

DUCK CREEK WASTEWATER PLANNING STUDY

Site Review by Participating Agencies

Promoting Agency: Utah Department of Environmental Quality

Funding Agency: Utah Water Quality Board

Project Sponsor: Kane County Water Conservancy District

Project Engineer: Sunrise Engineering, Inc.

Review Summary: On October 13, 2005, representatives from the Utah Division of Water Quality, the Utah Division of Drinking Water, the USDA Forest Service, and Sunrise Engineering met at Duck Creek Village to discuss the progress of the Duck Creek Wastewater Planning Study and to conduct a project site review. During the meeting, particular regions in the study area were visited and various possibilities for wastewater treatment, including limiting factors, were discussed.

Possible Treatment Options: The discussion at the site review focused primarily on three options for wastewater treatment including on-site treatment, community wastewater treatment, and regional wastewater treatment. Sunrise Engineering is currently conducting an allowable septic density study to determine how many conventional septic systems the area can support without causing physical or biological degradation to the water quality and without causing a risk to human health. The septic density study will also provide insight regarding whether or not the use of alternative on-site systems (i.e. septic tanks with peat moss or textile filtration systems) will be allowable. Community or regional facilities, including pipe collection systems and Membrane Bioreactor (MBR) or Sequencing Batch Reactor (SBR) treatment facilities, are viable options; the limiting factors affecting these system types are expense, facility location, and effluent discharge conditions.

Sample Photo - Sequencing Batch Reactor



Minimal Treatment: Regardless of the method of wastewater treatment determined to be most suitable by the Wastewater Planning Study, treated effluent discharged to the environment will be required to meet the State of Utah's minimum standards established in the Utah Administrative Code, Title R317. Compliance with these standards will help ensure the quality of water present in underlying aquifers.

Nitrogen Removal: A significant concern when selecting any type of wastewater treatment system is the ability of the system to remove nitrogen. Nitrogen-containing compounds act as nutrients in rivers and streams. Nitrate [NO₃⁻] reactions in fresh water cause oxygen depletion and can result in the death of aquatic organisms which depend on dissolved oxygen for existence. Nitrites [NO₂⁻] can produce a serious condition in fish called "brown blood disease". Nitrites also react directly with hemoglobin in human blood and other warm-blooded animals to produce methemoglobin, which destroys the ability of red blood cells to transport oxygen. This condition is especially serious in human infants and causes a condition known as methemoglobinemia or "blue baby" syndrome. Nitrogen is relatively difficult to remove from wastewater, often requiring additional treatment processes in the form of recirculation of the wastewater stream or anaerobic treatment.