4.0 Performance Summary

This section summarizes the findings of the most recent (April 2009 through March 2010) assessment of the floodplain and terrace groundwater remediation systems at the Shiprock site, marking the end of the seventh year of active groundwater remediation.

- Groundwater in the floodplain system is currently being extracted from two wells (wells 1089 and 1104) adjacent to the San Juan River north of the disposal cell, two collection trenches (Trench 1 and Trench 2), and a seep collection sump. Approximately 9.6 million gallons of groundwater were extracted from the floodplain aquifer system during this performance period, yielding a cumulative total of about 65.5 million gallons extracted since March 2003.
- Groundwater in the terrace system is currently being extracted from two drainage trenches (in Bob Lee and Many Devils Washes) and nine wells. From April 2009 through March 2010, approximately 2.7 million gallons of groundwater were extracted from the terrace system, yielding a total cumulative volume (extracted since March 2003) of about 21.3 million gallons. The cumulative volume removed from both terrace and floodplain combined was approximately 87 million gallons.
- Terrace-wide, the majority of the alluvial groundwater level measurements taken during this performance period declined relative to the baseline (2003) period (Figure 2–13); average and maximum decreases were 1.7 ft and 6.1 ft, respectively. These findings indicate that the extraction well field is attaining the terrace performance dewatering objectives.
- Contaminated groundwater that could potentially discharge to the San Juan River is now being intercepted by the remediation system. This contaminated groundwater is pumped to the evaporation pond on the terrace just south of the disposal cell. The estimated masses of sulfate, nitrate, and uranium removed from the floodplain and terrace well fields during this performance period were 727,000 pounds, 21,000 pounds, and 70 pounds, respectively.
- As observed during the last (2008–2009) reporting period, marked decreases in contaminant concentrations are evident in selected floodplain wells—in particular, Trench 1 area wells 0614 and 0615. COC concentrations in easternmost Trench 2 area wells (closest to the San Juan River) are also markedly lower than those nearer the escarpment, demonstrating the effectiveness of the Trench 2 system.
- Following previous recommendations (DOE 2009a), as well as recommendations by stakeholders, nine new Geoprobe wells were installed in the floodplain during this reporting period. Seven (including three in a line toward the river from the well 1089 complex) were installed near the San Juan River to evaluate groundwater flow and monitor contaminant levels in groundwater that could enter the river. Also, two new alluvial wells (1140 and 1141) were installed about 50 ft from the east side of Trench 1 (nearest the river).
- In response to stakeholder concerns that large storms could generate runoff from Many Devils Wash, causing contaminants to flush into the San Juan River, DOE installed an automated sampling system in the lower end of the wash in May 2009. Also, because the effectiveness of the subsurface drain in Many Devils Wash had been decreasing in previous years, DOE installed a new diversion structure in August 2009.