

GROUNDWATER CONSTRUCTION, OPERATION AND MONITORING REQUIREMENTS PLAN

TECO Polk Power Station
9995 State Road 37, South
Mulberry, Florida 33860
Polk County

Latitude: 27° 43' 40" N Longitude: 81° 58' 22" W

This Groundwater Construction, Operation and Monitoring Requirements (GWCOMR) Plan is developed by the Licensee, Tampa Electric Co, (TEC), in conjunction with the Florida Department of Environmental Protection Southwest District's Industrial Wastewater (IWW) Section and Groundwater Regulatory Section for the monitoring of the following sites (as defined in Rule 62-520.600, F.A.C.): the Cooling Water Pond and the Brine Storage Area where the outward facing portion of the pond berms define each respective site boundary.

The Department's Southwest District IWW Section is responsible for reviewing and approving all revisions to this document in accordance with Section B, I.C. Industrial Groundwater Monitoring, and Section A, XIII. Procedures of Post-Certification Submittals of the Conditions of Certification(COC).

New sources or deletion of existing sources of wastewater with changes to water quality standards, applications for a new Water quality Criteria exemption pursuant to Rule 62-520.500 F.A.C., and improvements made at a treatment facility to provide for a new or expanded land application system with increase in the permitted capacity are considered modifications to the existing license. The Licensee shall submit a petition for modification to the Conditions of Certification to the Department for review and approval in accordance with Section 403.516, F.S. and 62-17.211, F.A.C.

FACILITY DESCRIPTION

The facility is an electric generating plant with a total nominal generating capacity of approximately 920 megawatts (MW). The existing generating facility consists of five electrical generating units (Units 1, 2, 3, 4 and 5). Unit 1 is an integrated gasification combined-cycle (IGCC) generating unit with a net capacity of 260 megawatts (MW). .

Units 2, 3, 4 and 5 are simple-cycle combustion turbines (CTs) with a combined nominal generating capacity of 660 MW. Coal is the primary fuel source for the IGCC unit, which includes a variety of solid fuels such as 100 percent petroleum coke, and various coal/petroleum coke blends in between, and No. 2 fuel oils as backup fuel. Natural gas is the primary fuel source for the CT units.

WASTEWATER TREATMENT:

The facility uses a re-circulating cooling pond for heat dissipation with makeup from ground water and continuous discharge to Little Payne Creek via the unnamed reclaimed lake under a National Pollutant Discharge Elimination System (NPDES) Permit No. FL0043869.

The cooling reservoir, which has a capacity of approximately 3.5 billion gallons, receives treated effluent from an on-site Industrial Wastewater Treatment (IWT) system, groundwater seepage, low-volume wastewater from the wastewater neutralization basin, including reverse osmosis concentrate, boiler blow down, equipment wash water, laboratory wastes, wash down from the materials storage areas, wastes from the equalization basin and sand filter, including filter backwash water and slag pile runoff, neutralized condensate generated in the low-temperature gas cooling (LTGC) unit and the CO₂ compression and drying system, and contact storm water runoff from the facility.

The IWT system treats the slag pile leachate and treated water from the oil water separator. The IWT includes the following basins and units: oil/water separator, dissolved air flotation tank, equalization basin, slag runoff retention basins, and sand filter. The metal cleaning wastes associated with the combustion turbine and compressor washing will be routed to the equalization basin for subsequent filtration treatment. Spent chemicals and metal cleaning wastes not associated with the wash operations will be disposed off site by a licensed contractor.

The sources of water makeup to the reservoir include rainfall, storm water runoff, treated wastewater, Floridan aquifer makeup water and treated reclaimed water from the City of Lakeland.

I. SITE GROUNDWATER MONITORING

A. Construction Requirements

1. Within thirty (30) days after completion of construction or abandonment of new ground water monitor wells, the following information shall be submitted:

a. A copy of the Southwest Florida Water Management District (SWFWMD) State of Florida Permit Application to Construct, Repair, Modify, or Abandon a Well (LEGR.040.01 (June 2010) 40D-3.101(1), F.A.C.) and

b. A copy of the SWFWMD Well Completion Report (LEG-R.005.02 (June 2010) 40D-3.411(1)(a), F.A.C.), SWFWMD Well Completion Report, and DEP Form 62-520.900(3), Monitor Well Completion Report, for each well shall be submitted to the Southwest District IWW Section. The DEP form can be accessed at <http://www.dep.state.fl.us/water/groundwater/forms.htm>. [62-532.410 and 62-520.900(3)]

The information shall be sent to the Ground Water Regulatory Section, Southwest District office, Department of Environmental Protection, 13051 North Telecom Parkway, Temple Terrace, FL 33637.

2. The Licensee or the authorized representative shall give at least 72-hours notice to the Department's Southwest District Office, prior to the installation of any monitoring wells. [62-520.600(6)(h)]

3. The Licensee or the authorized representative shall sample all new ground water monitoring wells for the Primary and Secondary Drinking Water parameters included in Rule 62-550, Florida Administrative Code, Public Drinking Water Systems (excluding asbestos,

acrylamide dioxin, butachlor and epichlorohydrin). Results of this sampling shall be submitted to the Department within sixty days after sampling. [62-520.600]

4. The new wells shall be sampled Semi-annually for the parameters identified in condition I.B.3. below. All field work done in connection with this GWCOMR regarding the collection of ground water samples shall be conducted in accordance with the Standard Operating Procedures (SOPs) described in DEP-SOP-001/01 (revised March 31, 2008, effective December 3, 2008), or as replaced by successor SOPs [Rule 62-160.210(1), F.A.C.]. All laboratory analyses done in connection with this GWCOMR shall be conducted by firms that hold certification from the Department of Health, Environmental Laboratory Certification Program under Chapter 64E-1, F.A.C.

5. Before construction of new ground water monitoring wells, a soil boring shall be made at each new monitoring well location to properly determine monitoring well specifications such as well depth, screen interval, screen slot, and filter pack. [62-520.600(6)(g)]

6. Within sixty [60] days after completion of construction of new ground water monitoring wells, a properly scaled figure depicting monitor well locations (active and abandoned) with identification numbers shall be submitted to the Southwest District IWW Section. The figure shall also include (or attach) the monitoring well, top of casing, and ground surface elevations referenced to National Geodetic Vertical Datum (NGVD) of 1929 to the nearest 0.01 foot, along with monitor well location latitude and longitude to the nearest 0.1 second. [62-520.600(6) (i)]

7. All piezometers and monitoring wells not part of this GWCOMR are to be plugged and abandoned in accordance with Rule 62-532.500(4), F.A.C., unless future use is intended. [62-532.500(4)]

B. Operational Requirements

1. During the period of operation authorized by this Certification the licensee shall continue to sample ground water at the monitoring wells identified in Section I.B.2. below, in accordance with the COC and GWCOMR prepared in accordance with Rule 62-520.600, F.A.C.

2. The following monitoring wells shall be sampled for Groundwater Monitoring requirements:

Monitoring Well ID	Alternate Well Name and/or Description of Monitoring Location	Aquifer Monitored	New or Existing
MWB-1S	Background well	Surficial	Existing
MWB-1UI	Background well	Upper Intermediate	Existing
MWB-1LR	Background well	Upper Floridan	Existing
MWC-2S	Compliance well	Surficial	Existing
MWC-2UI	Compliance well	Upper Intermediate	Existing
MWC-2LI	Compliance well	Upper Floridan	Existing

Monitoring Well ID	Alternate Well Name and/or Description of Monitoring Location	Aquifer Monitored	New or Existing
MWC-3S	Compliance well	Surficial	Existing
MWC-3UI	Compliance well	Upper Intermediate	Existing
MWC-3F	Compliance well	Upper Floridan	Existing
MWC-4S	Compliance well	Surficial	Existing
MWC-4UI	Compliance well	Upper Intermediate	Existing
MWC-5S	Compliance well	Surficial	Existing
MWB-6S	Background well	Surficial	Existing

MWB = Background; MWI = Intermediate; MWC = Compliance; MWP = Piezometer

3. The monitor wells specified in Condition.I.B.2 above shall be sampled for the parameters listed below:

Parameter Name	Compliance Well Limit	Units	Sample Type	Monitoring Frequency
Water Level Relative to NGVD*	NA	FEET	In-situ	Semi-annual
Turbidity *	NA	NTU	In-situ	Semi-annual
Specific Conductance *	NA	UMHOS/CM	In-situ	Semi-annual
pH *	6.5-8.5	SU	In-situ	Semi-annual
Temperature Water *	NA	DEG.C	In-situ	Semi-annual
Oxygen, Dissolved*	NA	MG/L	In-situ	Semi-annual
Antimony	0.006	MG/L	Grab	Semi-annual
Arsenic, Total	10	UG/L	Grab	Semi-annual
Fluoride, Total	4.0	MG/L	Grab	Semi-annual
Nickel, Total	100	UG/L	Grab	Semi-annual
Nitrate, Total	10	MG/L	Grab	Semi-annual
Selenium, Total	50.0	UG/L	Grab	Semi-annual
Sodium, Total	160	MG/L	Grab	Semi-annual
Total Coliform	4	cts/100mL	Grab	Semi-annual
Thallium, Total	2.0	UG/L	Grab	Semi-annual
Chloride, Total	250	MG/L	Grab	Semi-annual
Iron, Total**	0.3	MG/L	Grab	Semi-annual
Iron, Filtered**	0.3	MG/L	Grab	Semi-annual

Parameter Name	Compliance Well Limit	Units	Sample Type	Monitoring Frequency
Water Level Relative to NGVD*	NA	FEET	In-situ	Semi-annual
Manganese , Total **	0.05	MG/L	Grab	Semi-annual
Manganese, Filtered**	0.05	MG/L	Grab	Semi-annual
Sulfate, Total	250	MG/L	Grab	Semi-annual
Color	NA	CU	Grab	Semi-annual
Alkalinity	NA	MG/L	Grab	Semi-annual

* The field parameters shall be sampled per DEP–SOP-001/01, FS 2200 Ground Water Sampling, Figure FS 2200-2 Ground Water Purging Procedure (<http://www.dep.state.fl.us/water/sas/sop/sops.htm>) and recorded on Form FD 9000-24, Ground Water Sampling Log (<http://www.dep.state.fl.us/water/sas/qa/forms.htm>). The sampling logs shall be submitted with each ground water Part D DMR. The field parameters to be reported on Part D of GW DMR shall be the last sample recorded on FD 9000-24.

** These parameters shall be sampled **Quarterly** on Surficial wells **MWB-1S, MWC-2S, MWC-3S, MWC-4S, MWC-5S and MWB-6S.**

4. Water levels shall be recorded prior to evacuating the well for sample collection. Elevation references shall include the top of the well casing and land surface at each well site (NGVD allowable) at a precision of plus or minus 0.01 feet. [62-520.600(11)(c)]

5. Ground water monitoring wells shall be purged prior to sampling to obtain a representative sample. [62-160.210]

6. Analyses shall be conducted on un-filtered samples, unless filtered samples have been approved by the Department as being more representative of ground water conditions. [62-520.310(5)]

7. Ground water monitoring test results shall be submitted as required under Section B.I. Department of Environmental Protection B.15 of the Conditions of Certification.

8. The licensee shall take a representative sample of the cooling water pond and the sample shall be analyzed for manganese and iron quarterly at the same sampling schedule of the surficial monitoring wells. Test results shall be submitted as required under Section B.I. Department of Environmental Protection B.15 of the Conditions of Certification.

9. Every 5 years upon issuance of the Modification N COC, the licensee shall submit a proposal identifying the IWW wells in the Department-approved monitoring requirements that will be sampled for the Primary and secondary drinking water parameters included in Chapter 62-550, F.A.C., (excluding asbestos, acrylamide, Dioxin, butachlor, epichlorohydrin, pesticides, and PCBs, unless reasonably expected to be a constituent of the discharge or an artifact of the site). The selection of the wells should include at least one background well and one intermediate well, if they are available. Compliance well selections should be based on recent groundwater conditions. Sampling results should be submitted sixty days (60) upon Department's approval of the well proposal sampling. [62-520.600(5)(b).]

10. Within six (6) months of startup for any new facilities, including but not limited to the addition of a new source of water makeup to the cooling water pond, certified through supplemental proceedings and at least every five (5) years thereafter the Licensee shall

provide a waste stream characterization for the cooling water pond. The waste streams shall be analyzed for the Primary and Secondary Drinking Water parameters included in Rule 62-550, F.A.C Public Drinking Water Systems (excluding asbestos, acrylamide, Dioxin, butachlor, epichlorohydrin, pesticides, and PCBs, unless reasonably expected to be a constituent of the discharge or an artifact of the site), Fecal Coliform. In addition, volatile organics and extractable semivolatile organics shall be analyzed.. The results shall be submitted to the Ground Water Regulatory Section, Southwest District office

11. If, at any time, background ground water standards are exceeded at the edge of the zone of discharge, the Licensee has fifteen (15) days from receipt of the laboratory analyses in which to resample the monitor well(s) to verify the original analyses. The monitoring test results must be submitted to the Department within fifteen (15) days of receipt of the reanalyses from the laboratory. Should the Licensee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility.

12. If the concentration for any constituent listed in Section I.B.3, in the natural background quality of the ground water is greater than the stated maximum, or in the case of pH is also less than the minimum, the representative background quality shall be the prevailing standard. [62-520.420(2)]

13. If any monitor well becomes damaged or inoperable, the licensee shall notify the Department's SWD office the next business day from discovery, and a detailed written report shall follow within seven (7) days. The written report shall detail what problem has occurred and remedial measures that have been taken to prevent the recurrence. All monitoring well design and replacement shall be approved by the Department prior to installation. [62-520.600][62-620.320(6)]

14. The Licensee shall ensure that the water quality standards for Class G-II ground waters will not be exceeded at the boundary of the zone of discharge in accordance with Rules 62-520.400 and 62-520.420, F.A.C.

15. The ground water minimum criteria specified in Rule 62-520.400 F.A.C., shall be met within the zone of discharge. [62-520.400 and 62-520.420(4)]

16. Within forty five [45] days upon issuance of the Modification N COC, the licensee shall redevelop monitoring well MWC-5S and submit redevelopment details on Part III of FDEP Form 62-522.900(3), F.A.C. "Monitor Well Completion Report". The results shall be submitted to the Ground Water Regulatory Section, Southwest District office.

C. Other Specific Conditions

1. Drawings, plans, documents or specifications submitted by the licensee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.

2. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) F.S., applicable portions of reports to be submitted as required by this GWCOMR shall be signed and sealed by the professional(s) who prepared them.

D. General Conditions

1. This license does not relieve the licensee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this license source; nor does it allow the licensee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The licensee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this license which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a licensee in an enforcement action that it would have been necessary to halt or reduce the licensee activity in order to maintain compliance with the conditions of this license. [62-620.610(5)]

2. The licensee shall report to the Department's Southwest District Office any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the licensee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the licensee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

a. The following shall be included as information which must be reported within 24 hours under this condition:

(1) Any unanticipated bypass which causes any reclaimed water or effluent to exceed any permit limitation or results in an unpermitted discharge,

(2) Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,

(3) Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and

(4) Any unauthorized discharge to surface or ground waters.

b. Oral reports as required by this subsection shall be provided as follows:

(1) For unauthorized releases or spills of untreated or treated wastewater reported pursuant to subparagraph a.4 that are in excess of 1,000 gallons per incident, or where information indicates that public health or the environment will be endangered, oral reports shall be provided to the Department by calling the STATE WARNING POINT TOLL FREE NUMBER (800) 320-0519, as soon as practical, but no later than 24 hours from the time the permittee becomes aware of the discharge. The permittee, to the extent known, shall provide the following information to the State Warning Point:

(a) Name, address, and telephone number of person reporting;

(b) Name, address, and telephone number of permittee or responsible person for the discharge;

- (c) Date and time of the discharge and status of discharge (ongoing or ceased);
- (d) Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater);
- (e) Estimated amount of the discharge;
- (f) Location or address of the discharge;
- (g) Source and cause of the discharge;
- (h) Whether the discharge was contained on-site, and cleanup actions taken to date;
- (i) Description of area affected by the discharge, including name of water body affected, if any; and
- (j) Other persons or agencies contacted.

(2) Oral reports, not otherwise required to be provided pursuant to subparagraph b.1 above, shall be provided to Department's Southwest District Office within 24 hours from the time the permittee becomes aware of the circumstances.

c. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department's Southwest District Office shall waive the written report. [62-620.610(20)]

3. Bypass Provisions.

a. Bypass" means the intentional diversion of waste streams from any portion of a treatment works.

b. Bypass is prohibited, and the Department may take enforcement action against a Licensee for bypass, unless the licensee affirmatively demonstrates that:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The Licensee submitted notices as required under General Condition 3(c). of this Attachment C-1.

c. If the licensee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The licensee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required under General Condition #2 of this Attachment C-1. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times;

if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.

d. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in General Condition #3(b) 1 through 3 of this Attachment C-1.

e. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of General Condition #3, b. through d. of this Attachment C-1.

4. Upset Provisions

a. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee.

(1) An upset does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, careless or improper operation.

(2) An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of upset provisions of Rule 62-620.610, F.A.C., are met.

b. A licensee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the licensee can identify the cause(s) of the upset;

(2) The licensed facility was at the time being properly operated;

(3) The licensee submitted notice of the upset as required in General Condition # 1. of this Attachment C-1; and

(4) The licensee complied with any remedial measures required under General Condition #1 of this Attachment C-1.

c. In any enforcement proceeding, the burden of proof for establishing the occurrence of an upset rests with the licensee.

d. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review. [62-620.610(23)]