

Project Number

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Beneficial and Nontraditional Uses of Concentrate

Principal Investigator

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Cash Contributors (in addition to the Bureau of Reclamation):

State Water Resources Control Board (CA)

Awwa Research Foundation

Water Environment Research Foundation

City of Phoenix

Objectives

This project focused on the beneficial reuse of concentrate or concentrate byproducts. The objectives were:

- To provide a comprehensive review and comparison of the full range of alternative uses of concentrate, and to assess the feasibility of implementation, economic considerations, and environmental safety; and
- To evaluate both direct uses of concentrate and the potential for recovery and marketing of individual salts separated from concentrate.

Benefits

This report identifies several potentially beneficial and nontraditional uses of concentrate that could help agencies develop creative local options for beneficial concentrate disposal.

Highlights

- Oil Well Field Injection: Injection may be technically feasible at some locations, and may be used to aid secondary recovery of oil and gas.
- Solar Ponds: Concentrate could be used as a feedstock for a solar pond, from which heat energy could be derived.
- Land Application/Irrigation: This can be a viable alternative, especially for smaller facilities close to agricultural areas.
- Aquaculture: Issues include the existence of a market for the species to be grown, climate, concentrate chemistry and flow rate, and effluent disposal.
- Wetland Creation and Restoration: Concentrate could potentially be discharged to naturally occurring or artificially created inland salt marsh areas.
- Constructed Wetland Treatment: Treatment wetlands have been tested at an experimental scale for concentrate treatment.
- Salt Separation: Technology appears to exist to accomplish the salt separations and recovery.