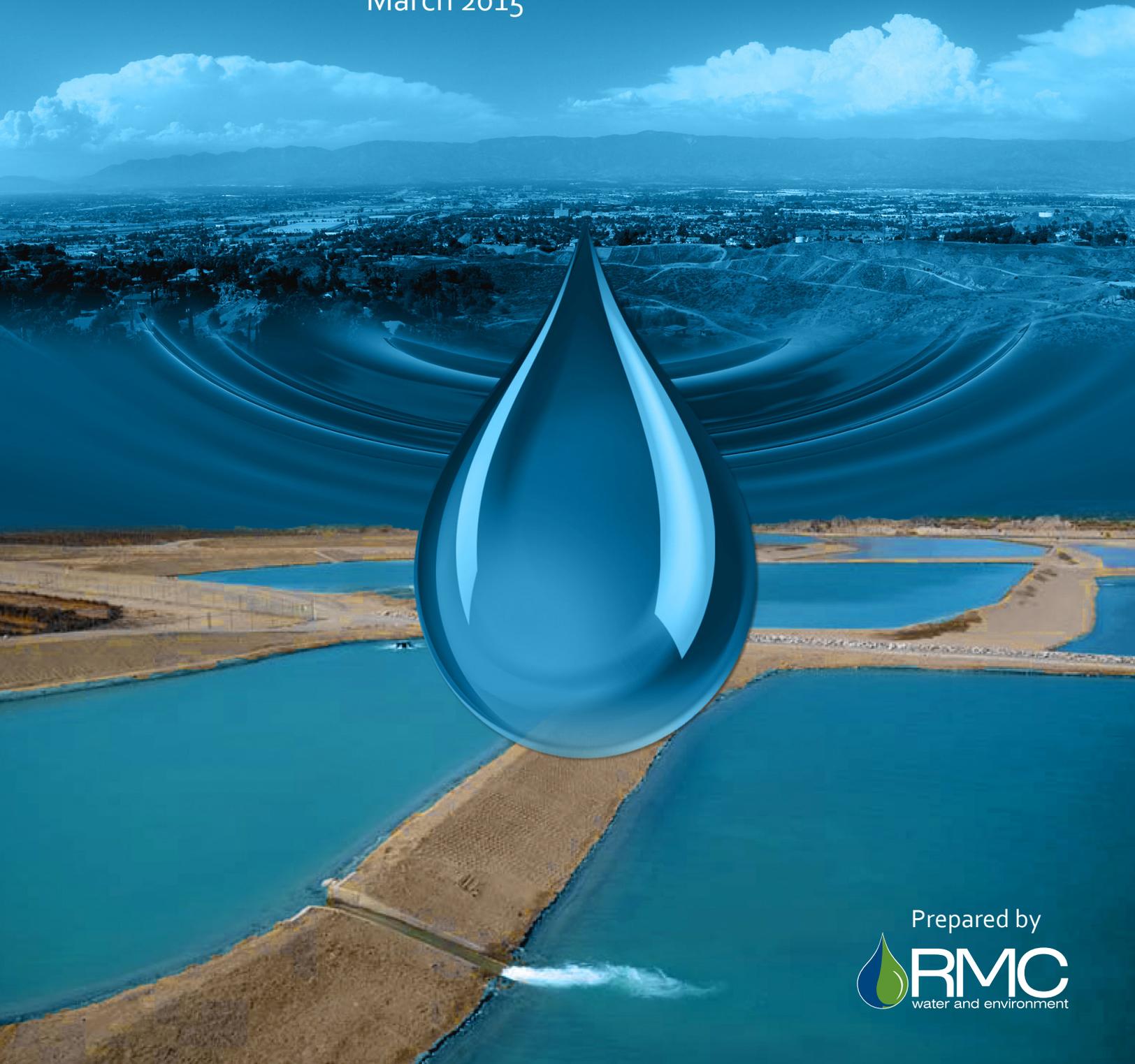




East Valley Water District An Update of the Recycled Water Feasibility Study

Executive Summary

March 2015



Prepared by



Executive Summary

The East Valley Water District (District) has a historic opportunity to provide an increased level of service to its customers through implementation of a recycled water program. A recycled water program will provide the District's customers with the following benefits:

- A new, locally controlled, highly reliable source of water to help meet the District's and the region's water supply needs;
- Greater control over the cost of wastewater treatment by bringing that component of service completely under the control of the District;
- Meaningful and lasting environmental benefits created through direct coordination with the Upper Santa Ana Habitat Conservation Plan process; and
- Reduced costs associated with providing long-term service to the existing customer base and reduced cost of connection and service for new customers.



This updated Feasibility Study has been prepared in response to two significant opportunities. The first is the identification of an alternative treatment plant site. The alternative site, located on Del Rosa Drive near Indian Springs High School, affords expanded opportunities for making the proposed facility blend with the surrounding community and to be a true community asset through incorporation of an interpretive center. The second opportunity is through development of the Habitat Conservation Plan (HCP) the identification that the recycled water from the proposed facility could serve as a source of water for habitat conservation as well as groundwater recharge. This opportunity has been discussed with the US Fish and Wildlife Service (FWS), and the San Bernardino Valley Municipal Water District, the lead agency for the HCP, which have expressed support for the concept.

Therefore, it is recommended that the District initiate a recycled water program to treat all flows collected by the District by constructing the Recycled Water Center. It is recommended that the Recycled Water Center be a Membrane BioReactor (MBR) facility, with the treated flows used for groundwater recharge, providing the greatest benefit to the District's customers. This approach makes the District self-reliant rather than relying on the City of San Bernardino for treatment and disposal.

Unique Opportunity

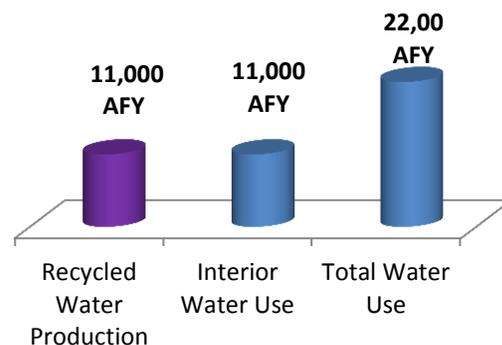
The timing could not be better for the District to implement the proposed Recycled Water Center. Some of the factors creating the unique timing of this opportunity include:

1. California is now in the beginning of the fourth year of severe drought, bringing to light the availability and reliability of the District's water supplies. Implementing projects to protect against the impacts of future droughts is critical to providing a long-term reliable water supply. The most appropriate response for the District is to develop a locally-controlled, sustainable recycled water supply.

2. California is facing continued challenges and costs associated with importing water through the Sacramento-San Joaquin Delta, including water deliveries to the District's service area. The most appropriate response for the District is to develop a locally-controlled, sustainable recycled water supply that can augment imported water supplies.
3. The California legislature has passed historic groundwater management legislation that will bring a greater focus on groundwater management throughout California, including the Bunker Hill Groundwater Basin underlying the District. The most appropriate response for the District is to develop a locally-controlled, sustainable recycled water supply to assist in managing the local groundwater basin.
4. The California State Water Resources Control Board has an objective of creating over 1 million acre-feet of recycled water use by the year 2020, and over 2 million acre-feet per year by the year 2030. The State is providing incentivized funding to assist in meeting this goal. The most appropriate response for the District is to develop a locally-controlled, sustainable recycled water supply in support of the State's objective.
5. The San Bernardino Valley Municipal Water District, in conjunction with the region's water resource agencies, is undertaking a Habitat Conservation Plan (HCP) process that addresses habitat critical to the survival of multiple species in the Upper Santa Ana River Watershed. The most appropriate response for the District is to collaborate in this process and create environmental benefits while creating a new, locally controlled water supply.
6. The voters of California approved a bond measure in November 2014 to provide \$7.5 billion of funding for water development in California. The most appropriate response for the District is to access potentially available funding to develop a locally-controlled, sustainable recycled water supply.

Need for Recycled Water

The District currently relies on the City of San Bernardino to treat its wastewater, which is then discharged to the Santa Ana River. The treated water from the San Bernardino treatment plant is a valuable resource that is not presently available to serve the water supply needs of the District's customers. The Bunker Hill Groundwater Basin, which lies beneath all of the District's service area, has seen declining water levels over the past several years as local runoff has diminished and imported water deliveries have been reduced. In fact, the Bunker Hill Groundwater Basin is at historic lows in terms of the amount of water in the basin.



Recycled water will provide a drought-proof supply source for recharge equal to the interior water use of the District's customers, providing assurance of critical water supply in future

Using recycled water to help recharge the groundwater basin would be a significant local water supply source for use to assist in managing the Bunker Hill Groundwater Basin levels and providing a long-term

reliable water supply. Further, the recycled water production will be approximately equal to the indoor use of treated water delivered by the District to its customers. This will provide the District with a drought-proof supply source to recharge the groundwater basin in an amount equivalent to the District's customers' indoor water use.

Through the HCP, the District has a unique opportunity to leverage its recycled water to restore and conserve habitat in City Creek while also providing water supply by recharging the groundwater basin under the creek. As a collaborating partner in the Upper Santa Ana River Habitat Conservation Plan, the District will provide recycled water produced at the Recycled Water Center in order to support its objectives. The purpose of the HCP is to enable the water resource agencies to continue to provide and maintain a secure source of water for the residents and businesses in the watershed, and to conserve and maintain natural rivers and streams that provide habitat for a diversity of unique and rare species that make the watershed their home.

Avoided Costs

The District's recently completed water and wastewater master plans identified the need for additional water supply and the need for increased wastewater conveyance capacity. Implementing the proposed Recycled Water Center will provide additional water supply and will reduce the level of required investment in wastewater system conveyance improvements. The estimated savings to the District's customers in the required level of wastewater infrastructure improvements is estimated to be over \$25 million.

Why Groundwater Recharge?

Groundwater recharge was found to be the most appropriate use due to a number of factors, including lower cost, increased local water supply, the opportunity for restoring habitat, and long-term benefits to the District's customers. Other uses of recycled water were evaluated, but were found to be less advantageous at this time.

The use of recycled water to replenish groundwater basins has been successfully implemented throughout Southern California since the early 1950s. The use of recycled water for groundwater recharge is regulated by the State of California, who earlier this year adopted a new set of regulations for increased recycled water use, paving the way for increasing the use of recycled water for recharging groundwater basins and improving water supply reliability.

Implementing the Recycled Water Center would provide a reliable local water supply for the region and help offset the need for increased amounts of imported water. Some of the key benefits that would result from using recycled water for groundwater recharge are summarized in the table below.



Groundwater recharge of the recycled water provides a valuable benefit of improved water supply sustainability and reliability.



Key Benefits of a Groundwater Recharge Program

Benefit Category	Benefit Description
Water Supply Reliability	Provides new source of water supply that is reliable, “drought-proof,” and locally- controlled Diversifies regional water supply portfolio
Resource Management	Provides year-round beneficial use for recycled water
	Promotes highest and greatest beneficial use of recycled water
	Restores and conserves habitat in City Creek – Upper reaches of Santa Ana River
Integration/Synergies with Other Practices	Augments current groundwater recharge practices employed by the San Bernardino Valley Municipal Water District
Consistency with State Goals and Objectives	Embraces State guidelines and policies relative to recycled water, groundwater management, and diversification of water supplies

What are the Options?

Three fundamental approaches for meeting the District’s wastewater treatment needs were evaluated:

- Continue to send all of the District’s flows to the City of San Bernardino
- Treat 60 percent of the District’s flows at a new plant located on North Del Rosa Drive
- Treat all of the District’s flows at a new plant located on North Del Rosa Drive

These three fundamental approaches were evaluated on a comparative cost basis over a 20-year planning period. The results showed that there is a clear advantage to the District’s customers if the District implements the Recycled Water Center and treats all flows.

Project Option	Comparative 20-Year Cost Increase
All Flow Treated by City of San Bernardino	24%
60% of Flow Treated by District	19%
All Flow Treated by District	7%

Treating all flows provides the least increase in cost of the three options available to East Valley Water District.

If the District were to continue to send flows to San Bernardino, costs would increase approximately 24% over the next 20 years, as compared to increasing only 7% over the same period of time if the District constructs a plant and treats all flows. Furthermore, there is a similar clear advantage to the cost per EDU (Equivalent Dwelling Unit) for future connections if the District treats all flows.

This relative comparison of costs has assumed the cost of treatment by the City of San Bernardino does not increase over the next 20 years, and that the value of the recycled water similarly does not increase over the next 20 years. Both of these assumptions are conservative in their nature and therefore reinforce the conclusion that the least cost option is for the District to implement a recycled water program.

Value of the Created Resource

Recycled water will constitute a new water resource for the District. The value of this resource is best established by comparing it to the existing value of California State Project Water. The value of State Project Water (2013) is \$662 per acre-foot, delivered to the East Branch turnout near Highland, California. (Management of California State Water Project, Bulletin 132-12, August 2014, 50th Edition) The value of State Project Water will increase in the future due to a number of factors, including the cost of the Delta fix, currently known as the Bay Delta Conservation Plan (BDCP). A 10 MGD plant flow will generate approximately 11,200 acre-feet per year of water with a relative current annual value of approximately \$7.4 million.

Recycled water is a valuable resource.

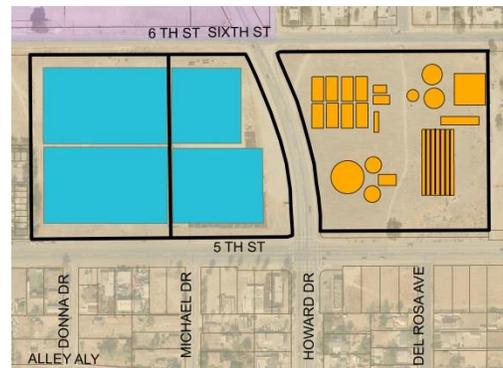
- A 10 MGD plant will produce 11,200 acre-feet per year
- An acre-foot of State Project Water is valued at \$662
- The value of 10 MGD of water is \$7.4 million per year

Proposed Project

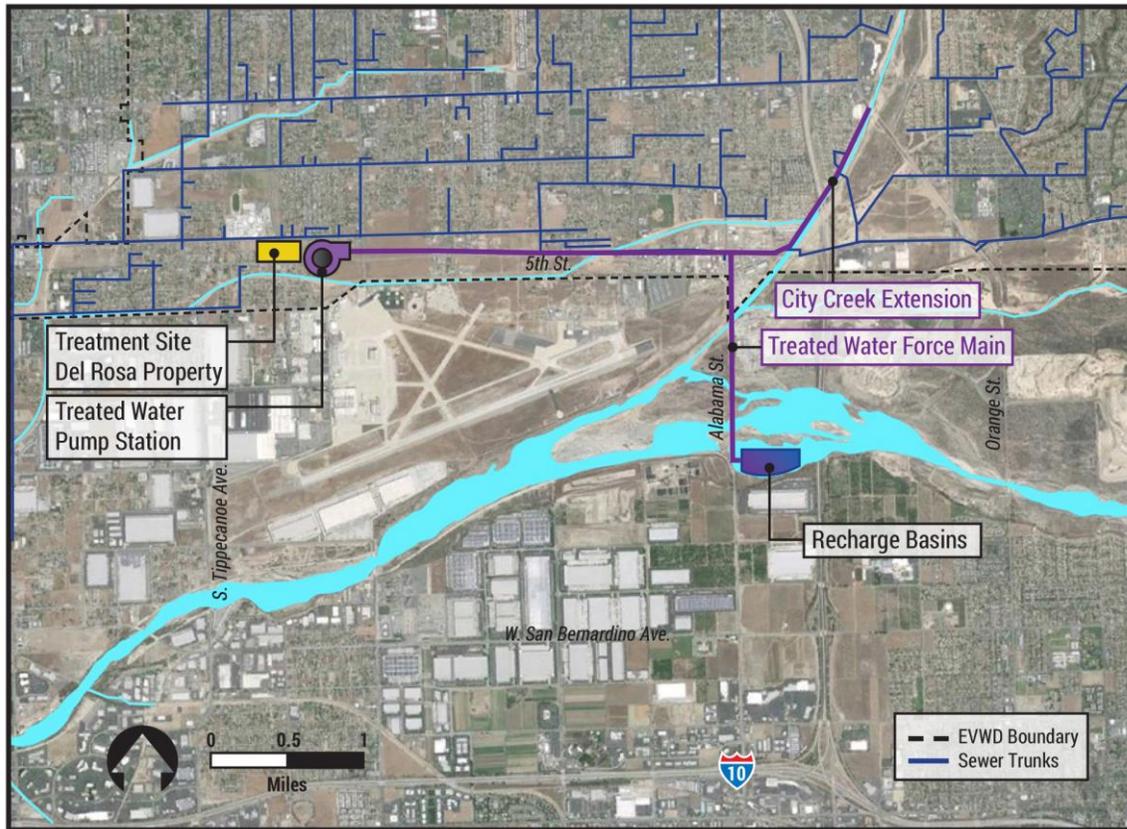
The proposed project consists of constructing an MBR-based recycled water treatment plant, associated pipelines and pumping stations, with recharge to the groundwater basin. Four facility sites were evaluated for use and ranked based on specific criteria. The project site located at North Del Rosa Drive and 5th Street has been selected as the most appropriate site for the proposed facility. The site lends itself well to potential multi-beneficial development options, including an educational interpretive center for the community, which will be further explored during project implementation.

The Recycled Water Center would be constructed between East 5th Street and East 6th Street on Del Rosa Drive in Highland. Approximately half of the service area flows would be intercepted on East 5th Street and diverted to the new treatment plant. The remaining portion of the service area flows would be captured at the low end of the collection system and pumped to the new treatment plant.

The treatment plant would utilize the most advanced technology – Membrane BioReactors (MBR) - to produce tertiary Title 22 recycled water that would be disinfected to meet all applicable requirements for recharge into the Bunker Hill Groundwater Basin. Recharge is proposed to be through City Creek as a part of a coordinated effort with the Upper Santa Ana River HCP. Additional new and existing recharge facilities will be utilized during City Creek high flow periods to ensure that recycled water remains in the basin. Recharge is proposed to be through a combination of existing recharge basins, facilitated through cooperative agreements between the District and the owners of the existing basins, and new recharge areas at the Recycled Water Center and in City Creek.



The proposed site is located in Highland near Indian Springs High School



The proposed project includes a new treatment plant located on North Del Rosa Drive with the ability to deliver recycled water for recharge at existing and new locations.

Consistency with the Community

A Recycled Water Center utilizing MBR treatment utilizes the most up-to-date technology available. Use of this technology lends itself to making the treatment facility a good neighbor in any neighborhood due to the smaller foot-print of the treatment process, which provides the ability to enclose the treatment facility to eliminate odors and noise impacts to the surrounding community. The proposed plant location is northwest of the San Bernardino Airport near Indian Springs High School. Similar treatment plants have been constructed and are in use in communities throughout the country. District officials visited three similar facilities – a demonstration facility in Anaheim, California, and two treatment plants near



MBR technology provides the ability to build and operate a treatment plant that is a good neighbor – enclosed facility producing no odors and no noise.

Seattle, Washington– the Lighthouse Plant and the Brightwater Plant. All three of these enclosed facilities produce high-quality recycled water with no odor or noise impacts to the surrounding community.

A similar approach can be utilized for the East Valley facility. The Recycled Water Center can be designed to:

- Be a multi-use site in concert with a new treatment plant;
- Be designed to produce no odors or noise;
- Be aesthetically pleasing; and
- Provide opportunities for community uses such as meetings, training, classrooms, and similar uses.

Similar to what other agencies have also done, there is an opportunity to incorporate an interpretive center at the Recycled Water Center, with interactive exhibits and education programs intended to enhance the community’s awareness and involvement in preserving its valuable water resources.

Community Involvement

The District has conducted and will continue to conduct an extensive community outreach program for the Recycled Water Center project. Monthly workshops were conducted to inform the Board and the public about the project, the project issues, opportunities, and recommendations.

The District conducted community forums, provided information in the newspaper, in mailers, and on its website to assist in informing the public about the challenges facing the District and the opportunity that can be afforded by implementing a recycled water program.

The District conducted a public tour of the Anaheim Water Recycling Demonstration Facility. The City of Anaheim facility is located adjacent to City Hall and employs the same MBR technology that is being recommended for East Valley Water District.



Economic Benefits

Investment in the Recycled Water Center will result in additional benefits to the local economy. According to estimates provided by Sacramento Regional Research Institute, a group associated with the Sacramento Area Commerce and Trade Organization, a

The financial benefit to the local economy from construction of a recycled water treatment plant is estimated to be \$228 million.

\$1 million investment in infrastructure and public works projects generates an additional \$825,858 of output through indirect and induced activities. Constructing the Recycled Water Center, with a capital cost of approximately \$125 million, would have an added local economic benefit of \$103 million, providing a net financial benefit of \$228 million to the

The District conducted an extensive outreach program to inform the community and to receive input to the planning process.

local economy. Further, according to the SRRI estimates, construction of a new facility would generate over 800 direct construction jobs, and over 1,400 total new jobs.

Budgetary Cost Estimates

The following table summarizes the estimated costs for each major component for the proposed project at the Sterling and Del Rosa properties. These estimates are budgetary cost estimates and should be refined as project planning progresses. Costs presented below are based on the ultimate plant capacity of 10 MGD.

10 MGD Project Budgetary Cost Estimates

Project Components	Estimated 10 MGD Project Cost at Sterling	Estimated 10 MGD Project Cost at Del Rosa
Water Reclamation Plant	\$103.3 M	\$103.3 M
Treated Water Conveyance System	\$15.2 M	\$15.8 M
City Creek Extension	\$5.5 M	\$5.0 M
Total Capital Cost	\$124.0 M	\$124.1

Implementation of the Recycled Water Center will be phased. The existing flows from the entire District are approximately 6 MGD, necessitating a minimum initial plant capacity of 6 MGD. Projected flows will require increases in the treatment plant to a future capacity 10 MGD. The initial treatment plant capacity and associated phasing will be refined during the next phase of the project. Presented below are the budgetary cost estimates of a 6 MGD treatment plant as well as a 6 MGD treatment plant that can be expanded to a future 10 MGD capacity. Under these scenarios, the treated water conveyance system is constructed to accommodate the full projected flow of 10 MGD.

6 MGD Project Budgetary Cost Estimate

Project Components	Estimated 6 MGD Project Cost at Sterling	Estimated 6 MGD Project Cost at Del Rosa
Water Reclamation Plant	\$61.4 M	\$61.4 M
Treated Water Conveyance System	\$15.2 M	\$15.8 M
Habitat Conservation Plan Extension	\$5.5 M	\$5.0 M
Total Capital Cost	\$82.1 M	\$82.2 M

The estimated costs of the proposed project at the Sterling and Del Rosa sites are equal. Other, non-monetary factors include the greater opportunity to develop a meaningful interpretive center at the Del Rosa site and tie it into educational opportunities at Indian Springs High School, and the opportunity to create an integrated community asset within the City of Highland. With equal cost considerations, the recommended site location is at Del Rosa.



District's system. Further, during construction, the proposed project would provide an estimated \$228 million economic benefit to the local economy and would generate over 1,400 new jobs.

By locating the Recycled Water Center at the Del Rosa site, there is an opportunity to create an integrated community asset within the City of Highland, and the opportunity to enjoin with Indian Valley High School and create an environmental learning center adjacent to the campus.

Finally, the addition of a new, locally-controlled and highly reliable water supply will have an annual economic value of up to \$7.4 million.

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