

5.0 ENVIRONMENTAL EFFECTS OF SITE PREPARATION AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

This chapter discusses the expected environmental effects of site preparation and construction of the plant and directly associated facilities comprising the proposed Polk 2-5 Conversion Project. The potential effects are assessed in terms of their relationships with the physical and natural resources and socioeconomic conditions on and in the vicinity of the Site as described in Chapter 3.0, as well as in terms of compliance with applicable regulations and standards.

5.1 LAND IMPACT

5.1.1 GENERAL CONSTRUCTION IMPACTS

Figure 4.8.0-2 illustrates the general portions of the PPS Site that will be disturbed by construction of the power plant and associated facilities for the Project. This figure also shows the existing power plant facilities on the Site. Approximately 7 acres of the 2,837-acre Site will be disturbed by construction of the Project facilities. As shown in Figure 4.8.0-2, an additional approximately 15 acres of the Site will be temporarily utilized for equipment and material laydown and parking during construction of the Project. These areas to be disturbed by construction of the new plant facilities will be generally located in the immediate area of the existing Unit 2 through 5 simple cycle units and currently consist of lands previously impacted by development of the existing units. The proposed construction laydown/parking areas are located south and southwest of the existing simple cycle units' area and currently consist of grassed fields. The new cooling tower will be located west of the existing Units 4 and 5 simple cycle power plant facilities. The existing cooling water intake and discharge structures will be expanded to provide condenser cooling water for the proposed CC unit and makeup water for the cooling tower and emergency firewater pumps.

As discussed in Section 4.8, the proposed Project development activities will not change the drainage patterns or system on the Site. The existing stormwater pond will have adequate storage and water quality treatment capacity to handle runoff

from the proposed Project facilities areas. Runoff from the construction laydown/parking areas will be routed to the cooling reservoir. During construction, BMPs for erosion and sediment control measures will be implemented.

The construction activities for the Project will involve the following general phases:

- Site preparation.
- Construction laydown and temporary facility area preparation.
- Underground works.
- Civil works.
- Equipment erection.
- Bulk commodity installation.

Since the areas to be disturbed for the proposed Project construction were previously cleared and graded during the existing PPS facilities development, the initial site preparation activities will primarily involve, as needed, regrading portions of the areas to achieve design elevations and stabilizing and contouring the areas to appropriate slopes and drainage consistent with the existing stormwater management plans. Materials for filling and preparing areas will be provided from other onsite areas or from locally available sources for such finishing and bed support materials as limestone, gravel, and crushed rock.

Fugitive dust from these site preparation activities will be controlled through compacting, stabilizing, and grass seeding of the disturbed areas and the use of water sprinkling. Silt fencing and other erosion control measures will also be installed to minimize sediment runoff from the disturbed areas. No explosives will be used during construction of the Project.

During the initial site preparation activities, the areas to be used for construction laydown, parking, and other temporary facilities will be prepared. These areas have been previously graded and stabilized to appropriate drainage contours for use as construction laydown for the reclaimed water treatment project. Access roads to these areas will be constructed, typically consisting of gravel or limestone installed over geotextile fabric. Portions of the laydown areas will be regraded, as needed, to meet the needs of the proposed Project. These areas will be used for temporary storage of delivered equipment and materials and assembly, prefabrication, welding, painting, and other activities necessary for the preparation of equipment. The construction parking areas will also consist of gravel or limestone installed over geotextile fabric. The main access roads to the parking areas will be covered with asphalt aggregate surface treatment to control fugitive

dust and minimize maintenance. Temporary security fencing will be installed around the laydown and parking areas.

The next general phases of construction will involve underground and civil works. Piles will be installed in the areas of major foundations that will be required to support heavy loads such as HRSG and STG equipment. Other underground work will consist of the installation of cooling water, firewater, sewers, and other piping systems and electrical duct banks and grounding. Construction of structural concrete foundations will begin after completion of the underground works.

During the underground and civil works, some limited, temporary dewatering activities may be required in the areas of certain plant facilities that have relatively deep foundations.

In general, these temporary dewatering activities will be accomplished through standard construction dewatering techniques using sheet pile and shoring and well points installed around the area to be excavated and/or by pumping from the excavated area. Water withdrawn during the dewatering operations will be routed to the existing stormwater pond or cooling reservoir. These temporary dewatering activities will periodically occur over an approximately 1-year period after the start of construction and will be conducted at various locations generally involving a specific area of less than 1 to 2 acres. As described in Section 5.3, these temporary dewatering activities are not expected to adversely impact onsite and offsite groundwater resources. The dewatering activities will be conducted in compliance with the applicable requirements of the COCs for PPS and SWFWMD's Rule 40D-2.301.

After completion of the civil works, structural steel erection activities will be conducted followed by mechanical equipment erection and installation. Next, bulk piping and electrical systems will be installed, and remaining activities to complete the equipment and facility construction and site cleanup will be conducted. All equipment and systems will be appropriately tested prior to initiation of startup activities for the Project.

Solid waste generated during construction activities will be disposed in accordance with applicable rules and regulations. General solid wastes (i.e., typical municipal solid waste) will be temporarily stored in appropriate waste collection containers located around the construction areas and transported offsite for disposal at an approved solid waste landfill. Construction debris, such as scrap wood, con-

crete, and metal, will first be transported to a specified salvage storage area on the Site where the debris will be separated and stockpiled for potential salvage and recycling. Construction debris that is not salvaged and recycled will be disposed in an approved offsite construction debris disposal facility.

During construction, the construction labor force will use portable chemical toilets. A licensed contractor will pump sanitary sewage from the portable toilets and holding tanks as needed and transport the waste to a permitted offsite disposal facility. Potable water for consumption during construction will be provided by bottled water.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and any resulting hazardous wastes. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes in accordance with federal and state hazardous waste regulations.

It is anticipated that onsite construction activities for the project will begin in February 2014 and be completed to meet the scheduled commercial operation date in January 2017. The peak construction employment will be approximately 500 workers and management personnel. Construction employment will average approximately 250 workers over the 32-month construction period.

5.1.2 ROADS

During construction of the proposed Polk 2-5 Conversion Project, construction labor force and delivery traffic will use the existing roadway system in the vicinity of the Site, primarily SR 37, Fort Green Road (CR 663), CR 674, and CR 630. The construction traffic will primarily use the existing main access road from SR 37 on the west side of the Site and the existing access road from Fort Green Road on the east side to enter the Site. These access roads and intersections were constructed and used by construction traffic during development of Unit 1 and are expected to be adequate for the proposed Project construction traffic. Entrance roads are gated, and access to the Site will be controlled for security purposes.

The potential transportation impacts during construction are discussed in Section 5.7.3 of this SCA.

As discussed in Section 4.9.1, although the majority of equipment and materials for construction will be delivered to the Site by trucks, some larger equipment, such as the HRSGs and STGs, may be delivered via the CSX railroad system.

5.1.3 FLOOD ZONES

As discussed in Section 3.1.5, the majority of the 100-year flood zones on the PPS Site have been significantly altered due to the previous phosphate mining and reclamation activities, as well as the development of the existing PPS facilities and cooling reservoir. Therefore, the specific portions of the Site containing the existing power plant facilities and proposed to be used for new Polk 2-5 Conversion Project facilities are no longer connected to the nearby drainage systems nor located in 100-year flood zones. Construction of the Project will not adversely impact flood elevations or cause flooding impacts on adjacent, offsite properties.

5.1.4 TOPOGRAPHY AND SOILS

Based on Tampa Electric's experience with the construction and operation of the existing power plant facilities at the PPS Site, no adverse effects on topography or soil stability are expected due to the proposed Project construction activities. Some portions of the Site may require some minor filling and grading to support the proposed facilities construction and provide for appropriate drainage. Overall site topography will not be significantly altered by these construction-related alterations and will be similar to the existing plant facility areas.

Construction activities will not significantly alter runoff rates in the specific areas of the new structures and facilities, because these areas were considered as developed in the existing, approved stormwater management plan. Stormwater runoff from these facilities' areas will be collected and directed to the existing stormwater pond. As discussed in Section 4.8, runoff from the construction laydown/parking areas will be routed to the cooling reservoir. Appropriate BMP erosion and sediment control measures will be implemented during construction.

5.2 IMPACTS ON SURFACE WATER BODIES AND USES

5.2.1 IMPACT ASSESSMENT

The surface water bodies on the Site that could potentially be affected by site preparation and construction of the proposed Polk 2-5 Conversion Project include the reclaimed wetlands area on the west side of the Site area, the mine cut lake that receives drainage from the wetlands and the existing stormwater pond (at Outfall D-002), and the unnamed lake to the east of the cooling reservoir (refer to Figure 4.2.0-1). Although not considered waters of the United States, the major surface water feature on the Site is the 755-acre cooling reservoir. Excess water from the reservoir discharges through Outfall D-001 into the unnamed lake.

Offsite water bodies that could potentially be affected by site preparation and construction include Little Payne Creek, which receives drainage from the unnamed lake, and Payne Creek, which receives drainage from Little Payne Creek and eventually discharges to Peace River.

Construction of the Project will require minor filling, grading, and excavation activities in addition to using site areas for laydown and staging activities. Sections 4.2 and 4.8 provide details on the site layout and onsite drainage plans.

The proposed construction activities will have minimal impacts on the existing stormwater management system. As described in Section 4.8, the proposed Project facilities will be located on land within areas that have been approved for development according to the original SCA (ECT, 1992). The proposed facilities will increase neither the total drainage area to the existing stormwater pond nor the stormwater runoff volume to the stormwater pond. Therefore, the existing stormwater management facility has sufficient capacity to accommodate stormwater runoff from the proposed Project facilities.

No long-term impacts to aquatic species are expected to occur as a result of Project construction. The construction will follow an approved sedimentation and erosion control plan, which will ensure minimal impacts to water quality during construction.

Other construction activities within water bodies will include modifications to the existing intake and discharge structures within the cooling reservoir. These impacts should be limited to potential temporary increases in sedimentation within

the reservoir. Impacts to other water bodies are not expected. Appropriate sediment and erosion control procedures will be followed during construction to minimize the temporary disturbances within the cooling reservoir.

5.2.2 MEASURING AND MONITORING

Current PPS operations are governed by NPDES permit No. FL0043869. The permit requires monitoring at discharge locations D-001 and D-002, as well as internal Outfalls I-003 and I-004 (see Figure 4.8.0-3). In addition, the permit requires continuous monitoring of the water temperature in an old mine cut (Sampling Point SWA-1). As required by the permit, monitoring will continue at these locations throughout the construction period. In addition, an NPDES stormwater discharge permit will be obtained prior to construction. Any monitoring requirements issued with that permit will be implemented and will continue through the required monitoring period identified in the permit.

5.3 GROUNDWATER IMPACTS

5.3.1 IMPACT ASSESSMENT

The proposed site preparation and facility construction activities for the Project may have potential short-term effects on groundwater in the surficial aquifer on the Site due to temporary dewatering activities. These limited, temporary dewatering activities may be required for several plant facilities that have relatively deeper foundations or locational requirements. However, the temporary dewatering activities associated with the excavation and construction activities for the cooling reservoir during initial construction of Unit 1 were substantially greater in comparison to any of those proposed for the Polk Unit 2-5 Conversion Project, during which time no adverse dewatering impacts were measured. Furthermore, the presence of the cooling reservoir to the east and south of the plant site serves as hydrologic recharge boundaries limiting the aerial extent of any dewatering impacts, restricting them to the plant site, and confining them to well within the plant property boundaries. Therefore, it is expected that these more limited proposed dewatering activities will not result in adverse impacts.

Plant structures associated with the Polk Unit 2-5 Conversion Project that may potentially require dewatering activities for construction include:

- Cooling tower foundation and associated pipelines.
- HRSG units foundations.
- STG foundation.
- New exhaust stacks.

- Recirculating water pipelines.
- Recirculating water pumping facilities.

Plant facility and structure foundations will consist of concrete or crushed stone mats or spread footings for relatively lighter load-bearing facilities and pilings for heavier structures. Construction of these types of foundations generally will require no dewatering activities.

All potential dewatering activities will be conducted in compliance with applicable SWFWMD requirements (Rule 40D-2.301) and the current COCs for PPS. Water withdrawn by dewatering to facilitate construction of proposed facilities and structures will be managed and routed through sedimentation/settling ponds and then directed to the stormwater pond or cooling reservoir. As mentioned previously, due to its water elevation, the existing cooling reservoir acts as a local recharge feature to the surficial aquifer. Thus, the presence of the cooling reservoir will serve to minimize and limit the aerial extent of any potential drawdown resulting from the short-term dewatering for any of these features. Furthermore, these relatively shallow and short-term dewatering activities are not anticipated to affect the intermediate and Floridan aquifers on or in the vicinity of the Site. Therefore, the proposed temporary dewatering activities for the Polk Unit 2-5 Conversion Project are not expected to have adverse impacts to onsite and offsite groundwater resources.

Potential chemical effects from dewatering activities can result from the disturbance (mobilization) of constituents from the soils into the water and from oxidation of the groundwater. The undifferentiated, surficial soils on the Site are composed primarily of quartz sands with several water-soluble constituents, including calcite, phosphate, and iron. The oxidation can cause the disassociation of calcite releasing bicarbonate and calcium anions, which can increase the hardness of water. Oxidation of the dissolved iron can cause ferrous iron to form ferric iron. However, in the onsite aquifer system composed primarily of silica sands, the oxidation reactions will be minimal, and potential groundwater quality impacts will be insignificant.

Based on the existing Site and adjacent offsite conditions, these potential shallow and short-term groundwater drawdowns will have no significant impacts on wetlands and surface water bodies in the vicinity of the Site. Also, since the surficial aquifer in the site area is not used for potable water supply purposes and due to

the confining layer between the aquifers, the temporary surficial aquifer draw-down will not affect drinking water supplies and other uses of deeper aquifer systems in the PPS Site area.

5.3.2 MEASURING AND MONITORING PROGRAMS

In compliance with applicable SWFWMD regulations and the current COCs for PPS, as required, Tampa Electric will prepare a monitoring program to measure the water table elevation and potential drawdown impacts of the potential dewatering activities and determine if mitigation will be required. As discussed previously, any potential impacts due to dewatering activities are expected to be limited to the immediate proximity of the structures being constructed.

For the monitoring plan, Tampa Electric will monitor, as required, the water levels in the surficial water table for potential impacts during the Polk Unit 2-5 Conversion Project dewatering activities. Prior to initiation of the dewatering activities, background data measurements will be collected and previous water level data reviewed. Water level measurements will be obtained from relevant monitoring wells that are part of the existing groundwater monitoring program for the existing PPS operations.

For the dewatering monitoring program, water levels may also be monitored using temporary piezometers. Water levels will be checked and recorded on a weekly basis after initial installation. Typical construction details for the proposed piezometers will be 2-inch diameter PVC well casing and slotted well screen. The casing will rise above land surface approximately 2 ft and be covered by a protective casing. The screen interval will start approximately 2 to 3 ft bls and extend for an additional 20 ft. Water level monitoring locations will be surveyed to a National Geodetic Vertical Datum.

5.4 ECOLOGICAL IMPACTS

5.4.1 IMPACT ASSESSMENT

Potential impacts to terrestrial and aquatic ecological resources within the areas to be developed for the proposed Polk Unit 2-5 Conversion Project will be based on the effects associated with site clearing and project construction on the existing floral and faunal communities. Potential impacts would include effects on wildlife and aquatic habitat, wetlands, and important species. Since the majority of the areas selected for development have already been either completely altered or otherwise disturbed through the construction of the existing power plant and past

mining and reclamation activities, and the proposed construction activities are mostly planned to occur in developed areas or lands mostly converted to an upland grassy condition, the potential for impacts to ecological resources is expected to be minor. The following subsections provide information on the potential impacts to ecological resources.

5.4.1.1 Terrestrial Systems—Flora

No native or reclaimed wetland or upland habitats are planned to be disturbed. Some disturbance to existing roadside drainage ditches may occur in an effort to improve access to construction parking and laydown areas or for pipeline crossings; however, no mitigation for impacts to these manmade drainage systems is required. A few small areas of reclaimed wetlands occur along the existing transmission corridors, where new lines are proposed to be built or rebuilt. No impacts are proposed along these wetland crossings. No state or federally listed species of plants are expected to be affected by the construction of the new facilities onsite.

5.4.1.2 Terrestrial Systems—Fauna

Construction impacts to wildlife resources at the Site may occur in the form of direct impacts (displacement, mortality) in the proposed construction area or indirect impacts (noise, human presence) in preserved onsite and surrounding natural habitats. In the areas to be cleared for construction, mobile fauna will be displaced. Less motile or fossorial species may be lost due to clearing and earth-moving activities.

The most conspicuous faunal elements observed on the Site are birds. It is unlikely that the site preparation and construction activities on primarily previously disturbed lands currently dominated by old-field vegetation will affect regional populations of any bird species. This is due to the fact birds are highly mobile, and similar and better quality habitats are available on the remainder of the Site and in the nearby environs.

It is also unlikely that Project clearing/construction would impact most of the mammal species found onsite. The better quality habitats on the Site will not be affected by clearing or construction activities. Reptiles and amphibians are not likely to be affected by the Project construction, since no aquatic habitats will be impacted. Also, populations of these animals are expected to be minimal in the affected habitats.

Power plant construction is not expected to significantly impact regional populations of any endangered, threatened, or of special concern species. Of the 28 listed wildlife species confirmed in Polk County prior to development of the original Polk Unit 1, only 15 of those species were confirmed onsite at that time. During prior surveys conducted in 2007, only two of those species were confirmed in the vicinity of the plant facilities: the tricolored heron and American alligator. Both of these species were observed in the reclaimed wetland situated to the west of the existing power plant facilities; therefore, they were located in an area that will not be directly disturbed for the proposed Project construction.

Both the tricolored heron and American alligator are listed as a species of special concern by FWC. Since they were both observed in the reclaimed wetland west of any proposed Project construction, it is not likely their habitat will be affected. These species and perhaps other listed wetland-dependent species may occur in the drainage ditches and wetlands along the proposed construction laydown/parking areas and existing transmission line corridors, respectively, where construction is proposed. Since these species have already acclimated to the existing power plant operations, it is unlikely that the new construction will reduce their use of the onsite wetlands or ditches.

The bald eagle nest, located in the southeasternmost corner of the PPS Site, will not be affected by the proposed development activities. The nest is more than 1 mile away from the Polk Unit 2-5 Construction Project footprint. The construction activities will also be well beyond the currently recommended FWC and USFWS buffers of 330 to 660 ft. In addition, the Project's construction will not reduce any of the eagle's onsite foraging habitats.

While other listed species may occur in or use the areas to be impacted, these areas do not represent valuable wildlife habitats. Better habitats exist elsewhere on the Site and certainly in the region. Therefore, no significant impacts are expected to occur to regional populations of any listed species.

5.4.1.3 Aquatic Resources

The use of the construction laydown/parking areas could require the crossing of the manmade drainage ditches for access roads. Culverts could be placed across the drainage ditches to maintain adequate flow for improved road crossings. With the implementation of appropriate erosion controls during construction, the disturbance to drainage ditches will only result in localized losses of aquatic macro-invertebrates due to fill and sedimentation. However, no significant long-term im-

pacts to populations of aquatic species are expected to occur as a result of project construction.

5.4.2 MEASURING AND MONITORING PROGRAMS

As stated previously in Sections 3.3.5 and 3.3.6, the data used for this SCA include field studies conducted on the PPS Site in 2007 and data compiled for the SCA initially conducted for development of the Site. No recent wildlife or vegetation surveys were conducted, nor were these activities considered necessary in describing or ascertaining impacts to the ecological resources present. In addition, no aquatic ecological studies were conducted recently, nor were such studies considered necessary for the purposes of evaluating impacts to aquatic systems from the proposed actions. No monitoring programs are proposed for biological resources during construction of the Project.

5.5 AIR IMPACT

Three general activities will generate air emissions during construction of the proposed Project. First, site preparation and vehicle movement will generate fugitive dust emissions. Second, internal combustion engines in construction equipment will release NO_x, CO, and other fuel combustion-related air pollutants. And third, construction worker travel to and from the Site will result in vehicular emissions.

In general, emissions due to construction activities will vary due to weather conditions and will fluctuate on an hourly and daily basis as construction progresses. Since the new CC process equipment (i.e., HRSGs, STG, and cooling tower) associated with the Polk Unit 2-5 Conversion Project will be installed on land previously cleared and prepared for the existing simple cycle CTGs, the quantity of emissions released during the site preparation phase will be minimal. Fugitive dust emissions will increase during the more active construction periods as a result of increased vehicle traffic on the construction site.

Fugitive dust emissions from the construction site will be minimized using appropriate dust suppression control methods. Construction roadways and parking areas will be surfaced with aggregate to provide a stabilized subgrade and reduce fugitive dust emissions. Standard fugitive dust control methods used at construction sites will be implemented including the application of water to unpaved roads and other exposed surfaces on an as-needed basis. Construction-related fugitive dust emissions will be temporary and will end once construction is completed. Also,

since the construction activities will be located approximately 1,200 ft from the nearest PPS property boundary, potential fugitive dust impacts to offsite areas will be minimal.

Fuel combustion-related emissions will occur during site preparation and construction due to the operation of onsite construction equipment using internal combustion engines for site excavation and grading, concrete placement, and structural steel and major equipment installation. Potential minor sources of VOCs include:

- Evaporative losses from onsite painting.
- Refueling of construction equipment.
- Application of adhesives and waterproofing chemicals.

Construction of the Project will occur over an approximately 32-month period. There will be an average of approximately 250 workers onsite during that time frame, with peak employment of approximately 500 construction workers. The construction personnel are expected to be drawn primarily from Polk, Hillsborough, and other nearby counties and will commute to the job site. While not readily quantifiable, the temporary net changes in vehicle-miles traveled (VMT) in the area are expected to be relatively insignificant, as would any temporary net changes in areawide vehicular emissions.

The air quality impacts caused by construction activity will vary from day to day as a function of the level of activity, specific nature of the activity, weather conditions while the activity is occurring, and emissions controls applied to the activity. However, even under worst-case conditions, the maximum ambient impacts caused by construction emissions are expected to be minimal, temporary, and limited to the general area of the construction site. The main construction activities for the Project's major facilities will take place approximately 1,200 ft from the nearest property boundary and more than 1.5 miles from the closest residential area. Thus, based on the type and nature of the construction-related emissions sources, potential maximum air quality impacts caused by potential construction-related emissions should be localized, primarily limited to the immediate onsite area of the construction activity, and well within the overall Site boundaries.

Approximately 7 acres of the PPS Site in the vicinity of the existing simple cycle CTGs will be developed for the proposed Project. An additional 15 acres will be used for construction laydown and parking. The construction laydown/parking areas that will be used for the Project will have also been used for a prior con-

struction project and, therefore, will require only minor additional site preparation activities.

The construction activities, especially earth moving and operation of construction equipment, will result in air emissions. The total annual emissions that may occur during the construction of the Project are shown in the following table. Total PM₁₀ and PM_{2.5} emissions projected for construction activities are 5.3 and 3.3 tpy, respectively. These emissions represent an upper bound approximation because of the use of conservative assumptions:

Emissions Category	Pollutant	Emissions (tpy)	Controls
Grading operations	PM ₁₀	1.6	Watering as necessary
	PM _{2.5}	0.082	
Unpaved roads	PM ₁₀	0.48	Watering as necessary
	PM _{2.5}	0.048	
Diesel engines	PM ₁₀	3.2	ULSD fuel oil
	PM _{2.5}	3.2	
	NO _x	45.1	
	CO	55.9	
	VOC	19.3	
	SO ₂	0.02	

5.6 **SOLID WASTES**

Solid wastes generated during construction activities will be disposed in accordance with applicable rules and regulations. Disposal of solid waste (i.e., typical municipal solid waste) will be in appropriate waste collection containers located around the construction areas, and the waste will be transported offsite for disposal at an approved solid waste landfill. Construction debris, such as scrap wood, concrete, and metal, will first be transported to a specified salvage storage area on the Site where they will be separated and stockpiled for potential salvage and recycling. Construction debris that is not salvaged and recycled will be transported to a permitted offsite construction and demolition debris disposal facility.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and any resulting hazardous wastes. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes in accordance with federal and state hazardous waste regulations.

5.7 IMPACT ON HUMAN POPULATIONS

5.7.1 LAND USE IMPACTS

Construction impacts of the proposed Project on land use on and in the vicinity of the Site are expected to be insignificant since the Site is already developed as an electrical power generating station, and the conversion of Polk Units 2 through 5 is an addition to the existing power plant facilities. Information presented in Section 3.2.3.2 describes the surrounding land uses, which are predominantly previously mined and reclaimed phosphate lands. The proposed Polk Unit 2-5 Conversion Project will not result in the expansion of onsite facilities closer to any existing residents. The nearest single-family residences to the planned location of the facilities that comprise the Project are located approximately 1.8 miles west along Bethlehem and Albritton Roads.

The site plan for the proposed conversion and existing facilities was previously shown in Figure 4.2.0-1. The site plan shows the planned locations for construction of the new facilities (cooling tower, HRSGs, STG, etc.). This plan also shows Tampa Electric's setbacks from the site boundaries and visual buffers for the main power plant facilities along SR 37, CR 630, and Fort Green Road from potential public viewpoints.

5.7.2 CONSTRUCTION EMPLOYMENT

The construction workforce for the proposed Polk Unit 2-5 Conversion Project is estimated to peak at approximately 500 workers and average 250 workers for a 32-month duration. Employment is expected to be highest during 2015.

The majority of the construction workforce is expected to be drawn from Polk, Hillsborough, and other counties in the region within commuting distance to the Site. It is estimated that approximately 60 percent of the construction workforce will be drawn from Polk County and counties within the west-central Florida region. Also, it is estimated that 40 percent of the construction workforce will be drawn from outside the region and state and that these workers will temporarily

relocate to areas within commuting distance of the Site. These workers will occupy available rental housing units or recreational vehicle park sites. The associated potential impacts on housing, schools, and other public facilities and services are expected to be minimal and temporary. Construction is expected to occur primarily during daylight hours, with the majority of the construction workers onsite between 7 a.m. and 4 p.m. Chapter 7.0 provides more detailed information on the construction workforce, payrolls, and expenditure and economic benefits.

5.7.3 TRANSPORTATION IMPACTS

Some temporary construction-related transportation impacts are expected as a result of the movement of construction workers, machines, and equipment to and from the PPS Site. A transportation analysis was conducted as part of the original SCA for PPS and the Polk County CUP application/approval in 1992. The transportation analysis assumed the following:

- Construction-related trip generation of 2.0.
- Vehicle occupancy rate of 1.4.
- 75 percent northbound trips.
- 25 percent southbound trips.
- 75 percent of construction employees accessing the Site from SR 37.
- 25 percent of construction employees accessing the Site from Fort Green Road.

Access points to the Site during construction will be provided by the three existing entrance roadways: main plant and Bethlehem Road entrances from SR 37 and the Fort Green Road entrance. The main plant entrance and the Fort Green Road entrance will be the primary accesses for construction personnel and construction-related deliveries. The Bethlehem Road entrance from SR 37 will be used for operational employees, visitors, and deliveries. Entrances will be gated, and access to the plant site will be controlled.

Using the same assumptions as the previous transportation analysis, a total of 715 daily trips will be generated during the expected 12-month peak construction employment period with as many as an additional 150 daily trips for deliveries. The distribution of these trips is anticipated to be:

<u>Roadway</u>	<u>Direction</u>	<u>Trips</u>
SR 37	Northbound	484
	Southbound	173
Fort Green Road	Northbound	160
	Southbound	48

The average construction workforce of 250 employees will generate a total of 357 daily trips with approximately 50 additional delivery trips:

<u>Roadway</u>	<u>Direction</u>	<u>Trips</u>
SR 37	Northbound	228
	Southbound	82
Fort Green Road	Northbound	75
	Southbound	22

The 1992 transportation analysis found that all roadway links and intersections within the traffic impact area would operate at acceptable LOSs with the existing geometry. No additional roadway improvements were recommended, and none were required after construction of the plant entrances.

A comparison of the AADTs contained in the 1992 transportation analysis and the 2011 traffic counts compiled by the Florida Department of Transportation (FDOT) indicate only minor increases in traffic have been experienced on the major roads near PPS. The following is a comparison of AADT reported in the CUP and in 2011 and with peak projection construction traffic for the Project:

<u>Roadway</u>	<u>1992 AADT</u>	<u>2011 AADT</u>	<u>Peak Construction</u>	<u>Daily Capacity</u>
SR 37	3,247	4,300	4,957	15,000
SR 674	1,418	1,700	2,300	15,000
Fort Green Road	Not applicable	800	1,008	15,000

Even at the peak of construction activities, the surrounding roadway network is expected to operate at acceptable LOSs.

Further, Tampa Electric will encourage transportation demand management techniques to reduce the number of temporary construction-related vehicle trips on the road networks. These techniques will include placing a bulletin board onsite that may be used by construction contractors to place car-pooling advertisements. Construction contractors will be requested to inform their employees that this service is available.

During the peak construction activities, construction vehicles (e.g., graders, bulldozers, dump trucks) will also access the Site. However, the majority of these heavy construction vehicles are anticipated to remain onsite for the duration of the initial construction activities, entering at initiation and exiting at completion. Since the majority of these vehicles are not expected to make daily trips to and from the Site, the potential traffic impacts from these vehicles are expected to be minimal to the regional road network.

5.7.4 HOUSING IMPACTS

For the year 2010, the Florida Department of Labor and Employment Security reported a total of 9,385 construction workers in Polk County (BEHR, 2011). Based on this available construction workforce and as previously discussed in Section 5.7.2, the majority of construction workers is expected to be drawn from within commuting distance to the Site and will not permanently relocate to the area. It is therefore expected that the majority of these construction workers will commute daily to and from the Site.

Also, as previously discussed in Section 5.7.2, the number of construction workers expected to be drawn from outside the region is predicted to range up to 40 percent of the workforce. These workers are anticipated to occupy available rental housing and/or rental or seasonal units in the area. Relatively few construction workers are anticipated to be continuously employed throughout the 32-month construction period, and, consequently, associated impacts on housing are expected to be negligible.

In 2010, there were 53,729 vacant housing units in Polk County, of which 7,283 were for sale and 12,562 were for rent. Therefore, the relatively small additional temporary demand for rental housing associated with the Project construction workforce is expected to be readily absorbed by available rental housing in Polk County and/or adjacent counties. Those commuting workers are expected to maintain their established patterns of use based on their existing residences, which are not expected to create additional housing demands to the area.

5.7.5 PUBLIC SERVICES AND FACILITIES IMPACTS

As with potential housing impacts, construction-related impacts to public services and facilities are not expected to be significant. The majority of the construction workforce is anticipated to commute from their current residences, with only min-

imal temporary relocations expected. Therefore, because the workforce is currently provided with public services and facilities associated with their existing residences, no significant changes in the patterns of use or demands upon public services are expected. During construction, bottled water and portable sanitary units will be used for the construction work force.

5.7.6 NOISE IMPACTS

The impact of noise on human populations is dependent on the proximity of human receptors (i.e., residential land uses) to the construction activities and types of levels of the noise sources.

Construction of the proposed Project is expected to be typical of other power plants in terms of schedule, equipment utilized, and types of activities. Construction can generally be divided into several phases, with the noise level varying with the construction phase (based on Bolt Beranek and Newan, Inc., 1977). The various construction phases are:

- Site preparation and excavation.
- Concrete pouring.
- Steel erection.
- Mechanical and electrical.
- Clean up.
- Startup and testing.

At the PPS Site, potential noise impacts are expected to be minimal and mitigated by the significant distance between the construction area of the main plant facilities and the Site boundaries, as well as the low density of residential land uses in the area. The nearest residences to the main facility construction area are located approximately 1.8 miles to the west along Bethlehem and Albritton Roads.

During the initial site preparation and foundation excavation phase, heavy diesel-powered earth-moving equipment will be the major source of noise. This equipment includes bulldozers, graders, compactor rollers, dump trucks, backhoes, and front-end loaders. As shown in Table 5.7.6-1, typical noise levels produced by such equipment range between 80 to more than 90 dBA at a distance of 50 ft.

Equipment used during the concrete pouring stage typically includes concrete trucks, cranes, and equipment for backfilling foundations. Pile drivers, which produce noise levels ranging from 91 to 105 dBA at 50 ft, will also be used on the Site. The steel erection phase typically requires the use of cranes in varying sizes, air compressors, welders, material delivery trucks, concrete trucks, and front-end loaders. The machinery installation phase requires the same types of equipment as

the steel erection phase. During construction, noise related to truck traffic is normally the highest contributor due to noise levels generated (83 to 94 dBA at 50 ft in Table 5.7.6-1) and frequency. However, such impacts will be temporary.

Table 5.7.6-1. Typical Noise Levels (dBA at 50 ft) for Construction Equipment

Equipment Description	Noise Level (dBA)
Bulldozers	80 to 90
Graders	80 to 93
Backhoes	72 to 93
Front-end loaders	72 to 90
Generators	81
Scraper pans	80 to 91
Compactor rollers	73 to 83
Pile drivers	91 to 105
Concrete pouring/trucks	81 to 87
Cranes	75 to 86
Air compressors	74 to 89
Concrete pumps	81 to 84
Excavation equipment	72 to 90
Welders	73
Dump/delivery trucks	83 to 94
Diesel locomotives (12 to 30 infrequent rail deliveries)	97
Asphalt paver	86 to 89
Pneumatic tools	85

Source: ECT, 2007.

The final phase, consisting generally of site cleanup and plant startup activities, is typically 10 dBA quieter than the other phases (Bolt Beranek and Newan, Inc., 1977), except for steam blows during the final phase of plant startup and equipment preparation and cleaning. Steam blows involve exhausting steam for short periods of time. This process involves intermittent exhaust during the startup period for approximately 2 to 3 weeks. Specialized noise attenuation equipment will be used to minimize noise levels at the facility boundaries. Further, Tampa Electric will notify nearby residents and place notices in the local newspaper to inform citizens in Polk County that the steam blows will be occurring and over what period the blows will occur to minimize potential concerns due to high sound level produced by the steam blow events.

During Project construction, noise impacts will be minimized by requiring that noise control measures on construction equipment be properly installed and functional. Also, for certain high noise-producing activities such as pile driving, noise control will focus on limiting the time of day and/or duration of the activity. Noise produced during the construction activities will attenuate with the distance from the source. Based on the significant distances from the major equipment construction areas to the boundaries of the Site, noise levels at the Site boundaries during construction will typically range from 55 to 60 dBA. The projected noise levels are not significantly different than the existing noise levels produced by traffic along SR 37 (see Section 3.3.8). Further, construction noise for the Project is not expected to be significantly different than that experienced during the construction of the existing Unit 1. Therefore, no adverse impacts on human populations are expected during the Project construction.

5.8 IMPACT ON LANDMARKS AND SENSITIVE AREAS

No federal, state, regional, or local scenic, cultural, or natural landmarks are located within the 5-mile study area surrounding the Site. Therefore, the construction of the Project will have no impact upon such resources.

5.9 IMPACT OF ARCHAEOLOGICAL AND HISTORIC SITES

Based on the prior cultural resources assessment conducted for the Site and confirmation of those results by FDHR (see Appendix 10.7.1), the proposed Polk Unit 2-5 Conversion Project is not expected to disturb any archaeological or historical features eligible for the National Register of Historic Places. Therefore, no mitigation to such impacts will be required. In the unexpected event that such a feature is encountered during construction, activities will be halted until a certified archaeologist evaluates the find and determines its significance. If the find is significant, Tampa Electric will take the appropriate measures to preserve or mitigate the impact to the find in coordination with FDHR.

5.10 SPECIAL FEATURES

The Polk Unit 2-5 Conversion Project will involve no unusual products, raw material, garbage disposal services, or incinerator effluents and residues that will have an influence on the environment and ecological systems on the Site or adjacent areas.

5.11 BENEFITS FROM CONSTRUCTION

The construction of the Polk Unit 2-5 Conversion Project will create numerous economic benefits to the area. These benefits include increased construction employment and sales taxes levied on construction materials. Chapter 7.0 of this SCA presents a detailed description of these benefits.

REFERENCES

- Bolt Beranek and Newman, Inc. 1977. Power Plant Construction Noise Guide. Report No. 3321. Prepared for Empire State Electric Energy Research Corporation. New York, New York.
- Bureau of Economic and Business Research (BEBR). 2006. 2005 Statistical Florida Abstract. College of Business Administration, University of Florida, University Press of Florida. Gainesville, Florida.
- Environmental Consulting & Technology, Inc. (ECT). 2007. Polk Power Station Unit 6 Site Certification Application (*Filed, later withdrawn*). Prepared for Tampa Electric Company. ECT No. 070040-0100. September. Gainesville, Florida.
- . 1992. Polk Power Station Site Certification Application. Prepared for Tampa Electric Company. ECT No. 90263-0100. July. Gainesville, Florida.