4.0 CUMULATIVE IMPACTS

Cumulative impacts are defined in the Council on Environmental Quality regulations 40 CFR 1508.7 as "... the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency... or person undertakes such other actions." The primary study for cumulative impacts is the area outlined in **Figure 1.1-1**, which includes the communities of Umatilla, Hermiston, and rural developments east of Hermiston to Cold Springs Reservoir in Umatilla County, Oregon. Certain resources (air, water, and socioeconomics) are considered in a larger geographic context. The time frame for the cumulative assessment is 20 years, although it is not possible to speculate about future development beyond projects that are currently proposed.

4.1 Past and Present Actions

The primary land use within the cumulative study area is irrigated agriculture for which the primary water sources are the Columbia and Umatilla Rivers. Reservoirs (Cold Springs Reservoir) and irrigation canals have been constructed to store and deliver irrigation water. Native plant communities remain on the basalt outcrops near the Columbia River. Rural residential communities have developed along major county roads and highways. Major industrial and transportation infrastructure includes the following:

- State and Federal Highways (I-82, I-84, U.S. Highway 395, U.S Highway 730) that form a major east-west and north-south interconnection near Hermiston.

- A dam and locks on the Columbia River at McNary where barge traffic moves up and down the river, and where hydroelectric power is generated.

- The Port of Umatilla, which includes grain storage facilities, an oil products storage terminal, and several smaller industries. Within the general port industrial area is the TRCI, a medium-security prison.

- McNary Substation, a major hub within the BPA System that is connected with the hydropower generators at the dam and the interstate transmission system that serves the Northwest region.

- The Hermiston power plant and transmission lines located south of Hermiston.

- Two large interstate natural gas pipelines (Northwest, PGT) that transfer natural gas from the Rocky Mountains, and Canada, respectively.

4.2 Foreseeable Actions

The three primary foreseeable actions that could interact directly with the Wanapa project are the McNary to John Day transmission line (BPA 2002a), a new transmission line that would expand BPA electrical transmission capacity from McNary westward, the Wallula power plant and transmission line (BPA and Washington EFSC 2002), and the Plymouth Cogeneration Facility (BPA and EFSC 2003). The transmission capacity needed to move power from the Wanapa Energy Center, as well as other projects, would be provided by construction of the McNary-John Day transmission line. The Wallula transmission line could be located in the same transmission line corridor and approach to McNary substation as the Wanapa project. Other potential projects that could potentially be interconnected with the McNary and John Day substations are described in the McNary to John Day Draft EIS (BPA 2002b). These include the Starbuck-Lower Monumental Dam Transmission Line Project and Starbuck Power Project, Umatilla Generating Project, Mercer Ranch, Cliffs Energy Project, and several wind generation projects in southeastern Washington and northeastern Oregon.

The State of Oregon has an option to expand its prison facilities onto a block of land east of the existing TRCI and west of the proposed Wanapa Electric Generating Facility.

4.3 Cumulative Effects of the Proposed Action

4.3.1 Geologic Hazards and Soils

The proposed action would not cause, or be affected by any existing geologic hazards, based on facility design to accommodate regional seismicity. Surface disturbance caused by the project would cause a very small incremental increase in soil and wind erosion relative to existing erosion from thousands of acres of dryland wheat fields within Umatilla County. ***Use of irrigation water from Cold Springs Reservoir, which includes plant discharge water, would not cause cumulative increases of salts in irrigated soils because of the very small project contribution to stored irrigation water.***

4.3.2 Water Resources

The proposed action would consume a small fraction of the flow of the Columbia River, and would represent a very small fraction of the ongoing agricultural and industrial consumptive uses upstream and downstream of the proposed water withdrawal point at the Port of Umatilla. Some plant site water would be returned to the regional agricultural system where it could be used to water crops. The Wanapa project withdrawal would be ***17.7*** cfs out of 65,000 cfs available during low flow periods in the Columbia River. The Umatilla Power plant would withdraw about 5 cfs; the current municipal withdrawal rate is about 25 cfs. Based on these existing and future demands, water demand at the Port of Umatilla could increase to 53 cfs, which is under the 61 cfs capacity of the existing intake structure (with improvements). A cumulative withdrawal rate of 53 cfs represents 34 percent of the Port of Umatilla/Hermiston water right of 155 cfs.

The Proposed Action consumptive withdrawals would result in very small changes in Columbia River flow and, consequently, very small incremental changes in existing Columbia River water quality, which is generally very good in this river segment. The Proposed Action plant discharge water contributions to Cold Springs Reservoir would result in very small incremental changes in water quality in this water body because of the small project flow rates as compared to the reservoir cumulative water supply sources (Columbia and Umatilla Rivers).

4.3.3 Biological Resources

The project would remove about 60 acres of native vegetation habitat out of about 3,000 acres on basalt outcrops that extend eastward along the south bank of the Columbia River. Based on the boundaries of the Port of Umatilla industrial area and the Wanaket Wildife Area, it is unlikely that future industrial development would consume additional shrub steppe habitat in this area, or would expand adjacent to the Wanaket Wildife Area except at the western boundary. The electrical transmission corridor south of U.S. Highway 730 could be expanded to provide new transmission line interconnections with McNary Substation (Wallula Project). The Port of Umatilla previously consulted with the USFWS and NMFS on their water intake structure for the current intake capacity, and therefore, potential cumulative withdrawal effects as well as entrainment effects have already been considered. ***Cold Springs Reservoir operations would not be modified by other foreseeable projects and, consequently, no cumulative habitat availability effects are predicted for reservoir fisheries or waterfowl and fish-eating birds.***

4.3.4 Air Resources

The proposed facility is in an area where several other proposed power plants are undergoing the permitting process. To date, the proposed facilities are all gas-fired combined cycle or simple cycle turbine power plants.

The air quality modeling that was conducted as part of the PSD application indicated that emissions from the proposed facility would not cause or contribute to an exceedence of any ambient air quality standard. Facility impacts are well below significant impact levels for all criteria air pollutants except NO_x and PM_{10}. Emissions of those pollutants are ***controlled*** by the use of SCR control technology and the use of natural gas firing. Significant impacts are confined to an area immediately around the power plant site.

A recent study by the BPA (2002a) attempted to anticipate the impact of up to 24,000 MW of additional power generation in the region, with several of these plants located in the Umatilla Area. Results from a Phase I study indicated that there were no expected exceedences of ambient air quality standards resulting from the combined projects and that impacts on sensitive areas were acceptable.

The main concern dealt with the impacts on visibility in the Class I areas in the region. A subsequent Phase II report was issued (BPA 2002b). When all proposed units are operated at full capacity on natural gas only, there were no predicted exceedences of the cumulative 10 percent threshold at any of the Class I areas that were studied. There were only two exceedences of the 5 percent single source threshold that were predicted by the model. Since this proposed project does not create a significant impact on visibility in the Class I area, and since its emission levels of NO_x and SO_2 are mitigated as shown above, the effects of the proposed facility would not contribute significantly to any visibility impact in a Class I area.

Despite the expected increase in power generation in the area, some of which ***would*** likely not take place, the use of natural gas firing for the proposed sources, including the Wanapa Energy Center project, ***would*** not lead to significant impairment of air quality or of air quality-related values within the region.

4.3.5 Traffic and Circulation

It is anticipated that there ***would*** be short term increases in Wanapa plant site construction traffic that may require special management; however, the long-term work force ***would*** be small (**30** workers), and would not cause incremental cumulative effects to local traffic turning from U.S. Highway 730 onto Beach Access Road. It is likely that traffic turning onto Beach Access Road ***would*** continue to increase to serve the existing and potential new correctional facilities.

4.3.6 Visual Quality and Noise

The Wanapa Energy Center would incrementally expand an existing landscape occupied by industrial buildings and infrastructure eastward on the south bank of the Columbia River. Based on current land ownership by the CTUIR to the east and south, the power generation site would represent the eastern-most extension of this development. The new transmission line would expand an existing transmission line corridor, which may be further expanded in the future as new projects are brought on line. The noise generated by the plant would meet state standards at the fence line. No new residential or commercial developments are expected adjacent to the fence line because of the existing ownership and existing designated industrial uses.

4.3.7 Cultural Resources

Construction of industrial facilities within the ***cumulative study*** area would incrementally remove cultural evidence from the landscape, and modify the landscape where traditional cultural uses still occur. As indicated above, the generating plant and new prison would be extensions of existing industrial land uses, but further development along the Columbia River bluff to the east would be limited by the boundaries of the CTUIR Wanaket Wildlife Management Area.

4.3.8 Land Use and Recreation

The industrial facilities within the ***cumulative study*** area would not affect the use of, or access to existing recreation sites. The foreseeable projects would convert about 60 acres of existing wildlife habitat to industrial uses for the long term (see Biological Resources above). No changes in human land uses, primarily agricultural uses would occur.

4.3.9 Socioeconomics

The existing and foreseeable projects contribute additional employment and taxes to the local and regional economy. No known major industrial projects in the vicinity of Hermiston are expected to overlap with the peak Wanapa Energy Center construction period. Because the electric generating facility would be located within an approved industrial zone, no special infrastructure demands (roads, water, sewer, electrical power) would be required that would generate additional capital projects.