

#### 4.2.2.2.3 Shut Down and Maintain

This alternative would produce the same impacts as the Shut Down and Deactivate Alternative, but a restart of the River Water System could increase flows to the streams.

### 4.2.3 GROUNDWATER

This section describes groundwater conditions in the vicinity of potentially affected SRS streams (Steel Creek, Pen Branch, Fourmile Branch, and Lower Three Runs).

#### 4.2.3.1 Affected Environment

##### Hydrogeologic Setting

In general on the SRS, the water table aquifer and the first confined aquifer recharge to the streams that incise them. The water table aquifer discharges to both Steel Creek and Pen Branch tributaries. The groundwater flow to Steel Creek and L-Lake from the L-Area is toward the southeast. The groundwater flow to Pen Branch from L-Area is to the northwest. Although groundwater discharges to L-Lake in its upstream portions, lake water at the L-Lake dam recharges the water table aquifer. The net flux of groundwater in the first confined aquifer is believed to originate from L-Lake and the water table aquifer (del Carmen and Paller 1993b). Further downstream, the aquifers resume discharge to the stream in a southerly direction. Below the Par Pond Dam, the water table aquifer and first confined aquifer discharge to the Lower Three Runs stream valley. Hydraulic properties for the aquifers are not available for specific stream areas. Therefore, Tables 4-1 and 4-2 list general sitewide data.

#### 4.2.3.2 Environmental Impacts

##### 4.2.3.2.1 No Action

DOE anticipates no changes in current conditions for the water table aquifer or the first confined aquifer because the lake level would be maintained.

#### 4.2.3.2.2 Shut Down and Deactivate

##### Water Table Aquifer

The current outfall from L-Area would be eliminated and L-Lake levels would lower. Because L-Lake discharges to the water table aquifer below the dam and into Steel Creek, groundwater gradients, levels, and flow rates of the aquifer would decrease over the near term but would eventually return to the natural hydrogeologic state. Groundwater properties would remain stable downstream from the dam.

Fourmile Branch and headwaters of Steel Creek would not receive outfall discharges from the River Water System. The water table aquifer at Lower Three Runs would not be affected because its source of water is not directly related to the River Water System.

##### First Confined Aquifer

Because none of the SRS streams and their outfalls currently or directly affect the properties of this aquifer, shutting down the River Water System would not have an effect.

#### 4.2.3.2.3 Shut Down and Maintain

The impacts described in Section 4.2.3.2.2 would also apply to this alternative.

### 4.2.4 AIR RESOURCES

#### 4.2.4.1 Affected Environment

The climate, meteorology, and ambient air quality for the SRS streams are equivalent to those for the SRS, which is discussed in Section 4.1.4.1. DOE assumes that joint wind frequency data from the L-Area tower and meteorological and climatological data from other SRS locations would be applicable to the streams.

#### 4.2.4.2 Environmental Impacts

##### 4.2.4.2.1 No Action

The continued operation of the River Water System would have no new impacts on the existing ambient air quality at the SRS. The water flow in the streams derived from pumping water from the Savannah River does not contribute additional air contaminants to the surrounding environment. Vegetative regrowth would mitigate potential exposure of dried sediment to winds due to natural fluctuations in stream flows.

##### 4.2.4.2.2 Shut Down and Deactivate

The shutdown and deactivation of the River Water System would enable the receiving streams to return to a natural base flow; the small change in stream flows would not likely expose an appreciable amount of sediments. The potential for resuspension of contaminated sediment due to exposure to windborne currents would be minimal, and no impacts to ambient air quality would be likely.

DOE does not expect the vaporization of organics from dried sediment because an analysis of Steel Creek channel sediments indicates that no organic contaminants are present at levels close to EPA risk-based concentrations, which DOE used as screening levels at the SRS (DOE 1996c).

TE | As discussed in Section 4.1.5.2.2, the reduction in streamflow is not likely to result in exposed sediments. Vegetative cover would minimize the resuspension of contaminated soils.

##### 4.2.4.2.3 Shut Down and Maintain

The shutdown and maintenance of the River Water System would have no impacts on the ambient air quality, as discussed in Section 4.2.4.2.2.

#### 4.2.5 ECOLOGY

##### 4.2.5.1 Affected Environment

###### 4.2.5.1.1 Terrestrial Ecology

The *Environmental Assessment for the Natural Fluctuation of Water Level in Par Pond and Reduced Flow in Steel Creek Below L-Lake at the Savannah River Site* (DOE 1995a) evaluated the potential impacts to fish and wildlife of 10-cubic-foot-per-second (0.28-cubic-meter-per-second) flows in Steel Creek and Lower Three Runs. The environmental assessment concluded that impacts to downstream biotic resources would be small. Because the assessment evaluated potential impacts of 10-cubic-foot-per-second flows in these streams to terrestrial biota, this section does not discuss terrestrial wildlife.

Wike et al. (1994) summarizes existing ecological information on the major stream drainages of the SRS, including Fourmile Branch and Pen Branch/Indian Grave Branch. This includes limited information on the plant communities and terrestrial wildlife that occur along these streams. Because the Proposed Action would not affect terrestrial wildlife in the Fourmile Branch and Pen Branch areas, this section does not include detailed descriptions of terrestrial wildlife communities in these areas.

###### 4.2.5.1.2 Aquatic Ecology

###### Fourmile Branch

The Fourmile Branch watershed includes a number of SRS facilities: C-Area (reactor), F- and H-Areas (separations), Defense Waste Processing Facility, and the Solid Waste Disposal Facility. Before C-Reactor was placed on standby in 1985, heated effluent was discharged into Fourmile Branch via Castor Creek. Flows in Fourmile Branch approached 400 cubic feet per second (11.3 cubic meters per second) when