

Attachment 4. Project Description

The proposed Study is designed to determine the potential for recycled water to be a component of the water supply necessary for the stabilization and recharge of the San Joaquin Valley Basin, located in northeast San Joaquin County, CA. The groundwater basin is currently over drafted. To accomplish this objective, an extensive outreach program has been developed and will be executed to seek input from the general public, public agencies, and the agriculture community.

The main goals of the Study include:

- Determine the potential for using recycled water to recharge the groundwater basin either through direct or in lieu groundwater recharge, and
- Evaluate the willingness and demand from both the farmers and the public to use recycled water for agricultural irrigation and/or direct groundwater recharge.

Agricultural water demands within the District are estimated to be approximately 90,000 acre-feet/year (AFY). Another aspect of the Study will be to identify suitable suppliers of recycled water, based on quality, quantity and availability throughout the year. This information will then be used to develop the layout of a distribution system that can deliver the recycled water to identified customers within the boundaries of the District.

The Eastern San Joaquin Groundwater Basin Groundwater Management Plan, as adopted by the Northeastern San Joaquin County Groundwater Banking Authority, September 22, 2004, has four identified Basin Management Objectives (BMOs). These BMOs are as follows: 1) groundwater levels; 2) groundwater quality; 3) surface water quality; and 4) inelastic land subsidence.

The Study will address each of the BMOs as follows:

BMO 1: Groundwater Elevations. The Study will determine if the use of recycled water for either direct or in lieu groundwater recharge can help address the issue of maintaining or enhancing groundwater elevations to meet the long term needs of the groundwater users. This is accomplished by providing recycled water as an alternative water supply source that will facilitate a conjunctive use program. In addition, this source of supply will help in efforts to manage the basin during drought conditions by providing a reliable water source and groundwater recharge.

BMO 2: Groundwater Quality. The Study will determine whether using recycled water will provide a reliable source of water during prolonged droughts. Having another alternate water supply such as recycled water may protect the District against mismanagement of groundwater or overdrafting of the groundwater basin.

BMO 3: Surface Water Quality. Utilizing recycled water to reduce groundwater pumping will minimize impacts to surface water quality by reducing overdraft of the groundwater basin.

BMO 4: Inelastic Land Subsidence. An alternative source of supply to groundwater, such as recycled water, can meet some of the basin's demands and may help prevent inelastic land subsidence due to continued groundwater overdraft.

The next sections include a discussion of the methodology used in the Study, how the District collaborates with other agencies, and District funding mechanisms.

Methodology

Public outreach. The facilitators used for the public outreach effort will be experienced in meeting facilitation and will understand the needs and requirements for water use in the agricultural community. The public outreach process will include the use of both public workshops and selected grower focus groups. During these meetings, the project team will develop a list of issues and concerns regarding the use of recycled water for agricultural irrigation. These workshops will target the general public, elected officials, the agricultural community, and the wastewater suppliers. Additionally, project staff will make public presentation to the District Board, the Sacramento Groundwater Authority, the Northeastern San Joaquin County Groundwater Banking Authority, and local water and wastewater districts to inform them of the intent behind this project, as also detailed in the Agency Collaboration section below.

Once the first round of workshops and public outreach has been completed, the issues identified during this effort will be compiled and reviewed with the project team to develop a strategy to address the concerns.

Based on the initial public outreach and subsequent technical work, conceptual level projects for using recycled water will be identified and discussed in both public workshops and with the selected grower focus groups.

Project development. Based on the interest and input received during the public outreach effort, technical strategies for the development of a conceptual level facilities plan to bring recycled water to the District will be developed. These strategies will address the water quality, availability, reliability, and price of recycled water, the requirements for recycled water use, and the level of interest.

A summary of the methods used to develop potential recycled water projects are outlined below:

Identify potential recycled water sources. This step involves identifying regional providers of recycled water, including the City of Galt, the City of Lodi and Sacramento Regional County Sewer District. HydroScience Engineers (HSe) will analyze whether these sources have sufficient recycled capacity to supply the District with recycled water, the expected water quality, cost, and associated permitting issues required to deliver recycled water to the District. The analysis will also include the advantages and disadvantages of using each source based on cost, permitting, capacity, and location.

Identify potential recycled water users and demands. HSe will use estimate recycled water demands based on grower input, farm acreage, crop type, agronomic rates, and groundwater pumping data provided by the farmers, to determine which areas could potentially use recycled

water. Local climate data and precipitation data is typically obtained from the Western Regional Climate Center. Evapotranspiration rates are typically obtained from the DWR CIMIS database. Data obtained from the sources above will be used to calculate peak precipitation rates and peak irrigation demands.

Collecting this information will assist in looking at seasonal and overall recycled water needs in order to accurately estimate recycled water demand. Farmers who express interest using recycled water, based on initial public outreach efforts, will also be prioritized based on their higher likeliness to utilize recycled water.

Develop pipeline alternatives. The potential pipeline alternatives are developed based on the major clusters of demands, proximity to the potential recycled water sources, and access to the public rights-of-way. Pipeline routes will target users with higher demands or irrigated agricultural lands near public right-of-ways to provide a more cost-effective alternative. Based on the environmental technical memorandum, areas of environmental significance will be avoided and efforts made to minimize potential environmental impacts. The potential alternatives will also minimize the number of barriers, such as creeks, bridges, and private access points.

Model pipeline sizes. The pipeline sizes and groundwater recharge rate will be modeled using the software WaterCAD by Bentley Systems, Inc. The model criteria will include the pressure and supply from the recycled water source and minimum pipeline diameters, pressure, and velocity as required by the District. The model will help determine the minimum pipeline sizes, storage capacity, pumping requirements, and acreages to provide groundwater recharge to the District using recycled water.

Environmental constraints analysis. An environmental constraints analysis will be conducted to assist in selecting an alternative. This analysis will identify critical environmental factors for the proposed alternatives including the potential impacts from transmission pipeline routing.

A description and map of key environmental constraints will be developed for each alternative. The descriptions and maps will also serve as a basis for the development of the existing conditions section of any future California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) document. The results will include a matrix that identifies key environmental issues, potential impacts to the key environmental issues, potential mitigation measures, and environmental permits that may be required. The matrix will provide the basis for the alternatives analysis in any future CEQA/NEPA document.

Quality and usefulness of the information. The information collected as part of this work will form the basis for development of a subsequent project that could result in significant benefits to the groundwater basin. Adding a new water supply to the basin has the potential to provide long-term benefits to the groundwater basin, a reliable and sustainable water supply to the farming community, and regional benefits of a more stabilized water table. A project to deliver recycled water has not previously been studied in this region. If a feasible project is identified, development of new recycled water projects can provide water supply, environmental, and economic benefits to the basin and its farmers.

Agency Collaboration

Organized in 1948, the District's main objective has been to secure surface water rights for use within the District and to facilitate management of the groundwater basin. The District has participated in a variety of collaborative activities with other regional and local public agencies, including San Joaquin County, the Woodbridge Irrigation District, Stockton East Water District, and the Northeastern San Joaquin County Groundwater Banking Authority. This collaboration includes being signatory to a regional Joint Powers Authority for groundwater management, the Northeastern San Joaquin County Groundwater Banking Authority. The District has also participated in the development of planning studies, pilot studies for groundwater recharge for management of the basin, and construction of facilities with other agencies. All of these activities advance the District's main purpose of managing the groundwater basin either through the development of alternative water sources or enhancing groundwater recharge.

Currently, the District provides updates of its activities to the general public through the use of its website: www.nsjgroundwater.org. Regional activities are also posted on the website of the Northeastern San Joaquin County Groundwater Banking Authority website: www.gbawater.org. The Work Plan for this project includes development of a comprehensive public outreach program. One of the tasks in the Work Plan is to prioritize an effective method of communication with the affected groundwater users, stakeholders and the general public who are located inside and outside the District. An effective outreach program that keeps all players informed is critical to the success of the Study and any future project.

The District remains involved with various local, state, Federal, and outside agencies due to overlapping issues with groundwater and surface water supply. The Northeastern San Joaquin Groundwater Banking Authority is currently trying to update the Integrated Regional Water Resources Management Plan with an updated list of interested parties. This information will be compiled to create a baseline database of interested water users and combined with other data sources to create a project specific outreach list for public notices and mailers. One of the first task items for the Study will be a presentation during a meeting for the Northeastern San Joaquin Groundwater Banking Authority, San Joaquin County Board of Supervisors, and any other interested local public agency. Monthly presentations will be made to the North San Joaquin Water Conservation District during their regular meetings.

The Study will help to determine if a demand for groundwater recharge using recycled water exists from the agricultural community. If a demand does exist for recycled water, then the alternatives developed in the Study will provide essential information to implement any future recycled water projects. The alternatives will include a list of potential customers and a layout of distribution facilities that will integrate the various sources of available recycled water and surface supply.

Funding

The District's previous efforts to fund capital facilities have been seriously hampered by the lack of a dependable supply. Current rights to divert water have limited availability on a year by year basis; therefore, potential customers are reluctant to invest in distribution facilities to divert and supply surface water. However, the development of a reliable supply, such as recycled water, could change that situation. Potential customers could be more willing to accept recycled water

and form Improvement Districts to finance capital facilities if the water source was reliable and drought-proof.

The District has a recent example financing capital projects by raising \$636,000 in funds for the Tracy Lake Groundwater Recharge Project (Tracy Lake Project). When river water is available, the Tracy Lake Project will allow the District to divert up to 4,000 AFY of Mokelumne River surface water into the South Tracy Lake. The water will be used for irrigation and groundwater recharge. The Tracy Lake Project formed Improvement District No. 1 that issued and sold two series of warrants. This project is now fully funded with a combination of the warrants, a \$300,000 grant from the United States Bureau of Reclamation and an annual per-acre-foot water charge for landowners. It is expected that the District would fund any future groundwater recharge projects with the formation of improvement districts, issuing warrants, and annual capital assessments on the land within a district.

More background information about the District can be found in the **Attachment 5**.