STATEMENT OF BASIS
PACIFICORP
HUNTER PLANT

Ground Water Discharge Permit No. UGW150001
September 15, 2010

PURPOSE

The purpose of this statement of basis is to describe the PacifiCorp Hunter Power Plant facilities and changes made to the permit as part of the permit renewal process.

DESCRIPTION OF FACILITY AND BACKGROUND INFORMATION

PacifiCorp operates the Hunter Plant in Emery County, Utah. Hunter Plant is situated on 2000 acres located 3 miles south of Castle Dale, Utah, in Section 16, T19S, R8E, Salt Lake Base and Meridian. (111° 01' 51" W. Longitude and 39° 10' 28" N. Latitude).

Hunter Plant is an existing facility comprised of a three unit coal-fired steam electric generating power plant with integrated transmission facilities. Units #1 and #2 are 480-megawatt units constructed in 1978 and 1980, respectively. Unit #3 is a 495 megawatt unit constructed in 1983. The power plant operates the Hunter Research Farm for the disposal of process and cooling wastewater, and the Hunter Combustion Waste Landfill for the disposal of combustion wastes.

Land application is the current method of wastewater disposal for the Hunter Plant. The Research Farm consists of 480 acres of farmland that surrounds the plant on the north, west, and east. Power plant wastewater is stored in two lined holding ponds and is used as irrigation water for the Research Farm during the growing season from April through November. Berms have been constructed to prevent irrigation water from running off into surface streams that border the Research Farm. The amount of water used on the farm is controlled to ensure that all the wastewater is evaporated, absorbed by vegetation, or otherwise used so that no wastewater escapes the company owned property into surface water or percolates through the soil and into the ground water system. Any crop that is grown must have a high water consumptive use, be salt tolerant, have a perennial growth habit, be deep rooted, and tolerant of elements contained in the wastewater. Alfalfa is the crop of choice for meeting these conditions. Crops grown at the farm since 1978 have included alfalfa, barley, wheat, oats, hay, trees, and safflower. PacifiCorp has estimated that the farm can continue to support crops for 20 more years. A closure plan for the research farm has not been developed but options may include abandoning the farm followed by controlled flushing of salt from the soil, or planting salt absorbing crops followed by incineration of the biomass.

The combustion waste landfill is a 381 acre area used for disposal of combustion wastes generated by the power plant, including bottom ash, fly ash, pyrites, slaker grits, and scrubber sludge. Landfill support features consist of collection and diversion ditches, culverts, haul access roads, and a storm
water retention pond. The storm water pond is 23 acres with an 80 acre-feet volume, and is designed to contain a 6-hour, 100-year storm event equivalent to 1.8 inches of water. The pond is lined with 18 inches of low permeability clay.

The following facilities at Hunter are permitted by rule in accordance with Utah Administrative Code R317-6-6.2: raw water pond and Snow Lake, coal yard basins, and storm water runoff basins and ponds.

SITE HYDROGEOLOGY

The farm area has two main surface water drainages, Rock Creek Canyon and South Wash (locally known as Buzzard Bench Creek). Both creeks flow eastward past the power plant and/or land application farms. Surface water drainage at the Hunter Plant is a network of ditches cut into the Mancos Shale. Surface water seeps in the Hunter area generally contain an area of soft saturated soil with a white calcite and gypsum precipitate.

The farm area is underlain by Holocene slope wash consisting of unconsolidated deposits of clay, silt, sand, and gravel. The slope wash is generally a thin sheet-like deposit ranging in thickness from zero to 25 feet. Slope wash deposits are well graded and have low permeability. They are underlain by the Blue Gate Member of the Mancos Shale, which is composed of shale and shaley siltstone containing large amounts of soluble minerals such as gypsum.

The hydrogeologic model for the site is thin Holocene slope wash underlain by a thick confining layer of weathered Mancos Shale. The alluvial aquifer (slope wash) has low hydraulic conductivity. The perennial nature of the surface water streams suggest an onsite and offsite gain of water from upgradient seeps, from slope wash deposits, from seeps within the Mancos, and from seepage during the irrigation season. Mancos Shale has an estimated ground water velocity of less than one foot per year.

Hunter Research Farm monitoring wells are screened within the slope wash and across the top of the Mancos Shale. Static saturated conditions appear to be within the lower part of the slope wash and within the Mancos Shale ranging in depth from 10 to greater than 30 feet below ground surface. Most wells have very slow flow and recharge rates due to low formation permeability.

WATER QUALITY AND GROUND WATER CLASSIFICATION

Water quality information has been collected since 1979 from Hunter Plant monitoring wells in the land application area. Background water quality is based on historical data prior to original permit issuance, subsequent compliance data collected as a permit requirement from the monitoring wells screened in site aquifers, the Hunter Power Plant 2004 Annual Monitoring Report, and the 2010 Annual Monitoring Report.

At the Hunter Plant site, the ground water in the Mancos Shale aquifer underlying the site and beyond is Class IV Saline Ground Water with a total dissolved solids load of greater than 10,000
mg/l. Total dissolved solids load in upgradient ground water in the slope wash is 3200 mg/L Class III Limited Use Ground Water. Sulfate is a component of TDS in all waters underlying the site. Power Plant process water that is used for land application has a total dissolved solids load of 3,770 mg/L (Class III) and elevated levels of boron, chloride, sulfate, and nitrate.

**BASIS OF PERMIT ISSUANCE**

The determination of impacts from past and present day releases to ground water is a major concern for ground water management. Hunter Plant has proposed to continue controlled land application of wastewater, evapotranspiration, and evaporation as approaches to reduce impacts to ground water. The administration of the permit, to assure compliance with ground water protection regulations, is founded on the use of periodic monitoring well sampling to assess potential impacts to ground water quality from the Hunter Plant discharges. PacifiCorp has installed monitoring wells surrounding potential ground water degradation sources, including the coal pile, combustion products landfill, and wastewater ponds.

**BASIS FOR SPECIFIC PERMIT CONDITIONS**

Wastewater Application - Land application of Hunter Plant wastewater will conform to the proper application rates and procedures outlined in the Hunter Research Farm Wastewater Land Application Plan. This plan is Appendix A of the permit.

Ground Water Monitoring - The enforceable performance standard for this permit to achieve protection of ground water quality will be monitoring of ground water quality parameters listed in Table 2 of the permit. The minimum frequency of reporting will be two times per year. Hunter Plant has submitted the *Site Wide Monitoring & Sampling and Analysis Plan for Hunter Power Plant*. This sampling plan is Appendix B of the permit. Monitoring shall be conducted for key marker elements found in plant process waters: boron, nitrate+nitrite, chloride, sulfate, and other parameters listed in Permit Table 2.

Waste Products Management - In order to minimize losses of any scrubber slurry fluids to ground water or leaching of landfill waste products, Hunter Plant has submitted a *Combustion Waste Landfill Operations Manual* that describes commitments for operation, maintenance, and inspections of the facility and point source components. This plan is Appendix C of the permit.

The permittee has submitted a Best Management Practices Plan (BMP) that describes inspection, maintenance, and operating procedures for sumps, tanks, ponds, and features not permitted-by-rule. This plan is Appendix D of the permit.