33 ft below mwl (-32 ft NGVD29). In the model, the sheet pile walls along the discharge canal were placed in model layers 1 and 2. The bottom of layer 2 is at -9 ft NGVD29. The sheet pile walls along the intake bulk head were placed in model layers 1, 2 and 3. The bottom of layer 3 is at -21.5 ft NGVD29. Therefore, the sheet pile wall placement in the model is less than actual (i.e., conservative) in both cases.

Conductance values for the general head boundaries were calculated using the layer hydraulic conductivity and the distance between the model boundary and constant head boundary estimated from aerial maps. A constant head boundary (elevation 0.7 ft NGVD 29) was assigned to layer 5, along the port turning basin and slips (Figure 1). This allows flow from the port turning basin and channel to move through the upper Biscayne aquifer to the lower Biscayne aquifer.

The river package boundary condition was assigned to the intake and discharge canals north and south of the dewatering area (Figure 1). The river package generates a constant head that allows groundwater to flow into the canal if the constant head assigned is lower than the water table, and allows canal water to flow out if the head is higher than the water table. Based on the depth of the intake and discharge canals, the river package boundary condition was applied to layers 1, 2, and 3.

The drain package boundary condition was applied to the regions of demolition and construction dewatering (Figure 1 and Table 2). The drain cells are assigned a head value and water is continuously removed to maintain the specified head.

Most of the areas surrounding PEEC have directly connected impervious surfaces (e.g., tank farms, parking lots, roads and buildings). Therefore, surface runoff is very high and recharge is very low. Based on a review of the Google Earth aerial photograph (see Figure 1), Golder estimated the impervious surface area in the model domain to be approximately 85 percent. Therefore, the pervious surface area would be approximately 15 percent.

Annual average rainfall in the area of the site is approximately 64 inches/year (SFWMD CUP BOR, Part B, 2003). For a grassed pervious surface, if rainfall is 64 inches per year, surface runoff should be approximately 8 to 10 inches/year. In Fort Lauderdale pan evaporation is approximately 74 inches/year (DBHYDRO Station S140) and reference crop evapotranspiration (ET) is approximately 60 inches/year (SFWMD CUP BOR, Part B, 2003). Fernald and Patton (1984) estimate lake evaporation to be 51 inches/year. Therefore, a reasonable estimate for actual ET from a non-irrigated grassed area would be 45 inches/year (range: 40 to 50 inches/year). This estimate is consistent with the regional ET estimate for Broward County provided by Fish (USGS, WRI Report 87-4034, 1988). Based on these values, a reasonable estimate of average net recharge (precipitation minus surface runoff minus ET) through a previous surface would be 5 to 15 inches per year. If pervious surfaces comprise 15 percent of the model domain, then the average net recharge in the model should be 0.75 inches/year to 2.25 inches/year; and the best estimate would be 1.5 inches/year. During the wet season, when precipitation rates are 7 to 9 inches/month (annualized rate of 84 to 108 inches/year) a reasonable estimate of the net surface recharge through a pervious surface is 20 to 40 inches/year. Under these conditions, the wet season net recharge in the model domain would be 2.8 to 5.6 inches/year, with the best estimate being 4.1 inches/year.

An average surface recharge rate of 0.5 inches per year was assigned to the entire model domain for the base case scenario. This was an initial estimate based on professional judgment. Based on the analysis above, this initial estimate appears to be low. Therefore, other model simulations are included in this report that use surface recharge rates of 1.5 inches per year and 4.1 inches per year over the entire model domain. Several model simulations assume no runoff from the construction site, with 50 inches per year of recharge over the construction site.

Other assumptions made during the model setup include:

- Ground surface elevation is constant;
- Layers are a uniform thickness;
- Thickness of riverbed is 1 ft; and
- Thickness of drain bed is 1 ft.

MODEL HYDRAULIC PARAMETERS

The input parameters used in MODFLOW 2000 (those representing the hydraulic characteristics of the system) include the following:

- Lateral hydraulic conductivities (Kx and Ky);
- Vertical hydraulic conductivity (Kz);
- Porosity (n);
- Specific yield (Sy); and
- Storage (S).

The input parameters were entered into the model using consistent units of feet and days. The base model used estimated average values for Kx, Ky, and Kz for each stratigraphic unit. The data used in the model are based on nearby aquifer tests, literature values and professional judgment. The horizontal hydraulic conductivity in model layer 1 was based on aquifer tests from nearby wells, as discussed above. The base case scenario used a K_h value 2.0 ft/day in model layer 1, but other scenarios in the sensitivity analysis used values of 4 ft/day. The low permeability organics layer (model layer 2) was assigned a base case K_h value of 0.03 ft/day based on model adjustment or calibration, as discussed below. Model layers 3, 4 and 5 were assigned a K_h value of 35 ft/day because these layers are described in the geotechnical report as fine sand with limestone fragments. Model layer 6 was assigned a K_h value of 1,500 ft/day based on literature data for the Biscayne aquifer in Broward County (Fish, 1988). The vertical hydraulic conductivity for each model layer was estimated to be $K_h/10$ in all cases. The hydrogeologic values used in the base case model are shown in Table 3.

The following conditions were applied to the hydraulic parameters:

- Kx = Ky in each layer and the layers are homogeneous;
- Kz = Kx /10;
- Riverbed hydraulic conductivity equals Kz of the layer; and

- Drain bed hydraulic conductivity equals Kx of the layer.

The model was run in steady–state mode for 2 days without the drain cells to establish initial water levels. Then the model was run for 270 days in transient mode with the drain cells activated to simulate the dewatering process. After the base case was run, 15 additional scenarios were simulated to evaluate model sensitivity.

MODEL ADJUSTMENT AND SENSITIVITY ANALYSIS

The vertical hydraulic conductivity for model layer 2 (the confining organics layer) was determined by comparing low and high monthly average water levels in the USGS monitoring well G-561_G with model predicted water levels (before dewatering started), using average and wet season recharge rates that were estimated from the water budget analysis (see Table 4). Based on this procedure, the vertical hydraulic conductivity of model layer 2 must be approximately 0.003(+/-33%) ft/day (i.e., the range must be between 0.002 ft/day to 0.004 ft/day). Outside this range, water levels and recharges rates cannot be reasonably matched. Within this range, they match very well.

After the model was adjusted, multiple sensitivity analyses were performed to understand the influence of several parameters. The sensitivity analyses focused on the parameters and boundary conditions that were judged to be the most sensitive, including the following:

- Hydraulic conductivity of layers 1 and 2; and
- Surface recharge.

The scenarios and the corresponding variation of the model parameters are presented in Table 4. The horizontal and vertical conductivity of layer 1 and layer 2 were changed to reflect expected maximum and minimum values, and extreme values. The recharge rates were increased to represent average and wet season conditions. Recharge within the demolition and construction site area was increased to represent wet season rainfall with no runoff from these areas.

RESULTS AND CONCLUSIONS

The dewatering quantities calculated by the model are separated into two components: the initial dewatering quantity and the maintenance quantity. The initial dewatering quantity is the volume of water pumped in the first 1 to 5 days of each dewatering phase to dewater the aquifer. The maintenance quantity is the volume of water that must be pumped over the remainder of the dewatering project to maintain the dewatered conditions. Results for multiple scenarios are found in Table 5.

The “worst-case” assumption used in Scenarios 6, 7 and 8, that the organics layer (model layer 2) is missing entirely or highly permeable, is not justified by the either the site geotechnical data or by the results of the model calibration process. These scenarios were provided to envelop the most extreme conditions. These scenarios don’t represent reality and are very unlikely to develop. Therefore, Scenario 6C is the probable worst case scenario.

Excluding Scenarios 6, 7 and 8, the model results (Table 5) show that between 0.34 and 0.75 million gallons (MG) will be pumped during the initial dewatering of all three phases (combined total), and between 0.22 to 0.90 MG will be pumped during the maintenance period over the remaining 9 months. Excluding Scenarios 6, 7 and 8, the maximum dewatering rate will be 0.36 MGD (Scenario 6C) and the maximum maintenance pumping rate will be .003 MGD.

The model simulations also show that between 10 to 32 percent of the total water produced will be pumped during the demolition phase (Phase 1 of the dewatering plan), between 42 to 72 percent of the water will be pumped during construction of the intake circulating water pipes (Phase 2) and between 17 to 35 percent of the water will be pumped during construction of the discharge circulating water pipes (Phase 3). The percentages for the three phases vary with each scenario; therefore, the ranges given above do not sum to 100 percent.

The maintenance dewatering volumes are sensitive to the degree of confinement provided by the sandy silt layer underlying the fill (model layer 2). The sensitivity of the confining layer can be seen by comparing the Scenario 6C (the probable maximum) with Scenarios 6 and 7, which assume that layer 2 is missing completely, or Scenario 8, which assumes that Layer 2 is very transmissive. The maintenance pumping volume increases from 0.90 MG to 9.54 MG, and the maintenance pumping rate increases from 0.003 MGD to 0.035 MGD. As discussed above, Scenarios 6, 7 and 8 are extreme, are not believed to accurately represent known site conditions, and are very unlikely to develop.

Dewatering and maintenance volumes are also sensitive to the surface recharge rate. Comparing Scenarios 2B, 6B and 2C shows the affect of increasing surface recharge from 1.5 to 4.1 to 5.6 inches per year. The corresponding dewatering volumes increase from 0.40 MG to 0.49 MG to 0.54 MG; and the maintenance volumes increase from 0.32 MG to 0.42 MG to 0.475 MG.

Once demolition/construction has commenced, impervious surfaces may be temporarily replaced with unpaved pervious surfaces and stormwater runoff may be restricted. This could significantly increase the surface recharge rate and the required maintenance pumping volumes. Comparing Scenario 6B with Scenario 6C shows the impact during the wet season. The dewatering volumes almost double and the maintenance volumes more than double. The maximum pumping rates increase by about 50 percent.

Figures 2, 3 and 4 show the maximum drawdown contours in the surficial aquifer at the end of each phase of the dewatering plan. These figures show that there should be no adverse off-site impacts from the dewatering process.

Table 1: Dewatering Schedule for Demolition and Construction at Port Everglades Energy Center

<table>
<tr><th>Dewatering Depth</th><th>Month 1</th><th>Month 2</th><th>Month 3</th><th>Month 4</th><th>Month 5</th><th>Month 6</th><th>Month 7</th><th>Month 8</th><th>Month 9</th></tr>
<tr><td>25 ft bgs</td><td colspan="2">Demolition</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>20 ft bgs</td><td></td><td></td><td colspan="3">Intake Circulation Water Line</td><td colspan="4">Discharge Circlulation Water Line</td></tr>
<tr><td>DNR</td><td></td><td></td><td colspan="3">ST Foundation</td><td>ST Step-up XFMR</td><td></td><td></td><td></td></tr>
<tr><td>24 ft bgs</td><td></td><td></td><td></td><td></td><td></td><td>Condensate Pumps</td><td>ST Blowdown Tank</td><td></td><td></td></tr>
<tr><td>DNR</td><td></td><td></td><td></td><td colspan="2">CT Foundation Unit 1</td><td colspan="2">HRSG Foundation Unit 1</td><td>CT XFMR Unit 1</td><td></td></tr>
<tr><td>DNR</td><td></td><td></td><td></td><td></td><td colspan="2">CT Foundation Unit 2</td><td colspan="2">HRSG Foundation Unit 2</td><td>CT XFMR Unit 2</td></tr>
<tr><td>DNR</td><td></td><td></td><td></td><td></td><td></td><td colspan="2">CT Foundation Unit 3</td><td colspan="2">HRSG Foundation Unit 3</td></tr>
<tr><td>DNR</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CT XFMR Unit 3</td></tr>
</table>

Notes:

bgs = below ground surface (g.s. = 16 ft NGVD 29)

ST = Steam Turbine

CT= Combustion Turbine

XFMR = Transformer

DNR = Dewatering Not Required, except to remove storm water.

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Table 2: Model Boundary Conditions for Drain Settings

Location	**Phase**	**Dewatering Elevation** (ft NGVD29)	**Horizontal Hydraulic Conductivity** (ft/day)
Southwest Layer 1	Demolition	0.75	2
Southwest Layer 1	Demolition	0.75	2
Southeast Layer 1	Demolition	-4	2
Southeast Layer 2	Demolition	-9	0.03
North Layer 1	Intake	-4	2
South Layer 1	Discharge	-4	2
South Layer 1	Discharge	-4	2

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Table 3: Hydrogeology of the Model Parameters for Port Everglades

Layer	1	2	3	4	5	6
Thickness (ft)	20	5	12.5	12.5	16	200
Aquifer Type	Unconfined	Unconfined	Confined	Confined	Confined	Confined
Unit	Fill	Organics	Sand	Sand	Sand	Limestone
Hydraulic Conductivity Zone	Sandy Limestone	Sandy Silt	Fine Sand	Fine Sand; Limestone Fragments	Fine Sand; Limestone Fragements	Limestone and Sand
Kx (ft/day)	2	0.03	35	35	35	1500
Kz (ft/day)	0.2	0.003	3.5	3.5	3.5	150
Sy	0.2	0.1	0	0	0	0
S	0	0	0	0	0.0001	0.0001
n	0.2	0.3	0.2	0.2	0.2	0.2

Notes:
Kx = horizontal hydraulic conductivity
Kz = vertical hydraulic conductivity
Sy = specific yield
S = specific storage
n = porosity

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Table 4: Sensitivity Scenarios and Parameters

Scenario	Layer	Kh (ft/day)	Kv (ft/day)	Recharge (ft/day)	PEEC Site Water level (ft NGVD 29) **	USGS Well G-561_G Water Level (ft NGVD 29) **	Description
Base Case	1 2	2 0.03	0.2 0.003	0.00011	1.14	1.07	Base Case Model; Recharge = 0.5 inches/year all model cells
Scenario 1	1 2	2 0.03	0.2 0.003	0.0114*	1.14	1.07	High Recharge on construction site during dewatering = 50 in/yr Base Case recharge before demolition phase begins; and in other areas at all times
Scenario 2	1 2	4 0.03	0.4 0.003	0.00011	1.11	1.07	High K Fill (Layer 1)
Scenario 2A	1 2	2 0.03	0.2 0.003	0.00034	1.53	1.47	Base Case with average recharge = 1.5 in/yr in all model cells
Scenario 2B	1 2	4 0.04	0.4 0.004	0.00034	1.38	1.33	High K in Layers 1 & 2; Average Recharge = 1.5 in/yr in all cells Layer 1 K=4; Layer 2 K= 0.04;
Scenario 2C	1 2	4 0.04	0.4 0.004	0.0013	2.55	2.58	High K in Layers 1 & 2; High Recharge of 5.6 in/yr in all cells Layer 1 K=4; Layer 2 K= 0.04
Scenario 3	1 2	1 0.03	0.1 0.003	0.00011	1.15	1.07	Low K Fill (Layer 1)
Scenario 4	1 2	2 0.01	0.2 0.001	0.00011	1.4	1.44	Low K Organics (Layer 2)
Scenario 5	1 2	2 0.1	0.2 0.01	0.00011	1.03	0.94	Layer 2 K=0.1; High K Orangics (Layer 2)
Scenario 6	1 2	2 2	0.2 0.2	0.0114*	0.98	0.89	Layer 2 K=2; High Recharge, Organics Missing (Layer 2)
Scenario 6A	1 2	2 0.04	0.2 0.004	0.00094	2.18	2.12	Layer 2 K=0.04; Wet Season Recharge of 4.1 in/yr
Scenario 6A2	1 2	2 0.04	0.2 0.004	0.0114*	2.18	2.12	Wet Season Recharge of 4.1 in/yr; High Recharge on construction site Layer 2 K=0.04;
Scenario 6B	1 2	4 0.04	0.4 0.004	0.00094	2.1	2.11	Layer 1 K= 4; Layer 2 K=0.04; Wet Season Recharge of 4.1 in/yr
Scenario 6C	1 2	4 0.04	0.4 0.004	0.0114*	2.55	2.58	Layer 1 K=4; Wet Season Recharge of 4.1 in/yr; High Recharge on site Layer 2 K=0.04
Scenario 7	1 2	2 2	0.2 0.2	0.00011	0.98	0.89	Layer 2 K=2; Organics Missing (Layer 2)
Scenario 8	1 2	2 0.5	0.2 0.05	0.00011	0.99	0.9	Layer 2 K=0.5; Variation of Layer 2 K

Notes:
Values that are changed relative to Base Case
K = Kh = Kx = Ky = horizontal hydraulic conductivity
Kv = Kz = vertical hydraulic conductivity
* On the power block area between intake and discharge canals; regional recharge rate in other cells.
** Water level before dewatering activities begin.

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Table 5: Dewatering Volumes for the Base Case and Fifteen Alternative Scenarios

Scenarios	Dewatering Volumes (MG)			Estimated Maximum Pumping Rate (MGD)	
	Dewatering	Maintenance	Total	Dewatering	Maintenance
Base	0.351	0.217	0.568	0.173	0.001
Scenario 1	0.608	0.692	1.300	0.323	0.003
Scenario 2	0.360	0.228	0.589	0.173	0.001
Scenario 2A	0.402	0.254	0.657	0.187	0.001
Scenario 2B	0.400	0.321	0.721	0.191	0.001
Scenario 2C	0.541	0.475	1.020	0.238	0.002
Scenario 3	0.340	0.220	0.560	0.167	0.001
Scenario 4	0.360	0.136	0.496	0.168	0.001
Scenario 5	0.414	0.649	1.060	0.219	0.002
Scenario 6	1.610	9.540	11.100	1.152	0.035
Scenario 6A	0.487	0.383	0.870	0.219	0.001
Scenario 6A2	0.688	0.779	1.470	0.330	0.003
Scenario 6B	0.488	0.416	0.905	0.220	0.002
Scenario 6C	0.752	0.904	1.660	0.356	0.003
Scenario 7	1.530	8.950	10.500	1.102	0.034
Scenario 8	0.731	2.840	3.570	0.473	0.011

Notes:
Dewatering Volumes pumped in 3 Phases 60 to 90 days apart, 1 to 5 days per phase.
Maintenance Volumes pumped over 255 to 267 days.
Total Dewatering Schedule 270 days.
MG= million gallons; MGD=million gallons per day

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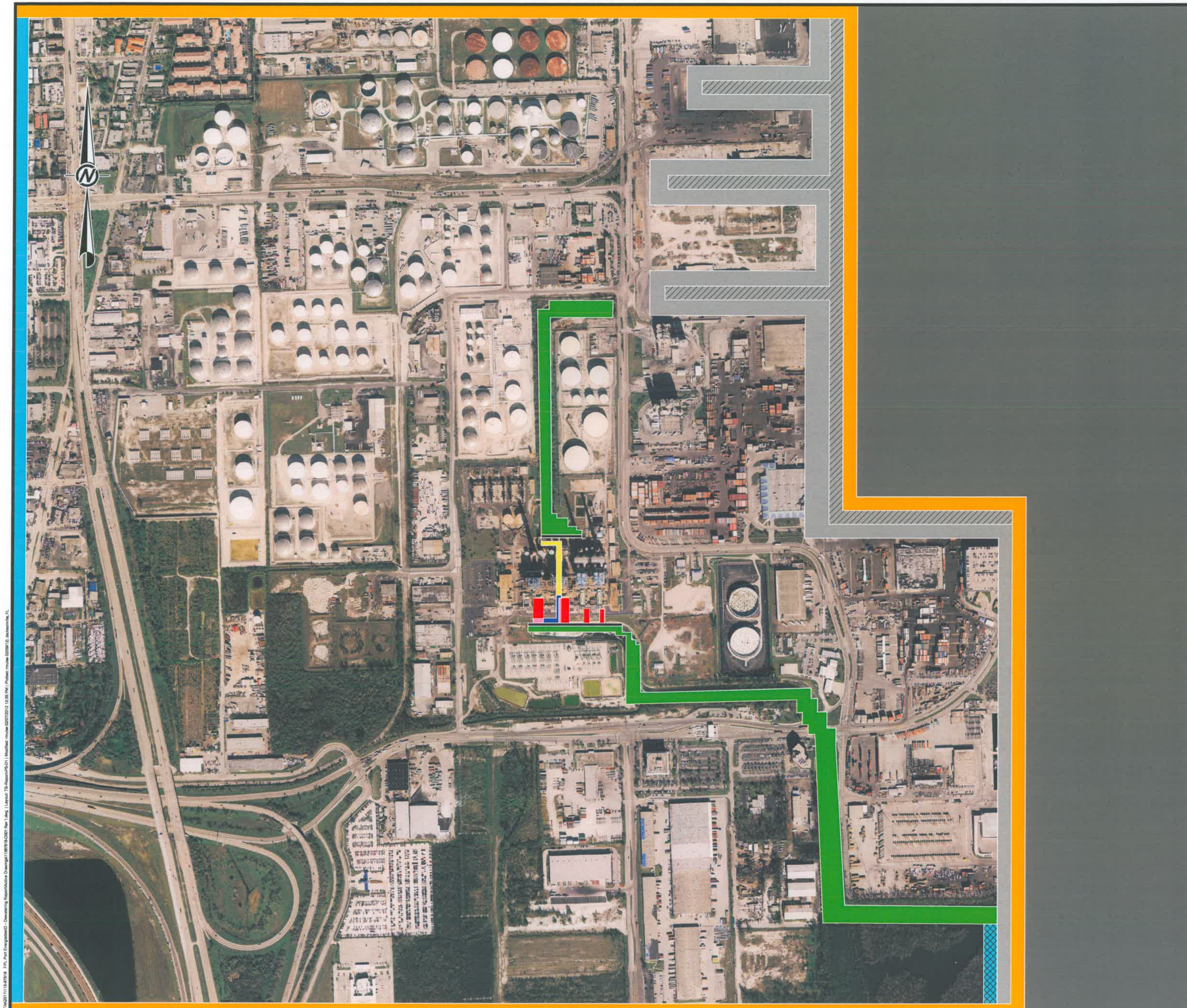

LEGEND

- GENERAL HEAD BOUNDARY (ALL LAYERS)
- GENERAL HEAD BOUNDARY (LAYERS 1-5)
- GENERAL HEAD BOUNDARY (LAYER 6 ONLY, NO FLOW IN ALL OTHER LAYERS)
- NO FLOW BOUNDARY (LAYERS 1-5)
- CONSTANT HEAD BOUNDARY (LAYER 5)
- NO FLOW BOUNDARY (ALL LAYERS)
- WALL BOUNDARY (LAYERS 1-3)
- RIVER BOUNDARY (LAYERS 1-3)
- DEMOLITION DRAINS (LAYERS 1-2)
- INTAKE CIRCULATING WATER PIPE CONSTRUCTION DRAINS (LAYER 1)
- DISCHARGE CIRCULATING WATER PIPE CONSTRUCTION DRAINS (LAYER 1)
- DEMOLITION AND DISCHARGE CWP CONSTRUCTION DRAINS (LAYER 1)

350 0 350 700
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/07/12	GMP	MODIFIED LEGEND	MRM		

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

MODEL BOUNDARY CONDITIONS

PROJECT No.		113-87618	FILE No.	11387618-D001 Rev 1
DESIGN	KSR	10/24/11	SCALE	AS SHOWN
CADD	MRM	10/28/11		
CHECK	RCM	01/18/12	**FIGURE 1**	
REVIEW	KFK	01/18/12		

NOTES

1.) CONTOUR INTERVAL 1 FOOT.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

DRAWDOWN IN THE SURFICIAL AQUIFER
DEMOLITION DEWATERING, PHASE 1

FPL

PROJECT No.		113-87618	FILE No.	11387618-D002A
DESIGN	KTR	10/28/11	SCALE	AS SHOWN
CADD	MRM	10/28/11		
CHECK	RCM	01/18/12	**FIGURE 2**	
REVIEW	KFK	01/18/12		

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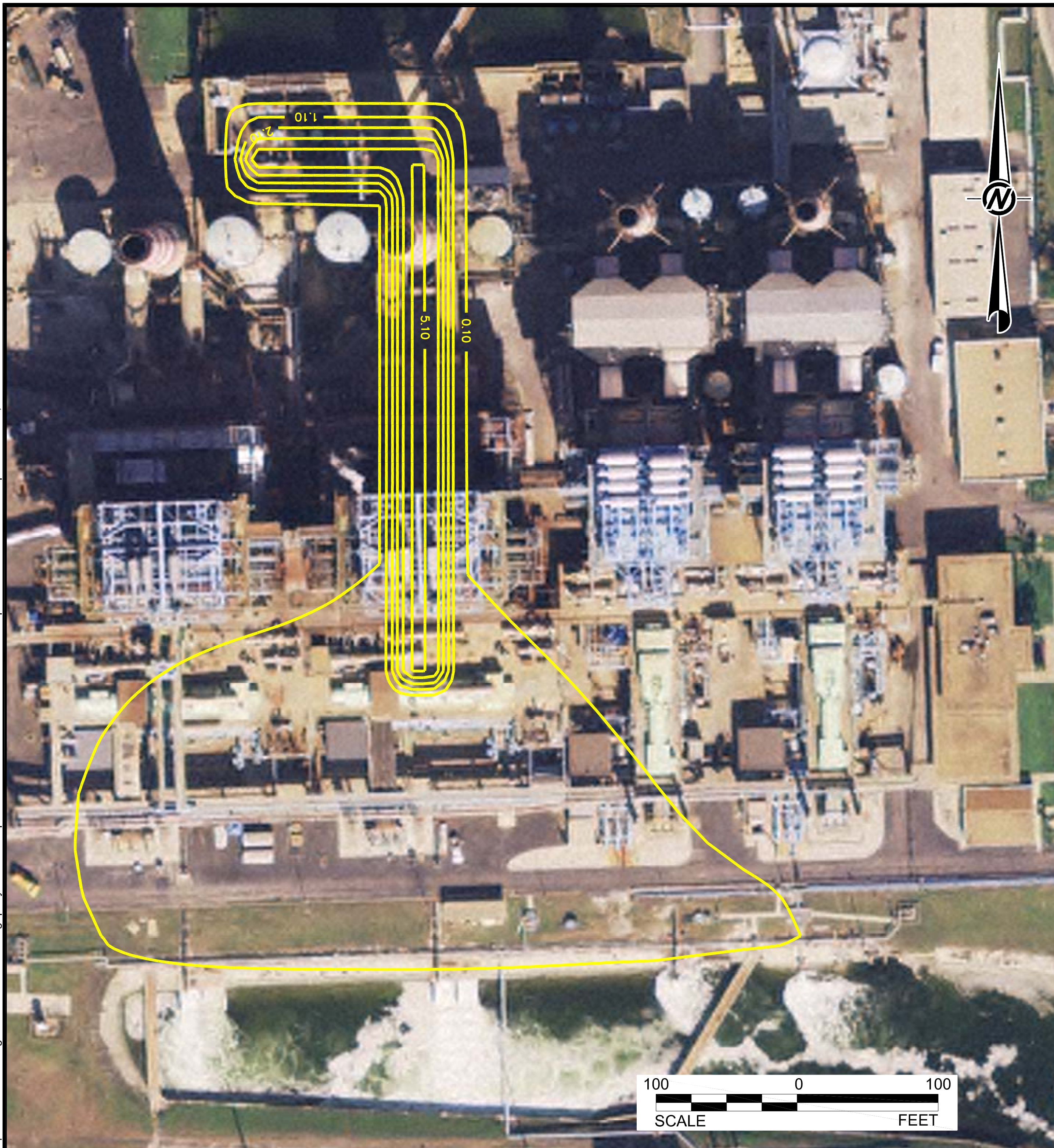


NOTES

1.) CONTOUR INTERVAL 1 FOOT.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT

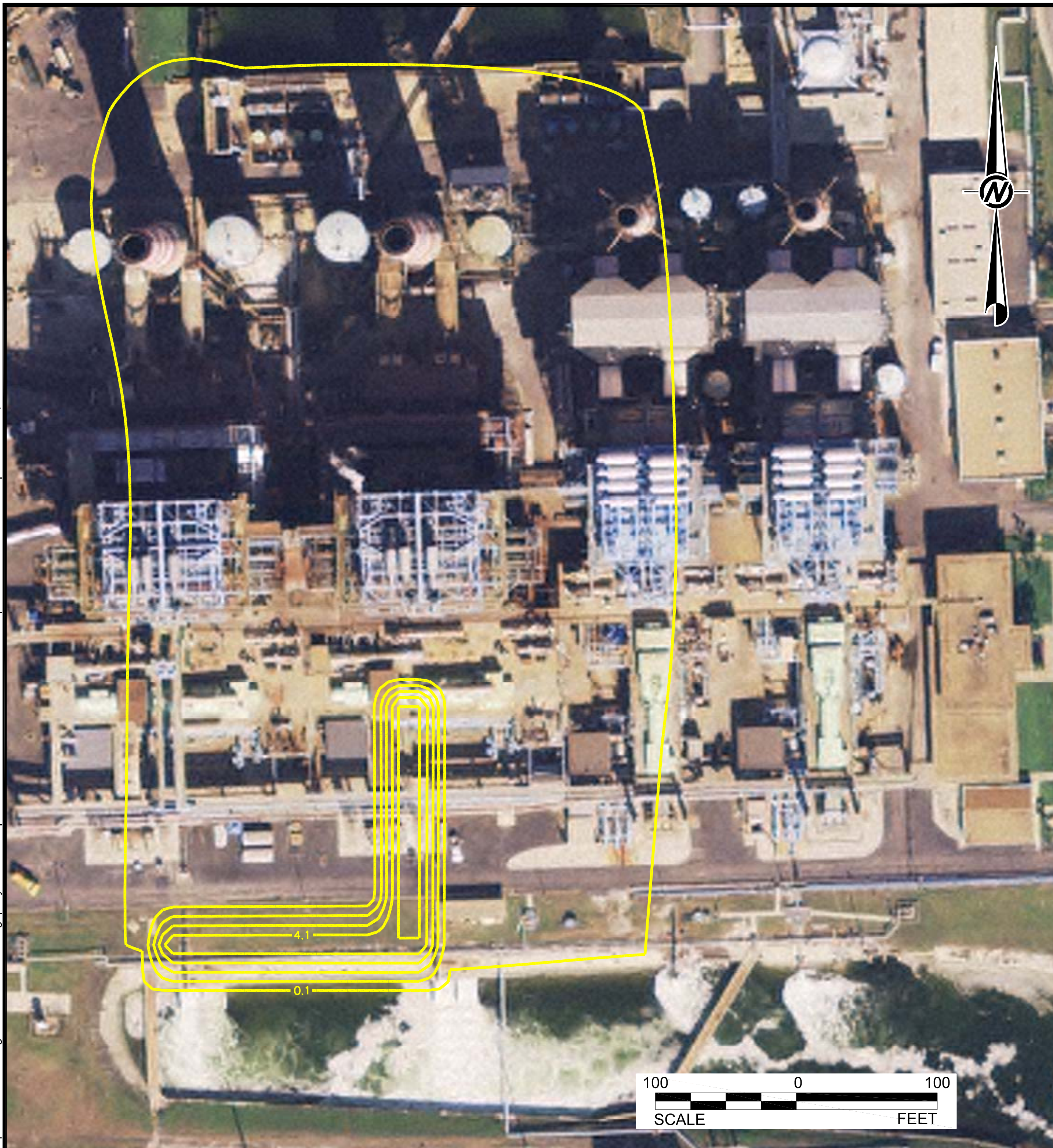
FPL
PORT EVERGLADES ENERGY CENTER

TITLE

DRAWDOWN IN SURFICIAL AQUIFER INTAKE DEWATERING, PHASE 2

PROJECT No.		113-87618	FILE No. 11387618-D002B
DESIGN	KTR	10/28/11	SCALE AS SHOWN
CADD	MRM	10/28/11	**FIGURE 3**
CHECK	RCM	01/18/12	
REVIEW	KFK	01/18/12	

N:\File\2011\113-87618 FPL Port Everglades\D - Dewatering Report\Active Drawings\11387618-D002.dwg | Layout: D002B | Modified: rmuise 01/18/2012 12:19 PM | Plotted: rmuise 01/18/12| Jacksonville, FL



NOTES

1.) CONTOUR INTERVAL 1 FOOT.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT

FPL
PORT EVERGLADES ENERGY CENTER

TITLE

DRAWDOWN IN SURFICIAL AQUIFER DISCHARGE DEWATERING, PHASE 3

PROJECT No.		113-87618	FILE No. 11387618-D002C
DESIGN	KTR	10/28/11	SCALE AS SHOWN
CADD	MRM	10/28/11	**FIGURE 4**
CHECK	RCM	01/18/12	
REVIEW	KFK	01/18/12	

FPL

N:\File\2011\113-87618 FPL Port Everglades\D - Dewatering Report\Active Drawings\11387618-D002.dwg | Layout: D002C | Modified: rmuise 01/18/2012 12:19 PM | Plotted: rmuise 01/18/12| Jacksonville, FL