Robert W. Walker Recharge Project

Central Colorado Water Conservancy District
Groundwater Management Subdistrict
Well Augmentation Subdistrict

Final report to CWCB – Water Plan Grant Agreement No. CTGG12019-3468

January 22, 2021

Prepared by Randy W. Ray, CCWCD Executive Director

South Platte River, near Orchard, CO – Site of CCWCD's Walker Recharge Project Alluvial Wellfield

Photo date: 8/31/2018

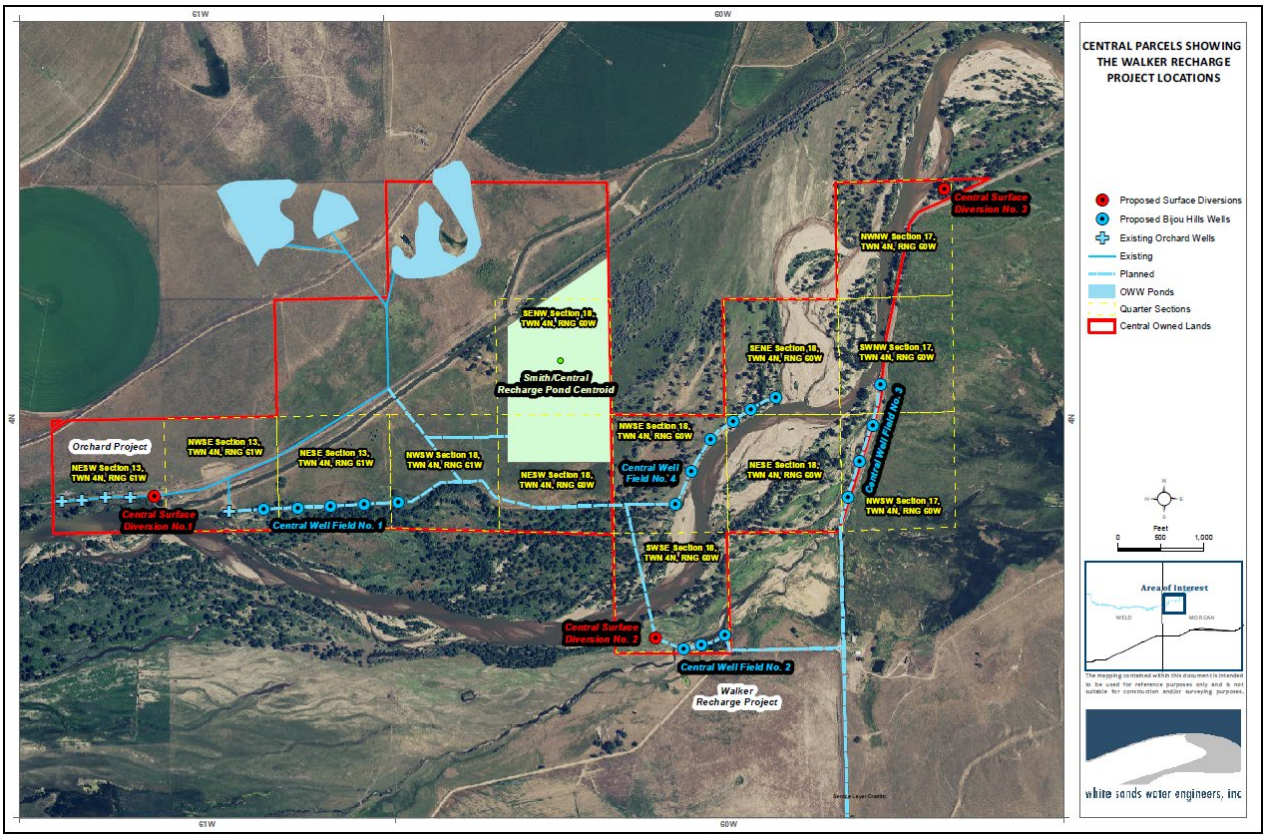
Central's two subdistricts, the Groundwater Management Subdistrict (GMS) and the Well Augmentation Subdistrict, operate court-decreed plans for augmentation to replace depletions caused by the pumping of approximately 1,300 alluvial groundwater wells. GMS and WAS have contracts to deliver up to approximately 80,000 acre-feet per year as augmentation supplies to replace depletions caused by alluvial well pumping. Wells provide a vital water supply to irrigated lands within the District and are used by producers as a primary irrigation supply or to supplement irrigation supplies when yield from surface water rights are insufficient. Wells operate within Colorado's prior appropriation system and require augmentation supplies to replace depletions from pumping when there is a call senior to the priority date of the well.

The augmentation plans operated by GMS and WAS utilize replacement water supplies such as recharge accretions developed through numerous decreed recharge projects operated by Central and the subdistricts. If sufficient replacement water is not available, then well use is curtailed to meet the replacement supply, represented to the members of the augmentation plans as the annual quota. In recent years well owners in the Central District have been allocated an annual supply or quota of 50 – 75 percent of the members contract allotment.

The majority of Central's members use their groundwater wells for irrigation purposes. The Walker Recharge Project will directly benefit agricultural producers in Weld and Morgan Counties, which are the number 1 ($1.9 B/year) and number 3 ($615.3 M/year) agricultural producing counties in the State, respectively. The purpose of the Walker Recharge project is to maximize every drop of water within our augmentation plans and put it to the most beneficial use for the agricultural community. The Walker Recharge facilities will allow Central to divert up to 30,000 acre-feet of water when in priority and capture and retime available water at the lower end of our districts, all of which will help the projection models in GMS and WAS resulting in better water management practices. This means more water for well owners, which can lead to greater crop yields, stronger rural communities, and a resilient strategy to cope with drought by allowing irrigators to divert water when it is available and retime it for later use during dry periods.

The Walker Recharge Project is located Weld and Morgan Counties between the towns of Orchard and Wiggins **(Figure 1)**. Water will be diverted from the South Platte River by four well fields and three surface diversions located near the town of Orchard, in parts of Sections 17 and 18 of Township 4 North, Range 60 West. Water will then be pumped south and east through a pipeline to various recharge facilities. Phase 1 of the Walker Project includes a) surface diversion from the South Platte River b) recharge pond near the north bank of the South Platte River c) wellfield located on the south bank of the South Platte River d) pipeline to deliver water from the Phase 1 wellfield, and e) recharge ponds. Phase 2 of the Walker Project will include development of additional surface diversions, wellfields, pipelines and recharge ponds.

Figure 1 – Walker Project Surface & Wellfield Location



Walker Project Funding

Central's three districts have combined resources of $20 million for Phase 1 and portions of Phase 2. These financial resources include available cash resources, CWCB loans totaling $15 million and grants awarded by the USBR & CWCB of $750,000 each. These combined resources provide for the approximate $20 million-dollar investment of the project. The funds from CWCB Grant No. CMS 129403 were used for the construction of the main delivery pipeline. Pipeline construction was awarded to CEI Constructors from Denver, CO. CEI, Central's engineers and staff finalized the initial engineering design, procured the 54" polyethylene lined steel pipeline, valves, cathodic protection and other relative components of the project and began construction in May of 2019. The construction of the approximately $7 million dollar pipeline which stretches nearly 3.5 miles was completed in October of 2020. The $7M cost of the pipeline contract with CEI exceeds the amount of matching funds as required by the CWCB grant requirement of $1,634,424.

Figure 2 – Installation of 54" Walker Pipeline

Summary of Walker Project pipeline, Engineering, Scheduling and Construction Meetings.

One of the first tasks in constructing the pipeline was to determine the alignment, such alignment is important as to construction efficiency and reduced impacts to private landowners. Central staff evaluated obtaining a right of way from the State of Colorado by following the Highway 144 alignment. It was determined the State ROW was insufficient in width to accommodate the construction and future maintenance of the pipeline. Central then approached landowners along a slightly modified alignment, involving five private landowners and the USBR. Easements were obtained allowing for the project to go forward. Central also had to obtain permits from Morgan County for four road crossing and a permit from Colorado Department of Transportation for the crossing of Highway 144.

Selecting the 54” polyethylene coated pipeline involved evaluating several options such as installing two smaller diameter 36” or 48” pipelines, and alternative coating methods to reduce corrosion and extend the life of the pipeline. Eventually Central’s Board selected the concept of one larger pipeline and requested the pipeline carry a maximum flow rate of 120 cubic feet per second and instructed staff to go to public bid. Central obtained several bids and selected CEI Constructors from Denver.

Multiple design meetings were held with CEI to finalize the 30% construction bid documents into plans which could be used for field construction. Once final alignments, both horizontally and vertically were determined, shop drawings were submitted to the pipe manufacturer. Eventually a steady line of trucks was hauling 50’ long joints of pipeline (two per truck) from the Northwest Pipe facility in California. Delivery aligned closely with installation, pipe was unloaded and positioned along the pipeline trench to avoid double handling of the pipeline which reduces the risk of damaging the protective polyethylene coating.

Central’s staff, engineers and CEI management selected a Denver company, QualCorr to provide cathodic protection for the quarter inch steel pipe lined with the protective polyethylene coating. Assuming the coating was not damaged the pipe had an expected life of 30-50 years. With the addition of cathodic protection, the pipeline would have a life expectancy much greater than the 30 to 50 years.

Overall, the installation of the pipeline was very efficient. After a few joints of pipe was installed the CEI crew was able to efficiently repeat the processes of removing topsoil, excavate to proper depths, and install a 2” conduit in the pipeline trench for fiber-optic communication. Central selected the fiber option to efficiently communicate water delivery and monitor conditions when the pipeline is in operation.

Central staff, Central’s engineers and CEI held weekly construction meetings, held either at the project site or by telephone during the entire project. The meetings were very helpful to keep the project moving forward efficiently.

One substantial project which took coordination with the Bijou Irrigation Company is the crossing of their ditch with the 54” pipeline. To accommodate the required bury depth from Bijou, a large excavation was required accompanied with the pouring a flow-fill concrete mix to the spring-line of the pipeline, installation of cathodic protection equipment and proper canal bank reconstruction. All this work had to commence November 1st and completed within a few months as to not restrict Bijou’s ability to divert recharge water in their canal. Figure 3 below is a photo obtained from Central’s drone demonstrating the work required for the Bijou crossing.

Figure 3 - Bijou Crossing

The Central Colorado Water Conservancy District, its two Subdistricts, staff, Board of Directors, member constituents and all beneficiaries of increased management and efficiency of surface water and groundwater sincerely thank the staff and CWCB Board for the support over the past several decades as Central has developed our water supplies.

Figure 4 – Several of the Central Board of Directors at Walker Project Well 2-O.

Board Members and Central Staff from left to right:
Douglas Dill, Ralph Anders, William Mihelich (Central Staff), Bret Schmidt, Randy Ray (Central Staff), Everett Kissler, David Bernhardt, James Reasoner, Vern Kammerzell and Don Rosenbrock.