5.0. Operation Impacts

This chapter presents descriptions of the potential environmental impacts of operation of STP Units 3 and 4. This chapter is divided into the following 12 sections:

- Land Use Impacts (Operation) (Section 5.1)
- Water-Related Impacts (Section 5.2)
- Cooling System Impacts (Section 5.3)
- Radiological Impacts of Normal Operation (Section 5.4)
- Environmental Impacts of Waste (Section 5.5)
- Environmental Impacts of Transmission Systems (Section 5.6)
- Uranium Fuel Cycle Impacts (Section 5.7)
- Socioeconomic Impacts (Section 5.8)
- Decommissioning (Section 5.9)
- Measures and Controls to Limit Adverse Impacts During Operations (Section 5.10)
- Impacts of Transportation of Radioactive Materials (Section 5.11)
- Nonradiological Health Impacts (Section 5.12S)

5.1 Land Use Impacts (Operation)

The following sections describe the impacts of STP 3 & 4 operations on land use at the STP site, the 6-mile vicinity, including impacts to historic and cultural resources. Operation of STP 3 & 4 is not expected to impact any current or planned land uses. Section 5.1.1 describes impacts to the site and vicinity. Section 5.1.2 describes impacts that could occur along transmission lines. Section 5.1.3 describes impacts to historic and cultural resources at the site.

5.1.1 The Site and Vicinity

5.1.1.1 The Site

Land use impacts from construction are described in detail in Section 4.1.1. Impacts from operations will be primarily from elevated plumes and associated shadowing from the operation of the two mechanical draft cooling towers making up the Ultimate Heat Sink (Section 5.3.3.1). Fogging and associated icing are not expected from the operation of the two mechanical draft cooling towers and therefore are not considered to be impacts (Section 5.3.3.1). Low-level fogging from the Main Cooling Reservoir is expected to evaporate and will not impact land use (Section 5.3.3.1).

The only other additional impacts to land use from operations will be the impacts of salt deposition from cooling tower drift. Cooling tower design is discussed in Section 3.4.2, and impacts of the heat dissipation system, including salt deposition, are discussed in Sections 5.3.3.1 and 5.3.3.2. NUREG-1555 (Reference 5.1-1) lists a threshold value of salt deposition where leaf damage would potentially be visible. This range is 8.9 to 17.8 pounds per acre per month. Salt deposition in the immediate vicinity of the cooling tower, out to 660 feet from the centerline of the cooling towers, is predicted to have a maximum of 160 pounds per acre per month during the Summer season. Salt deposition in areas out to 1600 feet from the cooling towers may be above 8.9 pounds per acre per month. However, salt deposition in all areas greater than 1600 feet from the centerline of both the cooling towers will be below 8.9 pounds per acre per month. Salt deposition in areas out to 4300 feet from the cooling towers may be above 0.89 pounds per acre month. However salt, deposition in all areas greater than 4300 feet from the centerline of both the cooling towers will be below 0.89 pounds per acre per month. Salt deposition is only predicted to occur for locations less than two miles from the towers (Section 5.3.3.1.3).

There are no land use plans or anticipated changes by local or regional governmental agencies due to operations within the site. STPNOC concludes that operations impacts to land use from STP 3 & 4 will be SMALL and will not warrant mitigation.

5.1.1.2 The Vicinity

As described in Section 2.5, the operations impact evaluation assumes that the residences of STP 3 & 4 employees will be distributed across the region in the same proportion as those of STP 1 & 2 employees. The operational work force for STP 3 & 4 will be approximately 888 additional employees (Section 3.10.3). Section 5.8.2 describes the impact of 888 new employees on the region's housing market and increases in tax revenues, as some land-use changes can be driven by increased property taxes.

As discussed in Section 2.5.2.6, housing trends associated with STP 3 & 4 are expected to mirror current housing trends associated with STP 1 & 2 with approximately 83 percent of the new employees expected to live in Matagorda (60.7 percent) and Brazoria (22.4 percent) Counties. Relatively few employees live in the vicinity of the STP site; the area is rural, with few utilities or amenities. The land adjacent to STP 3 & 4 is owned by private parties and has been passed down for several generations and is largely unavailable for development. It is likely that new employees who choose to settle in Matagorda and Brazoria Counties will purchase homes or acreage outside the vicinity of the STP site in the cities of Bay City (approximately 13 air miles from the STP site), Palacios (approximately 11 air miles from the STP site), Lake Jackson (approximately 40 air miles from the STP site), or Matagorda (approximately 8 air miles from the STP site). Based on the 19 years of experience from the operation of STP 1 & 2, increased tax revenues will not spur development in the direct vicinity of the STP site. (Reference 5.1-2)

There are no land use plans or anticipated changes by local or regional governmental agencies due to operations within the vicinity. STPNOC concludes that impacts to land use in the vicinity will be SMALL and not warrant mitigation.

5.1.2 Transmission Corridors and Offsite Areas

Land proposed to be used for transmission rights-of-way, routes of access, and off-site areas is described in Section 2.2.2, as are the details of land-use restrictions, rights-of-way lengths, widths and areas. Operation of STP 3 & 4 will not significantly increase the land-use impacts from STP 1 & 2 because no new off-site transmission line rights-of-way are planned, the basic transmission system, electrical and structural design will remain the same. Therefore, STPNOC concludes that impacts to transmission rights-of-way, routes of access and off-site land use areas of STP 3 & 4 will be SMALL and not warrant mitigation.

Also, STP 3 & 4 will generate low-level radioactive wastes that will require disposal in permitted radioactive waste disposal facilities (Section 3.5) and non-radioactive wastes that will require disposal in permitted landfills (Section 3.6). Both types of waste are commonly generated, and permitted disposal facilities are currently available. STP 3 & 4 will generate spent fuel, which will be stored on-site until such time that the NRC licenses a high-level waste disposal facility. STPNOC concludes that impacts to off-site land use due to disposal of wastes generated at Units 3 & 4 will be SMALL and not warrant mitigation.

5.1.3 Historic Properties

Table 2.5.3-1 lists properties in Matagorda County on the National Register of Historic Places. A letter dated January 19, 2007 was received from the Texas Historical Commission (THC) stating that no historic properties will be affected by the proposed construction and operation of STP 3 & 4. (Reference 5.1-3) However, STP has, in its Site Environmental Compliance Procedures, measures to contact the THC prior to performing ground-disturbing operations not reviewed by the NRC, after issuance of the COL.

The THC advised during the preparation of the STP 1 & 2 1986 FES-OP that STP 1 & 2 operations and maintenance activities would have no effect on any historical properties (Section 2.5.3.3). Impacts associated with the operation of STP Units 3 & 4 will be no more than what is described regarding impacts from construction in Section 4.1.

5.1.4 References

5.1-1 NRC (U.S. Nuclear Regulatory Commission) 1999. Environmental Standard Review Plans for Environmental Reviews for Nuclear Power Plants, NUREG-1555, Washington, D.C. October.

5.1-2 STPNOC (South Texas Project Nuclear Operating Company) 2006. STPEGS Updated Final Safety Analysis Report, Revision 13, May 1, 2006.

5.1-3 William Martin (Texas Historical Commission) January 19, 2007 response (stamp of approval) to letter from S.L. Dannhardt (STP) December 12, 2006 regarding STP 3 & 4.