

AGENDA

ENGINEERING and OPERATIONS COMMITTEE MEETING

Thursday, November 3, 2022, at 9:00 a.m.

**UWCD Headquarters, First Floor, Board Room
1701 N. Lombard Street, Oxnard, CA 93030**

CALL TO ORDER – OPEN SESSION 9:00 a.m.

Committee Members Roll Call

1. Public Comment

The public may comment on any matter not on the agenda within the jurisdiction of the Committee. All comments are subject to a five-minute time limit.

2. Approval of Minutes (Proposed Time: 5 minutes)

Motion

The Committee will review and consider approving the minutes from the October 6, 2022, Engineering and Operations Committee meeting.

3. November 9, 2022, Board Meeting Motion Agenda Items

The Committee will review and discuss the following agenda items to be considered for approval at the November 9, 2022, Board meeting. The Committee will formulate a recommendation to the entire Board based on its discussions with staff. The Committee will discuss the following items:

3.1 Contract Amendment to the Engineering Support Contract with Stantec Consulting Services, Inc. for the Vertical Slot Fish Passage Alternative
(Engineering Department, Craig Morgan) (Proposed Time: 5 minutes)

The Committee will consider recommending approval of the motion authorizing the General Manager to execute an amendment to the professional consulting services agreement with Stantec Consulting Services, Inc. (Stantec) in the amount of \$150,820 to provide continued engineering design support of the Vertical Slot as a Freeman Diversion Fish Passage Facility alternative to the full Board.

4. Project Highlights (Proposed Time: 15 minutes per update)

4.1 Engineering Department Update (Dr. Maryam Bral)

4.2 Environmental Services Department Update (Linda Purpus)

4.3 Operations and Maintenance Department Update (Brian Collins)

5. Future Agenda Items

The Committee will suggest topics or issues for discussion on future agendas.



ADJOURNMENT

Directors:

Chair Lynn E. Maulhardt
Gordon Kimball
Daniel C. Naumann

Staff:

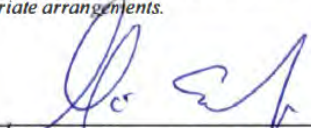
Mauricio E. Guardado, Jr.
Anthony Emmert
Linda Purpus
Evan Lashly
Randall McInvale
Hannah Garcia-Wickstrum

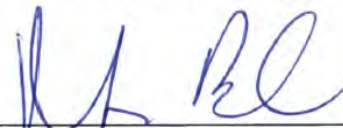
Dr. Maryam Bral
Brian Collins
John Carman
Jackie Lozano
Vanessa Vasquez

Craig Morgan
Michel Kadah
Adrian Quiroz
Robert Richardson

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Approved:


Mauricio E. Guardado, Jr., General Manager


Dr. Maryam Bral, Chief Engineer


Brian Collins, Chief Operations Officer

Posted: (date) October 27, 2022

(time) 4:00 p.m.

(attest) Jackie Lozano

At: www.unitedwater.org

Posted: (date) October 27, 2022

(time) 4:15 p.m.

(attest) Jackie Lozano

At: United Water Conservation District Headquarters, 1701 N. Lombard Street, Oxnard CA 93030



Board of Directors
Bruce E. Dandy, President
Sheldon G. Berger, Vice President
Lynn E. Maulhardt, Secretary/Treasurer
Mohammed A. Hasan
Gordon Kimball
Michael W. Mobley
Daniel C. Naumann

General Manager
Mauricio E. Guardado, Jr.

Legal Counsel
David D. Boyer

MINUTES
ENGINEERING AND OPERATIONS
COMMITTEE MEETING
Thursday, October 6, 2022, at 9:00 a.m.
Board Room, UWCD Headquarters
1701 N. Lombard Street, Oxnard, CA 93030

COMMITTEE MEMBERS IN ATTENDANCE

Lynn E. Maulhardt, chair
Gordon Kimball, director
Daniel C. Naumann, director

STAFF IN ATTENDANCE

Dr. Maryam Bral, chief engineer
Brian Collins, chief operations officer
John Carman, operations and maintenance program supervisor
Hannah Garcia-Wickstrom, associate environmental scientist
Michel Kadah, Engineer
Evan Lashly, environmental scientist
Tessa Lenz, associate environmental scientist
Jackie Lozano, administrative assistant
Craig Morgan, engineering manager
Josh Perez, chief human resources officer
Zachary Plummer, technology systems manager
Linda Purpus, environmental services manager
Ed Reese, technology systems specialist
Daryl Smith, controller
Ambry Tibay, senior accountant
Vanessa Vasquez, administrative assistant
Brian Zahn, chief financial officer

PUBLIC IN ATTENDANCE

One member of the public was in attendance but chose not to sign the attendance sheet.

Call to Order – Open Session

Chair Maulhardt called the Committee meeting to order at 9:01 a.m. All Committee members were present.

1. Public Comments
Information Item

Chair Maulhardt asked if there were any comments or questions from the public for the Committee. None were offered.

2. Approval of Minutes

Motion

Motion to approve the Minutes of September 1, 2022, Engineering and Operations Committee meeting, Director Naumann; Second, Chair Maulhardt. Voice vote: two ayes (Maulhardt, Naumann), none opposed, and one abstained (Kimball). Motion carried 2/0/1.

3. October 12, 2022, Board Meeting Agenda Motion Items

The Committee reviewed and discussed the following motion items for the October 12, 2022, UWCD Board of Directors meeting to formulate Committee recommendations:

3.1 Contract with Northwest Hydraulic Consultants for the Freeman Diversion Hardened Ramp Additional Modeling and Design Updates

Engineering Manager Craig Morgan presented the motion item to the Committee (presentation attached). There was one question from Director Naumann. It was recommended by the Committee that Mr. Morgan bring forward the same presentation to the Board.

No public comments or questions were offered.

The Committee members were in favor of recommending approval of the motion item to the full Board.

3.2 Pre-implementation Studies in Support of Federal Energy Regulatory Commission Fish Passage Assessment – Amendment to Professional Consulting Services Agreement with Cramer Fish Sciences - \$425,633

Environmental Services Manager Linda Purpus introduced the motion to the Committee and welcomed Environmental Scientist Evan Lashly to the podium to present (presentation attached).

Chair Maulhardt requested that the photos depicted in the presentation be date stamped for the purpose of referencing the condition of the streams at that moment. Director Naumann agreed and added that also including the length of time showing the months of when there was a wet period and dry period would be helpful.

Upon review of the Sampling Summary slide, Chair Maulhardt suggested Mr. Lashly include a statement that references the natural environmental conditions. It was the Committee's request to bring this presentation to the Board and going forward the Committee would like to see regular updates.

No public comments or questions were offered.

With the full support from the Committee on staff's ongoing work, the Committee members were all in favor of recommending approval of the motion item to the full Board.

3.3 Verizon Request for Easement for Cell Tower Fiber Optic Conduit

Chief Operations Officer Brian Collins presented this motion item to the Committee. There were no comments or questions from the Committee.

No public comments or questions were offered.

The Committee members were all in agreement to recommend approval of the motion item to the full Board.

4. Project Highlights (September 2022)

4.1 Engineering Department Update (see attached slides)

Dr. Maryam Bral presented an overview of the Engineering Department's activities which included updates on the progress of the Condor Point picnic sites, the Santa Felicia Dam Safety Program Audit and site visit, and the Integrated Regional Water Management Grant (IRWM) Round 2 Implementation in support of the District project related to the Noble and Ferro basins interconnection. Regarding IRWM, Director Naumann requested an additional slide be added to show the undercrossing connection from the Noble to Ferro basins. Dr. Bral also provided updates on the Extraction Barrier and Brackish Water Treatment Project as well as ongoing work at the Iron and Manganese Treatment Facility. The department participated in one public outreach event with Navy staff. Chair Maulhardt felt the slides were a good summary on highlights and it was his recommendation to bring forward all slides to the Board for presentation.

Information Item. There were no further comments or questions from the Committee. No public comments or questions were offered.

4.2 Environmental Services Department Update (see attached slides)

Ms. Purpus provided an introduction of this agenda item to the Committee. It was at that time that she invited Mr. Lashly to the podium to present their departmental updates which included submission of the Historical Properties Management Plan, and permitting efforts in support of the Santa Felicia Dam, Lake Piru Recreation Area, and Freeman Sediment Management Project. There was some discussion between the Committee and staff regarding the District's comment letter for CDFW consideration in evaluating status of species under CESA. The Committee members agreed to bring forward the full presentation to the Board.

Information Item. There were no further comments or questions from the Committee. No public comments or questions were offered.

4.3 Operations and Maintenance Department Update (see attached slides)

Mr. Collins presented an overview of the Operations and Maintenance Department activities. Included in the overview presentation were images depicting staff's sediment management efforts at the Freeman Diversion, and the work being done

on the OH and PTP pipelines. Director Maulhardt was pleased on the ongoing work put forth by staff.

Upon conclusion of the regular monthly updates, Mr. Collins moved into a special presentation and video on the modeling project taking place at the University of Iowa. There was great conversation between the Committee members and staff regarding the model. The Committee was pleased to see the progress and asked to share the details and video at the upcoming Board meeting. At 10:44 a.m., Director Naumann excused himself from the meeting.

Information item. There were no additional comments or questions from the Committee. No public comments were offered.

5. Future Agenda Topics

None were offered. On a separate note, Chair Maulhardt asked to publicly express his apology for referring to Mr. Craig Morgan as “Greg” citing his relationships with many friends with that name.

ADJOURNMENT 10:59 a.m.

Chair Maulhardt adjourned the meeting at 10:59 a.m.

I certify that the above is a true and correct copy of the minutes of the Engineering and Operations Committee Meeting of October 6, 2022.

ATTEST: _____
Chair Lynn E. Maulhardt

Motion Item 3.1

Freeman Hardened Ramp Additional Modeling and Design Updates


- ❑ Contract with Northwest Hydraulic Consultants for \$645,515
 - Additional Modeling and Design Updates to include:
 - ❖ Design development and criteria
 - ❖ Design documentation
 - ❖ CFD model runs to correlate physical model results
 - ❖ Alternative selection support






SANTA FELICIA FISH PASSAGE FEASIBILITY ASSESSMENT DOWNSTREAM MIGRANTS

Engineering and Operations Committee Meeting Agenda Item 3.2



October 6, 2022



1

Engineering and Operations Committee Meeting Agenda Item 3.2

Request to consider recommending that the Board authorize the General Manager to execute a contract amendment with Cramer Fish Sciences to complete field work associated with their study plan regarding Santa Felicia fish passage pre-implementation studies in the amount of \$425,633


Project Background

2008 – NMFS Biological Opinion

2017 – Fish Passage Feasibility Report

2019 – Pre-implementation Study Plan

- Stipulated a process for evaluating the feasibility of fish passage
- Identified “trap and haul” as potentially feasible, contingent upon resolving specific uncertainties
- Study plan designed to address uncertainties related to passage of downstream migrants



2

2

Study Plan Overview

- Spring-fall sampling (years 1-3)
 - Mark-recapture, demographics, movement, genetic sampling
- Operate Passive Integrated Transponder (PIT) antennas (years 1-3)
 - Movement
- Operate low-tech fish traps (years 2-3)
 - Test various trap designs, movement, genetic sampling
- Develop summary documents and analysis
 - Conceptual and quantitative life-cycle model, emigrant harvest model, feed into biological trigger development and IAMP



3


Project Activities Overview

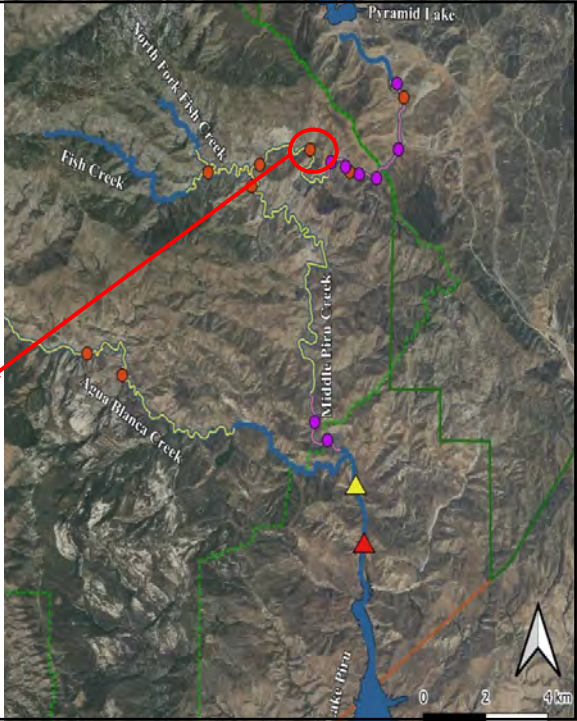
- Spring-fall field sampling
 - Fall 2018, spring 2019, fall 2019, fall 2021, spring 2022
 - COVID interrupted planned spring and fall 2020, spring 2021 activities
- Operate Passive Integrated Transponder (PIT) antennas (years 1-3)
 - Installed in 2018 and operated (mostly) continuously since
- Operate low-tech fish traps (years 2-3)
 - Installed/operated in 2020; interrupted due to COVID-19
 - 2021-22 year successful



4


Project Activities Overview

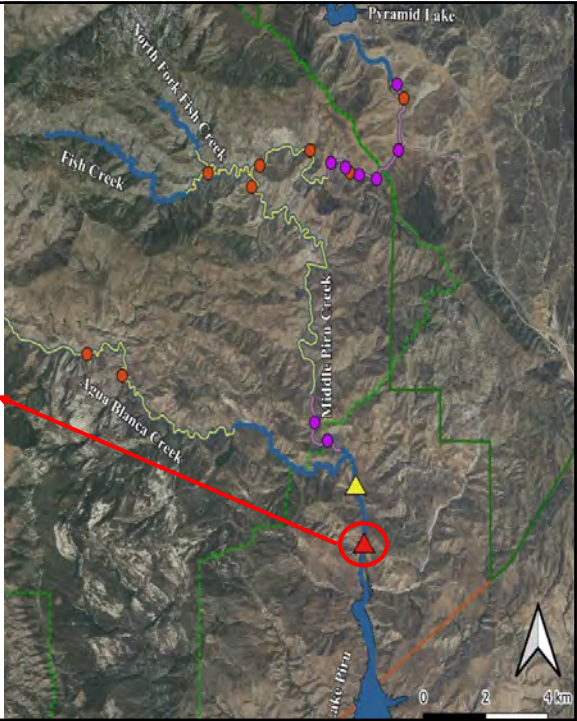




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Project Activities Overview

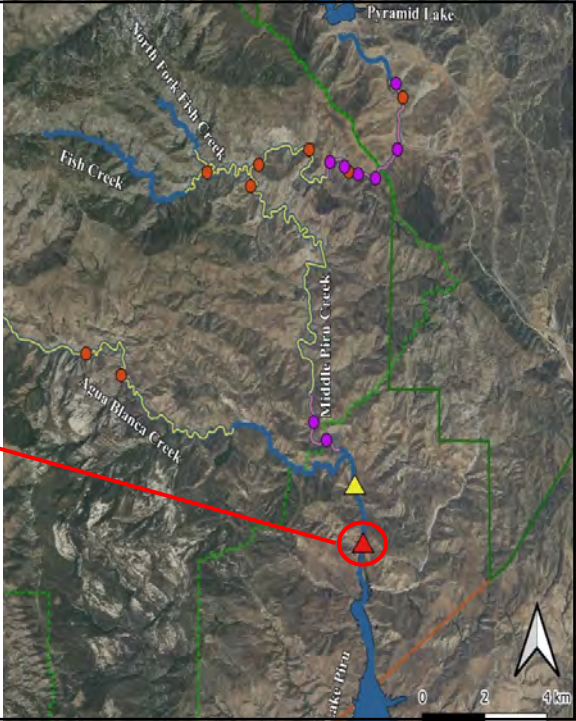




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Project Activities Overview

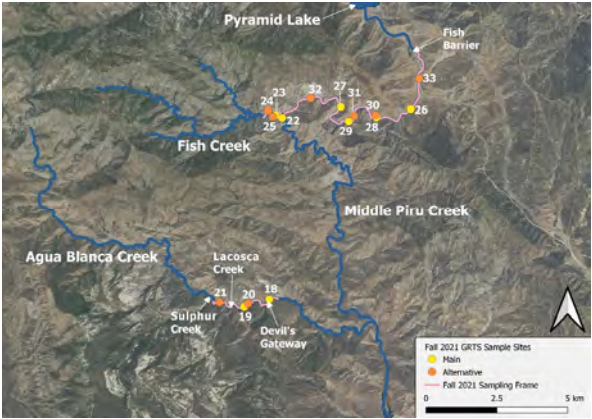




7

Sampling Summary

Location	Tagged	Average Density (trout/m)
Middle Piru	1,260	0.36
Agua Blanca	236	0.23
Fish Creek	211	0.42
Total/Average	1,707	0.34



8

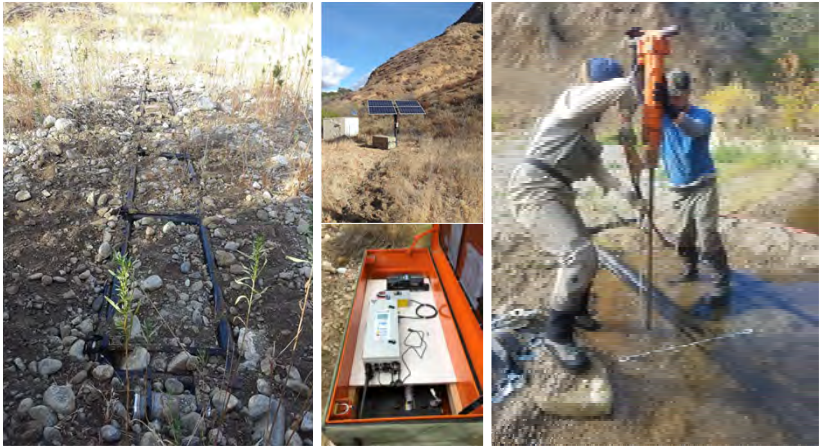
PIT Antenna Results

2018-2020

- Five PIT antenna detections
- Two from Agua Blanca
 - Two from Fish Creek
 - One from Piru mainstem
 - Two detected heading back upstream

2021-2022 *(preliminary data)*

- Six PIT antenna detections
- Three from Agua Blanca
 - Three from Piru mainstem
 - Two detected heading back upstream
 - One known missed detection (from trap)



Trapping Summary

Feb 2020-March 2020

- COVID-19
- One *O. mykiss* captured

Dec 2021-May 2022

- Low flows/high temps
- Five *O. mykiss* captured
 - One all smolt characteristics
 - Four some or none
 - Five days/week Dec-March
 - Seven days/week March-May



2021-2022 Trap Operations

High flow and debris damaged one fyke net (early Dec) and sunk the rotary screw trap (late Dec).



Caught 11/10/2021
Fork length: 78 mm
Weight: 6.4 g

Recapture 4/7/2022
Fork length: 166 mm
Weight: 39.5 g



* Captured at Canton Crossing fyke



Preliminary Genetic Results

Effective population size low

- $N_e < 50$

Relatedness high

- Families up to 70 individuals

Sex ratio typical

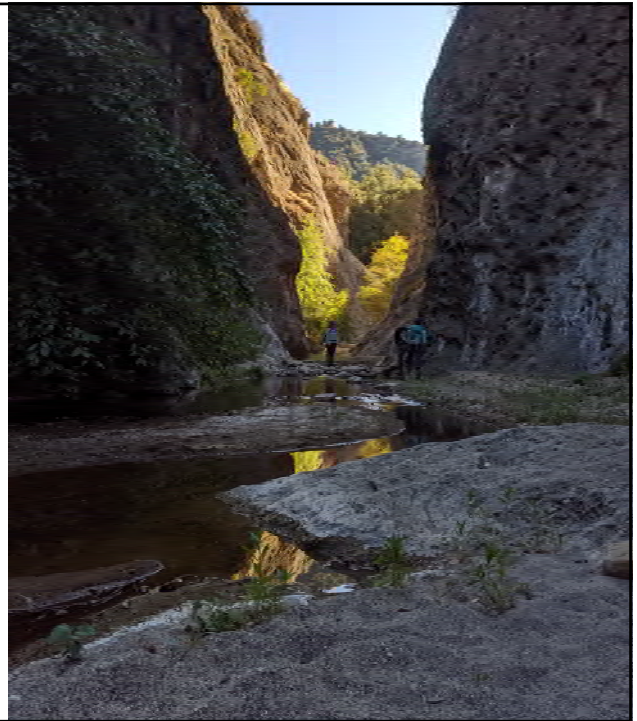
- 58% females

Successful spawners ~250

- Parents contributing to juveniles collected

OMY5 frequency intermediate

- 36% frequency of anadromous allele



13

Next Steps

- Complete final phase of field work
- Continue agency consultation
 - CESA implications
 - Experimental transport
- Complete genetic analysis and project deliverable

Value for Final Phase

- Information about fish movement and trap operations is *critical*



14

14



QUESTIONS





ENGINEERING DEPARTMENT MONTHLY UPDATE

October 6, 2022



Lake Piru Recreation Area - Condor Point Project



Six concrete pads for the new Ramada Shaded Picnic Sites were poured on September 16th



Dam Safety and Regulatory Compliance

Santa Felicia Dam Owner Dam Safety Program (ODSP) Audit

Auditors Site Visit and Tour of Headquarters on September 26





Auditors report to FREC is due by December 31



3

3

Integrated Regional Water Management Grant Program

Round 2 - Implementation



Groundwater Recharge Capacity Expansion Project

- \$1,000,000 State grant funding, requiring a 50 percent local match
- One of five projects endorsed by the Watershed Coalition of Ventura County
- Other projects include Casitas MWD Intertie, Calleguas-Ventura SWP Interconnection, Shallow Groundwater and Ecosystem Function (UCSB), Camarillo AMI

- **UWCD Project**
 - Undercrossing at Vineyard Ave. To connect Noble to Ferro basins to increase groundwater recharge capacity
- **Project Completion:**
 - January 2027



4

4

2

Iron and Manganese Treatment Facility

Completed roof on new Fe/Mn Building



Advancement of Filter Face Piping at new 40' long Filter Vessels





Expected Construction Completion Date - January 26, 2023

5

5

Extraction Barrier and Brackish Water Treatment Project

Site Visit on September 7 to establish the location of new monitoring wells.





6

6



Public Outreach

- September 20 - Tour of the PHWA Brackish Water Reclamation Demonstration Facility by Robert Richardson and Navy staff



7

QUESTIONS

8

8



ENVIRONMENTAL SERVICES DEPARTMENT

MONTHLY UPDATE



October 6, 2022




1

Department Summary Updates

- FERC Approval
 - Historic Properties Management Plan
- Permitting
 - Application submittals and implementation
 - SFD and Lake Piru Recreation Area
 - Freeman Sediment Management Project
- CESA
 - Comment letter for CDFW consideration in evaluating status of species under CESA





2



QUESTIONS





OPERATIONS AND MAINTENANCE DEPARTMENT MONTHLY UPDATE

October 6, 2022



1

Freeman Diversion Sediment Management Project



2

2



3

3

OH Delivery

Natural Gas Waukesha #4 Engine Rebuild – Removal of Heat Exchanger








4

4

PTP

PTP Turnout 146 Meter Upgrade – PTP Well #2 Mag Meter Upgrade





5

Questions?



6

Intake without Desander



Photo of completed 1:24 model



Sediment deposit after test DD-2
(6,000 cfs river, 1,500 cfs diversion)

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

1

Desander V1.0

→ Design changes:

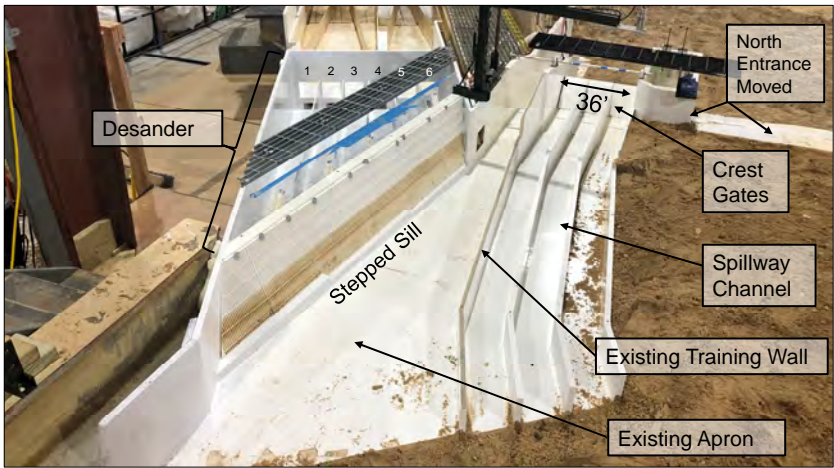
- Added six desanding channels inside diversion
- Added Obermeyer-style flap gates to upstream end of desanding channels between existing piers
- Added sixth gate into screen bays
- Removed portion of screen bay dividing wall and moved AWS screens downstream
- Provided two desanding outfall locations (A and C)
- Reduced crest gate width to 36' and lowered crest gate sill by 5'
- Added three-bay spillway channel upstream of crest gates
- Converted bypass channel gate to Obermeyer-style gate

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

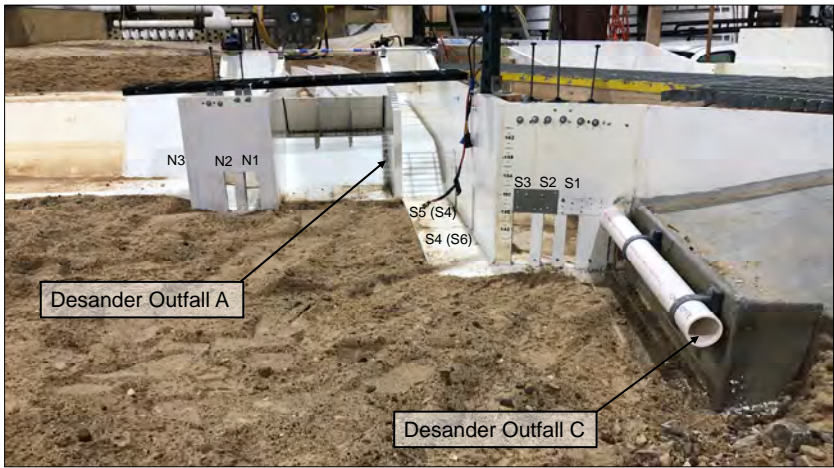
2

Desander V1.0



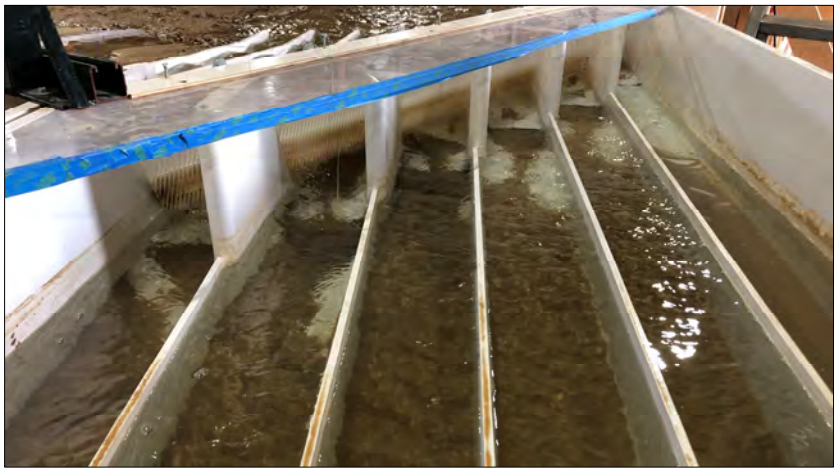
3

Desander V1.0



4

Desanding channels



5

Desanding channel head gates



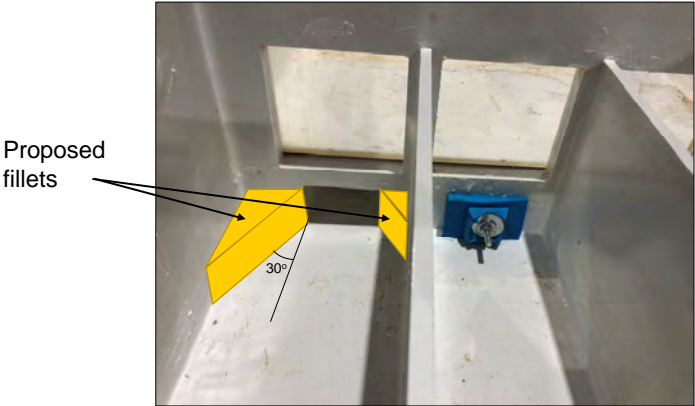
Gate Raised



Gate Lowered

6

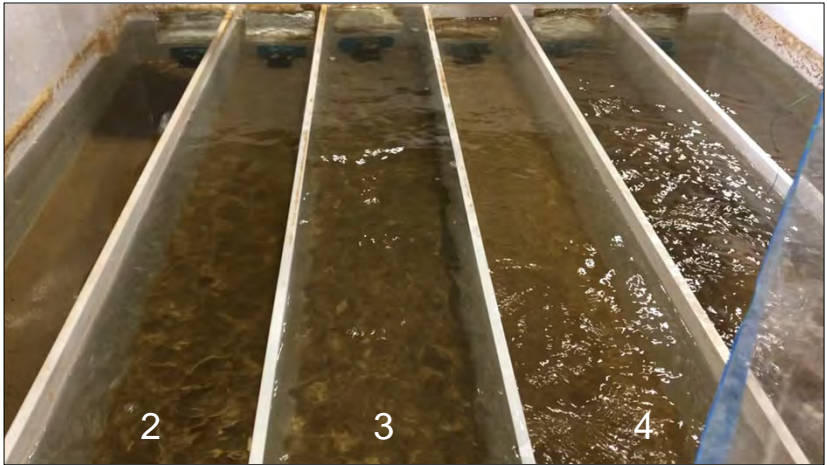
Desanding channel outlets



Desanding Bay 5



Desanding Bay 3 (playback 4X)



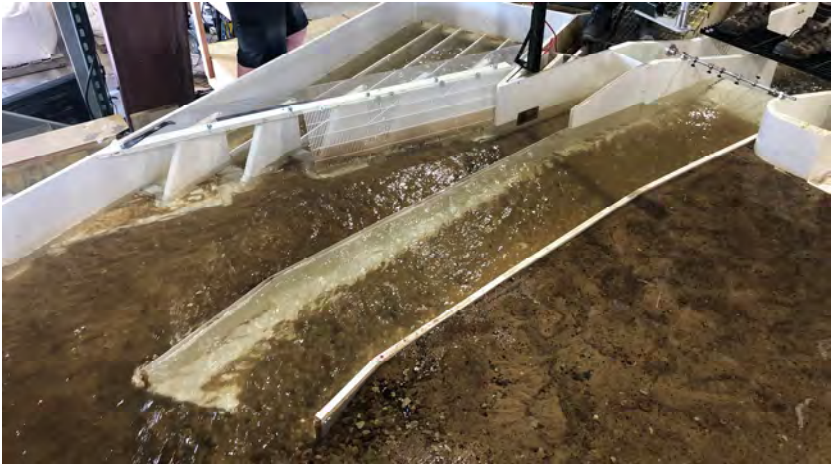
9

Spillway channel with intermediate walls



10

Intermediate spillway channel walls and trash rack panels removed



11

Sluicing spillway channel



12

Sluicing spillway channel



13

Modified training walls



14

Modified training wall



15

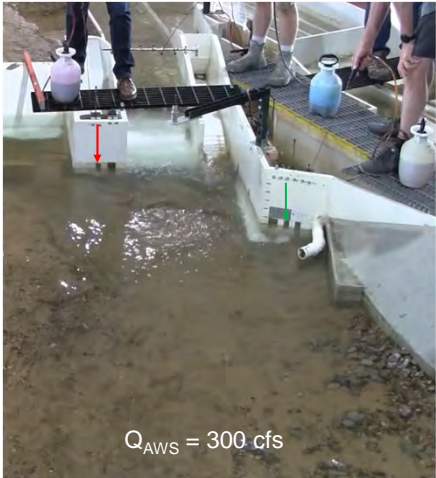
Desander outfall location C



16

$Q_{\text{river}} = 1,500 \text{ cfs}$


20%



$Q_{\text{AWS}} = 300 \text{ cfs}$

$Q_{\text{river}} = 1,500 \text{ cfs}$

50%



$Q_{\text{AWS}} = 750 \text{ cfs}$

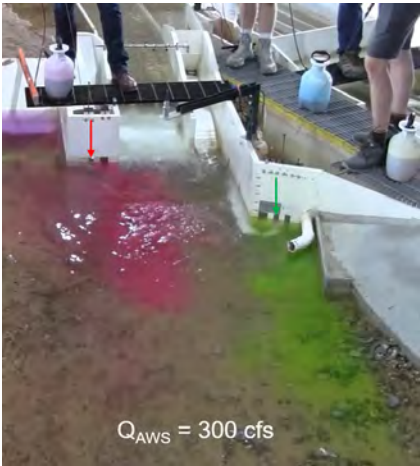
IOWA

IIHR – HYDROSCIENCE & ENGINEERING

17

$Q_{\text{river}} = 1,500 \text{ cfs}$

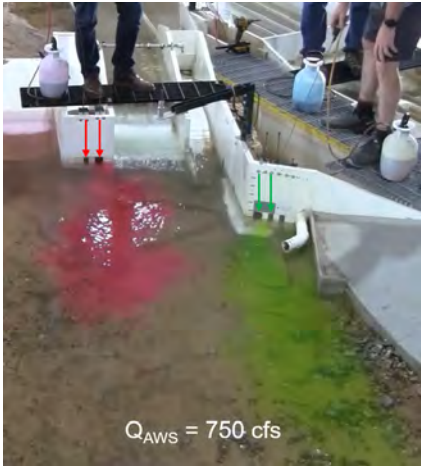
20%



$Q_{\text{AWS}} = 300 \text{ cfs}$

$Q_{\text{river}} = 1,500 \text{ cfs}$

50%



$Q_{\text{AWS}} = 750 \text{ cfs}$

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

18

9

$Q_{\text{river}} = 3,000 \text{ cfs}$

10%



$Q_{\text{AWS}} = 300 \text{ cfs}$

25%



$Q_{\text{AWS}} = 750 \text{ cfs}$

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

19

$Q_{\text{river}} = 3,000 \text{ cfs}$

10%



$Q_{\text{AWS}} = 300 \text{ cfs}$

25%



$Q_{\text{AWS}} = 750 \text{ cfs}$

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

20

$Q_{\text{river}} = 6,000 \text{ cfs}$

5%



$Q_{\text{AWS}} = 300 \text{ cfs}$

$Q_{\text{river}} = 6,000 \text{ cfs}$

12.5%



$Q_{\text{AWS}} = 750 \text{ cfs}$

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

21

$Q_{\text{river}} = 6,000 \text{ cfs}$

5%



$Q_{\text{AWS}} = 300 \text{ cfs}$

$Q_{\text{river}} = 6,000 \text{ cfs}$

12.5%



$Q_{\text{AWS}} = 750 \text{ cfs}$

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

22

11

Desander V2.0

→ Design Changes:

- Lower intake sill to reduce headloss and increase diversion flow capacity
- Add taller Obermeyer desanding channel head gates
- Modify trash rack piers (i.e., extend to floor and d/s)
- Evenly align desanding channel walls and lower-level outlets
- Add fillets to streamline desanding channel outlets
- Re-design desanding manifold with new exit location between S3 and S4
- Evenly align screen bay head gates
- Add gates between screen bays
- Move bypass channel gate downstream to align with crest gates
- Reshape bypass channel floor profile
- Remove intermediate walls in spillway channel
- Reorient upstream end of existing and new training walls
- Adjust spillway channel floor slope
- Add curved surface to improve transition from crest gate to apron floor



IIHR – HYDROSCIENCE & ENGINEERING

23

Desander V2.0

→ Performance to be observed during Oct. 17-19 Iowa lab visit

→ Modifications in progress



IIHR – HYDROSCIENCE & ENGINEERING

24

Next Steps

1:24-scale model

- Implement full desander concept
- Performance demonstration (Oct. 17-19)
- Testing results for report

1:12-scale model

- Implement changes to the crest gates, spillway channel, bypass channel, and fish entrances
- Performance demonstration (Oct. 17-19)
- Testing results for report

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

25

IOWA

IIHR – HYDROSCIENCE & ENGINEERING

Troy Lyons
troy-lyons@uiowa.edu, 319-335-5319

Priscilla Williams
priscilla-williams@uiowa.edu

26

Staff Report

To: Engineering and Operations Committee Members

Through: Mauricio E. Guardado Jr., General Manager

From: Dr. Maryam A. Bral, Chief Engineer
Craig Morgan, Engineering Manager

Date: October 18, 2022 (November 3, 2022 meeting)

Agenda Item: **3.1 Contract Amendment to the Engineering Support Contract with Stantec Consulting Services, Inc. for the Vertical Slot Fish Passage Alternative**
Board Motion

Staff Recommendation:

The Committee will consider recommending approval of the motion authorizing the General Manager to execute an amendment to the professional consulting services agreement with Stantec Consulting Services, Inc. (Stantec) in the amount of \$150,820 to provide continued engineering design support of the Vertical Slot as a Freeman Diversion Fish Passage Facility alternative to the full Board.

Discussion:

Due to unforeseen additions to the design of the Vertical Slot (i.e., desander, secondary sluice, etc.), additional engineering support and CFD model runs were required in order to meet the court mandated deadlines. Stantec dedicated additional staff to this project for the last three months to ensure the design additions were fully vetted.

Staff recommends the Board authorize the General Manager to execute an amendment to the contract with Stantec to provide engineering services and support of the Vertical Slot as an alternative Fish Passage Facility at the Freeman Diversion.

Fiscal Impact:

The physical modeling support, hydraulic design, and analysis of the Freeman Diversion Fish Passage Facility is included in the Fiscal Year 2022-23 Budget (421-400-81020 Project 8001), and sufficient funds are available to provide for the \$150,820.

Attachments:

Attachment A – Amendment No. 1 (Partially Executed)

AMENDMENT No. 1
TO THE PROFESSIONAL CONSULTINGS SERVICES AGREEMENT

The Professional Consulting Services Agreement (hereinafter referred to as “Agreement”), made effective May 9, 2022, by and between United Water Conservation District (hereinafter "United"), and Stantec Consulting Services, Inc. (hereinafter referred to a “Consultant”), for the purpose of providing engineering services in connection with the Vertical Slot Fish Passage Alternative, is here by amended as follows:

Agreement

On May 9, 2022 United Water Conservation District entered into an agreement with Stantec Consulting Services, Inc. to obtain professional engineering services provided in connection with the Vertical Slot Fish Passage Alternative.

Scope of Work

This amendment dated November ____, 2022, provides for additional engineering services to support the Vertical Slot Fish Passage Alternative. The justification for the additional work is listed in more detail in the attached proposal.

Contract Term

This amendment provides for an extended contract term through October 31, 2022.

Compensation

The not to exceed cost for the additional work described above is \$150,820. The total contract amount is now \$357,490. The conditions of the original Agreement dated May 9, 2022, shall remain enforce except as amended herein.

United Water
Conservation District

Stantec Consultant Services, Inc.



Mauricio E. Guardado, Jr.
General Manager

Heidi Wahto
Principal

AMENDMENT No. 1
TO THE PROFESSIONAL SERVICE AGREEMENT
Attachment A – Scope of Work and Schedule of Charges



Stantec Consulting Services Inc.
1687 114th Avenue SE Suite 100, Bellevue WA 98440

October 4, 2022

Attention: Mr. Craig Morgan
United Water Conservation District
106 North 8th Street
Santa Paula, CA 93060

**Reference: Freeman Diversion Dam,
Change Order to 3.1 – Supplemental Physical Modeling Support**

Dear Craig,

Thank you for the opportunity to submit this change order request to United Water Conservation District (UWCD) to cover unanticipated effort to support the physical modeling and hydraulic design development of the vertical slot option for the Freeman Diversion Dam.

In keeping with the format of our initial contract, this change order maintains the same task numbers as before. We are requesting changes to Tasks 1 and 3 to cover the work. Specifically, items covered by this change order address additional budget requested for unanticipated effort realized to obtain and convert lab bathymetry into a new CFD model requested for confirmation of physical model results and to prepare 3D drawings for physical model refinement changes. In the interest of maintaining the schedule we continued forward with this work, but it was necessary to borrow budget from other tasks to maintain the requested turnaround schedule for the lab prior to the October 31, 2022 deadline. Detailed descriptions of the work activities are presented in the following section under Task 1 and Task 3.3.

SCOPE OF SERVICES

Task 1 Project Management and Meetings

Project management and administration of the contract as defined in the original Task Order will be conducted through October 31, 2022.

Task 3 Geotechnical Investigation and Hydraulic Modeling

3.3 Physical Modeling Observation and Integration

Physical modeling of the vertical slot design is being conducted at the IIHR in Iowa City, Iowa. Stantec provided input and design support to IIHR for the completion of the physical modeling and will continue to assist UWCD in addressing agency comments on the modeling for submittal on October 31, 2022, in accordance with the latest stipulated order.

The following work items are for support of the vertical slot alternative modeling and were not included in the current contract (May 2022) to the level required:



October 4, 2022

Mr. Craig Morgan

Page 2 of 4

Reference: FDD, Change Order Proposal

- Original Scope: Coordination calls between the design team and lab throughout the completion of the 1:24 and 1:12 models on a weekly basis until the report is submitted to the agencies on October 31, 2022.

Change Order Justification: In order to support the lab's development of refined designs, Stantec was requested to commit more Principal-level resources to the project throughout the remainder of the physical modeling. Coordination calls and meetings required an additional 80 than originally assumed.

- Original Scope: Review the IIHR modeling report drafts and provide comments within 1 week of receipt of the draft report from the lab. Design changes from the results would then be reflected in the drawing to be included in the updated Hydraulic Design report (DDR) for review by UWCD and the agencies (a future task).

Change Order Justification: Major features were added to the design resulting from interim lab results and from the hardened ramp modeling. These include the desander system with control gates and spillway sluice channels. Ideas from the lab were developed into the 3D drawings and with digital files transmitted back to the lab for inclusion into their CAD program.

- Original Scope: Complete the hydraulic design of the vertical slot fishway and intake design based on the findings from the modeling. Conduct additional CFD modeling runs (5) to validate or provide a numerical backup for the IIHR findings and to provide additional data in support of UWCD's alternative selection.

Change Order Justification: We had anticipated the CFD Model, already developed, could be modified to reflect final river bathymetry and features with runs made at flows of 3,000 cfs. IIHR provided electronic scan data files to Stantec for conversion into the CFD software. Upon receipt of the data, it was found to be too detailed for use with our software and it took several iterations with the lab staff to find a workable solution so we could proceed.

Assumptions and Support Required from UWCD

In preparing this change order proposal we made the following new assumptions. These assumptions supplement the assumptions listed in the December 22, 2021 letter proposal.

- No allowance for expert testimony is included and this service would require separate authorization and budget.
- The 100% hydraulic design for the vertical slot ladder to include updates to the September 18, 2020, Design Development Report (DDR) and drawings to document the vertical slot ladder design and operation will be conducted under a future authorization.



October 4, 2022

Mr. Craig Morgan

Page 3 of 4

Reference: FDD, Change Order Proposal

- No additional physical models at IIHR will be developed that require Stantec involvement (e.g. prototype desander pipe or fish screens).
- Stantec will support UWCD in scheduled court mediation sessions or related agency working sessions on an as requested basis. No mediation sessions are anticipated in this change order but can be added under separate authorization, if required.

BASIS OF COMPENSATION AND BUDGET

Compensation for these Scope of Services shall be in accordance with the methods and specific amounts described herein.

1. Rate Schedule. Compensation shall be on an hourly rate basis using current project rates (approved January 2022). All work under this change order will be completed by October 31, 2022.
2. Other Direct Cost. Stantec will bill Other Direct Costs for travel, materials, equipment, or consumable supplies related to this project, including outside printing/scans of full-size drawings or subconsultants at actual costs plus 12%.
3. Flat Rate Disbursement at the rate of \$11.00 per labor hour for each hour incurred by Stantec employees for Direct Labor as described herein. Flat Rate Disbursement charge shall include computer equipment and usage, telecommunications, routine copying, printing of draft and final documents, information sharing platform (SharePoint), and Computer Aided Drafting (CAD). This charge will appear on invoices as "Flat Rate Disbursement."
4. Mileage for use of employee personal vehicles will be reimbursed at a per mile value equal to the rates established by the Federal government at the time that travel is incurred.

The budget requested by phase and major task is provided below in Table 1. The estimate to complete the work described in this Scope of Services is \$150,820.

Table 1 Additional Budget Summary Table

Task		Estimated Labor Hours	Estimated Budget
Phase 3.2a – Supplemental Physical Modeling Support			
1	Project Management and Meetings	46	\$10,185
3	Geotechnical Investigations & Hydraulic Modeling		
	3.3 Complete CFD Modeling and Hydraulic Design	536	\$140,635
Requested Change Order Amount		582	\$150,820



October 4, 2022

Mr. Craig Morgan

Page 4 of 4

Reference: FDD, Change Order Proposal

PRELIMINARY SCHEDULE

The project will generally be conducted in accordance with the revised order (Dkt 540, 10/13/2021) as presented below.

Key Milestone Target Dates:

- Model observation trips Sept 19-21 & Oct 17-19, 2022
- Stantec comments on IIHR draft model report (if rec'd by 10/6) Within 1 week of receipt
- Completion of current contract..... October 31, 2022

Regards,

STANTEC CONSULTING SERVICES INC.

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