

OPERATION AND MAINTENANCE REPORT

COLORADO RIVER RECOVERY PROGRAM
FY 2018 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER C-29

I. Project Title: Operation and Maintenance of the Fish Screen and Fish Passage Facility at the Grand Valley Irrigation Company Diversion in Palisade Colorado.

II. Prepared by: Bureau of Reclamation Agreement Number: 01-WC-40-7050
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III. **Project Summary:**

The Grand Valley Irrigation Company (GVIC) diversion is located on the Colorado River (River) near Palisade Colorado and diverts water in the GVIC Mainline Canal. A fish passage structure was constructed in the River on the downstream side of and adjacent to GVIC's diversion structure in 1998-1999 during the off water season. The fish screen was constructed in the GVIC canal below the river diversion gates in 2002. This fish passage and fish screen is owned by the Bureau of Reclamation. GVIC operates and maintains the fish screen and the fish passage through a cooperative agreement with the United States.

IV. **Study Schedule:**

GVIC makes every effort to operate the fish screen passage whenever diverting water into the GVIC canal from the Colorado River and adequate supply allows for GVIC's decreed diversion amount and needed fish screen by-pass pipe flows. Maintenance of the fish screen/passage is performed following the US Fish and Wildlife Service(FWS), the Bureau of Reclamation (BOR) and GVIC completing an annual inspection and submittal and approval of an Annual Work Plan by GVIC.

V. **Accomplishments of FY 2018 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:**

The following maintenance and activities were completed on the fish screen/passage

October, 2017

1. Lowered obermeyer on fish passage 9/28/17.
2. Conference call with BOR to discuss possible upgrades for fish screen.
3. Work on annual O&M report.
4. GVIC FWS Don Anderson site visit w/GVIC diversion and recovery efforts.
5. Repair expansion joint at fish screen.
6. Normal operations by GVIC Headgate attendant.

November, 2017

1. Discuss informal agreement on fish screen/fish passage on and off operations with Tom Pitts.
2. Inspect brush arms, PLC, screens. Perform general inspection of fish screen post GVIC shut down diversion.
3. Submit FY 17 O&M report.

December, 2018

1. Prep for brush arm #1 removal and rebuild by DW Metal Works.

January, 2018

1. Brush arm #1 removal for rebuild by DW Metal Works.
2. Brush arm #1 rebuilt and sent to Salt Lake for galvanizing.

February, 2018

1. Inspect brush arm #1 rebuild prior to re-install by DW Metal Works.
2. Discuss fish screen retrofit with Mark Wernke BOR.

March, 2018

1. Meet with FWS and BOR on fish screen retrofit.
2. Adjust brush arms and cable slack, test air compressor.

April, 2018

1. Normal operations by GVIC Headgate attendant.
2. Discuss raising GVIC diversion structure with BOR.
3. Engage with Applegate Group for cost estimate for stabilization study/flood plain analysis in river diversion area.
4. Attempt to lower screens – unsuccessful.
5. Power wash screens while raised.

May, 2018

1. Raise Obermeyer gate, lowered screens.
2. Repair brush arm #1 air supply hose.

June, 2018

1. Replace (fish screen) drive pulley belt.
2. Discover excessive wear to drive pulley's causing fraying of cables.
3. Discuss replacing brush arm cables.

July, 2018

1. Raised screens, low river-drought year.
2. Received Applegate proposal for stabilization/flood plain study and raising GVIC diversion structure.
3. Annual work plan submitted to FWS/BOR.

August, 2018

1. GVIC meet FWS/BOR for annual meet at fish facilities.
2. Discuss cone screen retrofit on GVIC fish screen facility.

September, 2018

1. Discuss and prepare drawing for add-on structure to fish screen by-pass pipe exit on river bank.
2. RWPA approved request for stabilization/GVIC diversion feasibility study.
3. GVIC enters into agreement with Applegate for feasibility study.
4. Raised remainder of fish screens for more unrestricted flow into GVIC canal. Excessively low river conditions.

END FY 2018

VI.

The fish screen was operated during the following periods: Not based on Fiscal Year

FISHSCREEN OPERATIONS – 2018 On-Off

Lowered On Date/Time	Raised Off Date/Time	Days On	Days Off	Shutdown Reason
04/02/18	04/08/18	6	25	Low river/excessive algae
05/04/18	05/09/18	5	12	Excessive river debris
05/21/18	06/28/18	39	1	Low river, no runoff
06/29/18	07/03/18	4	125	Low river/ check back situation
				Excessive low river season-drought
11/04/18				Water out of the canal November 4th.
TOTAL RUN	217 DAYS	54	163	
Percentages		25%	75%	

Lowered=Operable

Raised=Inoperable

VII.

The fish passage was operated during the following periods: Not Based on Fiscal Year

FISH PASSAGE						
				Days	Days	
OBERMEYER OPERATIONS - 2018	Raised	Lowered	Raised	Lowered	Reason	
Gate Lowered is						
Normal Position						
Fish Passage Operable						
GVIC Irrigation Start		04/02/18		13	Adequate water in river, water in Canal	
	04/12/18			19	Low river water/check back situation	
		05/01/18		59	Adequate water in river	
	06/28/18				Low river/check back situation	
					Excessive drought year	
				125		
		11/04/18			Water out of Canal November 4, 2018	
TOTAL 216 Days 2018				144	72	
Percentage				67.33%	33%	

Lowered=Operable
 Raised=Inoperable

VIII. Expenditures FY 2018:

Funds requested/budgeted for FY18 \$67,884.46

Funds Expended FY18 \$39,451.88

Total fiscal period October 1, 2017 – September 30, 2018

Break Down of Expenses

Administration	\$ 433.03
Labor Screens -	<u>\$15,565.58</u>
Electrical Screens -	<u>\$11,596.30</u>
Phone Screens -	<u>\$ 764.56</u>
Material Screens -	<u>\$ 10,927.41</u>
Equipment Screens -	<u>\$ 165.00</u>

Labor Passage -	<u>\$ 0</u>
Electrical Passage -	<u>\$ 0</u>
Material Passage -	<u>\$ 0</u>
Equipment Passage -	<u>\$ 0</u>

TOTAL \$39,451.88

Note:

1. Funds expended low due to excessive low river extreme drought conditions and GVIC decreed diversion amount not in river to operate screens and passage. (These conditions required less maintenance activity to screens and less electric charges for air compressor and drive-pulley brush arm system.) Orchard Mesa Irrigation District in check back situation to augment GVIC's decreed water right amounts.
2. Section V. accomplishments includes October 2017 FY 18 activity however is part of 2017 water operating season.
3. Section VI. and VII. Operations, include October 2018 for a clear water season operations report.

IX. Recommendations:

1. Sand blast and replace hot galvanizing on screen and baffle slots below water surface.
2. Continue evaluating replacing of some wedgewire screens with travelling screens. Price, engineering, operations, installing, etc.
3. Video camera by-pass pipeline, have had no internal inspection on by-pass pipe since 2002.
4. Place concrete raise on diversion approximately 350 LF to allow screens to perform during lower water in river through assistance from Applegate Group.
5. Look at cone/drum system of diversion in Price Utah. Possible retrofit to GVIC fish screen.
6. Increase surface area of screens by additional screen system.
7. Replace frayed cables between brush arms only.

Non GVIC fish screen/passage recommendation:

New Colorado River gauging station at end of 15 mile reach upstream of the confluence of the Gunnison River. To reflect return flows from the Grand Valley within the 15 mile reach.

X. Signed:



Charles D. Guenther
Assistant Superintendent

11/12/2018

Date

GVIC FWS BOR
August 17, 2018
Annual Meet GVIC Fishscreen/ Fishpassage

Recent Upgrades and Repairs

Fishscreen brusharm cable
Drive Pulleys

Work Pending

Clean Riffles and Pools Fishpassage per FY 2018 Workplan
Clean end FS by-pass pipe and exit area
Permits for these activities

Diversion Dam Feasibility Study

Water Off Season meet NOV-DEC 2018



PITRUN ON DAM NOT 2018



GVIC DIVERSION CURTAILED TO ITS 520 CFS SENIOR RIGHT SEPT. 23, 2018



Upper Colorado River Endangered Fish Recovery Program

Dated: October 11, 2018

DRAFT Management Committee Summary, September 11 & 12, 2018

In Attendance:

Steve Wolff	State of Wyoming
Todd Adams	State of Utah
Michelle Garrison	State of Colorado
Tom Pitts (via phone)	Water Users
Patrick McCarthy	The Nature Conservancy
Leslie James (via phone)	Colorado River Energy Distributors Assoc.
Shane Capron	Western Area Power Administration
Melissa Trammell	National Park Service
Ryan Christianson	Bureau of Reclamation
Marj Nelson	US Fish and Wildlife Service
Tom Chart (non-voting)	Program Director

Interested Parties:

Kevin McAbee	Program Coordinator
Julie Stahli	Program Coordinator
Don Anderson	Program Coordinator
Melanie Fischer	Program Coordinator
Kathy Callister	Bureau of Reclamation
Dave Speas	Bureau of Reclamation
Lain Leoniak	State of Colorado
Chris Keleher	State of Utah
Lori Martin	Colorado Parks and Wildlife
Harry Crockett	Colorado Parks and Wildlife
Tildon Jones (via phone)	US Fish and Wildlife Service

Tuesday, September 11th

Convened: 1:00 PM

1. Introductions, modify/review agenda - Capital projects update was moved up in the agenda to be discussed before individual capital projects.
2. Approve draft April 26&27, June 25, and July 10 meeting summaries
 - a. Kevin McAbee included final and draft meeting summaries via email on August 28.
 - b. The summary of the April 26 and 27 meeting includes revisions from Tom Pitts.
 - c. The summary of the June 25 meeting was approved on July 10.

keeping the requirement that any new owners would assume responsibility of the structure. Tom agreed to removing the suggested language. Ryan supported all other changes offered by Tom Pitts. Bob also recommended removing the 25% limit and relying only on the \$400K limit just to make accounting simpler. The Committee approved a change to a one-time payment of \$400K and removed the 25% limitation. Ryan also noted that he removed the requirement for all payments to be brought back to the MC and that all invoicing and payments will be handled by Reclamation exclusively. Melissa Trammell recommended adding clarification about what specific components the Recovery Program is planning to build and how that differs from Thayn Hydro's responsibilities during construction. Ryan agreed to add the contract number for specificity. Tom Pitts reminded everyone how important this project is and thanked Bob Norman for his years of service towards this goal as it could not be completed without it.

- c. Kevin McAbee reviewed the plan to tour the facility, noting that the tour will begin at the Post Office in Green River. Travel time to Green River is approximately 90 minutes. Kevin recommends starting upstream at the diversion structure and moving down to the canal.

X

6. **GVIC Diversion Dam** - Ryan sent out a proposal from the Applegate Group to investigate modifications to the GVIC diversion dam. Total cost for this feasibility study is projected to be \$28,000. The GVIC fish screen has been down more frequently than the other screens because of how it is designed. Reclamation and the Program have been exploring possible improvements with GVIC. Upgrades or replacements to the screens could be complicated and expensive. This proposal considers raising the dam, as this would increase hydraulic head, creating more efficient operation of the existing screens, and making more options possible for screen upgrades. Don noted additional head could allow for more effective fish screen operations during low flow conditions, and potentially leave the Obermeyer gate open more often (allowing for more fish passage). This could potentially reduce the need for Orchard Mesa to check water back up to GVIC. Bob Norman says the proposal could be funded through the O&M contract and NFWF funds are not needed. Capital funds would be used to fund the project. Don Anderson and Bob Norman expressed support for Applegate as a company. Melissa Trammell asked if the Program has access to the existing floodplain model already available. Bob Norman noted that the models we have are 20 years old, requiring updated versions to be obtained. Michelle Garrison said the Colorado River was not part of FEMA map modernization project and so the Colorado River model is very old and will require a lot of work to acquire and use (and therefore supports the timeframe for the screen planning process). Recent LIDAR will assist with defining the channel. Bob believes the vast majority of the project costs are surveying costs. Tom Chart asked if the surveying will take place above and below the existing structure. Bob assumes this would

has the authority to set a number she feels comfortable with and adjust it as necessary. Michelle explained that Erin will continue to explore that over the winter in conjunction with CWCB.

8. Program Director's update:

- a. Staffing updates - The PDO still has 3 unfilled positions, 2 science coordinators and an administrative support position. A new science coordinator has been selected, but the final offer has not been communicated from HR. A fisheries intern will join the office for FY19 and will assist on propagation projects (and others). Administrative assistance has been provided through decentralized help from the rest of FWS.
- b. Species Status Assessments & associated documents
 - i. Humpback chub SSA and 5-year review was signed in March 2018, recommending downlisting. A proposed rule to follow through on the recommendation will be submitted to HQ FWS by the end of September. The proposed change from endangered to threatened required the inclusion of a 4(d) rule because of proposed changes in the implementation of the ESA. Neither the Program nor the FWS Region has control over when the proposed rule is published, but the PDO is hoping that it is published before the next DC trip in March. Kevin reiterated the importance of continued funding to reinforce the conclusions reached in the SSA and subsequent documents. The proposed rule includes a 60-day comment period; FWS will inform partners when the comment period opens.
 - ii. In the lower basin, DOI is in the planning process for a potential High Flow Experiment from Glen Canyon Dam. Also, the NPS's Nonnative Fish EA was released for public comment today. The EA includes adding a cash incentive to harvest brown trout below Glen Canyon Dam and allowing rotenone treatment under certain conditions. The EA also supports increasing Tribal participation by adding guides to take Tribal youth fishing. Program partners who wish to submit comments should do so by October 11. Comments will not be coordinated through the Program.
 - iii. Julie Stahlh has been leading the development of the razorback sucker SSA this summer, with a signed 5-year review scheduled to occur by the end of September. Julie built on the draft submitted by BioWest and convened a science team for resource condition evaluation and future scenario development. The SSA was reviewed by program stakeholders in June and updated. The SSA has been approved by the Regional Office and a 5-year review is being drafted for release by the end of the month.

Signed 9/24/2018



July 3, 2018

Charles D. Guenther
Assistant Superintendent
Grand Valley Irrigation Company
688 26 Road
Grand Junction, CO 81506

RE: GVIC Diversion Dam Modification Feasibility Study Proposal

Dear Charlie,

Thank you for the opportunity to assist with proposed modifications to the GVIC diversion dam structure located in the Colorado River outside of Palisade. It is our understanding that you are requesting a proposal for engineering services necessary to raise the weir crest by approximately 1 foot to improve operations during drought years. This modification will require extensive floodplain modeling and permitting with the local Floodplain Manager as the project site is located within the floodway of the 100-year floodplain; the Mesa County Floodplain Manager has indicated that raising the weir crest cannot result in an increase to Base Flood Elevations (BFEs) within the floodway. For this reason, Applegate Group recommends pursuing the possibility of a 'No-Rise' certification in order to complete the modifications.

Due to the fact that we currently do not have the official FEMA Floodplain Model and other contingencies, we cannot provide you with a proposal for obtaining 'No-Rise' certification and complete design at this time. We do recommend, however, going forward with a preliminary study to evaluate the feasibility of this project and/or better define the ultimate scope of work and associated costs. We recommend the following preliminary scope of work for this feasibility level study.

PROJECT SCOPE

TASK 1: DATA ACQUISITION

FEMA FLOODPLAIN MODEL ACQUISITION

Applegate Group will complete the ordering process to acquire the official Mesa County Floodplain Model from the FEMA Engineering Library. Please note that this process may take several months. Once the model is obtained it will be reviewed to

determine what additional data will need to be collected onsite to properly model the structure and proposed modifications.

SITE VISIT

Applegate Group will coordinate with GVIC staff and other interested parties to schedule an initial site visit while the river is at low flow. The purpose of the site visit will be to determine the specific improvements GVIC wishes to make to the structure and gather any visual information. Optimal locations for additional cross sections will be identified during the site visit in preparation for hydraulic modeling. This proposal assumes the site visit will last one half-day plus travel.

SURVEY

Based on the site visit and an initial review of the working floodplain model, a survey of the existing crest structure and up to five cross sections will be carried out by River City Consultants out of Grand Junction. The survey will be completed on the necessary vertical and horizontal datum to conform to existing FEMA modeling and mapping. The surveyor will be a sub consultant to Applegate Group.

TASK 2: FLOODPLAIN MODELING

To qualify for a 'no-rise' certification, it is necessary to perform an engineering analysis of the floodway to demonstrate that the project will not increase BFEs identified on the Flood Insurance Rate Map (FIRM) for the project site and in the existing FEMA Floodplain Model. Applegate Group will utilize HEC-RAS software to perform 1-dimensional hydraulic floodplain modeling of existing and proposed conditions at the project site. In particular, the following models will be generated and analyzed as part of this task:

WORKING MODEL

Preliminary review of Floodplain products obtained from the Floodplain Manager indicates the current Floodplain Model may be built in an outdated version of HEC software. Applegate Group will import and modify the Floodplain Model obtained from FEMA as necessary to produce a working HEC-RAS model. The Working Model will be reviewed to determine the location, quantity, and extent of surveyed cross sections necessary for this study.

CORRECTED EFFECTIVE MODEL

The working floodplain Model will be further modified to reflect existing conditions based on survey data. This model will establish 'corrected effective conditions' against which flood elevations for the proposed modifications will be compared.

PROPOSED CONDITION MODEL

The corrected effective model will be further modified to reflect proposed modifications of the GVIC diversion structure. The results may indicate that modifications will cause a rise in BFEs when compared to the corrected effective model. Mitigation measures can be pursued to compensate for this possibility but additional effort associated with modeling mitigation structures has not been

included with this scope of work. If necessary, potential mitigation measures can be discussed with the work group at the meeting associated with Task 3.

Please note that the aforementioned models will be based on the original Mesa County Floodplain Model obtained from FEMA. Our modeling efforts will only focus on adjusting the existing model in the immediate area around the diversion structure to the extent necessary to model the 100-year flood.

TASK 3:

Applegate Group will prepare and distribute a brief memo that details modeling efforts and results, as well as discusses feasibility of the project going forward. As a part of this task Applegate Group will also coordinate a meeting with all interested parties to discuss the preliminary study and determine next steps for the project.

DELIVERABLES

Deliverables will include a brief memo summarizing findings of data acquisition, floodplain analysis and results, as well as a recommendation for how to proceed with the project.

STAFF

The following staff has been assigned to the project:

- **Craig Ullmann, P.E.** will serve as the Project Manager
- **Tyler Desiderio, P.E.** will serve as lead Design Engineer and Field Engineer
- **Dave Breindel, P.E., C.F.M.** will assist with hydraulic modeling and permitting

SCHEDULE

Applegate Group cannot commit to a definite schedule for project at this time as it is dependent on obtaining the official Mesa County Floodplain Model from FEMA. Once Applegate Group receives the model, the survey and floodplain modeling tasks can begin; in the interim the site visit can be conducted. We recommend scheduling the site during a time of low flow in the river in order to better observe the project site. **We anticipate the project to be complete within 4 months of receiving the Mesa County Floodplain Model from FEMA.**

PROFESSIONAL FEE

We propose to invoice this scope of work on a Time and Materials basis with invoices being sent monthly based on the amount of work completed. Our estimated fee for this scope of work is **\$28,000** and this amount will not be exceeded without prior authorization.

If this proposal is acceptable to you, we will prepare a work order as we have in the past and reference our existing Master Services Agreement with GVIC. Thanks again for the opportunity to submit a proposal on this project, and we look forward to working with you.

Sincerely,

Applegate Group, Inc.

Tyler Desiderio

Tyler Desiderio, P.E.
Water Resource Engineer

TJD/CMU

AG#: P18-120

Client

Charles D. Guenther 09/24/2018
Signature Date

Charles D. Guenther Asst. Supt. GVICo.
Printed Name Title