10.0 Environmental Consequences of the Proposed Action

This chapter presents the potential environmental consequences of constructing and operating two new STP 3 & 4 reactors at the STP site. These environmental consequences are presented in the following five subsections:

- Unavoidable Adverse Environmental Impacts (Section 10.1)
- Irreversible and Irretrievable Commitments of Resources (Section 10.2)
- Relationship Between Short-Term Uses and Long-Term Productivity of the Human Environment (Section 10.3)
- Benefit-Cost Balance (Section 10.4)
- Cumulative Impacts (Section 10.5S)

10.1 Unavoidable Adverse Environmental Impacts

This section summarizes those unavoidable adverse impacts identified as a result of construction and operation of STP 3 & 4. This summary also identifies mitigation actions proposed to reduce the impacts that would be reasonable and practical to implement as well as the impact significance level. Information provided in Section 4.6 and Section 5.10 has been used in preparing this section. The following categories have been assessed for adverse impacts due to the construction and operation of STP 3 & 4 that cannot be avoided and for which no practical means of mitigation are available:

- Land use
- Hydrologic and water use
- Ecology (aquatic and terrestrial)
- Socioeconomics
- Radiological
- Atmospheric releases and meteorological changes
- Environmental justice

10.1.1 Construction-Related Unavoidable Adverse Environmental Impacts

The potential adverse environmental impacts from the construction of STP 3 & 4 are described in detail in Chapter 4. Table 4.6-1 summarizes those impacts and identifies the measures and controls that will be implemented to reduce or eliminate those impacts. The unavoidable adverse environmental impacts due to construction are summarized in Table 10.1-1. A brief summary of the construction-related unavoidable adverse environmental impacts is included in the paragraphs below.

For many of the impacts related to construction activities, mitigation measures that would be applied are referred to as “best management practices,” as previously discussed in Section 3.9. Typically, their use is determined by the types of activities that are to be performed, and frequently, they are implemented through plans and procedures developed at the time of construction.

10.1.1.1 Land Use

Unavoidable, but small, adverse environmental impacts on land use would occur due to construction of STP 3 & 4. Approximately 740 acres (out of approximately 12,220 total site acres) on the STP site will be affected; most of the land that will be cleared at STP was disturbed during the original construction of STP 1 & 2. Twenty-nine wetlands were identified by the U.S. Army Corps of Engineers (USACE). These wetlands will be avoided during construction. Construction may also occur in other sensitive areas, including the Coastal Management Zone. Land used for construction related activities (e.g., laydown and spoils areas, construction parking) will be restored once construction is complete. These impacts would be considered small and temporary. There may be the potential for small to moderate short-term physical land use changes in the vicinity of the site due to the development of temporary housing for construction employees.

10.1.1.2 Hydrologic and Water Use

The construction of STP 3 & 4 will increase the amount of groundwater used at STP. However, as documented in the site groundwater use calculation (Reference 10.1-1), it has been determined that the existing STP site groundwater operating permit limit provides adequate groundwater supply for water uses required for the operation of STP Units 1 and 2 and the construction, initial testing, and operation of STP Units 3 and 4. Temporary dewatering of the shallow aquifer will also be required during construction. However, construction practices (i.e., best management practices) and adherence to storm water management procedures, as included in the Storm Water Pollution Prevention Plan, will minimize the adverse effects of the construction dewatering on the aquifer and local wells. Additional potential construction impacts to local hydrology include the potential disturbance of local surface water bodies due to turbidity and sedimentation caused by construction activities. In summary, small, temporary unavoidable adverse impacts to local hydrology and water are anticipated during construction.

10.1.1.3 Aquatic Ecology

Construction activities (e.g., restoration of the barge slip) along the Colorado River shoreline may adversely affect shoreline habitat. In addition, construction activities have the potential to temporarily increase the sediment load in that section of the river, although it is likely the increase will be small. There is also potential for construction-related spills (e.g., hydraulic fluid, diesel) that may impact surface water bodies. Small temporary impacts to surface waters are likely from the filling in or rerouting of surface drainage features during construction. In summary, small temporary unavoidable adverse impacts to aquatic ecology are anticipated during construction.

10.1.1.4 Terrestrial Ecology

Clearing activities and construction of STP 3 & 4, including relocating or refilling drainage ditches, will likely cause wildlife to leave or avoid the construction sites or relocate to other areas. Any changes in the wildlife population density in the site area would be difficult to measure. There also is a small potential for bird collisions with construction equipment. After construction of STP 3 & 4 is completed, wildlife is expected to return. Therefore, small temporary unavoidable adverse effects are anticipated to terrestrial ecology.

10.1.1.5 Socioeconomic

During construction, moderate to large socioeconomic impacts may result from the influx of estimated 5950 construction workers and their families. Early in the construction phase in Matagorda County, there is the potential for a shortage of suitable short-term housing or rental units. In addition, there is the possibility that the area schools may need to expand to accommodate the children of the construction workers. Water and wastewater facilities will require expansion/upgrading. Fire and police protection also would need to expand to meet the needs of the county. Roads in the vicinity of the STP site will experience increased traffic because most of the roads in the plant vicinity are two-lane highways.

Mitigation measures that could be implemented by STPNOC to minimize traffic impacts include staggering shifts, encouraging car pooling, erecting signs alerting drivers of increased construction traffic, and potentially adding turn lanes at the STP site. Increases in tax revenue that will result from the construction of STP 3 & 4 could be used for school funding, road improvements, upgrades/improvements to water/wastewater treatment facilities, and upgrades to the fire and police protection infrastructure. If housing is not available, local market forces will likely stimulate new home construction. All other socioeconomic impacts from construction activities will be small and temporary.

10.1.1.6 Radiological

Construction workers will receive radiation exposure from STP 1 & 2 during construction. However, the doses will be within regulatory limits (10 CFR 20.1301 and 40 CFR 190.10), as discussed in Section 4.5. The radiation dose to the workers is considered a small unavoidable adverse impact.

10.1.1.7 Atmospheric and Meteorological

Construction will result in increased air emissions and fugitive dust from traffic and construction equipment. Best management practices for dust control such as frequent watering of potential dust-emitting areas could be employed. Local exposure to potential construction noise will be mitigated by potential measures such as public notification of impending construction activities. Small unavoidable adverse impacts are anticipated.

10.1.1.8 Environmental Justice

No disproportionately high or adverse impacts to minority or low-income populations were identified. However, the cost of low-income rental housing could increase due to increased demand for housing, potentially displacing low-income renters in Matagorda County during the construction phase. Small unavoidable adverse impacts are anticipated.

10.1.2 Unavoidable Adverse Environmental Impacts of Station Operations

Operational impacts of STP 3 & 4 are discussed in detail in Chapter 5. Table 5.10-1 briefly describes those impacts and identifies measures and controls that may be implemented to reduce or eliminate adverse impacts. The expected impacts and the mitigation measures that are available to reduce these impacts are summarized in Table 10.1-2. The unavoidable adverse environmental impacts of operation, categorized by land use, hydrologic and water use, ecology (aquatic and terrestrial ecology), socioeconomics, radiological, atmospheric and meteorological, and environmental justice are summarized in the following paragraphs.

10.1.2.1 Land Use

Unavoidable, but small, adverse environmental impacts on land use would occur due to operation of STP 3 & 4. Approximately 90 acres of STP land will be used during the licensed use of the facility; however, most of the land that will be cleared at the STP site was disturbed during the original construction of STP 1 & 2. The proposed project is in keeping with the current use of the property, which is for the generation of power. Approximately 21 acres of permanently committed offsite land will be required to support STP 3 & 4 due to the uranium fuel cycle.

The GE ABWR reactors will generate solid radioactive waste that will require disposal as discussed in Sections 3.5 and 5.5. Additional nonradioactive solid wastes will be generated from waste streams and sanitary effluents (i.e., sludge) as described in Sections 3.6 and 5.5. Additional land will be required for offsite disposal of radioactive and nonradioactive wastes.

10.1.2.2 Hydrologic and Water Use

Operation of STP 3 & 4 will increase the amount of surface water and groundwater used at STP. However, as documented in the site groundwater use calculation (Reference 10.1-1), it has been determined that the existing STP site groundwater operating permit limit provides adequate groundwater supply for water uses required for the operation of STP Units 1 and 2 and the construction, initial testing, and operation of STP Units 3 and 4. STPNOC intends to install at least one additional site groundwater well with a design capacity of 500 gpm. As documented in the site groundwater use calculation (Reference 10.1-1), this additional capacity will allow for sufficient groundwater withdrawal to meet water uses required for: (1) operation of STP Units 1 and 2 and the construction, initial testing, and operation of STP Units 3 and 4; and (2) potential temporary capacity reduction as a result of equipment failure/unavailability. The additional wells would be properly permitted under applicable Coastal Plains Groundwater Conservation District (CPGCD) and TCEQ requirements

and would not involve a request for an increase in the existing permit limit. Consumptive water loss from the Colorado River will be within currently permitted levels. Small to moderate unavoidable adverse impacts from STP 3 & 4 water use, specifically the loss of availability of both resources to other potential users will occur during the life of the plant.

Small unavoidable adverse impacts associated with chemical and wastewater discharges to the Colorado River and other surface water bodies will occur during the life of the plant as a result of blowdown, additional impervious surfaces, and wastewater treatment.

10.1.2.3 Aquatic Ecology

Chemicals will be released to the Colorado River through blowdown from the Main Cooling Reservoir (MCR) in accordance with the Texas Pollution Discharge Elimination System (TPDES) permit. Because of dilution, the anticipated impact on water quality or aquatic biota is SMALL and will be within previously permitted levels.

The thermal plume from discharge from the MCR to the Colorado River will be small and within the TPDES permit limitations. Entrainment and entrapment effects on aquatic biota at the MCR makeup water intake on the Colorado River will be small and will not require mitigation. Small unavoidable adverse impacts on aquatic ecology are anticipated.

10.1.2.4 Terrestrial Ecology

Operation of STP 3 & 4 will have small unavoidable adverse impacts on the local terrestrial ecology as a result of the increased water level in the MCR required for operation, noise, and the small potential for bird collisions with plant structures. Potentially adverse impacts to terrestrial ecology may occur as a result of loss of habitat because of vegetation control within the transmission line rights-of-way. These activities are part of the established agency-approved vegetation maintenance program that is ongoing for the existing transmission line. There will be no increase in transmission line maintenance due to the addition of STP 3 & 4.

Operation of the mechanical draft cooling towers will result in small amounts of salt deposition, but the deposits will be minimal and leaf damage potential will be within the vicinity of the cooling towers. Maximum deposition will occur on STP property. No impacts are expected offsite. Small unavoidable adverse impacts on terrestrial ecology are anticipated.

10.1.2.5 Socioeconomics

Socioeconomic impacts from the operations workforce and their families, estimated at approximately 2400 people, may affect housing, water and wastewater treatment, and schools. MODERATE to LARGE temporary unavoidable adverse impacts may result from these issues until mitigation measures are in effect. SMALL unavoidable adverse impacts are anticipated from the use of local roads and the ability of the police, fire, and social service to provide services to the operations workforce.

Several plant buildings (e.g., reactor building, cooling towers) will be visible from local roads. Also, the plume generated from the cooling towers may be visible during several months of the year. The incremental increase in visible impacts will not have any short- or long-term impacts to local residents or visitors, and will therefore be SMALL. Small adverse environmental impacts are anticipated.

10.1.2.6 Radiologicals

STP 3 & 4 will discharge small amounts of radioactive liquids and gases within regulatory limits (10 CFR 50, Appendix I). Potential doses to workers and the public will be well within the applicable regulatory limits. The generation of radioactive wastes will also occur as a result of plant operation. Small unavoidable adverse impacts are anticipated.

10.1.2.7 Atmospheric and Meteorological

Minimal releases of pollutants to the atmosphere will result from operation of STP 3 & 4. In particular, testing of standby generators and other combustion equipment (estimated at less than 100 hours/year) will emit minimal air pollutants. The emissions from the two mechanical draft cooling towers have the potential for causing micro-level changes to the meteorology (e.g., fogging, precipitation, ground-level fogging), but only in the immediate vicinity of the towers. SMALL unavoidable adverse impacts are anticipated.

10.1.2.8 Environmental Justice

No impacts that would be disproportionately high and adverse on minority or low-income populations were identified. However, low-income rental housing rates could increase due to increased demand for housing, potentially displacing low-income renters in Matagorda County at the start of operations. SMALL, temporary, unavoidable adverse impacts are anticipated.

10.1.3 Summary of Unavoidable Adverse Environmental Impacts

Based on the preceding analysis of unavoidable adverse impacts from the construction and operation of STP 3 & 4, the following are irreversible commitments of these environmental resources:

- Land use resources
- Water resources
- Ecological resources (terrestrial and aquatic)

These irreversible commitments are further discussed in Section 10.2, Irreversible and Irretrievable Commitments of Resources. The unavoidable adverse environmental impacts that are further considered in Section 10.4, Benefit-Cost Balance, are summarized below:

- Land use (onsite and offsite)
- Water (surface water and groundwater)

- Ecology (terrestrial and aquatic)
- Socioeconomic (traffic, housing, water and wastewater, schools, fire and police services)
- Radiological (regulated effluent releases, storage of wastes)

10.1.4 References

10.1-1 "Site Groundwater Use for Construction, Initial Testing, Startup, and Operations," Fluor Nuclear Power Calculation No. U7-SITE-G-CALC-DESN-2002.

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Land	Ground-disturbing activities including excavating and recontouring the landscape.	Conduct construction activities using Best Management Practices (BMP) in accordance with regulatory and permit requirements. Implement environmental controls required in the Stormwater Pollution Protection Plan (SWPPP) such as weekly compliance inspections, documentation of runoff controls, etc.	Small, temporary impact to land use during the construction phase of project.
	Removal of vegetation within the temporary impact areas.	Cleanup and dispose of waste debris at designated location. Temporary impact area will be graded, landscaped to match the surrounding area, and revegetated.	Small, temporary impact to land use during the construction phase of project.
	Construction activities conducted in sensitive areas (e.g., in or around wetlands or other Waters of the U.S.)	Maintain communications with local and regional government and nongovernment organizations to verify that construction activities comply with applicable laws and regulations. Avoid sensitive areas where possible. All activities in these areas would comply with regulatory and permit requirements.	Small to moderate temporary impact to land use during the construction phase of project.
	Stockpiling of soils on site including spoil mounds and borrow pit soils.	Restrict stockpiling to designated areas. Stabilize all loose soils on site through the use of appropriate erosion control methodologies.	Small, temporary impact to land use during the construction phase of project.
	Change in land use due to construction of new permanent structures and the creation of impervious surface i.e., the haul road and the parking area within the existing STP site (the site is designated for industrial land use).	Restrict all construction and construction-related activities to the designated areas within the STP site.	Small impacts to land use for the life of the plant.

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Land	Potential short-term physical land use changes in the vicinity of the project due to development of employee housing.	Maintain communications with local and regional government and nongovernment organizations to disseminate project information in a timely manner.	Small to moderate temporary impact to land use during the construction phase of project.
Hydrologic and Water Use	Impacts to onsite surface water drainage flows by diverting and filling several unnamed onsite drainage features.	New drainage ditches and other feature such as sediment filters would be used to accommodate surface water runoff from altered drainage areas and the newly constructed impervious areas. Avoid all jurisdictional wetlands. Appropriate erosion control measures taken on all drainage features and wetlands to prevent turbid water, soil deposition, vegetation removal, etc., from occurring within those areas or downstream areas through the approved SWPPP.	Small, temporary impact to hydrology during the construction phase of project.
	Increase in surface water as a result of dewatering and excavation activities.	To decrease the volume of surface water runoff created during dewatering/excavating activities of the deeply excavated areas, a groundwater control system consisting of a slurry wall and a perimeter circuit of deep wells in conjunction with sand drains will be constructed. All other surface water runoff created during the excavation/dewatering activities will be controlled by a series of ditches that drain the water away from construction activities. Proper erosion controls will be used to contain sediments found in the runoff before being discharged into any jurisdictional water.	Small, temporary impact to hydrology during the construction phase of project.
	Impacts to local hydrology resulting from the excavation through the shallow aquifer, and subsequent dewatering of the shallow aquifer.	Local drinking water wells found in the vicinity of the construction area will be unaffected because they are located in the deeper aquifer which is isolated by surficial clays. Dewatering would occur within the shallow aquifer in a limited area for a short period of time. Upon completion of construction, groundwater in the shallow aquifer will return to natural elevations.	Small, temporary impact to hydrology during the construction phase of project.

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Hydrologic and Water Use	Potential for water pressure reduction within the local water table due to dewatering activities (i.e. dust abatement, concrete mixing, potable water use) .	Limit dewatering activities to only those necessary for construction.	Small, temporary impact to local water use during the construction phase of project.
	Potential impact to Little Robbins Slough, Kelly's Lake, and the Colorado River due to turbidity and sedimentation caused by soil erosion from ground disturbance.	Adhere to applicable regulations and permit requirements found in the TPDES permit. Implement BMPs to prevent the movement of pollutants (including sediments) into wetlands and water bodies via storm water runoff. BMPs will include the use of erosion-control measures such as silt fences and sediment settling ponds to prevent sedimentation and turbid water discharge. Use of vegetated land buffers between water bodies and the construction site to minimize sedimentation impacts.	Small, temporary impact to surface water quality during the construction phase of project.
Ecology (Terrestrial and Aquatic)	Construction activities will result in habitat loss and will displace animals such as birds and mammals that currently inhabit the construction site. The mortality rate of less mobile animals may increase.	Limit vegetation removal to only those areas needed for construction. Restoration of the temporary impact areas will be completed in a timely manner upon completion of construction.	Small, temporary impacts to habitat and wildlife during the construction phase of the project.
	Filling of drainage areas and ditches may impact foraging and roosting habits of wetland dependent species.	Restoration of the habitat by relocating and revegetation of drainage areas.	Small, temporary impacts to wildlife foraging areas during the construction phase of the project.

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Ecology (Terrestrial and Aquatic)	Disturbance or destruction of wetlands and surface waters by working in, over, or close to, these areas.	Avoidance of wetland areas, where possible, during construction activities.	Wetlands will be avoided where possible. There will be small, temporary impacts to surface waters during the construction phase of the project.
	Wildlife may be startled or frightened away by construction noises (onsite and transmission lines).	Animal displacement due to noise should be temporary in nature. Animals should return upon completion of construction.	Small, temporary impacts wildlife during the construction phase of the project.
	Potential impacts to aquatic plants, benthic macroinvertebrates, and fish as a result of water turbidity and sedimentation caused by soil erosion from construction activities.	Develop and implement erosion and sediment control plans that incorporate recognized BMPs such as covering of all disturbed areas, reducing the length of time disturbed soil is exposed to weather, and intercepting and retaining sediment via retention ponds and drainage ditches. Upon completion of construction along stream banks or drainage features, disturbed areas will be rip-rapped or seeded to establish a perennial vegetative cover to prevent erosion.	Small, temporary impacts to aquatic ecosystems during the construction phase of the project.
	Displacement of fish, aquatic species, crustaceans and insects from filling of drainage features on site.	Mitigation is not necessary because the impact acreage of this non-jurisdictional area is small, the type of habitat is not unique to the area, and no important species are found onsite.	Small, temporary impacts to aquatic ecosystems during the construction phase of the project.
	Temporary decline in insect population from rerouting of onsite drainage features.	Restoration of the habitat by relocating and revegetating the drainage feature.	Small, temporary impacts to insect populations during the construction phase of the project.
Socioeconomic	Degradation of roads in the vicinity of the project due to increased traffic and an increase in heavy, wide-bodied trucks and equipment.	Alert the appropriate local government agencies of problem areas as they occur so that necessary road repairs and improvements (i.e., patching cracks and potholes, reinforcing soft shoulders) can be conducted in a timely manner.	Small, temporary impacts to roads during the construction phase of the project.

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Socioeconomic	Increased traffic congestion in the vicinity of STP due to construction activities.	Develop and implement a construction traffic management plan that could include such measures as turn lane installation where necessary, establishing a centralized parking area with shuttle service, encouraging carpools, and staggering shifts.	Moderate to large impacts to traffic congestion during the construction phase of the project.
	Potential short-term housing shortage in Matagorda County.	Mitigation efforts will be market-driven over time. Construction employment will increase gradually with a peak after 2 or 3 years. This will allow time for construction of new housing. Temporary housing could be constructed as needed.	Moderate to large impacts to short-term housing at the beginning of construction of the project.
	Water shortages in Matagorda County as a result of the in-migrating construction workforce.	Maintain communication with local government and planning officials so that ample time is given to plan for the influx. Mitigation strategies (performed by others) include reuse, seawater desalination, conservation, and the Lower Colorado River Authority/San Antonio Water System Project.	Moderate to large impacts to water supply at the beginning of construction of the project.
	Shortage of wastewater treatment plants in Matagorda County as a result of the in-migrating construction workforce.	Maintain communication with local government and planning officials so that ample time is given to plan for the influx.	Moderate to large impacts to the wastewater treatment facilities at the beginning of construction of the project.
	Potential impacts to police, fire, medical, and social services in Matagorda County.	Maintain communication with local government officials so that expansions in police and fire services could be coordinated, planned, and funded in a timely manner. Funding for this expansion will be provided through the increased tax revenues from the construction project.	Moderate impacts to police and fire services until expansion of workforce are completed. Small unavoidable adverse impacts to medical and social services during the construction of the plant

Table 10.1-1 Construction-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Socioeconomic	Potential short-term ability of schools in Matagorda County to accommodate the increase in student population.	Maintain communication with local government officials so that timely short -term solutions can be implemented in the form of adding modular classrooms and hiring additional teachers to existing schools. Funding for additional resources will be provided through the increased tax revenues from the construction project.	Moderate to large impacts to schools until expansion of facilities are completed.
Radiological	Construction workers may be exposed to radiation sources (through direct radiation, gaseous effluents, or liquid effluents) from the routine operations of STP 1 & 2.	Continual monitoring the STP site for radiation exposure. The site will be in accordance with all radiation safety regulations to ensure that the construction workers are protected.	Small unavoidable adverse impact of radiation exposure for construction workers from existing units.
Atmospheric and Meteorological	Construction will cause increased air emissions from traffic, construction equipment, and fugitive dust.	Use dust control measures (such as watering, stabilizing disturbed areas, and covering trucks). Comply with local, state, and/or federal air regulations. Ensure that construction equipment is well maintained.	Small unavoidable adverse impacts during the construction of the plant.
	Construction may cause local elevated noise levels.	Notify local public of impending construction activities that may exceed acceptable noise levels.	Small unavoidable adverse impacts during the construction of the plant.
Environmental Justice	The cost of low-income rental housing could increase due to increased demand for housing, potentially displacing low-income renters in Matagorda County during the construction phase.	Analysis of housing availability in Matagorda County determined that the probability of this being an issue is low. Because of this, mitigation would not be necessary.	Small unavoidable adverse impacts during the construction of the plant.

Table 10.1-2 Operation-Related Unavoidable Adverse Environmental Impacts

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Land Use	Approximately 90 acres of land will be permanently dedicated to the plant until decommissioning. Approximately 21 acres of land will be permanently dedicated and 160 will be temporarily committed to the uranium fuel cycle during plant operation.	There are no practical measures of mitigation for this impact.	Land will not be available for use until plant(s) decommissioning resulting in small unavoidable adverse impact during life. 160 acres of land will not be available until decommissioning of the plant resulting in a small unavoidable impact. 21 acres will never be available for future use.
	Potential environmental impacts onsite and offsite from disposal of radioactive wastes generated as a result of the fuel cycle.	Disposal area(s) would be a permitted waste disposal facility with a land use designated for such activities. Disposal area would be operated under appropriate regulations and guidelines until such time a NRC licensed high-level waste disposal facility is constructed. At that time, the storage area could be restored for other uses.	Some onsite and offsite land will be dedicated to licensed disposal facilities and will no be available for other uses. Small unavoidable adverse impact.
	Offsite land use impacts attributed to operations workforce population growth. Increase in development for commercial and residential purposes.	Maintain communication with local and regional government to disseminate project information so they have the opportunity to plan accordingly.	Small to moderate unavoidable impact to land use during the life of the plant.
	Operation of new units would result in an increase in the total volume of solid waste generated at the STP site.	All federal, Texas, and local requirements and standards would be met regarding handling, transportation, and offsite land disposal of the solid waste at licensed facilities. STPNOC has recycling and waste minimization programs currently in place.	Some offsite land will be dedicated to licensed disposal facilities and will not be available for other uses. Small unavoidable adverse impact.

Table 10.1-2 Operation-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Hydrological and Water Use	Potential hydrologic impacts to the Colorado River from pumping of water to the MCR. Water would be withdrawn from the Colorado River and added to the MCR to replace water lost to evaporation, seepage, blowdown from the MCR, and as needed.	River water pumped to the MCR (attributable specifically to Units 3 & 4) would be at a normalized rate of approximately 22,799 gpm during maximum operations. Impact is considered small and would not require mitigation.	Small unavoidable impact to water availability downstream of the plant.
	Makeup water for the ultimate heat sink (mechanical draft cooling towers) would be pumped from [five] existing groundwater wells and at least one new groundwater well. Impacts to local groundwater supply due to increased demand from operating STP 3 & 4.	STPNOC is intends to install at least one additional groundwater well. The additional well(s) would be properly permitted under applicable Coastal Plains Groundwater Conservation District (CPGCD) and TCEQ requirements and would not involve a request for an increase in the existing permit limit. Withdrawal groundwater from the deep confined Chicot aquifer, limiting impacts to those local wells in the deep aquifer. Conduct groundwater monitoring as required by groundwater use permit.	Small to moderate unavoidable impacts to groundwater availability during the life of the plant.
Hydrological and Water Use	The addition of STP 3 & 4 is expected to increase the frequency of blowdown from the MCR to the Colorado River.	Obtain TPDES permit and comply with its discharge limits and monitoring requirements. The MCR would be operated such that discharges would not be made when the river flow is less than 800 cubic feet per second (cfs) and the volume would not exceed 12.5 percent of the river flow, allowing a dilution of the already diluted STP 3 & 4 cooling system effluent of at least 8. Also, per state water quality standards the discharges would be 95°F or less.	Small to moderate unavoidable impacts to surface water during the life of the plant.

Table 10.1-2 Operation-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Hydrological and Water Use	Non-radioactive wastewater discharges will increase as a result of the operation of the new units' operation, such as additional cooling water system blowdown, permitted wastewater from the new units' auxiliary system, and storm water runoff from new impervious surfaces.	Discharges would be in accordance with applicable TCEQ water quality standards. STPNOC will revise the existing Stormwater Pollution Prevention Plan. The impacts due to the new impervious surfaces will be negligible due to Best Management Practices.	Small unavoidable increase in non-radioactive wastewater discharge for the life of the plant.
Ecological (Terrestrial and Aquatic)	Entrainment and impingement of aquatic organisms at the power plant water intake structure.	Intake structure designed with the "Best Technology Available" The MCR is a closed cycle cooling system that minimizes withdrawal of river water. Impingement and entrainment were minimized by other design features: (1) the intake was oriented in such a way as to reduce attractant flows, (2) the approach velocity at the traveling screens was designed to be 0.5 fps or less, and (3) the intake was equipped with a fish "handling and bypass" system.	Small unavoidable adverse impacts during the life of the plant.
	Inclusion of STP 3&4 in the existing cooling reservoir system will lead to an increase in operating water level, potentially impacting existing shoreline vegetation and terrestrial biota using the reservoir.	Prey species will eventually recolonize along the new shoreline. There are other foraging areas in the vicinity until recolonization. Further mitigation would not be required.	Small unavoidable adverse impacts during the life of the plant.
	Impacts to bird populations from impacts with cooling towers.	Low height of cooling towers would cause negligible mortality. Mitigation would not be required.	Small unavoidable adverse impacts during the life of the plant.

Table 10.1-2 Operation-Related Unavoidable Adverse Environmental Impacts (Continued)

Category	Adverse Impact	Actions to Mitigate Impacts	Unavoidable Adverse Impacts
Ecological (Terrestrial and Aquatic)	Potential stressing of vegetation within the site boundary from salt deposition resulting from the operation of the STP 3 & 4 cooling towers. Vegetation stress could result either directly by deposition of salts onto foliage or indirectly from accumulation in the soil.	Salt deposition from mechanical cooling tower operation would be a fraction of the level that leads to leaf damage. Mitigation would not be required.	Small unavoidable adverse impacts during the life of the plant.
	Potential impacts to vegetation and habitat within the transmission line rights of way from routine maintenance of woody vegetative growth by manual and mechanical methods and herbicides.	There will be no increase in transmission line maintenance due to the addition of STP 3 & 4. Mitigation is not required for current maintenance activities associated with STP 1 & 2; therefore, mitigation is not anticipated with the addition of STP 3& 4.	Small unavoidable adverse impacts during the life of the plant.