

Urbanized Canal Inspections

Reclamation received \$10.1 million in American Recovery and Reinvestment funding for the comprehensive inspection of canal reaches located in urban areas. The inspection of these canal reaches were multifaceted and included a comprehensive inventory, baseline observations, and data regarding their condition. The inspections also helped determine the need for any follow-up activities for additional data in specified areas and provided a basis for any resulting formal recommendations that required collaboration with the operating entity.

The inspections funded under this ARRA activity targeted urbanized canal reaches that were inventoried and identified by Reclamation. An urbanized canal reach is the portion of a canal which, if it were to fail, has the potential to impact an estimated population at risk greater than 100 and/or result in estimated property damages greater than \$1 million. Inspection activities were performed on approximately 266 identified urbanized canal reaches, which totaled more than 1,000 miles.

Inspection activities initially included aerial inspections and onsite inspections performed during differing site conditions (dry and watered up conditions) to collect data on these urbanized canal reaches. Based on analysis of initial inspection data, follow-up inspections including onsite geophysical investigations were performed to provide clarification on specific canal reaches located in urbanized areas.

Aerial inspections, performed via a contract with a qualified aerial imaging company, collected both natural color orthoimagery and thermal infrared data on these canal reaches. Unlike other available imagery, the collected imagery provided a current snapshot of recent urbanization, vegetation, seepage and other concerns. As a result of the contractor's and Reclamation's analysis, more than 3,000 suspect areas were identified, located, and described so further investigation or verification could be performed by regional and/or area office personnel.

The onsite inspections, contracted with qualified private engineering firms, involved two phases of

activities. The first phase was the inspections of canal reaches in a watered-up condition and the second phase was in a dry/low water condition. More than 6,000 observations were made during these onsite inspections. Some of these observations, which are more likely to impact the condition of the canal, included animal burrows, seepage areas, detrimental vegetation, surface erosion/voids, distressed corrugated metal pipe and other embankment penetrations, restricted cross drainage and sloughing/lining damage. Based on the extent and severity of these observations, Reclamation prioritized which canal reaches deserved further analysis, follow-up inspections, and/or remedial measures.

Geophysical investigations were performed to provide further information on specific identified seepage areas. The geophysical data was utilized to determine the extent of seepage paths through the canal embankments, as well as to identify the source of seepage.

Through these ARRA-funded inspections, Reclamation was able to gather important data on these canals in urbanized areas, which provided a basis for determining long-term requirements as part of the existing Associated Facilities Review of Operation and Maintenance Program. In addressing the results of these inspection activities, Reclamation will also incorporate applicable philosophy and lessons learned from other Reclamation programs to enhance this program through a defined risk-based approach.

