Pro2Serve®
Professional Project Services, Inc.

Case Study

BJC Melton Valley Hydrologic Isolation Project

Pro2Serve served as the engineer of record for Bechtel Jacobs Company to design one of the largest caps in the DOE complex to hydrologically isolate approximately 100 acres of buried waste at Oak Ridge National Laboratory (ORNL). This project included design, field oversight and technical support from inception through the final phase of the project including preparation and approval of Post Construction Completion Reports. Overall the project required excavation, transportation and placement of over 1.3 million tons of material. The project was completed on budget and ahead of schedule, due, in part to the participative regulatory approach Pro2Serve implemented during the design phase and the constructability recommendations implemented as the project engineer. Pro2Serve applied a disciplined Value Engineering approach that resulted in over $49M in documented cost savings.

Completion of the Melton Valley project included remediation of nine areas of soil contamination from pipeline leak, sediments in floodplains, waste scrap and debris piles. We obtained regulatory approval to place certain types of this material under the cap, thus avoiding the use of clean fill. Contaminated soils and sediment removal met all cleanup standards, and completion reports were submitted and approved within schedule.

The Melton Valley project is immediately adjacent to two separate Waters of the State, requiring design and operation of dewatering systems including upgradient and downgradient trenches for surface water diversion and leachate collection, leachate transfer and treatment systems. Treatment of all leachate and surface water met Ambient Water Control Criteria.

To ensure cost effective transport of 1.3 million tons of material over the two and a half year construction schedule, Pro2Serve designed a 3-mile specific-use haul road. The excavation and transportation plan called for the use of 25-ton articulated dump trucks, which was the design basis for the weight capacity and maximum grade (8-10%) of the road. The haul road was used for all project-related traffic and its design included signage, widened areas and pull-offs for two way traffic. The road was constructed of gravel which withstood the usage with minimal maintenance. The design included provisions for storm water conveyance (culverts) as well as multiple creek and wetland crossings. Where possible, the design of the road took advantage of existing infrastructure, such as two small bridges with sufficient weight capacity, to minimize construction costs.

Certain material types encountered during remediation required transportation across public roads to an alternate disposal facility. Pro2Serve prepared the waste handling and transportation plans for this transport, including radiation controls, decontamination procedures, quality assurance for waste packaging, plackards and compliance with DOT regulations.

The Melton Valley project required submission of a total 22 regulatory documents, including three Remedial Action Plans, Waste Handling Plan, Transportation Plan, Storm Water Pollution Prevention Plan, ES&H Plan, and five Post Construction Reports. At the beginning of the project, twelve major Federal Facility Agreement (FFA) Decision Documents were approved by DOE, EPA and State Regulators inless than eight months including the three Remedial Action Plans allowing construction to commence ahead of schedule. In addition all of the Post Construction Reports were approved on the initial draft with no regulatory comments.

To optimize placement of materials in the three primary capping areas Pro2Serve specified placement of an interim cover to allow dump truck access as far as possible, thus minimizing material handling. All materials were placed and compacted in accordance with the required design.

Pro2Serve developed the cap design by using alternate lining and vegetative covers to reduce costs and thicknesses resulting in substantial lifecycle cost savings over the design life of the cap.