Loan Feasibility Study

Fruitgrowers Dam Outlet Gate Improvement Project

Sponsored by

Orchard City Irrigation District
Orchard City, CO

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And
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September 2023

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Orchard City Irrigation District

Directors/Officers

Andy Wick, President

Jeff Wick, Vice President-Treasurer

Gregg Helmsing, Co-Treasurer

Joe Young - Secretary

Jim Pizzino

Water Committee

Andy Wick

Richard Kirkpatrick

Niles Riese

Engineering Design and Specifications

US Bureau of Reclamation

Introduction

The Orchard City Irrigation District (OCID) has partnered with the US Bureau of Reclamation (USBR, Bureau), who owns the Fruitgrowers Reservoir, to replace the existing outlet gates which have come to the end of their serviceable life. The planned improvements include replacing the control gates, consisting of one emergency gate and one regulating gate, with two triple offset butterfly valves. These valves would be equipped with actuators for motorized operation. The geared operators/actuators and shaft access to the gates, with electrical power and ventilation, will be housed in a new control house.

This project will replace existing guard and regulating gate valves that were installed during the construction of the dam in 1938. Replacing this aging infrastructure will minimize risk of failure and allow for more accurate flow control and water delivery via upgraded valves with electric controls. Replacement will preemptively address leaking and a possible failure of the valves, especially the emergency gate valve which leaks approximately 1500 gal/min when closed. The project would include installing electrical components for motorized gates and a phased Supervisory Control and Data Acquisition (SCADA) system. Monitoring software for aid in decision making and water saving will be implemented as part of this project. More infrastructure, such as other flow measuring devices and telemetric communications equipment, will be installed during a later phase for remote control of the gates. This modernization of both physical and computerized infrastructure is much needed for outlet works installed 85 years prior.

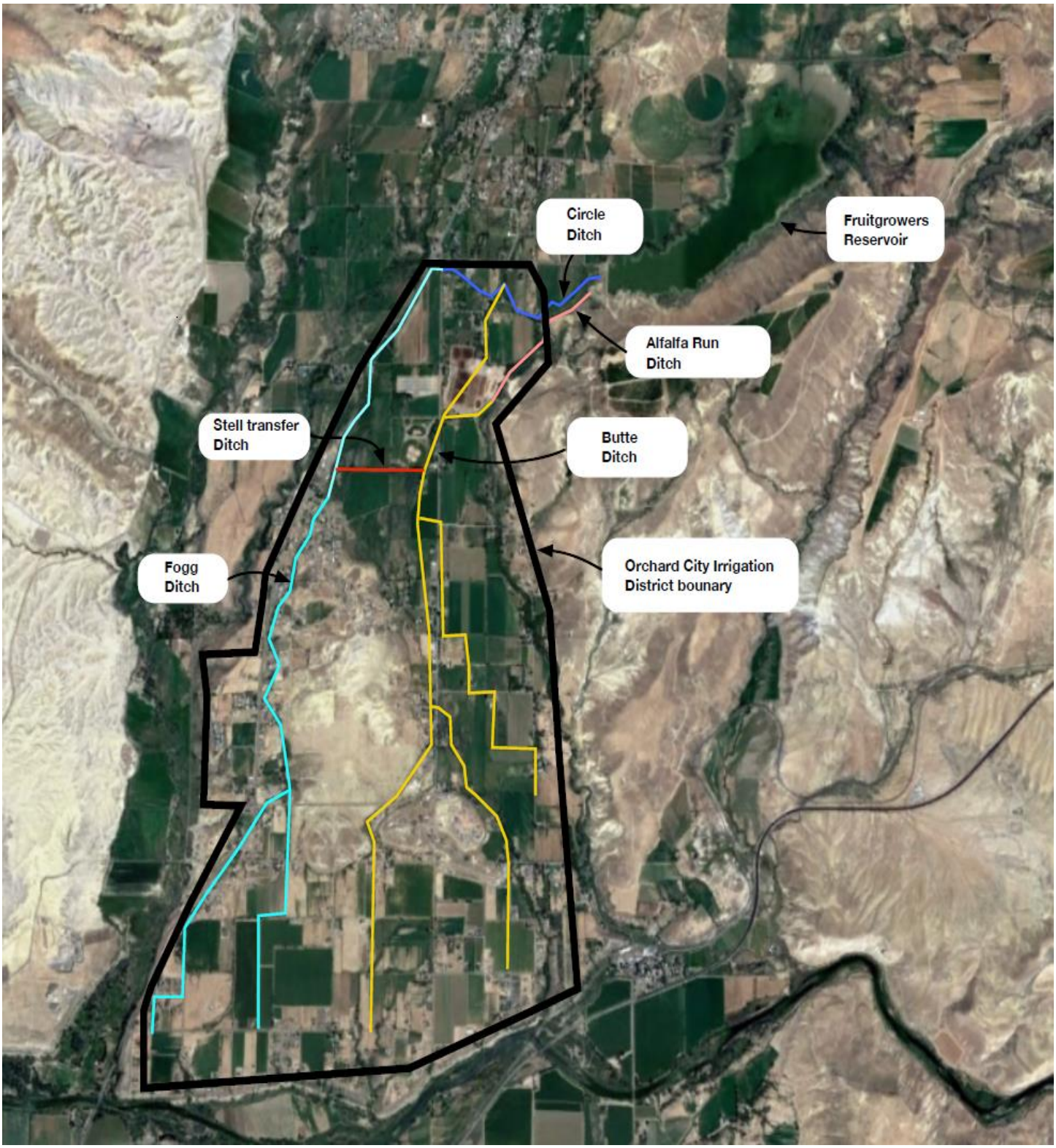
Engineering design for the project was completed in summer 2023. The project was bid in August 2023 and a bidder was selected September 15, 2023. The project is scheduled for construction during the irrigation off-season of 2023/2024 with a completion date of March 14th, 2024.

Project Sponsor and History of Dam and OCID

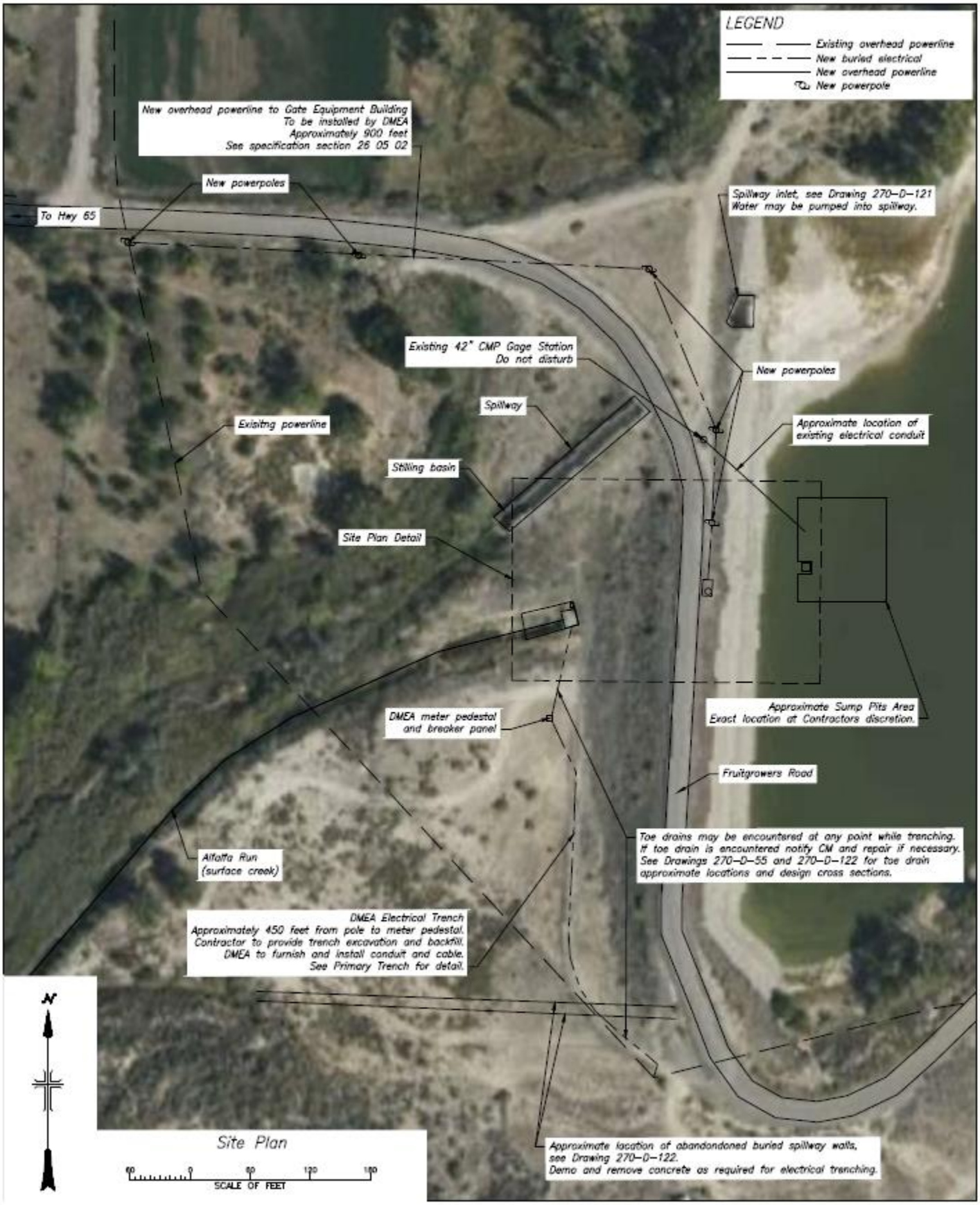
The Orchard City Irrigation District (OCID) is a Colorado Special District created under Colorado Revised Statues Title 37, Water and Irrigation. In the summer of 1937, a crack in Fruitgrowers Dam caused a breach in the south end of the dam, leveling a portion of Austin. After the failure, the Bureau of Reclamation took over and rebuilt the dam in 1938 in collaboration with the Fruitgrowers Ditch and Reservoir using shareholder and matching federal funds. The land, once farmed by less than 40 landowners, was by vote of those owners in 1939, placed in an irrigation district as a means to collect funds to reconstruct and thereafter operate the previous dam. The Fruitgrowers Ditch and Reservoir Company was dissolved and the Orchard City Irrigation District was formed in its place.

Today, OCID is responsible for the operations and maintenance of the Fruitgrowers Dam under a contract agreement with the US Bureau of Reclamation who owns the Dam. OCID receives, stores, tracks, and releases water from Fruitgrowers for both the Fogg and Butte Ditch system and the Circle Ditch. OCID controls the release of water ordered by producers according to the seniority of their allocations of stored water. They do not operate the downstream ditches but collaborate with the ditch companies to supply water to shareholders in the Orchard City Irrigation Company. The District supplies water to 558 agricultural users for a total of 2,760 irrigated acres. OCID is responsible for maintenance and operation of the Alfalfa Run and Transfer Ditches which bring water to the reservoir from Surface Creek and Dry Creek respectively.

System Map


Circle Ditch
Fruitgrowers Reservoir
Alfalfa Run Ditch
Stell transfer Ditch
Butte Ditch
Fogg Ditch
Orchard City Irrigation District bounary

Project Map


LEGEND
Existing overhead powerline
New buried electrical
New overhead powerline
New powerpole
New overhead powerline to Gate Equipment Building
To be installed by DMEA
Approximately 900 feet
See specification section 26 05 02
New powerpoles
To Hwy 65
Spillway inlet, see Drawing 270-D-121
Water may be pumped into spillway.
Existing 42" CMP Gage Station
Do not disturb
New powerpoles
Spillway
Existing powerline
Approximate location of
existing electrical conduit
Stilling basin
Site Plan Detail
Approximate Sump Pits Area
Exact location at Contractors discretion.
DMEA meter pedestal
and breaker panel
Fruitgrowers Road
Toe drains may be encountered at any point while trenching.
If toe drain is encountered notify CM and repair if necessary.
See Drawings 270-D-55 and 270-D-122 for toe drain
approximate locations and design cross sections.
Alfalfa Run
(surface creek)
DMEA Electrical Trench
Approximately 450 feet from pole to meter pedestal.
Contractor to provide trench excavation and backfill.
DMEA to furnish and install conduit and cable.
See Primary Trench for detail.
N
Site Plan
60 0 60 120 180
SCALE OF FEET
Approximate location of abandonded buried spillway walls,
see Drawing 270-D-122.
Demo and remove concrete as required for electrical trenching.

Hydrology and Water Rights

Fruitgrowers Reservoir decrees for storage are as follows:

Water Source	Adjudication Date	Appropriation Date	Priority No	Associated Case Numbers	Net Absolute (ac-ft)
SURFACE CREEK	9/28/1907	10/15/1898	24	CA0457	3400
DRY CREEK	1/31/1964	6/23/1937	K66, K67	W0706, CA4808	3105
SURFACE CREEK OR DRY CREEK	1/31/1964	6/1/1954	K114	W0706, CA4808	855

Fruitgrowers Reservoir has decrees totaling 7360 ac-ft. This is more than the capacity of the reservoir, which the USBR lists at 4540-acre feet. The current capacity estimate is 4000 ac-ft due to silt accumulation.

The decrees allow for flexibility in how the reservoir is filled. If winter water is less available in the Surface Creek drainage, then the Dry Creek drainage can be relied on more heavily. Records show that in the dry year of 2018, a total of 3841 acre-feet went through the transfer ditch (from Dry Creek to the reservoir). There are commonly issues with the transfer ditch icing up in the winter, and OCID shuts it down in the coldest periods. In this scenario, the Surface Creek water becomes more important. Because decreed amounts exceed the reservoir's capacity, OCID is allowed to refill the reservoir with the additional decreed water if still in priority.

The Fruitgrowers Reservoir stores 4,540-acre feet of water (nominally) and serves 558 irrigation water users with water from the natural flow of Alfalfa Run and by diversions from Surface and Dry Creeks. It then feeds 2,760 acres of productive agricultural lands in a privately owned system of canals and laterals.

Alternatives Analysis

Several alternatives were explored by the USBR and OCID Board. See Appendix D for the USBR's evaluation of the outlet works and alternatives analysis from August 2020.

1. No action
   The gates are 85 years old, at least 35 years past their typical serviceable life. The emergency valve was tested in 2010 and found to leak 1500gpm. It is also physically difficult to operate, requiring two people and a "cheater bar." See Appendix H for more USBR comments on their comprehensive dam inspection report, 2016. Both valves could fail in a number of ways which could lead to uncontrolled releases from the reservoir. This would be especially harmful to the 558 shareholders and irrigators who could lose some or all of their irrigation supply due to inoperable control gates. OCID's function to regulate releases for downstream users would be rendered impossible if the control gates are not able to operate precisely and reliably. In the event of a failure, emergency action would need to be taken to replace the valves, which could incur costs far higher than alternatives described below. The OCID wants to proactively replace the valves to avoid the high risk of this situation.
2. Repair Existing Valves
   The company who manufactured the existing valves went out of business over 50 years ago. In order to ascertain the work necessary to restore the valves they would need to be removed, disassembled, and evaluated for wear and condition. Then, welding/brazing repair, fabrication of parts, reassembly and pressure testing would occur. Since the reservoir would need to be dewatered for the duration of this minimum 60 day process, and because of the uncertainty of the extent of the valves degradation, this option was deemed too expensive and unreliable. USBR cost est $57k+$90k(dewatering)=$147k min.
3. Replace Existing Valves
   a. Standard Gate Valve and Throttling Knife Gate Valve
      This option was deemed too expensive, and not applicable for regulation. USBR cost est $160k
   b. Triple Offset Butterfly Valves
      This option would install resilient and long lasting valves for both the emergency and regulating valve with metal on metal seats (as opposed to elastomeric seals on standard butterfly valves with lower life expectancy). Butterfly valves are designed for regulation with a tight seal. USBR cost est $75k + 10.5k dewatering = $85.5k.

The Bureau recommended installing actuated (motorized) gates, if selecting the replace option, for a few reasons. First, a 24" butterfly valve is a large valve to operate by hand. The motorized valves will ensure smooth and easy to use functionality to a frequently used regulating valve along with a critical emergency valve. The existing emergency valve took 1.5hours to fully close when tested in 2016 (see Appendix H), which ~~cost~~ would? be a costly amount of time in the case of an actual emergency. These new, motorized valves will operate quickly and reliably. Second, the motorized valves can be programmed for a second phase of SCADA improvements. OCID's complex system of diversions, storage and water delivery demands a high degree of water accounting. Management of the system for water conservation is crucial for shareholders to get the full value of their shares. Data acquisition and real-time adjustment to conditions through programmed gate functionality can lead to tremendous water saving for a historically water short area. Since the gates are being replaced now, construction of the electrical systems at this time will reduce the cost of planned improvements.

Selected Alternative - Project Description

The Orchard City Irrigation District Water Committee reviewed the options and decided to proceed with upgrades recommended by the USBR and noted in the Proposed Budget.

The OCID plans to replace and upgrade the two gate valves to triple offset butterfly valves with motorized geared operators. A control house with electrical equipment for motor operated controls and ability to operate a future SCADA system will be installed. Engineers at USBR Grand Junction, Colorado have completed the design and provided a cost estimate, attached as Appendix E. Their description of the work is as follows:

This work includes removing and replacing the existing reservoir regulating and emergency valves with triple offset butterfly valves with motorized actuators. Installing a new 10' x 12' building over the top of the existing access shaft and providing electrical service (200-amp) and ventilation systems. Removal and replacement of gate chamber access shaft cover, access ladder, and platform components. Removal of lead-based paint and refinishing gate chamber components that will remain in place. Removal and replacement of slide gate on the Circle Ditch inlet, installing a motorized actuator, and installing a new electrical system. Work will also include controlling incoming reservoir water to prevent water from entering the outlet works during the replacement of the gates.

OCID decided to drain the reservoir for the installation of the guard gate valve. While the Bureau hesitated to recommend this dewatering option due to the uncertain financial effect on shareholders, the Board agreed that it was the least costly and quickest option given the accelerated schedule of fall 2023 construction. The reservoir will be fully drained by October 15th and the contractor will install the guard gate by November 10th. The guard gate will be closed and the reservoir refilled during the winter months while the rest of the construction is finished.

The USBR Grand Junction office will oversee the project with assistance from Applegate Group for construction management and coordination services. Progress reporting to the USBR will be handled by the project manager and financial submittals of reimbursement requests to the various funding agencies will be the responsibility of the Financial Administrator.

The improvements planned in this project include water management software which will yield information to help the OCID board make more informed decisions throughout the irrigation season. At present the OCID Board of Directors has limited information available to help make the decisions on the amount of water to appropriate for each share of OCID stock. This tracking software will decrease the mismatch between "water on the books" and water actually available for delivery in the reservoir. Not only will this increase confidence for decision making in the short term, the water tracking and management system will interoperate with future SCADA control system components. This way, the reservoir valves can be programmed to release water in accordance with the real-time water measurements of flow coming into the reservoir, existing storage in the reservoir, and water ordered from users. OCID plans to implement this second phase of SCADA improvements with potential grant funding after a few years of successful new gate operations. The electrical and water management improvements for this first phase will ensure the second phase has less costly installation and more functionality.

Cost Estimate

Costs for this project have increased since the original 2020 estimate due to drastic cost increases for water projects over the period of 2020 to 2022 as well as the addition of power line installation not in original estimate, safety features for the well area, water tracking software programming, and automation materials.

A construction cost estimate was provided by Matt Bryner, USBR Engineer in June 2023 (Appendix E) for the finalized design. The project was bid in August 2023 and only received a bid from one contractor. The bid was about 10% more than the cost estimate from the USBR. The budget is included below and as Appendix F.

The project budget presented is broken into tasks. The first three tasks include work by consultants for design, permitting, project management, etc. OCID agreed to pay the Bureau for their engineering design and NEPA services. Applegate was retained for both bidding and contracting and construction management. Tasks 4-6 include project materials and construction costs. The bulk of these costs are taken directly from the revised bid from the selected contractor dated Sept 15, 2023. OCID opted to purchase the butterfly valves themselves due to cost and time savings, and the cost is based on the quote from the supplier. Task 7 includes other costs as well as a 5% contingency for unforeseen construction and other cost increases that could occur.

Project Budget - 9/25/2023									
Task No.*	Task Name	Units	# of Units	Cost Per Unit	CRD Funds	WSRF #1 Funds Approved	WSRF #2 Funds Apprvoed	Applicant Match (CWCB Loan)	Total
1	**Task 1 - Consultants & Engineering**								
	USBR "Safety of Dams" Review	LS	1	$ 55,000	$ 55,000				$ 55,000
	Design and Review of Dam outlet valves	LS	1	$ 50,600	$ 50,600				$ 50,600
	Design & Review of regulating valve at dam outlet for Circle Ditch lateral	LS	1	$ 5,500	$ 3,500			$ 2,000	$ 5,500
	Construction engineering management	LS	1	$ 11,000				$ 11,000	$ 11,000
	On-site construction inspection	LS	1	$ 4,400				$ 4,400	$ 4,400
	3rd Party Financial Administration	hr	66	$ 150				$ 9,900	$ 9,900
	Computer Programming (water tracking software)	hr	48	$ 110				$ 5,280	$ 5,280
	Total				**$ 109,100**			**$ 32,580**	**$ 141,680**
2	**Task 2 - Environmental Review**								
	US Bureau of Reclamation/Cultural Resources	LS	1	$ 20,000				$ 20,000	$ 20,000
	US Bureau of Reclamation/NEPA	LS	1	$ 46,200	$ 46,200				$ 46,200
	Total				**$ 46,200**			**$ 20,000**	**$ 66,200**
3	**Task 3 - Solicit & Award Construction Contract**								
	Project Management	hr	225	$ 40	$ 4,000			$ 5,000	$ 9,000
	Construction: bidding and contract preparation by 3rd party registered engineering firm	LS	1	$ 8,000				$ 8,000	$ 8,000
	Total				**$ 4,000**			**$ 13,000**	**$ 17,000**
4	**Task 4 - Purchase of Materials**								
	Guard Triple Offset Butterfly Valve (incl. flanges, bolts, and gaskets)	EA	1	$ 28,725			$ 28,725		$ 28,725
	Regulating Triple Offset Butterfly Valve (incl. flanges, bolts, and gaskets)	EA	1	$ 28,725		$ 3,800	$ 10,475	$ 14,450	$ 28,725
	Computer for water mgmt. software	EA	1	$ 2,200				$ 2,200	$ 2,200
	Water Management software	EA	1	$ 7,000	$ 1,100			$ 5,900	$ 7,000
	Total				**$ 1,100**	**$ 3,800**	**$ 39,200**	**$ 22,550**	**$ 66,650**
5	**Task 5 - Outlet Works Construction**								
5.1	Mobilization and Prep Work	LS	1	$34,001		$ 10,000		$ 24,001	$ 34,001
5.2	Removal and Disposal of Misc. Metalwork	LS	1	$66,531				$ 66,531	$ 66,531
5.3	Gate Equip. Building Foundation Slab	LS	1	$9,499				$ 9,499	$ 9,499
5.4	Furnishing Metalwork and Machine Components	LS	1	$106,528		$ 1,200	$ 106,528		$ 107,728
5.5	Installing Metalwork and Machine Componenets	LS	1	$96,437			$ 59,472	$ 36,965	$ 96,437
5.6	Gate Equip. Building	LS	1	$68,026	$ 50,000		$ 18,026		$ 68,026
5.7	Gate Chamber Ventilation System	LS	1	$18,271			$ 6,774	$ 11,497	$ 18,271
5.8	Gate Equip. Building Electrical System	LS	1	$43,850		$ 40,700		$ 3,150	$ 43,850
5.9	Removal and Control of Water	LS	1	$112,893	$ 10,200	$ 57,800		$ 44,893	$ 112,893
5.10	Triple Offset Butterfly Valves	LS	1	$45,375		$ 30,000		$ 15,375	$ 45,375
	Total				**$ 60,200**	**$ 139,700**	**$ 190,800**	**$ 211,911**	**$ 602,611**
6	**Task 6 - Circle Ditch Construction**								
6.1	Electrical System for Circle Ditch	LS	1	$74,040				$ 74,040	$ 74,040
6.2	Circle Ditch Gate	LS	1	$16,577		$ 4,500		$ 12,077	$ 16,577
6.3	Circle Ditch Actuator	LS	1	$7,381				$ 7,381	$ 7,381
	Total					**$ 4,500**		**$ 93,498**	**$ 97,998**
	SUBTOTAL				**$ 220,600**	**$ 148,000**	**$ 230,000**	**$ 393,539**	**$ 992,139**
7	**Other**								
	DMEA Power Lines	LS	1	$40,465	$ 4,400	$ 2,000		$ 34,065	$ 40,465
	5% Contingency	%	5%	$49,607			$ 20,000	$ 29,607	$ 49,607
	Total				**$ 4,400**	**$ 2,000**	**$ 20,000**	**$ 63,672**	**$ 90,072**
	PROJECT TOTALS				**$ 225,000**	**$ 150,000**	**$ 250,000**	**$ 458,000**	**$ 1,083,000**

Implementation Schedule

The schedule for the construction of the project from the selected Contractor is provided as Appendix G. In summary, the contractor will mobilize to the site in mid-October and the guard valve will be installed by Nov 10th in order for the reservoir to refill. The remainder of construction will take place over the winter with a substantial completion date of March 8th, 2024. Continued work will be performed by consultants such as Delta Conservation District for project management and grant administration, Applegate Group for construction management and inspection until construction is finalized and financial administration is completed. All tasks should be completed by July 2024.

Permitting

All permits have either been obtained or are in the process of being obtained before project completion.

Permitting Authority	**Permit, Approval or Agreement Required**	**Date Obtained**
USACE	404 Exclusion	10/15/2020
USBR Safety of Dams	Written Approval of Design	8/30/2023
Moonray Investments, Inc.	Easement Right-of-Way for Power Line (DMEA)	5/22/2023
USBR	Easement Right of Way for Power Line on Dam (DMEA)	10/2/2023*
USBR	NEPA Categorical Exclusion	11/1/2023*
SHPO	Cultural Resources Clearance	10/11/ 2023* * = anticipated

Institutional Considerations

Entities that are involved in the design, construction and financing of the project include:

US Bureau of Reclamation, engineering design and NEPA
Delta Conservation District, project management
Alpine Archeology, Cultural Resources
Applegate Group, contract documents and bidding services plus construction management
Delta Montrose Electric Association, power line installation
Colorado River Water Conservation District, grant financing
Gunnison Basin Roundtable, grant funding
Colorado Water Conservation Board, grant and loan financing

OCID will be the lead entity entering into contracts and agreements with the various entities for the services provided by each.

Financial Analysis

OCID is applying for a loan with a maximum amount of $458,000 which equates to 42% of the total project cost of $1,083,000. Repayment for CWCB loan, estimated at $20,730 annually based on a 2.1% interest rate and 30-yr payback, will be made by current assessments against the per acre share of the 558 OICD shareholders. The current assessment is $55/acre and $200/water user annual assessment collected by the County of Delta included with property tax payment. This was increased 3 years ago. OCID will cover any costs that exceed the project cost using cash on hand. OCID will set up a reserve account to place 10% of an annual payment amount into each year for the first 10 years of repayment. The total amount budgeted for loan repayment is $22,810 annually.

Total Project Cost	$ 1,083,000
Loan Amount	$ 458,000
Annual loan repayment +10%	$ 22,810
Annual Operating Cost	$ 181,555
Revenue from Assessments	$ 204,617
Average Net Income	$ 23,062

Operating costs and revenue are based on the average of the last four years but not including special assessments. Also, the average operating cost includes large ditch maintenance projects such as the transfer ditch headgate rehabilitation that occurred in 2021. These unplanned repair projects do not occur often. OCID has a healthy budget long with the ability to conduct special assessments to ensure financial stability and repayment of the loan.

OCID had over $533,000 in checking and savings accounts as of June 30, 2023. OCID would like to reserve these funds for emergency purposes, differed maintenance projects and anticipated improvement projects such as piping the Transfer Ditch and phase two of SCADA for the outlet gates. If needed, this reserve can be used for loan repayment, but would otherwise be earning interest of approximately $5000 annually, not included in the net income statement above.

Credit Worthiness

OCID has received CWCB loans in the past and has paid them in a timely manner. There have been no delinquencies or outstanding loans. OCID does not borrow funds for standard operations and maintenance of the Dam. Please see attached P&Ls for 2020, 2021, 2022 and Jan-June 2023 in Appendix A.

Financing Considerations

OCID applied for a WEEG WaterSmart grant but was declined. OCID met with USBR underwriters, and it was explained that this project did not fit all the criteria for the WEEG WaterSmart grant even though it is a reservoir owned by the USBR.

Other financing for the project includes grant awards from:

1. Colorado River District in the amount of $225,000.
2. Gunnison Basin Roundtable in the amount of $50,000 for the first grant request and $100,000 for a second grant request.
3. CWCB's WSRF Statewide account for Aging Infrastructure in the amount $100,000 for the first grant request and $150,000 for a second grant request.

Collateral

As security for the CWCB loan, OCID can pledge assessment income.

Economic Analysis

Water is the lifeblood of Western Colorado. Conserving water that would otherwise be lost through leakage or mismanagement is a vital component of increased drought resiliency~~.~~ to all water users. The economic benefit of this project will be realized first through time savings of the dam superintendent. Secondly, in a fully operable SCADA-enabled system, the water saved through precise, programmed and real-time decisions will yield economic benefits of increased yields to OCID shareholding producers. In the long term, the gates and other equipment will be low maintenance with a long service life. The increased safety of replacing the aged gates and housing the shaft is harder to quantify but beneficial, nonetheless.

Social and Physical Impacts

This project will have no significant negative impact as the reservoir will continue to operate as it has in the past. However, more accurate delivery of water will result. Positive social impacts include changes in the operation of the dam gates from manual to electric, more efficient water delivery, and time savings for the dam superintendent. Physical impacts will include a new equipment house on top of the dam, safer conditions in the area around the shaft to the gates (from a hatch to an enclosed, locked building), and reduced or eliminated risk of gate failure and associated uncontrolled releases.

Conclusions

- OCID can enter a contract with CWCB for the purpose of obtaining a construction loan.
- OCID will be able to repay the loan with current funding/assessment levels.
- OCID has obtained a Right-of-Way easements from private and public property owners to install a powerline to the dam.
- OCID has received a bid from and is in the contracting process with a construction contractor to substantially complete the project by March 15th, 2024. Up to date costs are based on this bid.
- The project will allow for safer dam operations.
- The project will save dam superintendent time by using a modern monitoring system and setting up a future remote-controlled SCADA system.
- The project will prevent failure of current worn gates causing uncontrolled releases downstream.
- New software program will increase the efficiency and accuracy in setting annual water appropriations to shareholders.
- The total estimated cost of the project is $1,083,000 of which OCID is applying for a $458,000 loan from CWCB which is 42% of the project cost.

Orchard City Irrigation District
Profit & Loss
January through December 2020

		Jan - Dec 20
Ordinary Income/Expense		
Income		
Interest income (bank)		28.95
Miscellaneous Income		72.60
Water Assesment--Upper B/F		9,462.80
Water Assessment-- County		234,238.46
Total Income		243,802.81
Expense		
Advertising		85.98
Alfalfa Ditch Salary		2,500.00
Audit		600.00
Bank Service Charges		70.00
Burn Crew Expense		3,652.17
Ditch Maintenance		7,500.51
Dues and Subscriptions		982.65
Education		300.00
Equipment		1,500.00
Grant Expense		5,620.32
Insurance		
Property and Liability	3,957.00	
Workers Compensation	1,455.00	
Total Insurance		5,412.00
Licenses and Permits		219.60
Office Supplies		648.38
Payroll Expenses		
Payroll Taxes	11,768.01	
Payroll Expenses - Other	52,992.10	
Total Payroll Expenses		64,760.11
Postage and Delivery		610.95
Rent		3,000.00
Telephone and Internet		395.62
Water Computer Program		50.00
Total Expense		97,908.29
Net Ordinary Income		145,894.52

Orchard City Irrigation District
Profit & Loss
January through December 2020

	Jan - Dec 20
Other Income/Expense	
Other Income	
Interest Income	0.67
Total Other Income	0.67
Net Other Income	0.67
Net Income	**145,895.19**

Orchard City Irrigation District
Profit & Loss
January through December 2021

	Jan - Dec 21
Ordinary Income/Expense	
Income	
Interest income (bank)	29.06
Water Assesment--Upper B/F	9,867.30
Water Assessment-- County	168,741.55
Total Income	178,637.91
Expense	
Advertising	70.27
Alfalfa Ditch Salary	2,500.00
ATV & Repairs	99.67
Audit	600.00
Bank Service Charges	-70.00
Burn Crew Expense	
Fuel and Supplies	374.55
Meals and Drinks	297.05
Tractor Rental and Water Wagon	653.67
Total Burn Crew Expense	1,325.27
Computers & Repairs	1,636.55
Contract Labor	
Bookkeeping	5,673.75
Office Help	36.00
Total Contract Labor	5,709.75
Ditch Maintenance	125,838.19
Dues and Subscriptions	1,384.45
Equipment	821.92
Insurance	
Property and Liability	4,302.00
Workers Compensation	3,481.00
Total Insurance	7,783.00
Interest Expense	0.05
Office Supplies	1,416.63
Payroll Expenses	
Butte records	1,925.42
Clean up project	6,610.84
Data entry/Treasurer-Londa	5,045.33
Data entry/Treasurer - Andrea	7,750.83
Fogg records	397.91

Orchard City Irrigation District
Profit & Loss
January through December 2021

	Jan - Dec 21
Salary	
Assistant Ditch Rider	9,000.00
Automobile Expense	12,600.00
Water Superintendent	35,000.04
Total Salary	56,600.04
Website payroll	1,955.83
Payroll Expenses - Other	7,636.27
Total Payroll Expenses	87,922.47
Postage and Delivery	1,481.14
Printing and Reproduction	1,309.63
Professional Fees	
Legal Fees	3,159.00
Total Professional Fees	3,159.00
Reconciliation Discrepancies	
Federal Tax Withheld	0.12
Reconciliation Discrepancies - Other	0.01
Total Reconciliation Discrepancies	0.13
Rent	
Safe Deposit Box	120.00
Rent - Other	130.00
Total Rent	250.00
Surveying	450.00
Telephone and Internet	1,086.04
Water Computer Program	3,600.00
Total Expense	248,374.16
Net Ordinary Income	-69,736.25
Other Income/Expense	
Other Income	
SPECIAL ASSEMENT INCOME	86,400.00
WEBSITE GRANT INCOME	4,500.00
Total Other Income	90,900.00

Orchard City Irrigation District
Profit & Loss
January through December 2021

	Jan - Dec 21
Other Expense	
SPECIAL ASSEMENT EXPENSES	
DCD Contract Grants	3,385.32
Total SPECIAL ASSEMENT EXPENSES	3,385.32
WEBSITE GRANT EXPENSE	3,750.00
Total Other Expense	7,135.32
Net Other Income	83,764.68
Net Income	**14,028.43**

Orchard City Irrigation District
Profit & Loss
January through December 2022

	Jan - Dec 22	
Ordinary Income/Expense		
Income		
Interest income (bank)		75.47
Miscellaneous Income		185.00
Stock Certificate Income		
Butte Stock Certificates	6,750.00	
Fogg Stock Certificates	3,050.00	
Total Stock Certificate Income		9,800.00
Water Assesment--Upper B/F		13,571.75
Water Assessment-- County		151,019.55
Total Income		174,651.77
Expense		
Advertising		
Notices for meetings etc	367.00	
Website	245.00	
Advertising - Other	110.00	
Total Advertising		722.00
Alfalfa Ditch Salary		2,500.00
ATV & Repairs		697.98
Audit		600.00
Burn Crew Expense		
Fuel and Supplies	684.73	
Meals and Drinks	411.52	
Tractor Rental and Water Wagon	400.00	
Total Burn Crew Expense		1,496.25
Contract Labor		
Bookkeeping	5,400.00	
Office Help	20.00	
Total Contract Labor		5,420.00
Ditch Maintenance		
Alfalfa Ditch/split cost w/Alfa	8,125.00	
Ditch Maintenance - Other	29,861.59	
Total Ditch Maintenance		37,986.59
Dues and Subscriptions		1,540.71
Education		600.00
Fogg and Butte Records clean up		15,501.53

Orchard City Irrigation District
Profit & Loss
January through December 2022

		Jan - Dec 22
Insurance		
E & O Professional Insurance	2,414.00	
Property and Liability	3,703.00	
Workers Compensation	1,032.00	
Total Insurance		7,149.00
Interest Expense		3,548.53
Office Supplies		534.84
Payroll Expenses		
Burn Crew	2,370.00	
Data entry/Treasurer-Londa	9,339.90	
Salary		
Assistant Ditch Rider	9,000.00	
Automobile Expense	12,600.00	
Water Superintendent	35,000.04	
Total Salary	56,600.04	
Payroll Expenses - Other	4,426.61	
Total Payroll Expenses		72,736.55
Postage and Delivery		906.82
Printing and Reproduction		313.41
Professional Fees		
Legal Fees	9,215.18	
Total Professional Fees		9,215.18
Reconciliation Discrepancies		
Federal Tax Withheld	0.42	
Total Reconciliation Discrepancies		0.42
Rent		
Safe Deposit Box	60.00	
Rent - Other	400.00	
Total Rent		460.00
Repairs		2,637.52

Orchard City Irrigation District
Profit & Loss
January through December 2022

	Jan - Dec 22	
Stock Certificates Expense		
Butte Certificate--Water &More	2,385.00	
Fogg Certificate-Water & More	1,260.00	
Stock Certificate Legal Expense	726.75	
Stock Certificate Postage	464.51	
Stock Certificate Supplies	1,138.77	
Stock Certificates-Buttes part	1,600.00	
Stock Certificates-Foggs part	750.00	
Total Stock Certificates Expense		8,325.03
Telephone and Internet		1,122.45
Water Computer Program		3,575.00
Total Expense		177,589.81
Net Ordinary Income		-2,938.04
Other Income/Expense		
Other Income		
SPECIAL ASSEMENT INCOME		111,600.00
Total Other Income		111,600.00
Other Expense		
GRANT EXPENSES		
Colo River Dist Grant Exp	0.00	
Total GRANT EXPENSES		0.00
SPECIAL ASSEMENT EXPENSES		
DCD Contract Grants	1,028.00	
Transfer Pipe	17,000.00	
Total SPECIAL ASSEMENT EXPENSES		18,028.00
Total Other Expense		18,028.00
Net Other Income		93,572.00
Net Income		**90,633.96**

Orchard City Irrigation District
Profit & Loss
January through June 2023

	Jan - Jun 23	
Ordinary Income/Expense		
Income		
Colorado Trust Interest		5,023.88
Interest income (bank)		128.14
Miscellaneous Income		350.00
Stock Certificate Income		
Butte Stock Certificates	750.00	
Fogg Stock Certificates	1,500.00	
Total Stock Certificate Income		2,250.00
Water Assesment--Upper B/F		9,126.12
Water Assessment-- County		204,499.61
Total Income		221,377.75
Expense		
Advertising		
Website	1,512.00	
Total Advertising		1,512.00
Alfalfa Ditch Salary		2,500.00
ATV & Repairs		17.55
Audit		675.00
Burn Crew Expense		
Fuel and Supplies	763.75	
Meals and Drinks	374.70	
Tractor Rental and Water Wagon	500.00	
Total Burn Crew Expense		1,638.45
Contract Labor		
Administrative work	1,240.00	
Bookkeeping	2,700.00	
Total Contract Labor		3,940.00
Ditch Maintenance		17,753.31
Dues and Subscriptions		746.21
Education		1,504.50
Fogg and Butte Records clean up		1,027.50
Insurance		
Property and Liability	3,462.00	
Workers Compensation	-16.00	
Total Insurance		3,446.00
Interest Expense		0.16

Orchard City Irrigation District
Profit & Loss
January through June 2023

	Jan - Jun 23	
Office Supplies		240.88
Payroll Expenses		
Burn Crew	3,206.25	
Clean up project	2,950.00	
Data entry/Treasurer-Londa	4,036.33	
Salary		
Assistant Ditch Rider	4,950.00	
Automobile Expense	6,300.00	
Water Superintendent	19,249.98	
Total Salary	30,499.98	
Payroll Expenses - Other	2,537.20	
Total Payroll Expenses		43,229.76
Postage and Delivery		935.61
Professional Fees		
Legal Fees	6,550.38	
Total Professional Fees		6,550.38
Reconciliation Discrepancies		
Federal Tax Withheld	0.78	
Total Reconciliation Discrepancies		0.78
Rent		150.00
Repairs		80.15
Stock Certificates Expense		
Butte Certificate--Water &More	225.00	
Fogg Certificate-Water & More	485.00	
Stock Certificate Postage	66.39	
Stock Certificate Supplies	219.17	
Stock Certificates-Buttes part	250.00	
Stock Certificates-Foggs part	500.00	
Total Stock Certificates Expense		1,745.56
Storage		330.00
Telephone and Internet		569.92
Total Expense		88,593.72
Net Ordinary Income		132,784.03

Orchard City Irrigation District
Profit & Loss
January through June 2023

	Jan - Jun 23
Other Income/Expense	
Other Income	
GRANT INCOME	
Colorado River Dist Grant	56,250.00
Total GRANT INCOME	56,250.00
Total Other Income	56,250.00
Other Expense	
GRANT EXPENSES	
Colo River Dist Grant Exp	350.00
Fruitgrowers Res Project	
Bureau of Reclamation	20,000.00
Total Fruitgrowers Res Project	20,000.00
Total GRANT EXPENSES	20,350.00
SPECIAL ASSEMENT EXPENSES	
DCD Contract Grants	898.15
Total SPECIAL ASSEMENT EXPENSES	898.15
Total Other Expense	21,248.15
Net Other Income	35,001.85
Net Income	**167,785.88**

2010

BYLAWS OF THE ORCHARD CITY IRRIGATION DISTRICT

ARTICLE I
NAME

This District shall be known as "The Orchard City Irrigation District".

ARTICLE II
BOARD OF DIRECTORS

SECTION 1. DISTRICT POWERS. The District powers shall be exercised by a Board of Directors composed of five qualified landowners, who shall have been duly elected as Directors of the District.

SECTION 2. POWERS OF THE BOARD OF DIRECTORS. The Board of Directors shall exercise the following powers:

1. To manage, maintain, operate, build, construct, alter, repair or supervise any and all dams, ditches, canals or other rights or property owned by the District.

2. To levy assessments at such times and in such amounts as to the Board shall deem necessary.

3. To issue notes, bonds, debentures, mortgages, trust deeds or any other instruments including instruments necessary to pledge, hypothecate or assign any or all of its revenues. In the event of any bond or in the event of a promissory note or other such instrument of debt in the amount of more than $20,000.00, such transaction must be approved by the qualified landowners as provided by law.

4. To have general supervision of the affairs of the District.

5. To call meetings of the qualified landowners whenever they deem it necessary, giving notice as provided in paragraphs 2 and 4 of Section 5 herein, and they shall call meetings of the qualified landowners at any time upon a written request of persons representing either one-third of the acreage of the qualified landowners within the District or one-third of the qualified landowners within the District.

6. To appoint and remove at will employees and agents of the District, prescribe their duties, fix their compensation and require them from security for the faithful performance of their duties.

7. To make rules and regulations not inconsistent with the laws of the State of Colorado or the act of incorporation of these bylaws (1) for the guidance of the officers and management of the affairs of the District and (2) for such other purposes as may be required for the benefit of the District and the qualified landholders. The record of the rules and regulations shall be kept up to date and shall be available for inspection by any qualified landholders.

8. To levy, assess and collect assessments upon the lands in said District annually to meet the maintenance, operating and current expenses of the District and to discharge any contract with the United States in accordance with the Federal Reclamation Laws and the public notices, orders and regulations issued thereunder and in compliance with any contracts made by the United States with any owners of said lands and in accordance further with the contracts between the District and the United States.

9. To select and designate, from time to time by resolution, the depository wherein the Treasurer shall be required to deposit and keep all moneys belonging to the District.

10. To acquire by use, appropriation, purchase or condemnation, property or rights of any kind, including rights of way, canals, dams, or reservoirs, either projected, partly constructed or constructed, or the part or whole of any contemplated, projected, partly completed system of irrigation or water works, water rights, or any other property or right necessary or useful for carrying out the objects of said irrigation District.

11. To contract for the annual rental of any water available for use in said District, provided such contract shall not interfere with the rights of any qualified landowner within said District to first use waters available for irrigation within the said District; and further provided that all water rental contracts shall require full payment of rental charges before delivery of water shall be made thereunder.

12. To require qualified landowners within the District to pay in advance of the delivery of water in any year such toll or other charges as the Directors may deem necessary for the purpose

of raising revenue to meet the obligations and expenses of said District for said year including any bond payment, principal or interest or contract payments to the United States.

13. The above enumeration of powers is descriptive only and not exclusive and in addition to such powers said District shall full right, power and authority to do any and all acts conferred by law.

SECTION 3. DUTIES OF THE BOARD OF DIRECTORS. It shall be the duty of the Board of Directors:

1. To cause to be kept a complete record of all their meetings and acts, also of the proceedings of the qualified and owners, present a full statement at the regular annual meeting of the qualified landowners, showing the assets and liabilities of the District, and generally the condition of its affairs. A similar statement shall be presented at any other meeting of the qualified landowners when thereto previously requested by persons representing either one-third of the acreage of the qualified landowners within the District or one-third of the qualified landowners within the District.

2. To supervise all the acts of the officers and employees, require the Secretary and Treasurer to keep full and accurate books and accounts, and to prescribe the form and mode of keeping such books.

3. To obtain an independent audit of all accounts of the District as required by law.

4. To review and adjust all bills and accounts against the District. To authorize the Secretary and one Board member to issue a check for payment of any bill less than $2,000.00 provided however, that such payment shall in all events be reviewed thereafter by the Board of Directors at its next meeting following the issuance of the check. Any check or payment made for $2,000.00 or more must be approved before its issuance by the Board of Directors.

5. The Board of Directors may be entitled to a per diem payment and associated travel expenses for each meeting attended outside of Delta County on behalf of the District. The amount of such per diem entitlement and travel reimbursement shall be established by the qualified landowner of O.C.I.D. and shall only be changed thereafter by the qualified landowners of O.C.I.D.

6. The Board of Directors shall fix the compensation of the Superintendent, Secretary and other appointees of the Board.

7. To review and act on the application of any qualified landowner seeking to withdraw his land from the District, or seeking to include his land in the District as long as the District does not exceed 2760 acres.

SECTION 4. QUALIFICATIONS FOR BOARD OF DIRECTORS.

1. Each Director must (a) be a qualified landowner within the District as reflected on the books of the District in his individual name or (b) be

a) An appointee of a corporation, which is a qualified landowner in the District;

b) A partner of a partnership, which is a qualified landowner in the District; or

c) A member of a limited liability District or limited liability partnership owning a stock of the corporation, which is a qualified landowner within the District.

2. No more than one individual per corporation, partnership, or limited liability District or limited liability partnership can serve on the Board of Directors at any one time.

3. Each Director of the Board shall execute an official bond in the amount of $3,000.00 which shall be approved by the County Judge, Delta County, Colorado and recorded in the Office of the Delta County Clerk and Recorder. The District shall pay the cost of the bond and all recording costs of such bond.

SECTION 5. ELECTION OF BOARD OF DIRECTORS.

1. The election of Directors, provided for in Section 1 of Article II, shall be held in January of each year at the annual landowner's meeting on a date as determined by the Board of Directors.

2. The election for Directors shall be held at such location in Delta County, Colorado, as designated by the Board of Directors and public notice of the time and place of holding such election shall be published not less than thirty days previous thereto, in one of the weekly newspapers printed in the said Delta County, Colorado. This election shall be made by such of the qualified

landowners as shall attend for that purpose, either in person or by proxy.

3. At such meeting, the qualified landowners shall proceed to nominate the number of Directors to be elected, each qualified landowner having the right to nominate. The election shall be by ballot which shall contain the name of the person for whom the ballot is cast, the name of the voter and, if by proxy, the name of both the qualified landowner and proxy and the number of votes cast. Each qualified landowner may cast as many votes as he has in acres of land or portions thereof within the District. Such votes may be cast all for one candidate or, if there is more than one board vacancy to be filled, the qualified landowner may use his votes totally for each of the candidates. The persons receiving the greatest number of votes shall be Directors. The President of said meeting shall appoint at such meeting for the election of Directors three disinterested persons to act as tellers, who shall receive and count the votes cast and announce the same to the President.

4. In addition to the published notice required in Section 2 of this Article, a written notice to each qualified landowner shall be mailed at least thirty days before such meeting, signed by the President or Secretary, stating the time and object of said meeting, by delivering personally or depositing in the post office addressed to his last known post office address.

SECTION 6. BOARD OF DIRECTORS - TERMS OF OFFICE. Each Director shall be elected to a three-year term of office unless other provided by statute. For purposes of this section the ending date of the term of office of each member of the present Board of Directors is as follows:

DIRECTOR	**TERM EXPIRATION**
Director I (Gage)	January, 2013
Director II (Wick)	January, 2011
Director III (Kirkpatrick)	January, 2011
Director IV (Buhrdorf)	January, 2012
Director V (Thomas)	January, 2012

SECTION 7. OFFICERS OF THE BOARD OF DIRECTORS.

1. The Directors shall elect one of their number as President and one of their number of Vice-President, who, together with the remaining Directors, shall constitute the "Board of Directors". The Board shall appoint a Secretary/Treasurer and a superintendent who need not be members of the Board.

2. DUTIES AND POWERS OF THE PRESIDENT. The President shall preside at all meetings of the qualified landowners and directors; sign notes and contracts of the District, may call special meetings of the qualified landowners, and shall do so on request of a majority of the Directors or upon a written request of persons representing one-third of the acreage of qualified landowners within the District; shall exercise supervision and authority in cases not provided for by bylaws or resolution; and shall cause the accounts of the District to be independently audited as provided by law.

3. DUTIES AND POWERS OF THE VICE PRESIDENT. The Vice President shall perform the duties and exercise the authority of the President in case of the inability or refusal of the President to act.

4. DUTIES AND POWERS OF THE SECRETARY/TREASURER. The Secretary/Treasurer shall keep the minutes of all qualified landowners and Directors' meetings; attest by his/her signature and affix the district seal to all contracts and conveyances requiring the same; keep an accurate ledger of all qualified landowners and other books of account of the business of the District; collect assessments and other sums due the District.

The Secretary/Treasurer shall safely keep all money and funds of the District and disburse the same only as directed by the Board of Directors or its designee as provided paragraph 4, Section 3 herein; he/she shall keep an accurate account of all money received and disbursed and report the same to the qualified landowners at each annual meeting and to the Board of Directors at least monthly in such form as directed by the Board of Directors.

5. SUPERINTENDENT. The Superintendent, who shall not be deemed to be an officer of the District, shall have the management of the Ditch of the District and of the distribution of water therein. At the discretion of the Board of Directors the Superintendent may be authorized to incur debt on behalf of O.C.I.D. for routine expenses incurred in his management of the ditch n an amount of up to $2,000.00 provided however that such expenditure shall be reported immediately to the Treasurer and which expense shall be reported by the Treasurer as provided at Paragraph 4 Section 7.

SECTION 8. MEETINGS OF THE BOARD OF DIRECTORS.

1. The Board of Directors shall meet at least four times per year on the call of the President or of a majority of the Board of Directors. Notice of such meetings shall be given as provided by law. At least one of those meetings must be for the purpose of setting a budget for the following year. The time and notice provisions for such budget meeting shall be as prescribed by statute.

2. A majority of the Board of Directors shall constitute a quorum for the transaction of business.

3. Any special meetings of the Board must be preceded by at least five days notice. The call for such meeting must state specifically the business to be transacted.

4. All meetings shall be held within Delta County, Colorado.

SECTION 9. VACANCIES ON THE BOARD OF DIRECTORS. In case any vacancy shall happen among the Directors, by death, resignation or otherwise, it shall be filled by the Board of Directors for the remainder of the term for which that previous Director had been elected.

SECTION 10. INDEMNIFICATION. Orchard City Irrigation District agrees to indemnify or reimburse all officers, directors and the superintendent for any and all costs, attorney's fees, expenses and amounts of any judgment and interest thereon incurred by said officers, directors or superintendent and arising out of their conduct relating or connected to any decision, acts or failure to act as an officer, director or superintendent of the District. The organization may undertake the defense of any such officer, director or superintendent, or said officer, director or superintendent may obtain counsel of his own choice, with the approval of the Directors. This indemnification provision shall not pertain to or cover any willful or malicious acts, intentional torts, or matters as to which the officer, director or superintendent is adjudged in such action, suit, or proceeding to be liable for negligence or misconduct in performance of duty to the District.

ARTICLE III
ASSESSMENTS

SECTION 1. ASSESSMENTS. The Board of Directors shall at their annual budget meeting determine the assessment for the ensuing year and levy the same, as provided for in Article II, Section 2, and said assessment shall become due prior to the date

when the irrigation water of the District is provided to the landowners. The Secretary shall give written notice to each qualified landowner of the amount of each assessment and the time when the same will be due, which notice shall be given by delivering the same personally to such qualified landowner or mailing the same to the address of the qualified landowner as shown by the books of the District.

CERTIFICATE

I hereby certify that the foregoing Bylaws, consisting of seven (7) pages, including this page, constitute the Bylaws of Orchard City Irrigation District as of _____, 2010.

_____
Secretary

STATE OF COLORADO)
) §
COUNTY OF DELTA)

Subscribed and sworn to before me this _____ day of _____, 2010, by _____, as Secretary of Orchard City Irrigation District.

Witness my hand and official seal.

My commission expires:_____

_____
Notary Public
Address:_____
_____

NUMBER TWENTY-FOUR.

THE FRUIT GROWER'S RESERVOIR.

This reservoir is claimed by the Fruit Grower's Ditch and Reservoir Company, a corporation, and its principal office is at Delta, Delta County, Colorado.

Work was commenced on said reservoir on the 15th day of October, A.D.,1898 and prosecuted with due diligence and has a dam at the present time 36 feet high and a storage capacity of 148, 104,000 cubic feet of water or 3400 acre feet.

It is used inthe irrigation of the lands of the claimant, 2000 acres of which have been irrigated and cultivated by means of water from this reservoir in connection with other waters.

This reservoir is located in what is known as Alfalfa Basin, on the Surface Creek drainage system in Delta County, Colorado, and in Water District No.40 of said state; and it derives its supply of water from the flood waters of Surface Creek, through and by means of the Forest and Alfalfa Ditches; and from waste and seepage waters from Hart's Basin and the W.H.Paul ranch all in said Water District, County and state;

By reason of appropriation by original construction this reservoir is entitled to priority number twenty-four on the Surface Creek drainage system.

It is therefore ORDERED, ADJUDGED and DECREED that there be allowed and permitted to flow into said reservoir and to be stored therein, from the said flood waters of Surface Creek, and from the waste and seepage waters from Hart's Basin and the W.H.Paul ranch, for the use and benefit of the parties lawfully entitled thereto, under and by virtue of appropriation by original construction, 148,104,000 cubic feet of water or 3400 acre feet; and the same is hereby designated as priority NUMBER TWENTY-FOUR, to date from the 15th day of October, A.D.,1898.

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FRUIT GROWERS RESERVOIR
FIRST ENLARGEMENT

RESERVOIR, or
DIVERSION STRUCTURE, No. K-58.

Priority No. K-66, St. ABSOLUTE,
Priority No. K-67, St. ABSOLUTE,
Priority No. K-67, St. CONDITIONAL,
and
Priority No. K-114, St. CONDITIONAL.

THE COURT FINDS:

That the name of said diversion structure is the FRUIT GROWERS RESERVOIR, FIRST ENLARGEMENT; That by reason of the date of initiation of appropriation by said Enlargement, as hereinafter found, it is given in this proceeding District Diversion Structure Number K-58, and it is entitled to be, and hereby is, awarded Absolute Priority No. K-66, and Absolute and Conditional Priority No. K-67; and by reason of proposed further enlargement to Priority No. K-114, Conditionally, in said Water District No. 40.

That the claimant of said reservoir and enlargement is the ORCHARD CITY IRRIGATION DISTRICT, the address of which is Austin, Colorado.

That said reservoir derives its supply of water primarily from Dry Creek, a tributary of the Gunnison River, through the Transfer Ditch. However, it also receives some water from waste and seepage in Harts Basin and Alfalfa Run tributary to said river, in Water District No. 40.

That the headgate of said Transfer Ditch is located on the west bank of said Dry Creek at a point whence the common corner to Sections 8, 9, 16 and 17, Twp. 14 S., R. 94 W., 6th P. M. bears N. 85° 08' W. 3984 feet.

That said Fruit Growers Reservoir is located on Alfalfa Run, and the dam is situated in the NE¼ NE¼ of Sec. 24, Twp. 14 S., R. 95 W., 6th P. M.

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And the Court Further Finds from the evidence, and from the Findings and Report of the Referee filed herein,- which Findings and Report are hereby approved and confirmed,- that said reservoir as originally constructed was awarded in the 1907 adjudication decree Priority No. 24 for 3400 acre feet of water, dating from October 15, 1898, said Priority being decreed out of flood waters in Surface Creek and waste and seepage waters from Hart's Basin and the W. H. Paul Ranch.

That said waters were found insufficient in many years to fill said award; and in the adjudication proceeding of May 26, 1937, said reservoir, without enlargement, was granted a second priority Numbered H-54 for 2870 acre feet of water for storage purposes out of Dry Creek, as of date May 15, 1925.

And it further appears from the evidence at sometime during the administration of said Priority H-54 claimants were permitted to, and did, utilize a portion of the water represented thereby for purpose of refilling said Fruit Growers Reservoir in the same season after a portion of its stored water had been withdrawn and used. That this right was challenged in Court, and the Supreme Court ruled that under the terms of said decreed priorities, and each of them, such right did not exist, and limited the right thereunder to one filling of said reservoir, which at the time of said award had a storage capacity of 3400 acre feet. The Court, however, in said decision remarked:

> "This asserted right must be found in the decree, or result from a proper and legal construction thereof. The decrees measure, limit and define both the nature and extent of plaintiff's rights. Neither decree expressly awards plaintiff the right to refill the reservoir, consequently if such right exists it must be implied from the express provisions of the decrees."

And the Court after analyzing said two decrees

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found that they did not contain such implied right.

The Court is of the opinion that there is no affirmative provision in the adjudication statutes permitting more than one filling of a reservoir annually under one or more priorities granted for its original filling. The cases cited in the decision of the Supreme Court above, however, do not definitely determine whether an application in a statement of claim filed in a later adjudication proceeding, alleging a necessity for more water, which water is available from another source, and showing capacity existing in said reservoir, without enlargement, by reason of withdrawal of previously stored water therein for beneficial purposes, might not be properly granted specifically for refilling purposes.

An analogous situation occurs occasionally in regard to ditches. A ditch may have a direct flow award for its capacity, and water may be available to fill the award only during the early season. The claimant comes into a later adjudication proceeding and requests additional water from another source to make up the mid and late season deficiency. Capacity in the ditch at such time exists therefor. To require him to enlarge his ditch before such additional water could be awarded thereto would be to require, at possibly considerable expense, an entirely unnecessary act merely because no affirmative provision for such award, without enlargement, exists in the statutes.

The implication of the above quotation appears to warrant the assumption that under proper circumstances, a later award for the refilling of a reservoir to the extent necessary to accomplish a definite and proper purpose, would be sanctioned by the Court if clearly set forth therein, and provided it is not merely a device to enlarge the original decree.

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The Court Therefore Finds that, inasmuch as it is not the purpose of the law to require the performance of an unnecessary act in the accomplishment of a proper and legal purpose, where a claimant establishes the fact that his existing facilities will, under refilling decree, perform the same service as an enlargement of those facilities,-under which there is no question of his right to a decree,-the granting of a refilling right, or decree, comes within the implied provisions of the adjudication statutes.

That the evidence is not definite as to just when the practice of refilling said reservoir with water diverted from said Dry Creek through the Transfer Ditch began. However, it does definitely establish that subsequent to the reconstruction and enlargement of said reservoir in 1937 and 1938, as much as 6141 acre feet of water in one year was transported to said reservoir,-partly to fill direct flow decrees,-but as much as 1623 acre feet was stored in said reservoir, of which 538 acrefeet was stored by refilling. Beyond that it has not yet been determined to just what extent actual storage by refilling has been, or can be, achieved. However it is the intention of claimant to continue its study, investigation and work for the purpose of ultimately diverting from said Dry Creek through said Transfer Ditch, and from Alfalfa Run, Harts Basin and waste and seepage waters as much as an additional 1462 acre feet of refilling water, and to make such diversion, storage and beneficial use with due diligence.

The evidence further shows that the original dam to said reservoir,-the height of which is not shown, but which was previously found to be sufficient to store 3400 acre feet of water,-was washed out in 1937, and in the next two years was rebuilt by the Bureau of Reclamation to a height of 38.6

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feet, which afforded, according to the computation of the engineer, storage capacity for a total of 4465 acre feet with water at the depth of 33.6 feet, or an increase over decreed rights,-eliminating the 1937 decree thereto,-of 1065.00 acre feet; and that said increased capacity has been filled repeatedly over the years since said reconstruction.

And the court further finds from the evidence that claimant intends to, and is progressing with plans to further raise the height of the dam to said reservoir to a total of 40 feet, and to store water therein to a depth of 35 feet. At which depth the total capacity of the reservoir will be, as computed by the engineer, 5340 acre feet, or an increase of 875 acre feet, for which it is asking a conditional decree.

The evidence does not clearly show just when this intention and purpose was formed, but in 1954, Robert W. Jennings, Project Manager of the Bureau of Reclamation at Grand Junction, testified an investigation was made of the capacity of said reservoir and it was determined to be 4465 acre feet. And at the sametime its capacity, if and when, the dam was raised to said proposed height of 40 feet was determined to be, as above stated, 5340 acre feet. The Court is therefore adopting and fixing as the date of initiation of appropriation by such proposed enlargement, as June 1, 1954.

The Court Further Finds that as to said conditional award of 875 acre feet of water, and the request that the source of supply thereof be left to be determined at the time said priority is rendered absolute, it is the opinion of the Court that it must determine the source or sources of supply for a diversion structure of any kind at the time an award is made, either absolute or conditional. That if the claimant is entitled to a conditional decree he must allege the source from

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from which his supply of water is to be derived, and is not entitled to a blanket decree permitting him to divert water from any source he may later select. Otherwise later appropriators could not determine the burden which might be imposed on the source from which they might desire to appropriate water. And since the evidence does show said priority could be filled, if and when water is available, from Surface Creek, Dry Creek, and waste and seepage water from Harts Basin and Alfalfa Run, said award will be limited to water therefrom.

That as to the necessity of said additional water, the evidence shows claimant's members and stockholders irrigate under said reservoir 2662 acres of fruit and highly developed general farming land, for which at the present time they have direct flow decrees through the Transfer Ditch, being Priority No. G-105 for 25.00 second feet of water of date February 10, 1930, and Priority No. H-147 to the first enlargement of said ditch for 35.00 second feet of water, as of May 38, 1937, which are comparatively late decrees, and are largely exhausted after the early season runoff. In addition thereto they have a decreed storage right for 3400 acre feet of water in said Fruit Growers Reservoir; the 1065 acre feet of water for which absolute award is asked herein by reason of enlargement of said reservoir; and the uncertain refill award requested herein for 558 acre feet, or a total of 5143 acre feet of stored water. And it appears from the testimony, and the Court Finds, the actual requirement for maximum results on said 2662 acres of highly developed fruit and agricultural land, is approximately 10,000.00 acre feet of water.

And it further appears the only source from which the deficit can be made up is the proposed enlargement of said reservoir, which will provide an additional 855 acre feet, and

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the development of water for the additional refill conditional Priority of a possible 1462 acre feet, which would, if accomplished and made absolute, in good years, provide a total supply of stored water of 7460 acre feet, in addition to said early direct flow irrigation decreed rights. And the Court Finds that all of said water is required and can be beneficially used on said acreage without undue waste.

The Court Further Finds that in the statement of claim filed herein for said reservoir and enlargement it is alleged, under the ruling of the State Engineer, supported by the decision of the Supreme Court of Colorado, the aforementioned Priority No. H-54 for 2670 acre feet of water out of Dry Creek through the Transfer Ditch, as of date May 15, 1925, awarded in the May 26, 1937 decree, based on an enlargement of the Transfer Ditch, and not on an enlargement of the Fruit Growers Reservoir, is of no further use or benefit to claimant, or its members and stockholders, and they desire to abandon it, and the Court is requested to decree such abandonment in this proceeding. Said allegation and request is then supported by the testimony of the President of claimant, the Orchard City Irrigation District.

The Court Finds with regard to said request that under ordinary circumstances a decree of abandonment of a previously decreed water right could not properly be entered in an adjudication proceeding. However, in this case the request therefor comes from the owner, or claimant thereof itself; and is, in effect, basing its claim in this proceeding for a new decree or decrees to replace and supersede same, upon the Court's acceptance of claimant's allegation and showing of abandonment as final. And the Court can see no impropriety in recognizing such abandonment under the evidence as final, and providing

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in the awards herein made, safeguards against the effect of any future attempt to divert water under such priority.

The Court Therefore Finds that the Claimant through its officers has definitely shown that it considers the abandonment of said Priority No. H-54, under the decision of the Supreme Court, to its best interest, in order that it may seek further award, or awards, herein, without the limitation placed thereon by the Court. And the Court accepts said abandonment as final with the provision that should such acceptance in the future be set aside because of lack of jurisdiction, the awards made herein shall be automatically reduced to the extent of the revival of said Priority No. H-54.

The Court Further Finds and declares that nothing herein is intended to, or does, in any way affect claimant's right under Priority No. 24 awarded to the original reservoir.

THE COURT THEREFORE ORDERS, ADJUDGES AND DECREES that, suubject to the several general limitations and provisions in the preamble to this decree, there be allowed to flow into said reservoir, and be stored therein, from said Dry Creek through the Transfer Ditch, for the benefit of the parties lawfully entitled thereto, under and by virtue of Enlarged construction thereof, diversion, storage and beneficial use, as aforesaid, and as Priority No. K-66, so much water as can be stored therein as now constructed, not to exceed 1085.00 acre feet, as of historic appropriation date June 23, 1937, and Decreed date June 25, 1951.

THE COURT FURTHER ORDERS, ADJUDGES AND DECREES that, subject to said several limitations and provisions, there be allowed to flow into said reservoir, and be stored therein, from said Dry Creek through the Transfer Ditch, for the benefit

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of the parties lawfully entitled thereto, under and by virtue diversion for refilling subsequent to withdrawal of a portion of the early stored water in said reservoir, the storage and beneficial use, as aforesaid, and as the Absolute portion of Priority No. K-67, so much water as can be stored therein by refilling, as same is now constructed, not to exceed 556.00 acre feet of water as of Historic Appropriation Date June 23, 1937, and Decreed Date June 25, 1951.

AND IT IS FURTHER ORDERED, ADJUDGED AND DECREED that, subject to said several limitations and provisions, there be allowed to flow into said reservoir, and be stored therein, from said Dry Creek through the Transfer Ditch, for the benefit of the parties lawfully entitled thereto, under and by virtue of appropriation by proposed enlarged diversion for refilling purposes as capacity therefor becomes available through withdrawal during the irrigation season, as aforesaid, and as the Conditional portion of said Priority No. K-67, so much water as the additional refilling capacity of said reservoir will hold, not to exceed 1462.00 acre feet, as of Historic Appropriation date June 23, 1937, and Decreed Date June 25, 1951. CONDITIONED, However, upon the completion of such additional diversion, its storage, and beneficial use within the time and in the manner provided by law, or so much thereof as may by proof be shown to have been diverted, stored and used.

AND IT IS FURTHER ORDERED, ADJUDGED AND DECREED that, subject to said several limitations and provisions, there be allowed to flow into said reservoir, and be stored therein, from said Dry Creek through the Transfer Ditch, Surface Creek and waste and seepage and direct flow of Harts Basin and Alfalfa Run, for the use and benefit of the parties lawfully en-

BUREAU OF RECLAMATION

Fruitgrowers Dam Outlet Works Evaluation

Fruitgrowers Project, Colorado
Interior Region 7 Upper Colorado Basin

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Fruitgrowers Dam
Outlet Works Evaluation

Fruitgrowers Project, Colorado
Interior Region 7 Upper Colorado Basin

Prepared by:

Western Colorado Area Office

Resource Division, Facility Maintenance Group (DUR)

Randy Green, Mechanical Engineer

Cover Photo: Fruitgrowers Dam

Photo of the access to the gate valves in the outlet works.

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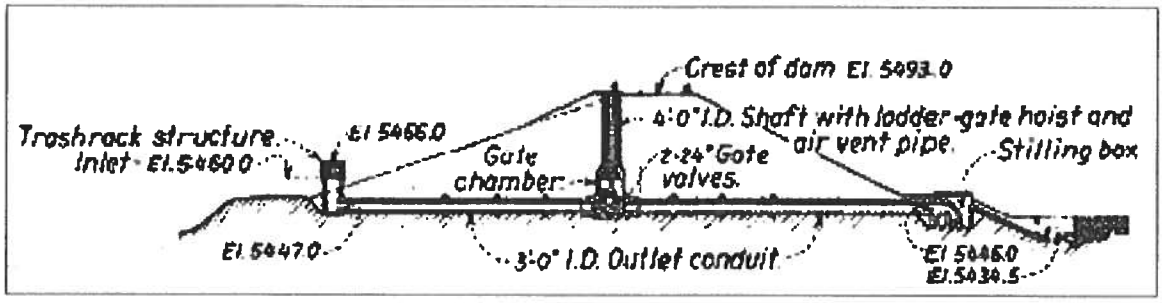
Introduction

Fruitgrowers dam was constructed starting on May 2, 1938 and storage to place on October 31, 1938. The dam was constructed by the Bureau of Reclamation after the failure of the original Fruitgrowers dam in 1937.[1]

The Fruitgrowers Dam outlet works primarily consists of an trashrack/inlet structure with four trash racks, 95 -feet of 36-inch inside diameter concrete upstream conduit, 24-inch gate valve (guard gate) with a bypass valve, 24-inch gate valve (regulating gate), 6" air relief piping, 36-inch concrete outlet conduit, and a concrete stilling basin. The outlet works was designed to release 135 cfs with the reservoir at 5485 ft elevation which is 37.5 ft of head at the gate valves.



Section View of the Fruitgrowers Dam and outlet works.

The purpose of this evaluation is to address the condition of the guard gate and regulating gate and provide recommendations for repair or replacement. If the gates are to be replaced, the regulating gate should be able to be upgraded with an actuator and position indictor and the guard gate with a position indicator for remote (SCADA) operation.

The emergency gate was inspected during the 2010 CFR. The emergency gate was able to be closed with 2 personnel using pipe wrenches for extra leverage on the hand wheel. The gate was found to be leaking approximately 1500 gal/min when closed. The 2010 CFR produced the following O&M Recommendations:

2010-2-F Determine the cause of the outlet works emergency gate valve leakage, and repair or replace the gate valve. (Examination Report)

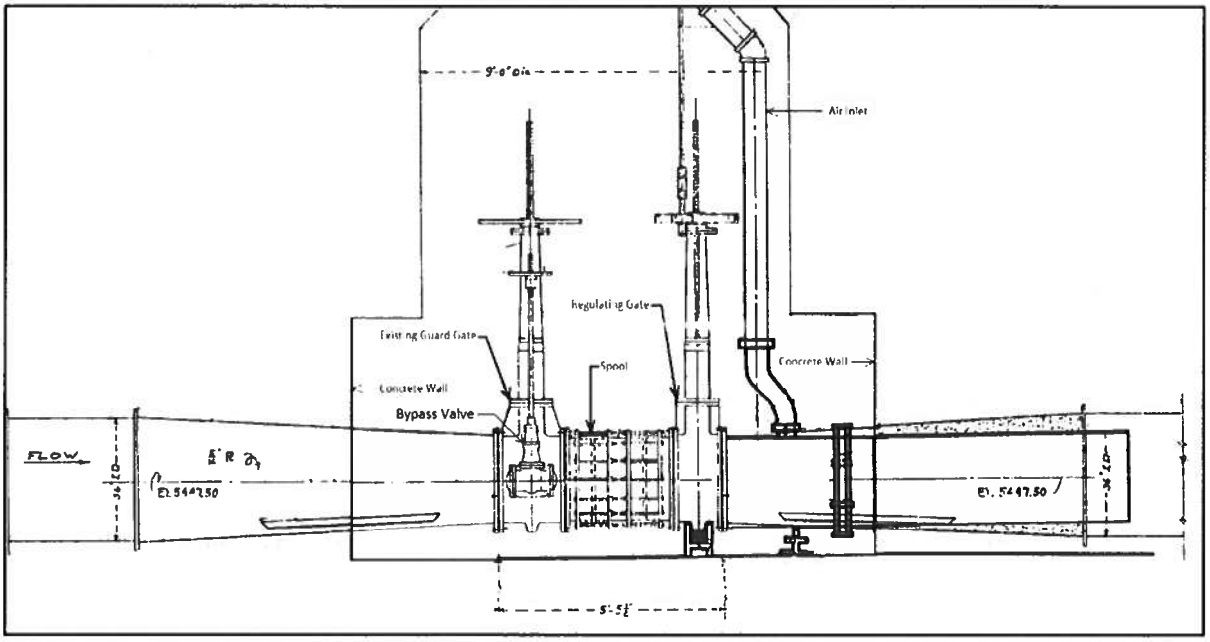
2010-2-G Repair or replace the existing outlet works emergency gate bypass and correct the SOP regarding the use of the bypass. (Examination Report)

[1] Bureau of Reclamation, Fruit Growers Dam Project, Wm. Joe Simonds, Bureau of Reclamation 1994

Evaluation Discussion

The guard and regulating gate valves were install during the construction of the dam in 1938. The valves have been in operation for approximately 82 years. This is considered excellent service since the life expectance for a gate valve is 50 years of service.[2]

The guard gate is normally used as a shut off valve and is normally in the full open or full closed position. The current Bureau of Reclamation Design Standard No. 14 requires that the guard gate be capable of operation under unbalanced head and shut off the flow. This requirement is in place in case the regulating gate becomes inoperable and the guard gate must be operated to close with water flowing through the outlet works.[3] The regulating gate is used to regulate the flow of water for 0 to 60,600 gpm (135 cfs).



The gate chamber showing the configuration of the guard gate and regulating gate.

The gate valves are described as: Std. 24" low pressure, outside stem and yoke, bronze trim, cast iron body wedge gate valve, for 50# cold water pressure, 4" by-pass with extended stem.[4] Both gate valves have reached the end of their service life and require repair or replacement.

The valves were made from cast iron which is very durable in this service but is difficult and sometimes impossible to repair by welding. The manufacture has been out of business and manufacture drawings and replacement parts are not available. If the valves were to be rebuilt, all components like valve seats, glands, stems, gate leaf would need to be removed, repaired if possible, or fabricated. If weld repair was performed on the structural component of the valve bodies the

[2] Federal Replacements, Units, Service Lives, Factors, 2017 Revision 1.1. Justification No. 29 Gates (Head) and Valves
[3] Design Standard 14, Section 1.7.2.1
[4] Drawing 270-D-17

valve would require a factory pressure test. It is unknown if the valves can be rebuilt and the associated cost until they are disassembled.

The bypass valve is used to bypass the guard gate and slowly fill the void between the guard gate and the regulating gate to reduce wear on the guard gate. The bypass valve was made into the guard gate and is inoperable. A valve this size and configuration would be difficult and expensive to repair.

Valves

Repair Existing Valves

The existing gate valves were manufactured by The Chapman Valve MFG Co. The company went out of business over 50 years ago. If the valves can be repaired a repair plan would have to be developed after the valves have been disassembled. The gate bodies and leafs are made from cast iron which is very durable but is difficult to impossible to repair. All worn or corroded parts including the gate leaf would have to either be repaired by welding/brazing or replaced by redesign and fabrication. If any structural component is modified or welded/brazed pressure testing to 200% of the rated pressure would be required.[5]

The cost of disassembly, evaluation, weld/brazing repair, fabrication of parts, reassembly, and pressure testing is difficult to estimate on a valve that has been in service for over 80 years. It is estimated that repairs to the valves will take at least 60 days which means that the outlet works will need to be isolated from the reservoir for this entire time. There is a possibility that after disassembly it is determined that one or both valves are not repairable. It should also be acknowledged that if after the valves have been repaired there is a possibility that they could fail the pressure test. If one or both valves failed the pressure test it would could cause significant delays due to lead times to purchase new valves.

Budgetary Estimates:

• Remove old Valves	$10,000
• Repair 24" Guard Gate with Bypass Valve	$20,000 min.
• Repair 24" Regulating Gate	$15,000 min.
• Pressure testing	$2000
• Install old rebuilt valves	$10,000
Total Budgetary Estimate	$57,000 min.

Note: If the valves fail the pressure testing, new valves would need to be purchased.

Replacement of the Existing Gate Valves

The guard valve is primarily used to isolate the flow of water from the reservoir and must be capable of opening and closing with full reservoir head with the regulating gate in the open position. The guard valve is not easy to remove and repair since there is not an easy way to isolate the reservoir to

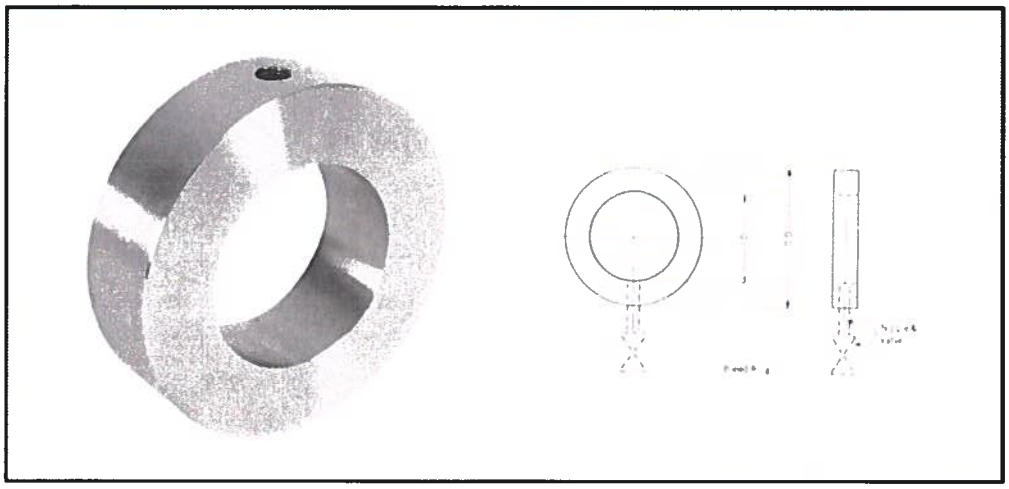
5 Design Standard #16 (Draft) 5.9.1.1

remove the valve. It is critical that a replacement valve be low maintenance with a very long service life. A standard butterfly valve is not considered a good alternative to be used as a guard valve for this reason. A standard gate valve or a triple offset butterfly valve with a metal to metal seat are considered the best alternatives to be used as a guard valve.

The regulating valve is used to throttle the flow of water from 0 to 60,600 gpm. Even though the original regulating valve was a gate valve a standard flanged gate valve is not designed to regulate flow. There are gate valves that are designed to regulate flow such as a throttling knife gate valve and the jet flow gate valve. The throttling knife gate valve is good alternative to the higher priced regulating valves such as jet flow gate. Other valves that are considered viable alternatives is the triple offset butterfly valve and a standard butterfly valve. Butterfly valves are not normally used by the Bureau of Reclamation for regulating flows except in low reservoir head applications[6] which Fruitgrowers has a low reservoir head of 37.5 feet. A standard butterfly valve will require more maintenance due to the soft rubber seat but is considered an alternative since it can be removed by closing the guard valve.

The new valves can be procured prior to isolating the outlet works from the reservoir and be onsite for installation after the old gate valves are removed. The entire work is estimated to take 14 days with the outlet works being isolated for 7days.

For normal operation and to extend the life of the guard valve and regulating valve, the system should include a bypass valve system to charge the spool between the guard valve and regulating valve and to release the air from the void as it fills with water. A simple way to accomplish this is to install bleed rings upstream and downstream of the guard valve. A bleed ring fits between flanges and has a drilled and tapped port. A bleed ring will be installed upstream of the guard valve with one 1-inch port and a bleed ring installed downstream of the guard valve with a 1-inch port for the bypass system and another 1-inch port for air release. This will allow the use of inexpensive 1" valves to be used to bypass the guard valve and to fill the spool that is between the guard valve and regulating valve and a 1" valve to release the air.



Standard Bleed Ring

[6] Fist 4-1A, Section 3.2.2.3

Replacement with a Standard Gate Valve and a Throttling Knife Gate Valve

Gate valves are designed to stop and start the flow of water and are normally left in the open or closed position. They are not typically designed to be used to regulate flow. Nevertheless, Fruitgrowers has utilized a gate valve to regulate the flow of water for over 80 years with minimal problems. Information concerning the existing gate valve could not be found to determine if it was designed for regulating flow. There are gate valves that are designed for regulation flow such as the throttling knife gate valve. It is appropriate to use a standard gate valve as a guard gate.

Budgetary Estimates:

• Remove old valves	$10,000
• Standard Gate valve with manual gear operator	$50,000
• Throttling knife gate valve with manual gear operator	$75,000
• Bypass System	$ 5,000
• Install new valves	$20,000
Total Budgetary Estimate	$160,000

Replacement with a Triple Offset Butterfly Valve and a Standard Butterfly Valve

Butterfly valves can require more maintenance since the seals are made from a pliable material like neoprene. A butterfly valve could be used as a regulating valve with the understanding that it may need to be removed from gate chamber for periodic maintenance. Standard butterfly valve uses elastomeric type seal which can be damaged due to erosion or debris and in some applications requires adjustment of the seat to reduce leakage.

Budgetary Estimates:

• Remove old valves	$10,000
• 24" Butterfly Valve with manual gear operator.	$10,000
• 24" Triple Offset Butterfly Valve with manual gear operator.	$20,000
• Bypass System	$ 5,000
• Install new valves	$20,000
Total Budgetary Estimate	$65,000

Replacement with two Triple Offset Butterfly Valves

A triple offset butterfly is designed to use a metal to metal seal. This seating design provides a tighter seal, less operating torque and longer service life than a standard butterfly valve. Since the seal surfaces are metal to metal, erosion and damage due to debris is substantially less likely.

• Remove old valves	$10,000
• 2 - 24" Triple Offset Butterfly Valve with manual gear operators.	$40,000
• Bypass System	$ 5,000
• Install new valves	$20,000
Total Budgetary Estimate	$75,000

Reservoir Isolation for Valve Removal and Installation

Repair or replacement of the gate valves will require the head (water pressure) produced by the lake to be isolated or removed upstream of the guard gate. This can be accomplished by designing, building, and installing four bulkheads in the intake/trashrack structure, installing an isolation plug upstream of the guard gate, or draining the reservoir.

Intake/Trashrack Structure

The intake structure was not constructed to utilize a bulkhead that would stop the flow of water at the intake structure. Technical Service Center was contacted to discuss possible ways of isolating the lake at the intake structure. They have solved this problem in the past by installing bulkhead guides on the exterior of the structure. This would require the fabrication of four bulkheads and bulkhead guides, installation of the guides underwater by divers, and the installation of the four bulkheads from a floating barge with divers. There may be other methods to block the flow of water at the intake structure but anything that would be placed on the intake structure would require installation and removal using divers.

Budgetary Estimates:

• Design of 4 - steel bulkheads and guides	$100,000
• Fabrication of Bulkheads and Guides	$150,000
• Installation of Guides using Divers, Barge, and Crane	$200,000
• Install Bulkheads using Divers, Barge, and Crane	$400,000
Total Budgetary Estimate for Reservoir Isolation - Valve Replacement	$850,000

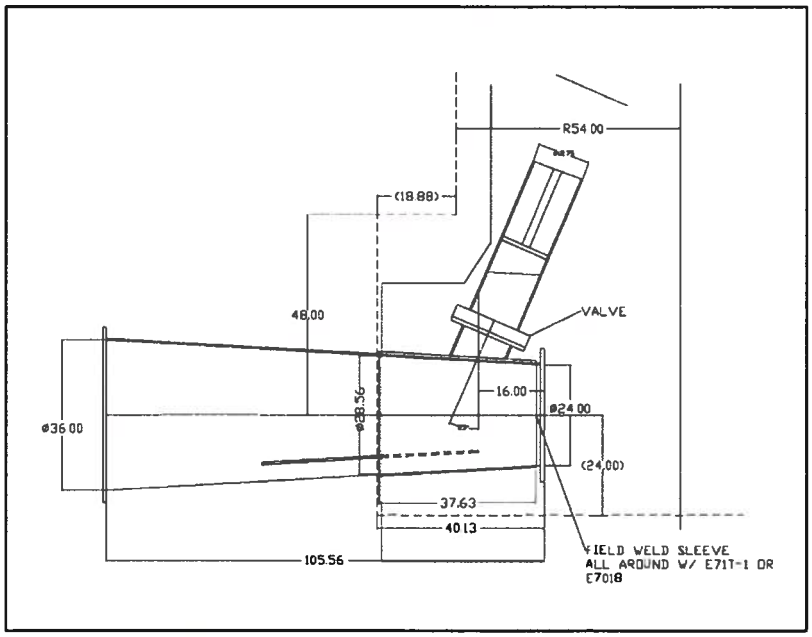
If the existing valves are to be repaired the schedule would require an addition 60 days of reservoir isolation. This would require the dive company to demobilize after the bulkheads are installed and remobilize after the rebuilt valves are reinstalled

• Demobilization and remobilization	$100,000
Total Budgetary Estimate for Reservoir Isolation - Valve Repair	$ 950,000

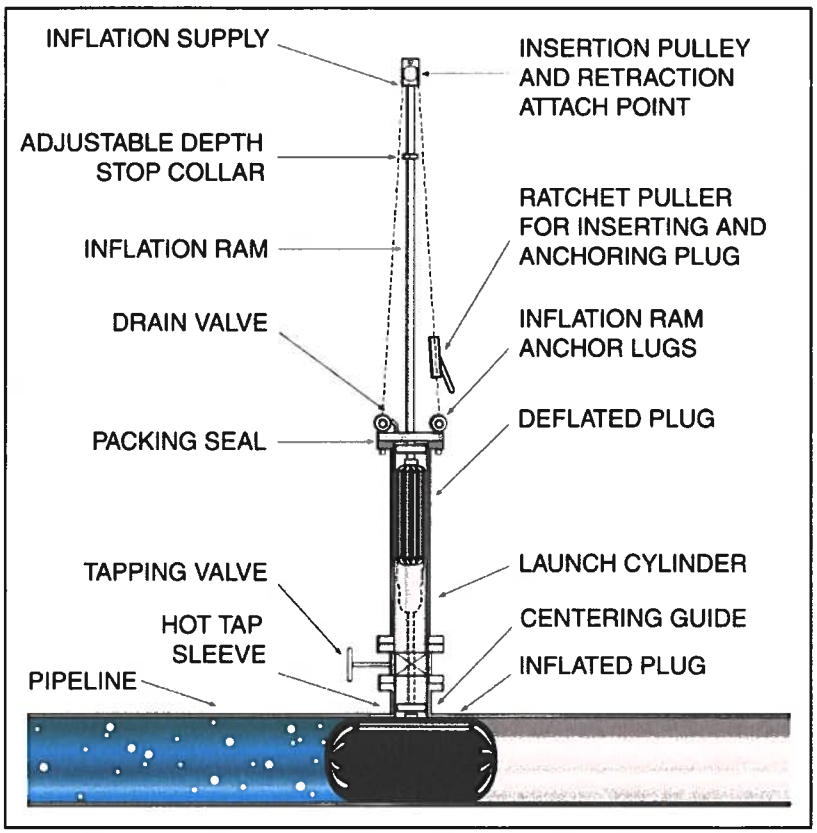
Installation of an Isolation Plug

There are companies that specialize in fabricating inflatable plugs to isolate the pressure in a pipe by installing a hot tap and inserting the plug upstream of the valve needing to be replaced. The only accessible location is in the 36" to 24" reducer just upstream of the guard gate.

Petersen Products reviewed the site conditions and provided a design to install a sleeve with a hot tap port over the exposed 36" to 24" reducer. The sleeve would be welded in place over the reducer. Once the hot tap has been performed a launch apparatus would be installed on the hot tap valve. The valve would then be opened, and the plug inserted and inflated in the reducer blocking isolating the reservoir head from the outlet works. The guard gate and regulating gate would then be opened to verify the valves are isolated.



Drawing from Petersen Products Company showing the orientation of the hot tap and launch cylinder on the reducer that is upstream of the guard valve.



Peterson Products Company Proposed Inflatable Line Stop Pipe Plugging System, 129 Series

• Isolation Plug and associated equipment	$ 70,000
• Installation and Removal of Plug	$ 70,000
• Technical Service Center (TSC) design review	$ 50,000
Total Budgetary Estimate for Reservoir Isolation - Valve Repair	$190,000

Draining the Reservoir

The reservoir head can be removed by draining the reservoir. The reservoir has previously been drained but it caused a massive fish kill to the extent that it plugged the trashracks on the intake structure. The fish kill would need to be addressed and eliminated if possible. The water coming from the tributaries upstream of the dam would need to be collected and pumped over the spillway to eliminate the flow of water through the outlet works.

Budgetary Estimate:

• Loss of revenue due to releasing the reservoir water storage	Unknown
• Pumping tributary water over the spillway	
o Replacing Valves - 7 days @ $1500/day	$10,500
Or	
o Repairing Valves - 60 days @ 1500/day	$90,000

Future Upgrades to Provide SCADA Capabilities

Control House

Place a concrete pad, and pre-cast concrete building over the gate chamber access hatch. Bring in 200-amp service to supply power to a ventilation system, regulating gate motor operator, electrical outlets, and interior and exterior lights.

Budgetary Estimates:

• Concrete footings and pad	$ 10,000
• Precast concrete delivered and placed on the concrete pad	$ 50,000
• Power (underground with no additional easements needed)	$ 25,000
• Ventilation, fiberglass grating access hatch, lights, and outlets.	$ 20,000
Total Budgetary Estimate	$105,000

Automate Regulating Gate

Install a motor operator and position indicator on the regulating gate. This will allow the regulating gate to be adjusted from the control house and the capability to upgrade to remote operation.

Budgetary Estimate:

• Motor Operator and control panel and installation	$25,000.

Conclusions

There are several options that are considered to repair or replace the guard valve and regulating valve. Replacement valves considered for the guard gate ranging from $15,000 for a triple offset butterfly valve to a gate valve costing $50,000 and replacement valves considered for the regulating valve range from $10,000 for a standard butterfly valve to $75,000 for a throttling knife gate valve.

The existing valves have seen approximately 82 years of service and have provided a long service life due to the low head of the reservoir. There are several issues that need to be addressed when considering repairing the valves. The downtime of the outlet works would be significant longer than if the valves were to be replaced. This would require addition costs if the reservoir was to be drained or if bulkheads were used to isolate the outlet works. If the valves were removed and disassembled it is likely that they would be determined unrepairable. If they were determined to be repairable it is very likely that the repair costs would exceed the cost of new valves. It is also possible that the valves, after being repaired, would fail the pressure test. This would require the repaired valves to be abandoned and new valves to be purchased. This could incur the cost of new valves in addition to the cost of the repairs. Repairing the existing valves was addressed but is not considered a viable option.

The guard valve is in a location that requires significantly more effort to remove and replace than the regulating valve. One of the three outlet works isolation options would need to be used to replace the guard valve. The regulating valve can be replaced by closing the guard valve if the guard valve is in fair condition. For this reason, a guard valve with a longer service life valve is necessary, and a valve requiring higher maintenance is considered for the regulating valve.

There were two valves discussed to replace the guard valve the standard gate valve and the triple offset butterfly valve. Both valves will provide a long service life with minimal maintenance. The triple offset butterfly valve design provides lower operating torque than a standard butterfly valve and a metal to metal seat. They are typically used in very harsh applications and in this application will provide a long service life with minimal maintenance. The benefit to the gate valve is that the leaf is completely out of the flow when in the open position but at this reservoirs head and flow rate the butterfly leaf being in the flow isn't considered to be a problem that would decrease its service life. The triple offset butterfly valve costs approximately $20,000 and the gate valve cost approximately $50,000.

There were three valves discussed to replace the regulating valve. The standard butterfly valve, the triple offset butterfly valve and the throttling knife gate valve. Butterfly valves are not normally used to regulate the flow from Bureau of Reclamation reservoirs except for low head reservoirs.[6] Fruitgrowers reservoir is has a very low head and for this reason butterfly valves are considered a good option for replacement of the regulating valve. A standard butterfly valve has a rubber seat which will deteriorate by wear and erosion over time. This will require removal and maintenance. A triple offset butterfly valve has a metal to metal seat which extends the life of the valve and reduces maintenance. The addition cost of the triple offset butterfly valve would be offset by the elimination of the periodic removal and maintenance of the standard butterfly valve. Even though the existing valve is a gate valve and has provided a long service life, manufactures do not recommend using a

[6] Fist 4-1A, Section 3.2.2.3

standard gate valve to regulate flow. It is unknown if the original valve was designed for regulating flow. There are gate valves that are designed to be used to regulate flow like the throttling knife gate valve. The approximate cost of a standard butterfly valve is $10,000, a triple offset butterfly valve is $20,000, a throttling knife gate valve is $75,000.

Bleed rings with guard gate bypass valves and an air release valve allows the void between the two valves to be filled slowly and controlled. The upstream bleed ring would have a 1-inch NPT port and the downstream bleed ring would have two 1-inch NPT ports. This would allow 1-inch piping with two 1-inch ball valves to be used to bypass the guard valve and fill the void between the guard valve and regulating valve. The downstream bleed ring would have the additional 1-inch port that would be located on the top to allow for the installation of a 1" ball valve to be used to release the air as the void is filled with water. If this system is not installed and the guard gate is opened too fast it could shock the system and cause damage.

There were three options discusses to isolate the outlet works to remove and replace the guard and regulating valve. One option is to isolate the outlet works at the intake structure. Since the intake structure was not designed for the installation of bulkheads a bulkhead system would need to be designed and fabricated then installed underwater with divers and a barge system. This will be very expensive for the initial installation and for future needs to isolate the outlet works since divers and a barge system will be needed for setting the bulkheads.

One of the options discussed was draining the reservoir. The last time the reservoir was drained there was a massive fish kill. This would need to be addressed and prevented if possible. The remainder and inflow would need to be pumped over the crest through the spillway to draw the water level down below the trashracks in the intake structure to eliminate water from running into the intake structure.

A pipe plug system was researched and is considered a viable alternative. This system would include the installation of a permanent reinforcement sleeve and port on the upstream reducer. This sleeve would need to be reviewed by the Technical Service Center and possibly redesigned. Once the sleeve and port are welded on the reducer any future needs to isolate the outlet works can be performed by using the already purchased components.

Recommendation

It is recommended that the guard valve and regulating valve be replaced with two triple offset butterfly valves. These valves are believed to be the best value based on service life and price. For additional service life and system protection a bleed ring with one port for a guard gate bypass valve should be installed between the upstream guard valve flange and the reducer flange, and a bleed ring with a port for the guard gate bypass and a port for an air bleed valve should be installed between the downstream guard valve flange and the spool flange.

In order to isolate the outlet works for the removal of the existing valves and the installation of new valves it is recommended to use a pipe plug system. This provides a full sleeve over the existing reducer. The installation of this system allows for future isolation of the outlet works with minimal

costs. The reducer was originally fabricated from 5/16-inch plate in 1938. The condition of the reducer is a concern and the installation of a reinforcement sleeve over the reducer is a benefit that will increase the life of the reducer.

Appendix E

CLIN	Section	Supplies or Services	Quantity and Unit	Amount	Totals
1	01 71 14	Mobilization and Preparatory Work (Not to exceed 5% of the Total Price)	For the lump sum of	$ 25,200.00	$
2	02 83 33	Removal and Recycling of Equipment with Coatings Containing Regulated Metals	For the lump sum of	$ 50,000	$ 49,643
3	03 30 00	Gate Equipment Building Foundation Slab	For the lump sum of	$ 10,000	$ 9,511
4	05 50 00	Furnishing Metalwork and Machine Components	For the lump sum of	$ 139,000	$ 137,559
5	05 50 00	Installing Metalwork and Machine Components	For the lump sum of	$ 79,000	$ 78,681
6	06 10 00	Gate Equipment Building	For the lump sum of	$ 17,000	$ 16,858
7	22 13 19	Gate Chamber Ventilation System	For the lump sum of	$ 10,000	$ 9,990
8	26 05 02	Gate Equipment Building Complete Electrical System	For the lump sum of	$ 25,000	$ 24,868
9	31 03 33	Removal and Control of Water	For the lump sum of	$ 40,000	$ 39,694
10	35 22 16	Triple Offset Butterfly Valves, Manual Actuators, Motorized Actuators	For the lump sum of	$ 184,000	$ 183,609
				$ 579,200	$ 550,414

Optional items

CLIN	Section	Supplies or Services	Quantity and Unit		Amount
		Mob and Prep		$ 2,500.00	
1	26 05 02	Electrical System for Circle Ditch Gate	For the lump sum of	$ 19,000	$ 18,699
2	35 22 16	Circle Ditch Gate	For the lump sum of	$ 17,000	$ 16,380
3	35 22 16	Circle Ditch Gate Motorized Actuator	For the lump sum of	$ 14,000	$ 13,650
				$ 52,500	

Total	**$ 631,700**

Appendix F

Project Budget - 9/25/2023

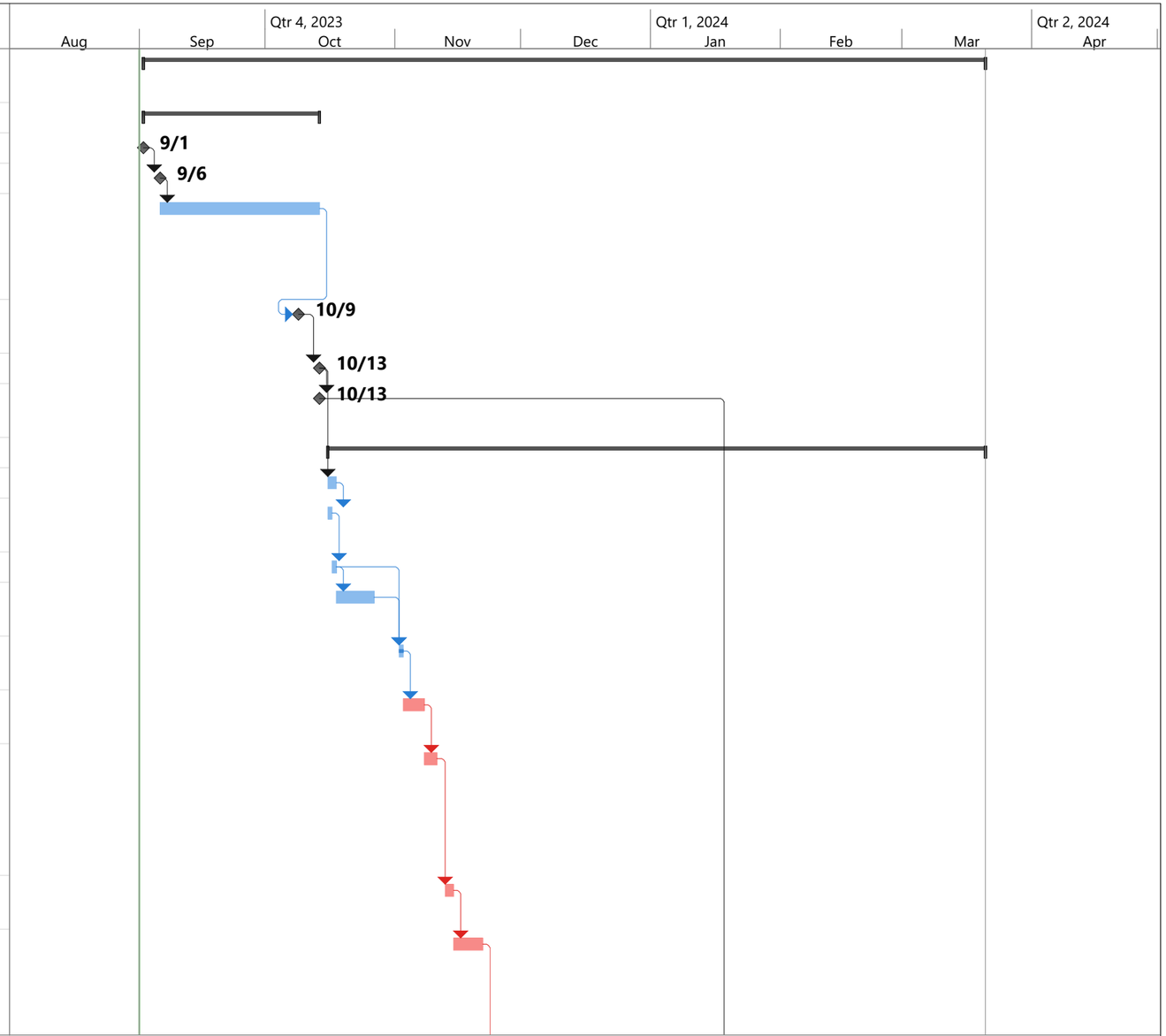
Task No.*	Task Name	Units	# of Units	Cost Per Unit	CRD Funds	WSRF #1 Funds Approved	WSRF #2 Funds Apprvoed	Applicant Match (CWCB Loan)	Total
1	**Task 1 - Consultants & Engineering**								
	USBR Safety of Dams Review	LS	1	$ 55,000	$ 55,000				$ 55,000
	Design & Review of Dam outlet valves	LS	1	$ 50,600	$ 50,600				$ 50,600
	Design & Review of regulating valve at dam outlet for Circle Ditch lateral	LS	1	$ 5,500	$ 3,500			$ 2,000	$ 5,500
	Construction engineering management	LS	1	$ 11,000				$ 11,000	$ 11,000
	On-site construction inspection	LS	1	$ 4,400				$ 4,400	$ 4,400
	3rd Party Financial Administration	hr	66	$ 150				$ 9,900	$ 9,900
	Computer Programming: Water tracking software	hr	48	$ 110				$ 5,280	$ 5,280
	Total				**$ 109,100**			**$ 32,580**	**$ 141,680**
2	**Task 2 - Environmental Review**								
	US Bureau of Reclamation/Cultural Resources	LS	1	$ 20,000				$ 20,000	$ 20,000
	US Bureau of Reclamation/NEPA	LS	1	$ 46,200	$ 46,200				$ 46,200
	Total				**$ 46,200**			**$ 20,000**	**$ 66,200**
3	**Task 3 - Solicit & Award Construction Contract**								
	Project Management	hr	225	$ 40	$ 4,000			$ 5,000	$ 9,000
	Construction: bidding and contract preparation by 3rd party registered engineering firm	LS	1	$ 8,000				$ 8,000	$ 8,000
	Total				**$ 4,000**			**$ 13,000**	**$ 17,000**
4	**Task 4 - Purchase of Materials**								
	Guard Triple Offset Butterfly Valve (incl. flanges, bolts, and gaskets)	EA	1	$ 28,725			$ 28,725		$ 28,725
	Regulating Triple Offset Butterfly Valve (incl. flanges, bolts, and gaskets)	EA	1	$ 28,725		$ 3,800	$ 10,475	$ 14,450	$ 28,725
	Computer for water mgmt. software	EA	1	$ 2,200				$ 2,200	$ 2,200
	Water Management software	EA	1	$ 7,000	$ 1,100			$ 5,900	$ 7,000
	Total				**$ 1,100**	**$ 3,800**	**$ 39,200**	**$ 22,550**	**$ 66,650**
5	**Task 5 - Outlet Works Construction**								
5.1	Mobilization and Prep Work	LS	1	$34,001		$ 10,000		$ 24,001	$ 34,001
5.2	Removal and Disposal of Misc. Metalwork	LS	1	$66,531				$ 66,531	$ 66,531
5.3	Gate Equip. Building Foundation Slab	LS	1	$9,499				$ 9,499	$ 9,499
5.4	Furnishing Metalwork and Machine Components	LS	1	$106,528		$ 1,200	$ 106,528		$ 107,728
5.5	Installing Metalwork and Machine Components	LS	1	$96,437			$ 59,472	$ 36,965	$ 96,437
5.6	Gate Equip. Building	LS	1	$68,026	$ 50,000		$ 18,026		$ 68,026
5.7	Gate Chamber Ventilation System	LS	1	$18,271			$ 6,774	$ 11,497	$ 18,271
5.8	Gate Equip. Building Electrical System	LS	1	$43,850		$ 40,700		$ 3,150	$ 43,850
5.9	Removal and Control of Water	LS	1	$112,893	$ 10,200	$ 57,800		$ 44,893	$ 112,893
5.10	Triple Offset Butterfly Valves	LS	1	$45,375		$ 30,000		$ 15,375	$ 45,375
	Total				**$ 60,200**	**$ 139,700**	**$ 190,800**	**$ 211,911**	**$ 602,611**
6	**Task 6 - Circle Ditch Construction**								
6.1	Electrical System for Circle Ditch	LS	1	$74,040				$ 74,040	$ 74,040
6.2	Circle Ditch Gate	LS	1	$16,577		$ 4,500		$ 12,077	$ 16,577
6.3	Circle Ditch Actuator	LS	1	$7,381				$ 7,381	$ 7,381
	Total					**$ 4,500**		**$ 93,498**	**$ 97,998**
	SUBTOTAL				**$ 220,600**	**$ 148,000**	**$ 230,000**	**$ 393,539**	**$ 992,139**
7	**Other**								
	DMEA Power Lines	LS	1	$40,465	$ 4,400	$ 2,000		$ 34,065	$ 40,465
	5% Contingency	%	5%	$49,607			$ 20,000	$ 29,607	$ 49,607
	Total				**$ 4,400**	**$ 2,000**	**$ 20,000**	**$ 63,672**	**$ 90,072**
	PROJECT TOTALS				**$ 225,000**	**$ 150,000**	**$ 250,000**	**$ 458,000**	**$ 1,083,000**

Appendix F

Matching Funds

Funding Partner	Contribution	Total	Funds Committed (Y/N)	Share of Project Cost
Colorado River District Community Funding Partnership (anticipated)	$ 225,000	**$ 225,000**	**Y**	**21%**
Colorado Water Conservation Board	$ 458,000	**$ 458,000**	**N**	**42%**
Gunnison Basin Roundtable #1	$ 50,000	**$ 50,000**	**Y**	**5%**
State WSRF #1	$ 100,000	**$ 100,000**	**Y**	**9%**
Gunnison Basin Roundtable #2	$ 100,000	**$ 100,000**	**Y**	**9%**
State WSRF #2	$ 150,000	**$ 150,000**	**Y**	**14%**
Total	**$1,083,000**	**$ 1,083,000**		

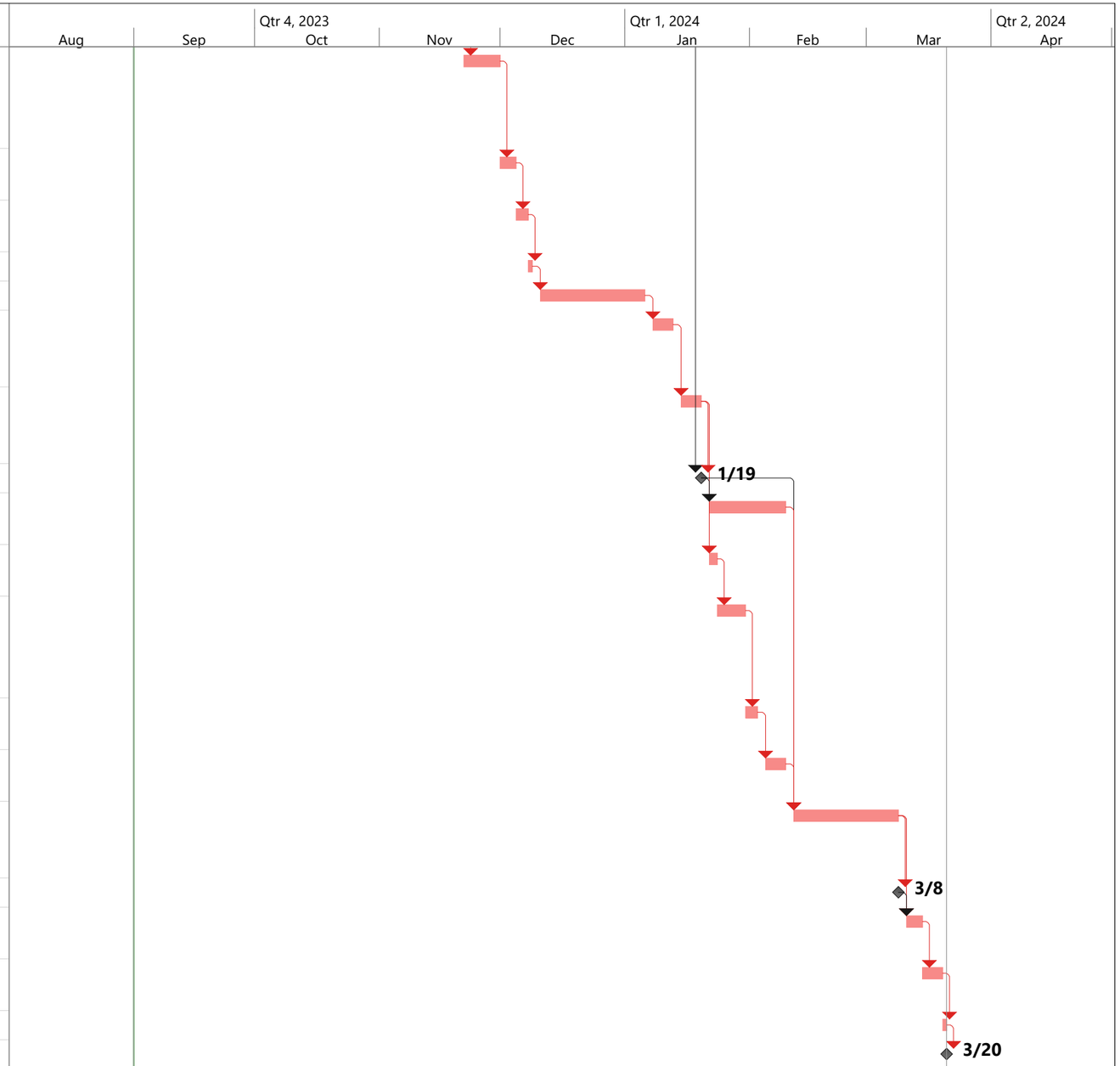
ID	Task Mode	Task Name	Duration	Start
1		**Fruitgrowers Dam Outlet Gate Improvements**	**138 days**	**Fri 9/1/23**
2		**Pre-Construction**	**29 days**	**Fri 9/1/23**
3		Proposal Submission	0 days	Fri 9/1/23
4		Anticipated Date of Project Award	0 days	Wed 9/6/23
5		Complete agreement; submit insurance certificates, performance & payment bonds, and all preconstruction submittals.	28 days	Wed 9/6/23
6		Pre-Construction meeting with Owner, Engineer, KGCI, and subs and suppliers as required.	0 days	Mon 10/9/23
7		Anticipated Notice to Proceed	0 days	Fri 10/13/23
8		Begin fabrication of steel components.	0 days	Fri 10/13/23
9		**Construction**	**109 days**	**Mon 10/16/23**
10		Mobilization	2 days	Mon 10/16/23
11		Placement of temporary facilities and signage.	1 day	Mon 10/16/23
12		Install SWPPP BMPs (track pad).	1 day	Tue 10/17/23
13		Install cofferdam and dewatering operations.	7 days	Wed 10/18/23
14		Remove existing reservoir emergency and regulating gates.	1 day	Thu 11/2/23
15		Sandblast existing pipe components and paint back.	3 days	Fri 11/3/23
16		Install first valve in valve assembly. Obtain written Engineer certification that guard valve is functional and acceptable for use. (Install entire valve set if available to do so.)	3 days	Wed 11/8/23
17		Removal of cofferdam and dewatering operations.	2 days	Mon 11/13/23
18		Auger 2 holes for DMEA. DMEA to install 5 new power poles and run power line to temporary power pedestal for temporary power.	5 days	Wed 11/15/23



Project: Clear Fork E Muddy
Date: Fri 9/1/23

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

ID	Task Mode	Task Name	Duration	Start
19		Excavate for electrical trench (450'). Install meter pedestal. DMEA to install conduit and cable. KGCI backfill.	5 days	Wed 11/22/23
20		Site and subgrade preparation for equipment building foundation.	2 days	Fri 12/1/23
21		Install concrete reinforcement and placement of concrete.	3 days	Tue 12/5/23
22		Remove existing 6" pipe.	1 day	Fri 12/8/23
23		Erect equipment building (dried in).	18 days	Mon 12/11/23
24		Electrical rough-in. Installation of electrical panel and connection to permanent power.	5 days	Mon 1/8/24
25		Install insulation, drywall, and interior finishes in equipment building.	5 days	Mon 1/15/24
26		Start receiving fabricated materials.	0 days	Fri 1/19/24
27		Apply finish coatings to fabricated materials as received.	15 days	Mon 1/22/24
28		Demo existing Circle Ditch Gate (optional schedule).	2 days	Mon 1/22/24
29		Excavate from meter to gate structure for electrical for new motorized actuator. Install conduit, wiring. Backfill and compact.	5 days	Wed 1/24/24
30		Installation of new Circle Ditch Gate, actuator.	3 days	Wed 1/31/24
31		Installation of meter panel and SCADA panel.	5 days	Mon 2/5/24
32		Installation of fabricated materials. Remove existing ladders and install new.	20 days	Mon 2/12/24
33		Project substantially complete.	0 days	Fri 3/8/24
34		Installation of building exterior finishes.	4 days	Mon 3/11/24
35		Punch list with Owner. Submit as-builts.	3 days	Fri 3/15/24
36		Demobilization.	1 day	Wed 3/20/24
37		Contract completion.	0 days	Wed 3/20/24



Project: Clear Fork E Muddy
Date: Fri 9/1/23

Task	Inactive Task	Manual Summary Rollup	External Milestone	Manual Progress
Split	Inactive Milestone	Manual Summary	Deadline	
Milestone	Inactive Summary	Start-only	Critical	
Summary	Manual Task	Finish-only	Critical Split	
Project Summary	Duration-only	External Tasks	Progress	

Cattails are growing along the discharge channel between the stilling basin and the measurement flume located adjacent to the hydrologic monitoring station (photos CE-84 through CE-86); these cattails do not obstruct flows and are not a concern at this time. The outlet works discharge channel is grass lined, well maintained, and is free of large obstructions that could impede flows (photo CE-84). Discharges from the outlet works and/or spillway that are too large to be diverted between Fruitgrowers Dam and the town of Austin (located about two miles downstream from Fruitgrowers Dam), flow under a railroad embankment and warehouse in Austin.

2. *Mechanical Features*

The emergency gate valve and regulating gate valve are located at centerline elevation 5447.5; they were under 38 feet of head during the CR mechanical examination. The gate valves are exercised annually in accordance with the SOP.

The regulating gate valve is manually operated from a floor stand located on the crest of the dam at the top of the gate chamber (photos ME-4 and ME-5); the valve is operated using a removable handwheel. The position indicator for the regulating gate should be located in a slot in the floor stand of the valve operator; however, the indicator has broken off. Recommendation **2016-2-C** is made to repair the position indicator. Operations personnel reported that 103 turns is required to fully open or fully close the regulating gate. During the CR mechanical examination, the gate position was estimated by counting the number of handwheel turns from fully open or fully closed. Initially the regulating gate valve was difficult to open and there was a squeaking noise. When the gate was opened further, it could be operated more easily. There was no binding of the gate stem; the gate stem appears to be straight and properly aligned. The regulating gate took approximately 10 minutes to fully open. The surfaces of the gate stem and stem guides are rusted.

During the CR mechanical examination, the 24-inch emergency gate valve was fully opened under balanced conditions. Because there was difficulty with operation of the valve, a cheater bar was used. The emergency gate valve bonnet exterior has spots and there was leaking water (photos ME-6 and ME-7). There is surface rust on the emergency gate valve gears (photo ME-8). The hand wheels for the 24-inch emergency gate valve and bypass valve (photo ME-9) are in satisfactory condition. Both the emergency and emergency 24-inch gate valves should be cleaned and lubricated. Both valves should be exercised annually, Recommendation (**2016-2-D**). Both 24-inch gate valves are near end of their useful life. Plans should be made for replacement of both emergency and regulating gate valves.

During the CR civil examination performed on March 29, 2016, both gate valves were very difficult to operate. It took 1½ hours to fully open the emergency gate

valve. During the 2010 CFR [1] examination, recommendation 2010-2-F was made to determine the cause of the emergency gate valve leakage, and to repair or replace the gate valve. The emergency gate was inspected on November 23, 2010. During the 2010 inspection it was determined that debris was causing the gate to not seal properly.

The 4-inch bypass pipe around the emergency gate valve (photo ME-10) is not used and it was not operated during the CR mechanical examination. The bypass pipe and valve is required for operations; it is not intended that the emergency gate valve be used to fill the space between the emergency and regulating gate valves. The bypass piping and valve allows equalization of pressure on the upstream and downstream sides of the emergency gate valve; it minimizes excessive conditions during normal operation of the emergency gate.

The exterior surfaces of the bypass pipe have rust spots. During the 2010 CFR [1] examination, recommendation 2010-2-G was made to repair or replace the existing emergency gate valve bypass and correct the SOP regarding the use of the bypass. On May 20, 2015, the emergency gate bypass valve was inspected [7]. This inspection was performed to address recommendations 2010-2-F and 2010-2-G. According to the 2015 Emergency Gate Inspection Report, there is no benefit to repairing or replacing the bypass valve until the emergency gate is repaired or replaced. Recommendation 2010-2-F is complete and recommendation 2010-2-G has been deleted. The 2015 report also states that the bypass valve should not be repaired or replaced under reservoir head conditions. Because of the leakage and difficult operation conditions, the 24-inch regulating, 24-inch emergency, and 4-inch bypass gate valves should be restored to their original operating conditions. Plans should be made for replacement of emergency, regulating and bypass gate valves.

The surface of the 24-inch steel pipe between the emergency gate valve and regulating gate valve (photo ME-11) is rusted in spots. The two sleeve-type couplings on the 24-inch pipe are rusted in spots; however, there is no leakage. In 2009, the metalwork in the gate chamber was cleaned and recoated, and rust and paint debris was removed, greatly improving the condition of the gate chamber and mechanical appurtenances. During the 2015 Annual Site Inspection (ASI) [6], it was found that the coating on the portion of the outlet works pipe inside of the gate chamber is chipping off. This condition was also observed during this 2016 CR. During the 2015 ASI and this CR, it was also observed that the stainless steel nuts and bolts are corroded due to electrolysis. Recommendation 2015-2-A was made to repair the coating on this portion of the outlet works pipe; this recommendation is incomplete.

A 6-inch air vent connects to the 24-inch steel pipe between the emergency and regulating gate (photos ME-12 and ME-13); this air vent is in satisfactory

9. PHOTOS

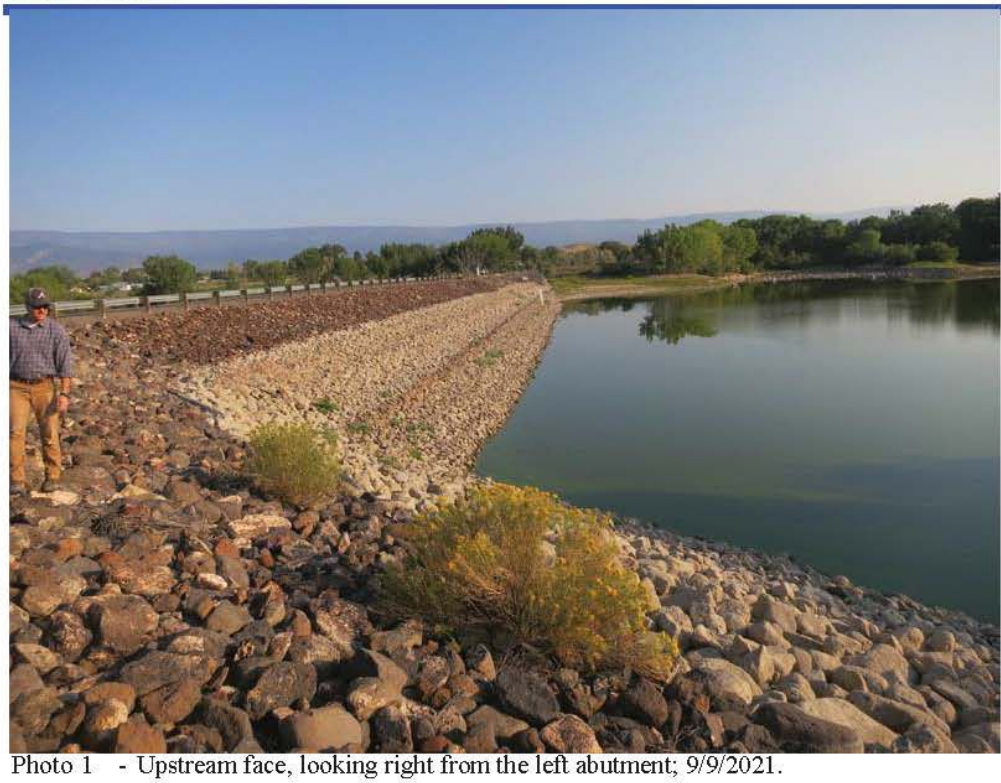


Photo 1 - Upstream face, looking right from the left abutment; 9/9/2021.

Photo 2 - Downstream face, looking right from the left abutment; 9/9/2021.

Photo 9 - Spillway stilling basin looking downstream. Note thick vegetation in the channel; 9/9/2021.

Photo 10 - Regulating gate sprocket in gate chamber; note the metal floor grates are corroded and need to be replaced; 9/9/2021.

Photo 11 - Outlet works pipe; note bolt corrosion and coating chipping off; 9/9/2021.

Photo 12 - Outlet works access shaft ladder, looking up; note corrosion of anchor bolts and ladder; 9/9/2021.

Photo 13 - Gate chamber shaft access; note need to replace gate position indicator on regulating gate operator; 9/9/2021.

Photo 14 - Alfalfa Run (outlet channel) downstream of the dam; note thick vegetation between stilling box and flume; 9/9/2021.