

## Project 8920: Evaluation of Non-nuclear Moisture Meters and Moisture-Density Gages for Reclamation Construction QC/QA

Abstract: Reclamation commonly incorporates materials such soil cement, controlled low strength material (CLSM, flowable fill), and roller compacted concrete (RCC) into its projects. Regardless of the mix design and project specifications, ensuring proper construction of these materials is critical to their long-term success. Traditional quality control/quality assurance (QC/QA) methods for these materials are often slow (providing results several days after the material has been placed), expensive and labor intensive, or rely on nuclear technology.

Several new, non-nuclear technologies exist which claim to enable the rapid measurement of moisture, or the combination of moisture and density of these materials (soil, soil cement, CLSM, and RCC). Being new, these technologies have not been rigorously tested and approved for use by Reclamation. The scoping study will consist of a literature and industry review of the use of these devices, and is designed to precede a conducting research study. As guided by the scoping study, the conducting study will systematically investigate the efficacy of several commercially available non-nuclear rapid moisture meters and non-nuclear moisture-density gages for performing rapid quality control/quality assurance (QC/QA) testing on soil, soil cement, CLSM, and RCC. Efforts will also be made during the scoping study to develop partnerships with regional offices as well as the manufacturers and vendors of the most promising devices to make the subsequent conducting research more cost effective.

If proven effective and reliable, these technologies will produce significant cost saving by (1) reducing QC/QA field testing time, and (2) eliminating the need for costly nuclear-density gages. Further, given that the feedback from QC/QA testing would be available immediately (rather than days to weeks later such as in the case of soil cement and CLSM) a higher quality product would result from the use of these new technologies.

Due to changes in workload of the research team, this scoping study was never conducted and the project is on hold. It is a worthwhile project and should be considered for funding when workload allows its completion.