BOARD MEETING

Agenda

March 14, 2024, 6:00 pm

1887 Howard Street, Anderson (Council Chambers)

1. **Call To Order**
2. **Flag Salute**
3. **Public Participation**

   Time set aside for members of the public that wish to address the Board regarding operations of the District within the jurisdiction of the Board. Individuals are requested to limit comments to a maximum of three minutes.
4. **Consent Items**
   a. Minutes – Approve the Minutes of the Regular Meeting on February 8, 2024, and the Special Board Meetings on February 3, February 16, and February 19, 2024.
   b. Financial Status Report for Year-to-Date through February 29, 2024
   c. Payroll: Approve the Payroll Check Register for the Month of February 2024
   d. Electronic Federal Tax Payment System (EFTPS) & Automated Clearing House (ACH) – Approve transactions for the Payroll Periods February 1, 2024, and February 16, 2024
   e. Voided and/or missing checks for February 2024
5. **Cash Disbursement Journal for February 2024**
6. **Other Business**
   a. Operations Manager Report/Presentation
7. **Business Items**
   a. Presentation by Ross Perry (Western Shasta Resource Conservation District)
      RE: Lower Clear Creek ACID Siphon Fish Passage. Request for support of alternative #2
   b. Consider/Approve the Sacramento River Settlement Contractor Non-Profit Corporation applying for a grant to California Department of Fish and Wildlife on behalf of ACID to evaluate Sacramento River diversion alternatives
   c. Discuss & Consider approval to authorize adding Daniel Ruiz as an authorized signatory for NRCS (Natural Resources Conservation Service) Projects, Tri Counties bank account, RBC (Royal Bank of Canada) Investment account, issue a new credit card for Daniel Ruiz and adopt Resolution No. 2024 – 01 updating the Local Agency Investment Fund authorization to transfer money
   d. Consideration of Finance Manager Employment Agreement with Teresa White
   e. Discuss and approve Shady Lane compaction bid from SMCI. Discuss & appoint SHN as project manager

f. Discuss and approve the hiring of a temporary employee to fill in for permanent employee out on disability
g. Discuss status of strategic planning committee

8. Closed Session

CONFERENCE WITH LEGAL COUNSEL--ANTICIPATED LITIGATION

a. Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of California Government Code section 54956.9: 2 potential cases.
b. Initiation of litigation pursuant to paragraph (4) of subdivision (d) of California Government Code section 54956.9. 1 potential case.

9. Adjourn

BOARD MEETING

Draft Minutes

February 08, 2024, 6:00 pm

1887 Howard Street, Anderson (Council Chambers)

1. **Call To Order** at 6:00 p.m.

   Directors Present: Woolery, Lund, Rickert, McCarley, Butcher
   Staff Present: Dahl, Duncan, White, Miller

2. **Flag Salute** was led by Director McCarley

3. **Public Participation**

   Time set aside for members of the public that wish to address the Board regarding operations of the District within the jurisdiction of the Board. Individuals are requested to limit comments to a maximum of three minutes.

4. **Consent Items**
   a. Minutes – Approve the Minutes of the Regular Meeting on January 11, 2024, the Special Board Meetings on January 22, 2024, and February 1, 2024.
   b. Financial Status Report for Year-to-Date through January 31, 2024
   c. Payroll: Approve the Payroll Check Register for the Month of January 2024
   d. Electronic Federal Tax Payment System (EFTPS) & Automated Clearing House (ACH) – Approve transactions for the Payroll Periods January 2, 2024, and January 16, 2024
   e. Voided and/or missing checks for January

   A motion was made by Director McCarley to approve the consent items, and it was seconded by Director Rickert. Vote 5-0.

   A comment was made by Director Rickert to put the Operations Report on the website.

5. **Cash Disbursement Journal for January 2024**

   A motion was made by Director Butcher to approve the Cash Disbursement Journal, and it was seconded by Director McCarley. Vote 5-0.

6. **Other Business**
    a. General Manager Report- Justin Dahl talked about the various meetings that he has attended in the last month; ACID weekly construction for the canal lining projects, assessment meeting with Provost & Pritchard, settlement contractor meeting, water users conference in Reno, SCADA update meeting to meter the water in the canal, waiting on vendors for pricing of the project. Clear creek siphon fish passage meeting, Western Shasta RCD has a grant to implement this.
    b. Operations Manager Report/Presentation- Ben Duncan gave a Power Point presentation on the projects that are currently underway.

7. **Business Items**
    a. Discuss & Consider Approval of the Monthly Board Meeting Start Time

A motion was made by Director Lund to keep the regular meeting times Thursday's at 6 p.m., the second Thursday of the month, and to have Special meetings during the workday, and it was seconded by Director Rickert. Vote 5-0.

    b. Discuss & Consider Removing/Revising three of Anderson-Cottonwood Irrigation Districts Policies

A motion was made by Director Lund to approve the deletion of the two policies, and a revision to the Policy for Cost Share Work on District Facilities, and it was seconded by Director Rickert. Vote 5-0.

    c. Discuss & Approve Lat. 46 Natural Resources Conservation Service (NRCS) Project for Anderson-Cottonwood Irrigation District

Public Participation

Brett Amen talked about the size of the piping in NRCS projects, that they are going to take a 36" pipeline out, and put a 15" pipeline in, and he says that it won't work the same way. He says that it is always better to have a bigger pipe than a smaller one.

A motion was made by Director Rickert to approve the Lateral 46, NRCS project, and it was seconded by Director Lund. Vote 4-0. (Director McCarley recused himself since he has property that this project runs through).

    d. Appoint (insert names) to serve as ACID Labor Negotiator Regarding Negotiations with the Bargaining Unit Represented by Teamsters

A motion was made by Director Butcher to appoint Director McCarley and Director Lund to the ACID labor negotiator committee, and it was seconded by Director Rickert. Vote 5-0.

e. Discuss & Consider District Protocols in absence of General Manager

A motion was made by Director Lund to appoint Director Woolery and Director Butcher to the ad hoc committee and seconded by Director McCarley. Vote 5-0.

f. Discuss & Consider Approval of General Manager Appointment

Public Comment

Mike Berry asked what his experience is with the Settlement Contractors, since that will be a big part of the job. He mentioned that the Board is doing great, and that he hopes that it continues with the new general manager.

A motion was made by Director McCarley to approve the general manager contract as presented and it was seconded by Director Rickert. Vote 5-0.

Directory Woolery called the recess into Closed Session at 7:16 p.m. to take the following actions:

8. **Closed Session**
   a. PUBLIC EMPLOYEE APPOINTMENT/EMPLOYMENT: General Manager (Pursuant to California Government Code section 54957).
   b. CONFERENCE WITH DISTRICT LABOR NEGOTIATOR REGARDING UNREPRESENTED POSITION OF GENERAL MANAGER (Pursuant to Government Code Section 54957.6)
   c. PUBLIC EMPLOYEE PERFORMANCE EVALUATION (Pursuant to California Government Code section 54957) Position Title: Finance Manager
   d. CONFERENCE WITH LABOR NEGOTIATOR (Pursuant to California Government Code Section 54957.6) ACID Designated Representative: Justin Dahl; Unrepresented Employee: Finance Manager

The Board returned from Closed Session into Open Session at 8:20 p.m., and announced the following actions taken:

The Board gave instructions to Justin Dahl as the Labor Negotiator.

9. **Adjourn** at 8:25 p.m.

SPECIAL BOARD MEETING

Draft Minutes

February 3, 2024, 12:30 p.m.
2810 Silver Street, Anderson, CA

1. **Call To Order-** 12:30 p.m.

   Directors Present: Woolery, Lund, Rickert, McCarley, Butcher

2. **Flag Salute**

3. **Closed Session:**
   a. PUBLIC EMPLOYEE APPOINTMENT/EMPLOYMENT: General Manager (Pursuant to California Government Code section 54957).
   b. CONFERENCE WITH DISTRICT LABOR NEGOTIATOR REGARDING UNREPRESENTED POSITION OF GENERAL MANAGER (Pursuant to Government Code Section 54957.6)

The Board went into closed session per government codes 54957 and 54957.6.

The Board then discussed procedures to be followed in interviewing a candidate for the general manager position. At 1 p.m. the candidate arrived, and the Board interviewed him for approximately the next 3 hours. At the conclusion of the interview the candidate left, and the Board voted 5-0 to offer him the position of general manager. Labor negotiators, McCarley and Woolery, were then given instructions for negotiations.

4. **Adjourn** at 4:30 p.m.

e. Discuss & Consider District Protocols in absence of General Manager

A motion was made by Director Lund to appoint Director Woolery and Director Butcher to the ad hoc committee and seconded by Director McCarley. Vote 5-0.

f. Discuss & Consider Approval of General Manager Appointment

Public Comment

Mike Berry asked what his experience is with the Settlement Contractors, since that will be a big part of the job. He mentioned that the Board is doing great, and that he hopes that it continues with the new general manager.

A motion was made by Director McCarley to approve the general manager contract as presented and it was seconded by Director Rickert. Vote 5-0.

Directory Woolery called the recess into Closed Session at 7:16 p.m. to take the following actions:

8. **Closed Session**
   a. PUBLIC EMPLOYEE APPOINTMENT/EMPLOYMENT: General Manager (Pursuant to California Government Code section 54957).
   b. CONFERENCE WITH DISTRICT LABOR NEGOTIATOR REGARDING UNREPRESENTED POSITION OF GENERAL MANAGER (Pursuant to Government Code Section 54957.6)
   c. PUBLIC EMPLOYEE PERFORMANCE EVALUATION (Pursuant to California Government Code section 54957) Position Title: Finance Manager
   d. CONFERENCE WITH LABOR NEGOTIATOR (Pursuant to California Government Code Section 54957.6) ACID Designated Representative: Justin Dahl; Unrepresented Employee: Finance Manager

The Board returned from Closed Session into Open Session at 8:20 p.m., and announced the following actions taken:

The Board gave instructions to Justin Dahl as the Labor Negotiator.

9. **Adjourn** at 8:25 p.m.

BOARD MEETING

Draft Minutes

February 16, 2024, 9:00 a.m.

1887 Howard Street, Anderson (Council Chambers)

1. **Call To Order** at 9:02 a.m.

   Directors Present: Woolery, Rickert, Lund (late arrival), McCarley, Butcher
   Staff Present: Dahl, Duncan, Miller

2. **Flag Salute** was led by Director Rickert

3. **Public Participation**
   Time set aside for members of the public that wish to address the Board regarding operations of the District within the jurisdiction of the Board. Individuals are requested to limit comments to a maximum of three minutes.

4. **Business Items** (Note: 4c was discussed first, then 4b, 4a)
   a. Discuss & Approve Innovative Controls SCADA Quote for District Facilities

      Public Comment-
      Matt Arrowsmith asked if Verizon or AT&T wireless would be a lower price.

A motion was made by Director Rickert and seconded by Director McCarley to approve the cellular bid. Vote 5-0.

   b. Discuss & Approve Clear Channel Chemical Quote for the Treatment of the Main Canal

A motion was made by Director McCarley and seconded by Director Rickert to approve the treatment for twice a year. Vote 4-0 (Director Lund not present).

   c. Discuss & Select a Shady Lane Bid from Contractors/Appoint SHN Engineering (Steve Nelson) to be Project Manager

A motion was made by Director Butcher and seconded by Director Rickert to reject the 3 submitted bids, and to direct staff to investigate alternatives. Vote 4-0. (Director Lund not present)

5. **Adjourn** at 9:44 a.m.

SPECIAL BOARD MEETING

Draft Minutes
February 19, 2024, 9:00 a.m.
2810 Silver Street, Anderson, CA

1. **Call To Order** at 9:00 a.m.

Directors present: Woolery, Rickert, Lund, McCarley, Butcher

The Board went into closed session at 9:01 a.m.

2. **Closed Session:**

CONFERENCE WITH REAL PROPERTY NEGOTIATORS (Government Code section 54956.9)
Property: Diversion Dam- 975 N. Court Street, Redding, CA 96001
Agency negotiator: ACID Board Members and ACID's General Counsel, Minasian Law.
Negotiating parties: State and Federal Fishery Agencies
Under negotiation: Price and terms of a potential change in ACID's Point of Diversion for its Water Rights

The Board reconvened into open session at 10:30 a.m. Director Woolery reported that directions were given to the District's real property negotiators.

3. **Adjourn** at 10:31 a.m.

Anderson Cottonwood Irrigation District

2024 Financial Status Report

Month Ending February 2024

Revenues

Account Number	Budget Item	Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
			General			
4111	Water Sales / Prior Year	$0	$0	$0	0%	$0
4112	Water Sales / Business	$0	$0	$8,500	0%	$8,500
4114	Water Sales / Irrigation	$133,972	$135,421	$743,000	18%	$607,579
4115	Water Transfer / CVP	$47,273	$47,273	$900,000	5%	$852,727
4117	Water Transfer / Base Supply	$0	$0	$0	0%	$0
4934	Penalty Revenue	$0	$0	$0	0%	$0
4971	Surplus Equipment	$0	$0	$0	0%	$0
4980	Misc. Revenue	$237	$3,402	$10,000	0%	$6,598
4984	Drainage Revenue	$0	$0	$0.00	0%	$0
4991	Contract/Project Income	$0	$0	$0.00	0%	$0
4995	FEMA Reimbursement	$0	$0	$60,000	0%	$60,000
	Sub-Total	$181,482	$186,096	$1,721,500	11%	$1,535,404

Account Number	Budget Item	Month To Date	Year To Date	2024 Anticipated Budget	Percent Realized	Total Revenue
			Property Tax & Interest			
4920	Interest / Investment Revenue	$103,470	$103,470	$350,000	30%	$246,530
4930	Prop. Taxes / Shasta	$150	$150	$558,000	0%	$557,850
4931	Prop. Taxes / Tehama	$0	$0	$46,500	0%	$46,500
	Sub-Total	$103,620	$103,620	$954,500	11%	$850,880
	Total Revenues	$285,102	$289,716	$2,676,000	11%	$2,386,284

Anderson Cottonwood Irrigation District

2023 Financial Status Report

Month Ending February 2024

Expenditures

Account Number	Budget Item	Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
	Salaries & Benefits					
5010	Reg. Salaries (Admin)	$25,405	$53,957	$361,500	15%	$307,543
5012	Overtime (Admin)	$0	$0	$0	0%	$88
5014	Retirement (Admin)	$7,701	$7,791	$16,900	46%	$9,109
5015	Social Security (Admin)	$691	$1,281	$22,410	0%	$0
5016	Workers Comp. (Admin)	$103	$191	$1,210	16%	$1,019
5017	Unemployment Ins. (Admin)	$273	$868	$1,750	50%	$882
5018	Medicare (Admin)	$162	$301	$5,300	6%	$4,999
5019	Health Insurance (Admin)	$1,626	$4,157	$50,000	8%	$45,843
5110	Reg. Salaries (T&D)	$20,352	$56,253	$604,310	9%	$548,057
5112	Overtime (T&D)	$139	$139	$27,000	1%	$26,861
5114	Retirement (T&D)	$2,745	$3,076	$43,710	7%	$40,634
5115	Social Security (T&D)	$5,907	$11,645	$36,500	32%	$24,855
5116	Workers Comp. (T&D)	$9,603	$17,663	$96,000	18%	$78,337
5117	Unemployment Ins. (T&D)	$513	$1,734	$4,800	36%	$3,066
5118	Medicare (T&D)	$293	$579	$8,510	7%	$7,931
5119	Health Ins. (T&D)	$7,742	$13,266	$183,000	7%	$169,734
	Sub-Total	$83,255	$172,901	$1,462,900	12%	$1,289,999

Anderson Cottonwood Irrigation District						
2023 Financial Status Report						
Month Ending February 2024						
Expenditures						
Account Number	Budget Item	Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
Administration						
6001	Medical Exp. / Supplies	$890	$890	$1,200	74%	$123
6002	Travel / Training Expense	$1,463	$1,463	$10,000	15%	$8,537
6003	Office Supplies / Expense	$2,652	$2,707	$11,500	24%	$8,793
6004	Office Equip. & Maintenance	$1,550	$1,550	$1,500	103%	($50)
6005	Association Dues	$0	$10,635	$25,000	43%	$14,365
6006	Public Notices	$0	$0	$500	0%	$2,835
6007	Election Expense	$0	$0	$0	0%	$4,978
6008	Legal Fees / Expense	$14,302	$14,302	$80,000	18%	$65,698
6009	SRSC Corporation	$20,822	$20,822	$27,500	76%	$6,678
6010	Maintenance Agreements	$1,088	$1,088	$15,000	7%	$13,912
6012	Vehicle Insurance	$0	$2,778	$15,000	19%	$1,881
6013	Management Expense Acct.	$0	$0	$1,000	0%	$1,000
6014	Liability Claims	$0	$0	$1,000	0%	$1,000
6015	Property / Liability Insurance	$0	$14,703	$100,000	15%	$3,872
6016	Permit Fees	$0	$0	$12,000	0%	$12,000
6017	County Taxes / Assessments	$0	$0	$6,000	0%	$248
6018	Consultant Services	$0	$0	$25,000	0%	$25,000
6019	Audit / Accounting Services	$0	$0	$8,000	0%	$8,000
6020	Web Site Revamp	$0	$0	$1,000	0%	$1,000
6023	Utilities	$2,203	$2,691	$25,000	11%	$22,309
6024	Misc. Expense	$0	$0	$20,000	0%	$20,000
6026	District GIS	$0	$0	$3,550	0%	$3,550
6027	SGMA	$0	$0	$7,600	0%	$7,600
	Sub-Total	$44,970	$73,629	$397,350	19%	$323,721

Anderson Cottonwood Irrigation District						
2023 Financial Status Report						
Month Ending February 2024						
Account Number	Budget Item	Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
General Maintenance						
7000	Fuels	$3,280	$3,280	$80,000	4%	$76,720
7001	Equip Rents & Leases	$0	$5,527	$5,000	0%	-$527
7002	Light Vehicles	$699	$699	$15,000	5%	$14,301
7003	Heavy Vehicles	$652	$1,082	$10,000	11%	$8,918
7004	Light Equipment	$994	$994	$5,000	20%	$4,006
7005	Heavy Equipment	$407	$407	$10,000	4%	$9,593
7007	Personal Supplies & Equip.	$24	$24	$500	0%	$476
7008	Maintenance Supplies	$2,790	$2,790	$25,000	11%	$22,210
7009	Buildings / Yard Maintenance	$699	$769	$4,000	19%	$3,231
7010	Small Tools & Equipment	$0	$0	$2,000	0%	$2,000
7011	Engineering Service	$0	$0	$50,000	0%	$50,000
	Sub-Total	$9,545	$15,572	$206,500	8%	$190,928
Canal Maintenance & Operations						
8000	SCADA Maintenance	$57	$57	$10,000	1%	$9,943
8001	Diversion Facilities Maint.	$3,311	$6,453	$20,000	32%	$13,547
8002	Contracted Services	$0	$0	$20,000	0%	$20,000
8003	Chemicals	$0	$0	$30,000	0%	$30,000
8004	Canal Maintenance & Exp.	$11,288	$11,288	$75,000	15%	$63,712
8005	Pump Maintenance	$669	$669	$30,000	2%	$29,331
8006	Utilities / Pumping	$0	$0	$135,000	0%	$135,000
8007	Project Water Costs / USBR	$55,643	$55,643	$900,000	6%	$844,357
8008	Water Rights Protection	$2,449	$2,449	$50,000	5%	$47,551
8010	Water Transfer / Base Supply	$561	$561	$0	0%	($561)
8019	High Grondwaetr Expense	$3,107	$3,107	$15,000	0%	$11,893
	Sub-Total	$77,085	$80,227	$1,285,000	6%	$1,204,773

Anderson Cottonwood Irrigation District
2023 Financial Status Report
Month Ending February 2024

Balance Summary

		Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
	Total Expenditures	$214,855	$342,329	$3,351,750	10%	$3,009,421
	Total Revenues	$285,102	$289,716	$2,676,000	11%	$2,386,284

Capital Improvement

		Month To Date	Year To Date	2024 Approved Budget	Percent Used	Balance Available
1112	Land	$0	$0	$0	0%	$0
1114	Pumps	$0	$0	$0	9%	
1116	Trans & Distribution Plant	$0	$0	$0	0%	$0
1117	Equipment (Machinery)	$12,499	$12,499	$150,000	0%	$137,501
1118	Auto & Trucks	$0	$0	$0	0%	$0
1119	Buildings	$0	$0	$24,000	0%	$24,000
1120	Office Furniture & Equipment	$0	$0	$10,000	0%	$10,000
1123	Yard Improvement	$0	$0	$1,500	0%	$1,500
1124	Canal Lining & Pipe	$636,486	$636,486	$3,875,000	16%	$3,238,514
1125	Canal Safety Project	$0	$0	$0	0%	$0
1126	Main Canal Metering	$0	$0	$0	0%	$0
1127	Main Dam Improvement	$0	$0	$0	0%	$0
1132	Fish Screens	$0	$0	$0	0%	$0
1133	Fish Ladders	$0	$0	$0	0%	$0
1134	SCADA Equipment	$0	$0	$50,000	0%	$50,000
1135	Groundwater Program	$0	$0	$0	0%	$0
1136	Construction in Progress	$0	$0	$0	0%	$0
	Total	$648,985	$648,985	$4,110,500	16%	$3,461,515

Anderson Cottonwood Irrigation District						
2023 Financial Status Report						
Month Ending February 2024						
	L.A.I.F.	$74,029				
	TCB Checking	$366,390				
	Petty Cash	$100				
	Imprest Cash	$200				
	RBC Investments	$12,474,253	**			
	Total Cash	$12,914,972				
Breakdown Of Funds on Deposit						
	General Fund	$8,503,130				
	Equipment Reserve	$228,791				
	Cap. Improvement Fund	$4,110,500				
	Drainage Fund	$25,000				
	Water Rights Protection	$47,551				
	Total Cash	$12,914,972				
RBC Wealth Management Accounts Breakdown (as of 02/292024)						
	Money Market	$565,033				
	4 T Bills	$11,909,220				
	Total Funds RBC	$12,474,253	**			

Anderson Cottonwood Irrigation District

Payroll Register

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Date. Report is printed in Detail Format.

Employee ID Employee Reference Date	Pay Type	Pay Hrs	Pay Amt
23-06 Dahl, Justin O. 20360 2/1/24	Reg_Salarie		6,250.00
12 White, Teresa L. 20361 2/1/24	Finance_Ma	98.50	3,447.50
22-03 Duncan, Benjamin 20362 2/1/24	Reg_Salarie	88.00	3,125.00
23-05 Miller, Colleen M. 20363 2/1/24	SickLeave Admin_Spe	4.00 92.00	96.92 2,229.16
21-11 Jensen, Jason A. 20364 2/1/24	Equip_Oper Vacation	92.00 4.00	2,546.56 110.72
30 Poliak, Jeff B. 20366 2/1/24	MainII Sick_Leave	95.00 1.00	2,070.05 21.79
23-09 Carlile, Bradley S. 20367 2/1/24	Overtime Sick_Leave WO	0.75 8.00 88.00	28.32 201.36 2,214.96
23-10 Cardwell, Robert J. 20368 2/1/24	Overtime WO	0.92 92.00	34.74 2,315.64
23-11 Trueblood, Trevor W. 20369 2/1/24	WO	88.00	2,214.96
23-12 Claycamp, Logan D. 20370 2/1/24	WO	92.00	2,315.64

Anderson Cottonwood Irrigation District

Payroll Register

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Date. Report is printed in Detail Format.

Employee ID Employee Reference Date	Pay Type	Pay Hrs	Pay Amt
23-13 Brian, Johnson J. 20371 2/1/24	Sick_Leave MainIII	7.00 88.80	160.16 2,031.74
24-01 Stilley, Amy R. 20372 2/1/24	MainII	71.34	1,554.50
23 Passmore, Scott C. 20373 2/1/24	Main_Sup Vacation	88.00 8.00	2,688.40 244.40
12 White, Teresa L. 20374 2/16/24	Finance_Ma	92.50	3,237.50
23-06 Dahl, Justin O. 20375 2/16/24	Reg_Salarie		6,250.00
23-06 Dahl, Justin O. 20376 2/16/24	Vacation	93.02	6,708.60
22-03 Duncan, Benjamin 20377 2/16/24	Reg_Salarie		3,125.00
23-05 Miller, Colleen M. 20378 2/16/24	Admin_Spe	88.00	2,132.24
23 Passmore, Scott C. 20380 2/16/24	Main_Sup Sick_Leave Vacation	80.00 6.00 2.00	2,444.00 183.30 61.10
30 Poliak, Jeff B. 20381	MainII Sick_Leave	52.00 4.00	1,133.08 87.16

Anderson Cottonwood Irrigation District

Payroll Register

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Date. Report is printed in Detail Format.

Employee ID Employee Reference Date	Pay Type	Pay Hrs	Pay Amt
2/16/24			
24-02 Chabolla, Jordan B. 20384 2/16/24	WO	72.00	1,812.24
23-12 Claycamp, Logan D. 20385 2/16/24	Sick_Leave WO	8.00 78.50	201.36 1,975.85
23-13 Brian, Johnson J. 20386 2/16/24	Sick_Leave MainIII	8.00 80.00	183.04 1,830.40
24-01 Stilley, Amy R. 20387 2/16/24	MainII	88.00	1,917.52
21-11 Jensen, Jason A. 20388 2/16/24	Equip_Oper Sick_Leave	80.00 8.00	2,214.40 221.44
23-09 Carlile, Bradley S. 20389 2/16/24	Overtime WO	1.00 87.00	37.76 2,189.79
23-10 Cardwell, Robert J. 20390 2/16/24	Overtime WO	1.00 88.00	37.76 2,214.96
24-02 Chabolla, Jordan B. 20391 2/16/24	WO	16.00	402.72
Summary Total 2/1/24 thru 2/29/24	Reg_Salarie Finance_Ma SickLeave Vacation Overtime MainII Equip_Oper	88.00 191.00 4.00 107.02 3.67 306.34 172.00	18,750.00 6,685.00 96.92 7,124.82 138.58 6,675.15 4,760.96

Anderson Cottonwood Irrigation District

Payroll Register

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Date. Report is printed in Detail Format.

Employee ID Employee Reference Date	Pay Type	Pay Hrs	Pay Amt
	Admin_Spe	180.00	4,361.40
	Sick_Leave	50.00	1,259.61
	Main_Sup	168.00	5,132.40
	WO	701.50	17,656.76
	MainIII	168.80	3,862.14
Report Date Final Total	Reg_Salarie	88.00	18,750.00
2/1/24 thru 2/29/24	Finance_Ma	191.00	6,685.00
	SickLeave	4.00	96.92
	Vacation	107.02	7,124.82
	Overtime	3.67	138.58
	MainII	306.34	6,675.15
	Equip_Oper	172.00	4,760.96
	Admin_Spe	180.00	4,361.40
	Sick_Leave	50.00	1,259.61
	Main_Sup	168.00	5,132.40
	WO	701.50	17,656.76
	MainIII	168.80	3,862.14

Electronic Federal Tax Payment System Transactions (EFTPS)

Federal Payroll Taxes

Date	*Payroll Period*	*Amount*	*Comments*
2/1/2024	01/16/2023 - 01/31/2024	$8,516.00	EFTPS for P/R taxes
2/16/2024	02/01/2024 - 02/15/2024	$5,510.82	EFTPS for P/R taxes

Automated Clearing House (ACH)

State Payroll Taxes

2/1/2024	01/16/2023 - 01/31/2024	$3,125.14	ACH for P/R taxes
2/16/2024	02/01/2024 - 02/15/2024	$2,637.52	ACH for P/R taxes

Voided and/or Missing Checks

Check #	*Issued To:*	*Amount*	*Check Date*	*Comments*	*Date Voided*
30926	Steve Manning Construction	$593,942.38	2/15/2024	Wrong address was given to us	2/15/2024
30941	Tri Counties Bank	$3,569.06	2/26/2024	Written for wrong amount	2/26/2024
30944	N/A	$0.00	2/26/2024	printed report on check	2/26/2024

Anderson Cottonwood Irrigation District

Cash Disbursements Journal

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Number. Report is printed in Detail Format.

Date	Check #	Account ID	Line Description	Debit Amount	Credit Amount
2/1/24	30881	2224	child support withholding for 02/01/24 payroll	375.87	
		1308	CA State Disbursement Unit		375.87
2/1/24	30882	2226	simple W/H for 02/01/24 payroll	250.00	
		5114	retirement for BD, 02/01/24 payroll	165.53	
		1308	Edward Jones - Ben Swim		415.53
2/1/24	30883	2226	457 withholding for 02/01/24 payroll	75.00	
		1308	Variable Annuity Life Ins. Co.		75.00
2/5/24	30884	8007	M&I for water transferred in October 2023	55,643.35	
		1308	DOI-BOR- Region: CA Great Basin		55,643.35
2/5/24	30885	6003	2024 water application copies	509.12	
		1308	Copy Cats		509.12
2/5/24	30886	5014	retirement for January/Admin	291.37	
		5114	retirement for January/T&D	2,413.60	
		1308	Western Conf. Team. Pension		2,704.97
2/7/24	30887	8001	turning rod support for trash rake/diversion facilities	261.67	
		1308	Atlas Polar		261.67
2/7/24	30888	8004	waterman gate, 6'X14', 18: toggle gate,8'X6' screwgate	2,223.61	
		1308	Briggs MFG INC		2,223.61
2/7/24	30889	6023	monthly charges for telephone/internet service	374.53	
		1308	Charter Communications		374.53
2/7/24	30890	6001	2 new hire drug tests, one back ground check	190.40	
		1308	Compliance Associates		190.40
2/7/24	30891	7008	antifreeze,radiator caps, shop supplies	100.04	
		7002	truck #05 misc supplies	36.94	
		8004	damages to main canal, oil, cleaner	57.67	
		1308	Entreprise Auto Parts		194.65
2/7/24	30892	7008	misc. hardware, rebar clips, wrench, brakeclean, paint, spade bit, cut wheels	660.74	
		1308	Fasteners INC		660.74
2/7/24	30893	7008	chain cable lube, food grade hydraulic oiul	329.48	
		1308	JMB Oil		329.48
2/7/24	30894	8004	6 sack concrete 1 yard	241.31	
		1308	Loucks Landscape Supply		241.31
2/7/24	30895	8001	rigging at diversion facilties	800.00	

Anderson Cottonwood Irrigation District

Cash Disbursements Journal

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Number. Report is printed in Detail Format.

Date	Check #	Account ID	Line Description	Debit Amount	Credit Amount
		1308	Meyer Crane		800.00
2/7/24	30896	6003	drinking water for office	19.77	
		7008	drinking water for shop	19.77	
		1308	Mt. Shasta Spring Water		39.54
2/7/24	30897	6010	monthly maintenance for office 365/emails	829.50	
		6004	finish setting up wifi to shop for Operations Manager computer	1,549.59	
		1308	Obsidian IT		2,379.09
2/7/24	30898	7008	rapid set cement (6)	251.54	
		1308	Pacific Supply - Redding		251.54
2/7/24	30899	7009	supplies for Lat #46, concrete	349.25	
		7008	concrete, misc supplies for shop	349.25	
		1308	Payless Building Supply		698.50
2/7/24	30900	6023	monthly power for office/shop	1,182.83	
		8006	monthly power for well #1/Barney Street	47.31	
		8006	monthly power for Anderson Creek pump	22.74	
		8006	monthly power for well #2/Crowley	30.21	
		8006	monthly power for Perry's pond pump	22.74	
		8006	monthly power for Dymesich pond pump	22.74	
		8006	monthly power for Lat #46 pump	30.21	
		1308	Pacific Gas & Electric		1,358.78
2/7/24	30901	6009	2024 annual dues	20,822.00	
		1308	Sacramento River Settlement Contractors		20,822.00
2/7/24	30902	7009	office cleaning for 2 weeks	140.00	
		1308	Sarah's Scottish Maids		140.00
2/7/24	30903	7002	flat repair, new tire for pickup #3	264.03	
		7004	flat repair, new tire for skidsteer	333.03	
		1308	Les Schwab Tires		597.06
2/7/24	30904	7008	welding rods for canal repair	54.99	
		1308	Shasta Welding Supply		54.99
2/7/24	30905	8004	invoice # 1215488-0531-0, dumpster Barney Street	561.72	
		6023	Invoice # 1215244-0531-7, monthly charges for office/shop garbage	144.05	
		1308	Waste Management		705.77
2/7/24	30906	5019	monthly health insurance for February/ Admin	1,626.00	
		5119	monthly health insurance for February/T&D	7,742.00	
		1308	N.C.G.T. Security Fund		9,368.00
2/8/24	30907	8010	balance due on prior	398.70	

Anderson Cottonwood Irrigation District

Cash Disbursements Journal

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Number. Report is printed in Detail Format.

Date	Check #	Account ID	Line Description	Debit Amount	Credit Amount
			statement		
		1308	MBK Engineers		398.70
2/12/24	30908	7003	BXW valve-brake E-7	651.78	
		1308	PAPE-Kenworth		651.78
2/13/24	30909	6008	Condemnation Issues Shasta County/Dustin Cooper Agreement	5,000.00	
		1308	Abbott & Kindermann , Inc		5,000.00
2/13/24	30910	8004	invoice #194, remove trees at 1457 Fair Oaks Anderson	1,495.00	
		8001	invoice # 195, remove wood from dam with pole saw	380.00	
		1308	Bundy's Tree Service		1,875.00
2/14/24	30911	7008	machine 2 chain adjuster blocks	150.00	
		1308	A & A Machine & Welding, INC		150.00
2/14/24	30912	8004	12" PVC PIP pipe, 12" elbow, 22' for main canal	2,376.86	
		1308	Alsco, Inc.		2,376.86
2/14/24	30913	6023	water for office/shop for January	14.85	
		1308	City Of Anderson		14.85
2/14/24	30914	6003	copies for office	264.97	
		1308	Carrel's Office Machines		264.97
2/14/24	30915	5014	retirement for Justin Dahl June 2023 - February 2024	7,500.00	
		1308	Charles Schwab FBO Justin Dahl		7,500.00
2/14/24	30916	7000	gasoline/diesel fuel for January	3,279.74	
		1308	Flyers Energy, LLC		3,279.74
2/14/24	30917	8001	Invoice #261842, 261854,oil for dam facilities	408.16	
		7008	Invoice #261830, hydraulic oil for shop	292.22	
		1308	JMB Oil		700.38
2/14/24	30918	6008	general	9,301.94	
		8008	NRDC, Preservation of Water Rights	1,269.99	
		8010	water transfer 2024	162.00	
		1308	Minasian Law LLP		10,733.93
2/14/24	30919	8019	pump rental for N. Bonneyview, high groundwater, October	2,315.08	
		8019	pump rental for high groundwater, October, Smith Road	792.13	
		1308	MPS Multiple Pump Services		3,107.21
2/14/24	30920	8000	monthly power for SCADA, Linda Lane Cottonwood	16.54	
		1308	Pacific Gas & Electric		16.54

Anderson Cottonwood Irrigation District

Cash Disbursements Journal

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Number. Report is printed in Detail Format.

Date	Check #	Account ID	Line Description	Debit Amount	Credit Amount
2/14/24	30921	7005	wet charged, parts, for Backhoe	407.20	
		1308	Powerplan - OIB		407.20
2/14/24	30922	8006	#0096520-0, Progress Drive pump charges	40.00	
		8000	#0114698-4, SCADA S. Bonneyview, SCADA charges for January	40.16	
		8006	#0044483-6, monthly charges for Churn Creek pumps, January	452.89	
		1308	City Of Redding		533.05
2/14/24	30923	8004	2 boxes of welding rods for shop	131.61	
		1308	Shasta Welding Supply		131.61
2/14/24	30924	8004	2,5 days cutting trees on main canal with excavator	4,200.00	
		1308	The Tree Guy		4,200.00
2/14/24	30925	7008	fasteners, pvc schedule 40	59.57	
		1308	Valley Supply Ace Hardware		59.57
2/15/24	30927	7008	shop supplies, oil, propane, silicone,spray paint, couplers	374.91	
		1308	Hardware Express		374.91
2/15/24	30928	1136	Emergency Canal Lining Project, 1st billing for construction	593,942.38	
		1308	Steve Manning Construction, Inc.		593,942.38
2/16/24	30929	2224	child support W/H for JJ, 2/15/24 payroll	375.87	
		1308	CA State Disbursement Unit		375.87
2/16/24	30930	5114	retirement for BD, 2/15/24 payroll	165.53	
		2226	Simple W/H for BD, 2/15'/24 payroll	250.00	
		1308	Edward Jones - Ben Swim		415.53
2/16/24	30931	2226	457 W/H for SP, 2/15/24 payroll	75.00	
		1308	Variable Annuity Life Ins. Co.		75.00
2/26/24	30932	8008	water right assistance	1,179.25	
		1308	MBK Engineers		1,179.25
2/26/24	30933	6003	drinking water for office	21.98	
		7008	drinking water for shop	21.99	
		1308	Mt. Shasta Spring Water		43.97
2/26/24	30934	7002	oil changes for 2 pickups	398.39	
		1308	Premier Oil Change		398.39
2/26/24	30935	1136	Emergency Canal lining project	14,384.59	
		1308	Provost & Pritchard		14,384.59
2/26/24	30936	7004	labor to repair Kubota, we supplied parts	437.50	
		1308	Ray's Truck & Equipment Repair		437.50

Anderson Cottonwood Irrigation District

Cash Disbursements Journal

For the Period From Feb 1, 2024 to Feb 29, 2024

Filter Criteria includes: Report order is by Check Number. Report is printed in Detail Format.

Date	Check #	Account ID	Line Description	Debit Amount	Credit Amount
2/26/24	30937	8001	monthly power for Diversion Facilties	297.19	
		1308	City Of Redding		297.19
2/26/24	30938	7009	office cleaning for 3 weeks	210.00	
		1308	Sarah's Scottish Maids		210.00
2/26/24	30939	7008	helmet bib wrap around, glove, mig stick	125.93	
		1308	Shasta Welding Supply		125.93
2/26/24	30940	1136	ACID canal Shady Lane	28,160.00	
		1308	SHN Consulting Engeineers & Geologists		28,160.00
2/26/24	30942	6023	monthly cell phone usage for February	487.54	
		1308	Verizon		487.54
2/26/24	30943	6003	folders,stamps for application mailings, copy paper, binders, misc supplies	1,836.64	
		7007	toilet tissue, Kleenex for office/shop	23.58	
		6010	monthly charges for Linxup	258.84	
		6002	irrigation training (5), Cal Poly @ Chico	750.00	
		6001	Compliance DOT annual enrollment	700.00	
		7004	brake controller	223.80	
		8001	nylon rope for main dam	1,164.03	
		6002	Conference motel, food expense	713.33	
		1308	Tri Counties Bank		5,670.22
2/29/24	30945	1117	deposit for VIN 1FHCYC0GHGY9793,2016 Dump Truck	12,499.00	
		1308	Mittry Construction		12,499.00
	Total			801,894.16	801,894.16

Date: 03/14/24 Agenda Item No. 7a.

Agenda Title: Presentation by Ross Perry (Western Shasta Resource Conservation District) RE: Lower Clear Creek ACID Siphon Fish passage.
Discussion: In coordination with ACID WSRCD has conducted a study of possible improvements to the Clear Creek siphon and the adjacent sheet pile grade control structure. There is concern that the existing sheet pile structure is not ideal for fish passage upstream. The study identifies four alternatives and WSRCD has chosen alternative #2 as their preferred alternative. This alternative will modify the sheet pile structure but will not modify the siphon. The report indicates that alternative #2 will not have a negative impact upon the siphon.
Fiscal Impact: None
Recommendation: WSRCD requests that ACID supports further study of alternative #2 and it's eventual construction.
Attachments: NHC study dated December 1, 2023

2810 Silver Street, Anderson, CA 96007 | **Phone:** 530-365-7329 | **Fax:** 530-365-7623
www.andersoncottonwoodirrigationdistrict.org

nhc

WESTERN SHASTA RESOURCE CONSERVATION DISTRICT

Lower Clear Creek ACID Siphon Fish Passage Planning Project
Existing Conditions and Alternatives Analysis

Prepared by:

Northwest Hydraulic Consultants Inc.
2600 Capitol Avenue, Suite 140
Sacramento, CA 95816
Tel: (916) 371-7400
www.nhcweb.com

NHC Project Contact:
Brian Wardman, PE
Principal Engineer

Prepared for:

Western Shasta Resource Conservation District
6720 Parallel Road
Anderson, CA 96007

December 1, 2023
Draft Report, Rev. 0

NHC Reference 5008323

Document Tracking

Date	Revision No.	Reviewer	Issued for
12/1/2023	1	Brian Wardman	Draft for client review

Prepared by or under the direct supervision of:

[Apply PE/LG stamp here for individual with overall responsibility]

Name, Designation(s)
Job Title
Area of Responsibility

[Apply 2nd PE/LG stamp here]

Name, Designation(s)
Job Title
Area of Responsibility

[Apply digital signature here]

DISCLAIMER

This document has been prepared by **Northwest Hydraulic Consultants Inc.** in accordance with generally accepted engineering practices and is intended for the exclusive use and benefit of Western Shasta Resource Conservation District and their authorized representatives for specific application to the Lower Clear Creek ACID Siphon Fish Passage Planning Project in Redding, CA, USA. The contents of this document are not to be relied upon or used, in whole or in part, by or for the benefit of others without specific written authorization from **Northwest Hydraulic Consultants Inc.** No other warranty, expressed or implied, is made.

Northwest Hydraulic Consultants Inc. and its officers, directors, employees, and agents assume no responsibility for the reliance upon this document or any of its contents by any parties other than Western Shasta Resource Conservation District.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

The Western Shasta Resource Conservation District contracted Northwest Hydraulic Consultants (NHC) and its subconsultants to develop a 65% design to address fish passage at the Anderson Cottonwood Irrigation District (ACID) siphon crossing on Clear Creek, a tributary of the Sacramento River southwest of Redding, CA. This document presents an analysis of existing conditions and an alternatives analysis of four possible designs aimed at improving fish passage at the ACID siphon site. This analysis is funded through California Fish and Wildlife's (CDFW) Proposition 1 Habitat Restoration Grants Program with the goal of exploring a solution, developing preliminary designs, and completing CEQA review and preliminary permit applications to apply for implementation funding to address salmonid passage concerns at the ACID siphon site.

The full Clear Creek watershed is 249 square miles with the headwaters located in the Trinity Mountains. The watershed is split into an upper and lower basin by Whiskeytown Reservoir. The ACID siphon fish passage project is located downstream of Whiskeytown Dam in the lower basin and is largely cut-off of from the natural hydrologic regime of the upper watershed except for a constant cold-water release from the dam into Lower Clear Creek. South Fork Clear Creek is the only tributary of substantial size that contributes to the lower watershed. Partially due to the cold-water release, Lower Clear Creek is one of the primary streams in the Sacramento River Basin responsible for salmon spawning and rearing. As such, Lower Clear Creek has been the subject of intense monitoring and restoration activities to support the recovery of salmonids (steelhead and Chinook) and (more recently) Pacific Lamprey.

1.1 Purpose

The primary purpose of this project is addressing fish passage for adult and juvenile salmonid (Central Valley steelhead and Chinook) and Pacific Lamprey at the ACID siphon site. The site consists of an exposed, concrete encased inverted siphon and a sheet pile grade control structure (described in greater detail in Section 2). The existing condition analysis and alternatives analysis presented in this document aim to:

1. Describe the existing site conditions and evaluate existing fish passage conditions along with other hydrologic and geomorphic conditions,
2. Describe a series of conceptual level designs aimed at improving fish passage for target species (steelhead, Chinook salmon, and Pacific Lamprey)
3. Evaluate each alternative with respect to overall primary and ancillary project goals and identify a preferred alternative to be advanced to permit level designs.

2 EXISTING CONDITIONS ANALYSIS

This section presents an analysis of existing conditions at the ACID siphon site after a site survey conducted by NHC and Cascade Stream Solutions (CSS) in August 2023. An overview of this analysis was presented to the Clear Creek Technical Team (CCTT) at their quarterly meeting in September 2023. This

section builds upon that analysis and provides additional detail to assess current hydrologic, geomorphic, and hydraulic conditions of the ACID siphon project site.

Note that the existing conditions analysis provided in this section was previously presented in a technical memorandum to Western Shasta Resource Conservation District (WSRCD) in late October 2020. Based on comments received back from stakeholders, some additional analysis has been added, particularly with respect to identifying impacts to the site due to changes in sediment supply from the Carr Fire in 2018.

2.1 Survey of Existing Ground Surface and Infrastructure

On August 8th, 2023, Northwest Hydraulic Consultants (NHC) and Cascade Stream Solutions (CSS) performed a site survey and assessment of the ACID siphon project site. Work included topographic and bathymetric data collection using RTK-GPS, UAV based imagery collection, and noting of general site conditions related to hydraulics, geomorphology, and fish passage. Survey data were collected with the intention of complimenting the existing survey data collected by Mark Gard at CDFW in 2020. The NHC/CSS survey included checking elevations of existing infrastructure, check shots for lidar validation, and small bathymetric surveys in areas where data were not collected in 2020.

Overall, between the existing CDFW and NHC/CSS surveys, a detailed digital terrain model (DTM) was developed for the project reach and extends across the entire floodplain width and approximately 1850 ft downstream and 3000 ft upstream of the siphon. The existing sheet pile structure and exposed siphon pipeline are included within this DTM. Note that due to high velocities and depths near and within the sheet pile structure, NHC/CSS could not resurvey the structure in detail. A handful of survey points were taken on the crest of the sheet pile walls where accessible to validate elevations and layouts of the sheet pile walls provided in the CDFW 2020 survey.

2.2 Existing Infrastructure

The ACID siphon under Clear Creek is a critical piece of infrastructure for ACID as it carries the entirety of the ACID diversion to downstream water users. The siphon is an approximate 48 in diameter pipe extending over 1,100 feet from its upstream inlet to downstream outlet. The pipe drops about 39 feet in elevation from the inlet to pass under Clear Creek before climbing back up about 38 feet in elevation to its outlet. Where the pipe crosses under Clear Creek, the pipe is capped with a concrete cover with angular rock armoring placed upstream of the siphon. A sheet pile grade control structure was placed downstream of the siphon. The top of the sheet pile crest is about 0.6 ft above the top elevation of the concrete cap overlying the siphon, however the concrete cap is about 1 ft to 3 ft above the upstream and downstream channel elevations.

In general, the sheet pile grade control structure appears to be structurally sound, however there is significant vegetation growing in portions of the structure. An open request is out with ACID personnel to acquire copies of any as-built drawings for the sheet pile and siphon structures. A rudimentary fishway path is present through the cells of the sheet pile structure that consists of notches cut into the crest of the piles. The general layout of the sheet pile and siphon pipeline are shown below in Figure 2.1 and Figure 2.2.

The existing fishway route is over sharp edges of cut sheet pile which pose a risk of injury to migrating fish. Additionally, the sheet pile cells adjacent to the fishway cells pose an entrapment hazard, since the only way for a fish to exit these cells would be to jump. This is likely mostly an issue for juvenile salmonids where the jump height out of the cells may exceed 0.5 ft.

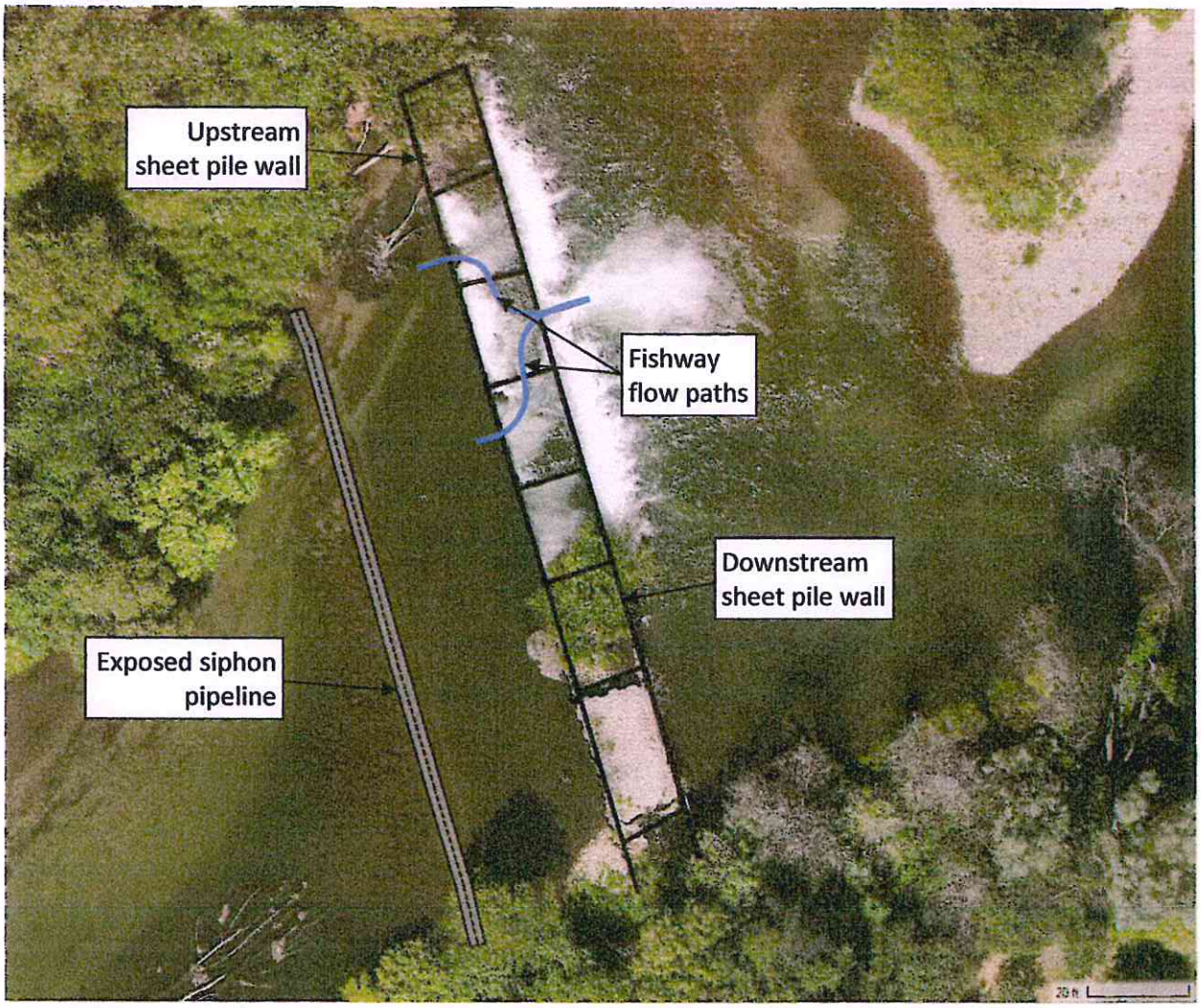

Figure 2.1 Overview of existing sheet pile and siphon pipeline infrastructure with fishway path identified. Clear Creek flow is from left to right, with north oriented to top of page.

Figure 2.2 Existing conditions of sheet pile structure as viewed in August 2023 during NHC/CSS survey effort.

2.3 Hydrology

At the project site, Clear Creek drains approximately 241 square miles, most of which is upstream of Whiskeytown Dam (200 square miles) (U.S. Geological Survey, 2019). There are a handful of small tributaries contributing to Clear Creek below the dam including South Fork Clear Creek, Kanaka Creek, and Paige Boulder Creek. Flow into lower Clear Creek is highly regulated by Whiskeytown Dam, which releases at least 200 cfs from October through June. During the July through September summer months, flows are regulated to manage water temperature for adult spring-run Chinook salmon and rearing steelhead (NMFS, 2008). As such, peak winter flows and snowmelt runoff are heavily attenuated and base flows are artificially elevated throughout the summer in Lower Clear Creek (NMFS, 2014). In total only approximately 38% of annual runoff is released into Clear Creek from Whiskeytown Dam (McBain and Trush, 2001).

The U.S. Geologic Survey in partnership with the U.S. Bureau of Reclamation operates a gage on Clear Creek near the town of Igo (USGS gage #11372000), approximately 9.5 miles upstream of the project site. As noted in discussion during the Clear Creek Technical Team quarterly meeting in September, utilizing the full gage record likely does not accurately represent current flow regulation conditions. Due to changes in releases from Whiskeytown Dam starting around 2000, only gage data from the 2002 to 2022 water years were utilized in the flow duration analysis performed in this study. Mean daily flow records for that 20-year period were used in a flow duration analysis to compute various fish passage design flows defined by state and federal agencies (NMFS, 2022, 2023). The frequency of peak flows on an annual basis were computed using the standard flood frequency analysis described by the USGS in Bulletin 17c (England Jr. et al., 2019). Note that the full gage record was utilized for the peak flow

analyses. A range of fish passage flows, and peak flood flows computed from these analyses are presented in Table 2.1.

Table 2.1 Flow statistics for Clear Creek near Igo gage (USGS gage #11372000)

Flow Statistic	Flow (cfs)	Significance	Calculation Method
Q_{hfp}	1490	High fish passage design flow for adult salmonid	1% migration season exceedance (Nov – May 15) (NMFS, 2023) [a]
$Q_{hfp,\ juv}$	372	High fish passage design flow for juvenile salmonid	10% annual exceedance flow (Lang and Love, 2014) [a]
Q_{lfp}	217 (200)	Low fish passage design flow for adult salmonid	50% annual exceedance flow or 3 cfs, whichever is greater [a]
$Q_{lfp,\ juv}$	83	Low fish passage design flow for juvenile salmonid	95% annual exceedance flow or 1 cfs, whichever is greater (Lang and Love, 2014) [a]
$Q_{2\text{-}yr}$	2980	Peak flood flow with a 2-year recurrence interval (50% annual probability of occurrence)	Bulletin 17c analysis (England Jr. et al., 2019) of Igo peak flows [b]
$Q_{5\text{-}yr}$	5760	Peak flood flow with a 5-year recurrence interval (20% annual probability of occurrence)	Bulletin 17c analysis (England Jr. et al., 2019) of Igo peak flows [b]
$Q_{10\text{-}yr}$	8000	Peak flood flow with a 10-year recurrence interval (10% annual probability of occurrence)	Bulletin 17c analysis (England Jr. et al., 2019) of Igo peak flows [b]
$Q_{50\text{-}yr}$	13900	Peak flood flow with a 50-year recurrence interval (2% annual probability of occurrence)	Bulletin 17c analysis (England Jr. et al., 2019) of Igo peak flows [b]
$Q_{100\text{-}yr}$	16700	Peak flood flow with a 100-year recurrence interval (1% annual probability of occurrence)	Bulletin 17c analysis (England Jr. et al., 2019) of Igo peak flows [b]

Notes:

a. Fish passage flows computed using mean daily data from water years 1998 – 2022.

b. Peak flow statistics computed using annual peak flow data from water years 1964 – 2022.

The fish passage design flows shown in Table 2.1 should be considered preliminary and may need to be adjusted to further minimize any delays in fish passage due to high or low flows at the project site. While the 5% and 95% seasonal annual exceedance flows are fairly standard high and low fish passage flows in the Pacific Northwest the greater degree in hydrologic variability through California has required a more tailored approach to determining fish passage design flows for project within the state (NMFS, 2023). NMFS recommends close coordination with agencies to develop site-specific fish passage design flows to ensure appropriate migration windows. Initial guidance from NMFS does recommend using the 1% flow exceedance during the period from November 1 – May 15 as the high fish passage flow. The low fish passage design flow should be consistent with the lowest flow at which fish migration is expected. For this phase of the project, we have presented the 1% migration window exceedance for the high fish passage flow and the 50% annual exceedance flow for the low fish passage flow as shown in Table 2.1. Note that due to the consistent flow release of at least 200 cfs from Whiskeytown Dam during fall and spring migration periods, the 217 cfs low fish passage flow shown in Table 2.1 appears to

be appropriate since flows at the project site will rarely be below 200 cfs during that time. As such, a low fish passage flow of 200 cfs is proposed. Flows lower than 200 cfs are seen during the peak of summer, however it is unlikely fish will be migrating at those times. Spring Chinook should already be holding in cool pools near their spawning grounds and steelhead will largely not be migrating.

2.4 Geomorphic Setting

Extensive geomorphic assessments have been performed in lower Clear Creek (defined as Clear Creek below Whiskeytown Dam) over the past couple of decades to inform various restoration activities from gravel augmentation to channel rehabilitation (i.e. Graham Matthews & Associates, 2013; McBain and Trush, 2001). We'll briefly summarize some of that work, and augment with our site-specific observations during the survey in August 2023.

The ACID siphon site is located within an alluvial reach of Clear Creek which starts at the outlet of Saeltzer Dam gorge (approximately 6 miles upstream) consisting of a relatively wide floodplain (greater than 500 ft) and lower slopes. This reach is comprised of a meandering channel with extensive deposition and storage of sediment. Where connected to the channel, the floodplain is diverse and consists of willow and cottonwood forests. This reach was also severely impacted by gold mining in the mid to late 1800's (including dredge mining). Aggregate mining has also severely impacted the channel and adjacent floodplain in the lower reach by artificially widening the channel resulting in shallow channels and gravel mining ponds prone to stranding fish.

Whiskeytown Dam currently traps all coarse and fine sediment transported from the upper Clear Creek watershed. Additionally, the bedrock dominated gorge just downstream of the dam is not a significant supply of sediment to the lower alluvial reaches below Igo. As such, coupled with the changes in hydrology associated with flow regulation, the magnitude, duration, and frequency of fluvial processes critical to geomorphic and biological stream health are greatly reduced (McBain and Trush, 2001).

Detailed geomorphic monitoring of lower Clear Creek from 2010 – 2013 (Graham Matthews & Associates, 2013) has shown that bedload transport at Igo is dominated by coarse sand sized material. Spawning gravel sized material makes up only 1% of the total bedload transport. Primarily, sediment transport on the mainstem is bedload, while inputs from tributaries (particularly South Fork Clear Creek) contribute higher suspended loads of finer sediment. While the fine sediment transported from the South Fork has appeared to increase mobility of spawning gravel sized material, the fine sediment does tend to "plug" the void space between gravel clasts which degrades spawning habitat. Overall, monitoring work suggests that sediment transport to the siphon project reach is capacity limited (i.e. the creek cannot move all available sediment), which could indicate why there is a lack of spawning gravel sized material being routed from upstream.

During the NHC/CSS survey in August 2023, we observed an abundance of sand deposited upstream of the sheet pile structure, extending at least 1300 ft upstream. Downstream of the sheet pile, there is significantly more heterogeneity in the channel form. Mid-channel and lateral bars are present (both vegetated and unvegetated) and there is significant sorting of sediment into coarse and fine regions. Additionally, there was evidence (including anecdotally) of recent minor channel avulsions immediately downstream of the sheet pile where a channel through a mid-channel bar was cut. Without long-term

surveyed elevations of the reach downstream of the sheet pile, we cannot say with certainty that the channel is stable, though there does not appear to be visual evidence of continued reach scale erosion. This suggests that while the siphon and sheet pile grade control appear to be trapping fine sediment, there is still some degree of coarse sediment transport past the structure.

Hydraulic modeling suggests that relatively coarser material should be able to pass through the project site under higher flows (e.g., high fish passage flows, 2-yr flood) since the sheet pile and siphon create minimal backwater effects as shown by the water surface profiles in Figure 2.3. The fine sand observed deposited upstream of the structures during the site survey overlays coarser material, which further suggests that coarse material does pass through the project site, however on the receding limb of a storm the fine sediment deposits on top of coarser bed material once the backwater from the sheet pile and siphon starts to develop around an estimated 500 cfs.

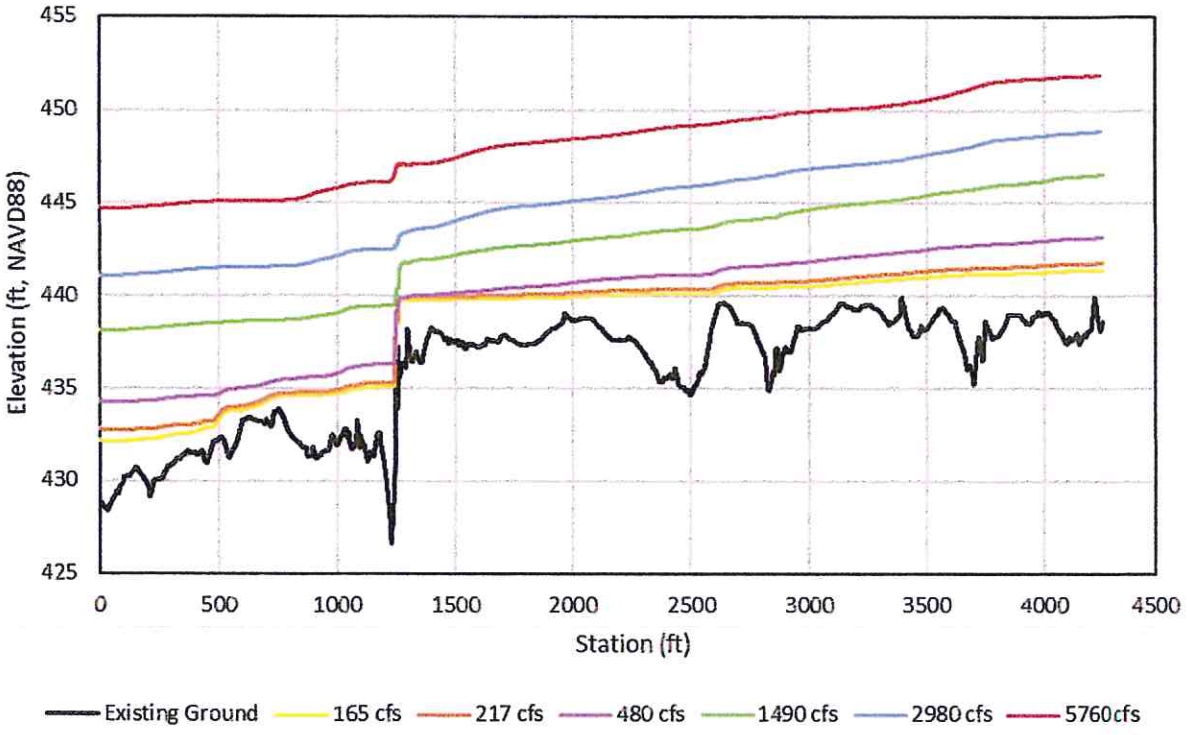

Figure 2.3 Existing modeled water surface profiles through project reach for a range of low to high flows. Note that sheet pile structures is located at approximately station 1250 ft.

The head cut process arrested by the sheet pile structure is largely caused by a lowering of the local base level at the downstream confluence due to significant alteration of the hydrologic and sediment transport regimes of the Sacramento River. Since these processes in the Sacramento River are unlikely to change in the foreseeable future, it is likely that the head cut at the sheet pile grade control structure would continue upstream if the sheet pile were removed.

The Clear Creek watershed is heavily impacted by several recent large wildfires; most notably the Carr (2018) and Zogg (2020) fires. It is well documented that sediment yields can be significantly increased in

burned watersheds for a periods of 2 to 10 years post-fire (e.g., East et al., 2021; Santi and Rengers, 2022; Warrick et al., 2012). This increased sediment yield can come from some combination of channel incision due to larger and flashier floods (i.e., increased shear stresses in channels), and rills delivering soils from burned hillslopes to channels. The overall response of a watershed post-fire is highly complex and difficult to predict with the overall changes to hydrologic and sediment regimes being dependent on soil burn severity, basin slope and aspect, precipitation patterns, and ecosystem type (i.e., vegetation and ground cover) (e.g. Pelletier and Orem, 2014).

An analysis of sediment yields upstream of the Whiskeytown Dam after the Carr Fire showed that first-year sediment yields increased by factors of 64, 42, and 4.8 for Brandy, Boulder, and Whiskey Creeks, respectively (East et al., 2021). Studies on the impacts of the later Zogg fire could not be found, but a similar response could be expected due to similar geologic and geographic characteristics. As noted, the Carr Fire study focused on small drainages upstream of Whiskeytown Dam, therefore sediment from those drainages will remain in the reservoir. While the drainages analyzed in that study do not contribute sediment to Clear Creek downstream of Whiskeytown Dam, there is a still a significant amount of moderate to high burn severity areas within the Clear Creek watershed area downstream of the dam as shown in Figure 2.4. In general, it can bee seen the entire watershed between Whisketown Dam and the town of Igo was burned between the Carr and Zogg fires.

East et al. (2021) showed a significant increase in sediment yield in the three years following the Carr fire. Assuming the watershed downstream of Whiskeytown Dam responds similar, we speculate that the bulk of the increased sediment yield from the Carr fire has already been introduced to Clear Creek. An increase in sediment from the Zogg fire is also likely tapering off currently. Additionally, since flow to Clear Creek is highly regulated by Whisketown Dam and the drainage area downstream of the dam is relatively small, it can be speculated that there hasn't been a significant increase in flashiness and peak flows due to the Carr and Zogg fires. An analysis of gage data at Igo may be conducted later to confirm or deny this assumption. For the purposes of designing a fish passage structure at the ACID siphon, the severely burned watershed and resulting increase in fine sediment supply necessitate designs which are resilient to potentially high loads of fine sediment.

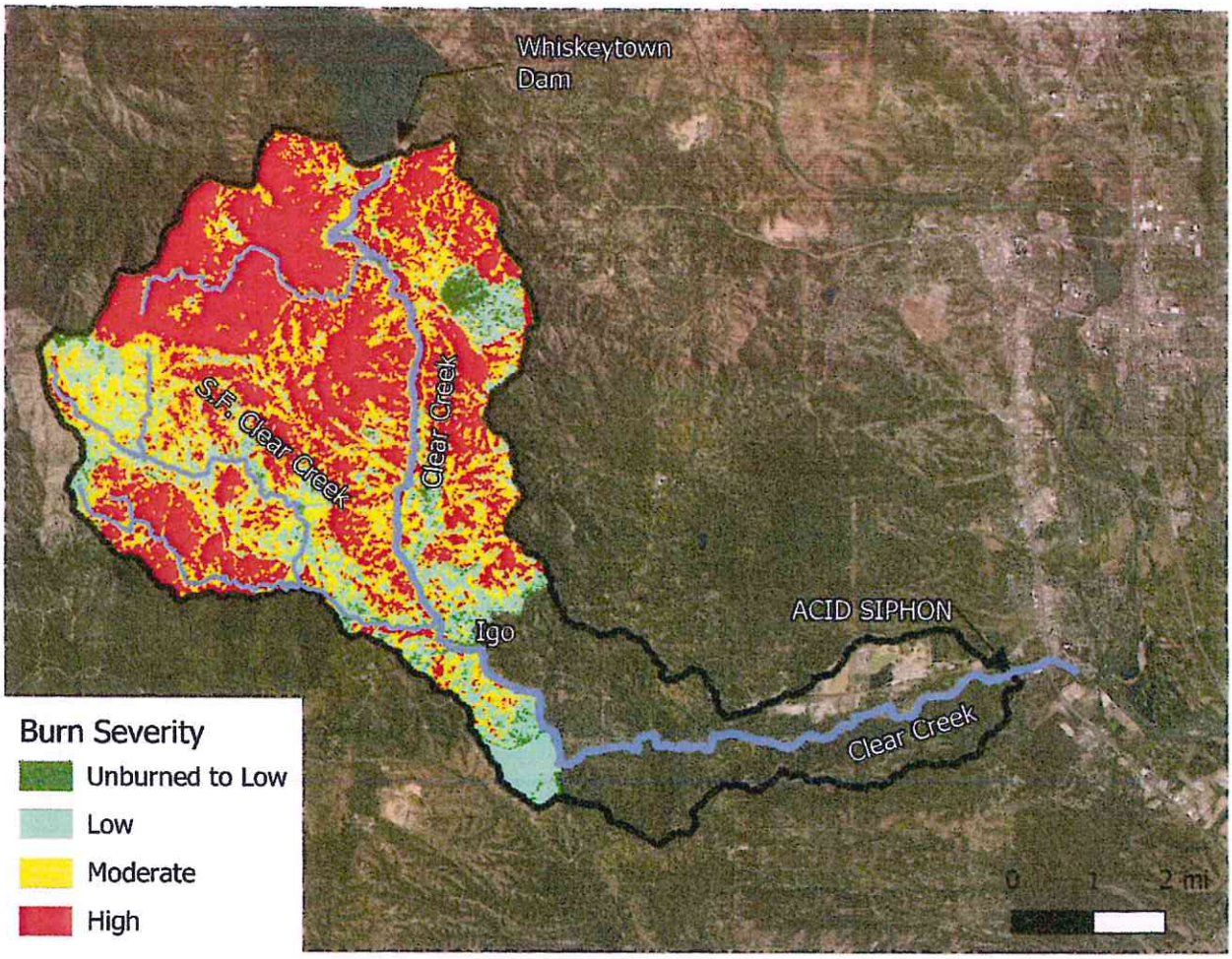

Figure 2.4 Composite Carr (2018) and Zogg (2020) fires burn severity within Clear Creek watershed downstream of Whisketown Dam.

2.5 Focal Species and Passage Requirements

The target species for this fish passage project include adult anadromous salmonids (steelhead and Chinook salmon), juvenile salmonids, and Pacific Lamprey. With regards to salmonid specifically, Clear Creek has historically supported four seasonal runs including fall, late-fall, and spring run chinook salmon, along with winter-run steelhead (McBain and Trush, 2001). Both Central Valley spring-run Chinook Salmon and Central Valley steelhead are Federally listed as "threatened" under the Endangered Species Act (National Marine Fisheries Service, 2008). Central Valley fall- and late-fall-run Chinook Salmon are listed Federally as a species of concern. All these evolutionary significant units (ESU) of salmonid require unimpeded passage up Clear Creek to spawn (95% of spawning occurs upstream of siphon) (Gard, 2020) and juveniles need two-way passage for rearing and outmigration. Additional species are present which may benefit from improved fish passage conditions (e.g., resident trout); however, they will not be explicitly accounted for in the design process.

Various publications specify design criteria for salmonid passage in fishways. While not a traditional fish ladder, the sheet pile structure essentially acts as a pool and weir fishway. As such, it will be evaluated against fish ladder design criteria. Federal (NMFS, 2022, 2023) and state (California Department of Fish and Wildlife, 2009) guidelines exist for such structures. In general, the maximum pool to pool jump height is 1 ft, minimum depth over weir crests is 1 ft, and the maximum energy dissipation factor (EDF) is 4 ft-lbs/s/ft^3. There are different criteria for the various types of fishways, which will be discussed as needed in the alternatives analysis.

While salmonids have received the bulk of attention with respect to fish passage and habitat restoration efforts on Clear Creek, anadromous Pacific lamprey also migrate up Clear Creek to spawn. These culturally and ecologically important fish are a California State Species of Special Concern (Moyle et al., 2015). As discussed below, lamprey often require significantly different conditions for successful upstream migration.

Detailed design criteria for lamprey migration at passage barriers is only recently seeing significant development. The Pacific Lamprey Conservation Initiative (Lamprey Technical Workgroup, 2022) has recently released some guidance on incorporating lamprey passage design at fishways. These design details will be analyzed during the alternatives analysis when evaluating each alternative design. In general, Lamprey have difficulty passing fishways designed solely for salmonids due to high velocities, highly turbulent flow, lack of attachment surfaces, and exposure to predation (Goodman and Reid, 2017).

2.6 Hydraulics

To assess existing conditions with respect to general hydraulic conditions along with fish passage, a 2-dimensional (2D) hydraulic model was developed to simulate the flow of water through the project site. The details of the model set-up are described in the following section along with a discussion of initial existing conditions results with a particular focus on existing fish passage conditions.

2.6.1 Existing conditions hydraulic model

A 2D hydraulic model was developed in HEC-RAS 6.4.1 (ACOE, 2023) using a combination of existing and newly collected data. The model extends approximately 1300 ft downstream and 3000 ft upstream of the existing siphon pipeline. An irregular computational grid was developed through this model domain with a typical characteristic cell size of 10 ft in the main channel. Cell sizes on the floodplain varied from 10 ft to 25 ft. Breaklines were utilized as needed to align cell faces perpendicular to the primary flow path and parallel to major geomorphic feature lines (top of bank, structures, etc.). A sample of the computational grid in the vicinity of the sheet pile and siphon is shown in Figure 2.5 below.

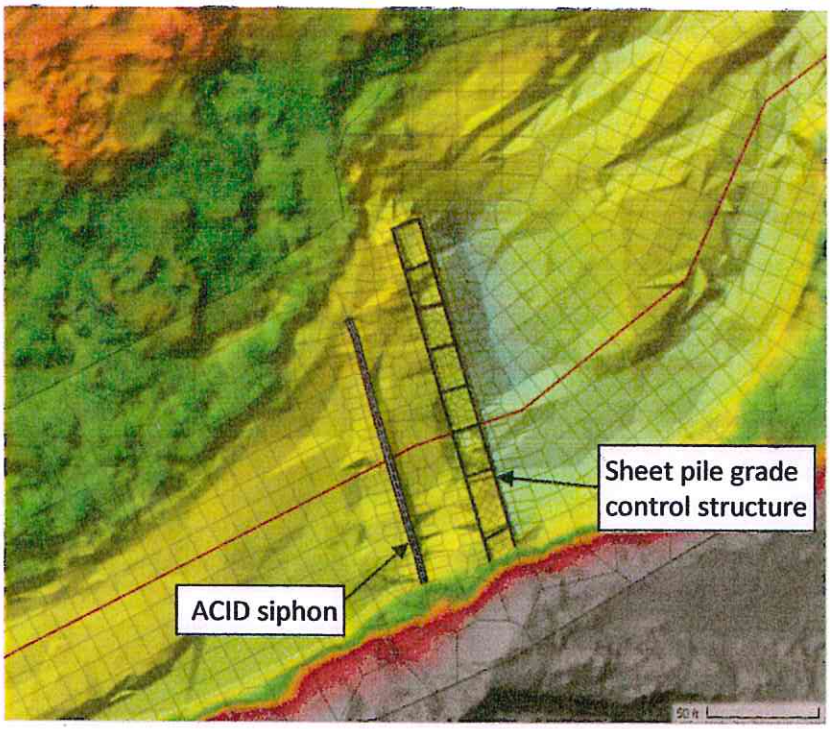

Figure 2.5 Example of existing conditions computational grid in vicinity of siphon and sheet pile structure. The flow is from left to right and north is towards the top of page.

The sheet pile grade control structure and the exposed siphon pipeline were included in the model as broad crested weir 2D connections with an example shown in Figure 2.6. The layout and crest elevations of the sheet pile walls were defined using survey points and alignment measured by Mark Gard at CDFW in 2020 and verified by NHC/CSS in 2023.

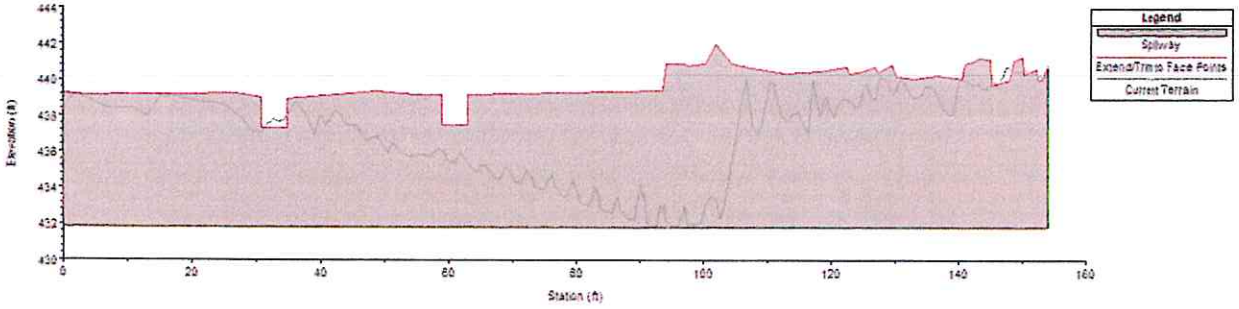

Figure 2.6 Section view of upstream sheet pile wall with the two fish passage notches shown. The downstream sheet pile wall is similar except it only has a single fish passage notch.

Bed roughness throughout the model domain was initially set using the constant Manning's n roughness value of 0.052 used in the similar HEC-RAS 2D model developed by Mark Gard at CDFW. To provide greater detail in the spatial variability of velocity and shear stress a different Manning's n values were applied to hydraulically significant land cover elements. The three distinct land cover units used were the main channel, mid-channel/lateral bars, and off-channel/floodplain areas. Calibrated values for each

unit are summarized in Table 2.2. An additional calibration region was set in the straight reach near the downstream boundary where a slightly lower main channel roughness was needed to match measured water surface elevations as highlighted in Figure 2.7. The model was calibrated at a flow of 165 cfs (average flow on 8/8/2023) with an overall root means square error of 0.09 ft when compared against water surface elevations measured by NHC/CSS on August 8th, 2023.

Table 2.2 Calibrated Manning's n values used in existing conditions model.

Land Cover Unit	Manning's n	Downstream Manning's n
Main Channel	0.045	0.035
Mid Channel / Lateral Bars	0.07	0.07
Floodplain / Overbank Areas	0.1	0.1

With only a single concurrent measurement of water surface elevation and flow at the downstream model boundary location, a rating curve for the downstream boundary could not be developed. For the calibration run at 165 cfs, the downstream water surface elevation was held constant at the measured value of 431.84 ft (NAVD88). Once the model was calibrated, the energy slope was determined to be approximately 0.0002 ft/ft. Using this slope, a normal depth boundary condition was set for all other flow simulations. The validity of this assumption can not be fully assessed without additional water surface elevation data; however, the model downstream boundary is sufficiently far away from the area of interest (sheet pile and siphon) that errors due to an inaccurate downstream boundary condition setting are minimal and insignificant.

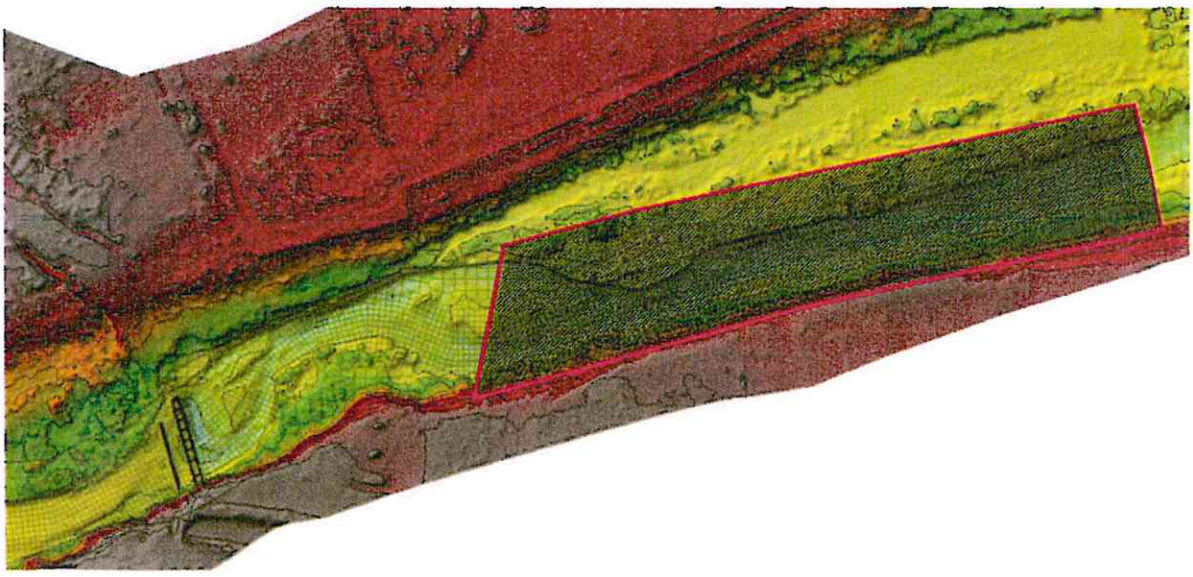

Figure 2.7 Model domain with red polygon and hatching identifying the downstream calibration region where the associated Manning's n values in Table 2.2 are applied.

2.6.2 Existing fish passage conditions

Based on monitoring data and anecdotal evidence, most Chinook and steelhead spawning is occurring upstream of the ACID siphon (Gard, 2020; Graham Matthews & Associates, 2013). With that information, we assume that the sheet pile grade control structure and exposed siphon pipeline are not complete, or even substantial barriers to upstream adult salmonid migration. While the jump height from the pool below the fishway entrance to the first pool in the fishway path is greater than 1 ft, the average pool depth below the fishway entrance was measured to be approximately 8 ft deep which is sufficient to allow steelhead and Chinook adequate room to develop speed to jump into the first fishway pool (Gallagher, 1999).

To assess existing fish passage conditions more formally, the 2D HEC-RAS model described in the previous section was run for a range of flows across the fish passage design flows shown in Table 2.1. Velocity with streamlines at the adult high fish passage flow is shown in Figure 2.8. Depth with streamlines at the low fish passage flow is shown in Figure 2.9. A water surface profile through the existing structure is shown in Figure 2.10. In general, a maximum velocity of around 6 to 7 ft/s is observed immediately upstream of the sheet pile structure, with a higher concentration of flow along the left bank. Depth below the entrance to the fishway varies from 8.5 to almost 13 ft across the range of flows modeled. Additionally, depth over weir crests at the notches ranges from 2 to 4 ft. At the low fish passage flow there is a hydraulic drop of approximately 3.4 ft from the downstream pool to the first fishway cell, followed by a 1.2 ft drop between last fishway cell and the upstream headwater. At the high fish passage flow, the upstream drop is approximately the same as at low flows, however the downstream drop is reduced to about 0.79 ft.

Overall, these hydraulic modeling results support the anecdotal and monitoring data evidence passage of that salmonid species is not significantly hindered by the sheet pile structure, particularly at higher flows. Other than the large hydraulic drop at the fishway entrance at low flows, the other standard fishway design criteria are essentially met. Note that this is true for the primary fishway flow path through the notches in the sheet pile walls.

Lamprey passage issues are only partially captured by the hydraulic model. In general, at both high and low fish passage flows, velocities meet or exceed the critical swimming speed for adult lamprey of 2.8 ft/s and the burst swimming speed of 3.9 ft/s (Lamprey Technical Workgroup, 2022). As such, lamprey would need to rely on "burst-and-attach" locomotion to move through the sheet pile spillway. However, the sharp 90-degree corners and edges of the sheet pile structure are not conducive to effective lamprey passage. Therefore, while lamprey ammocoetes have been observed upstream of the siphon (Gard, 2020), it is assumed that the sheet pile grade control structure poses a significant (though not complete) passage barrier to Pacific lamprey.

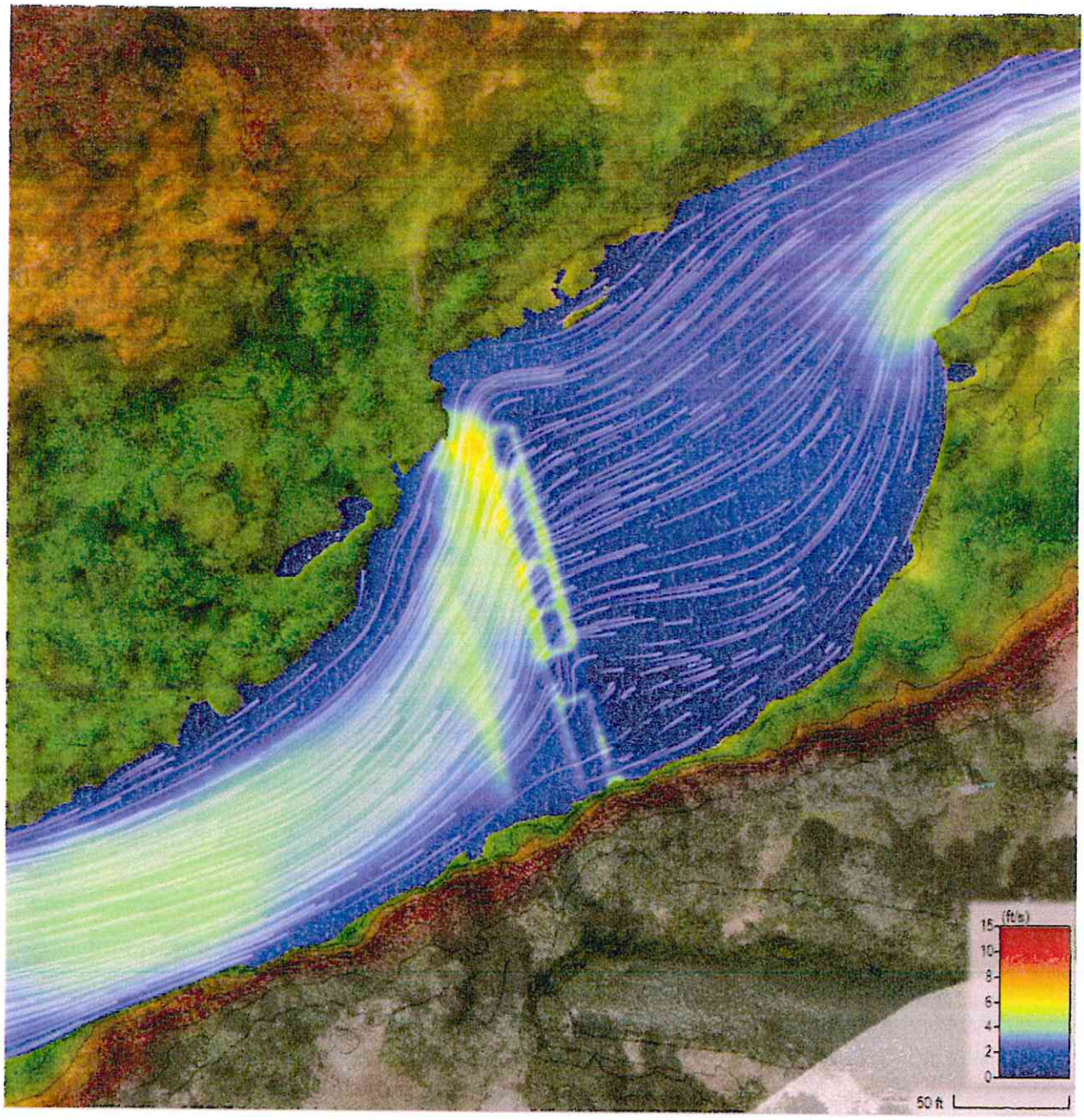

Figure 2.8 Velocity with streamlines under existing conditions at the high fish passage design flow (1490 cfs).

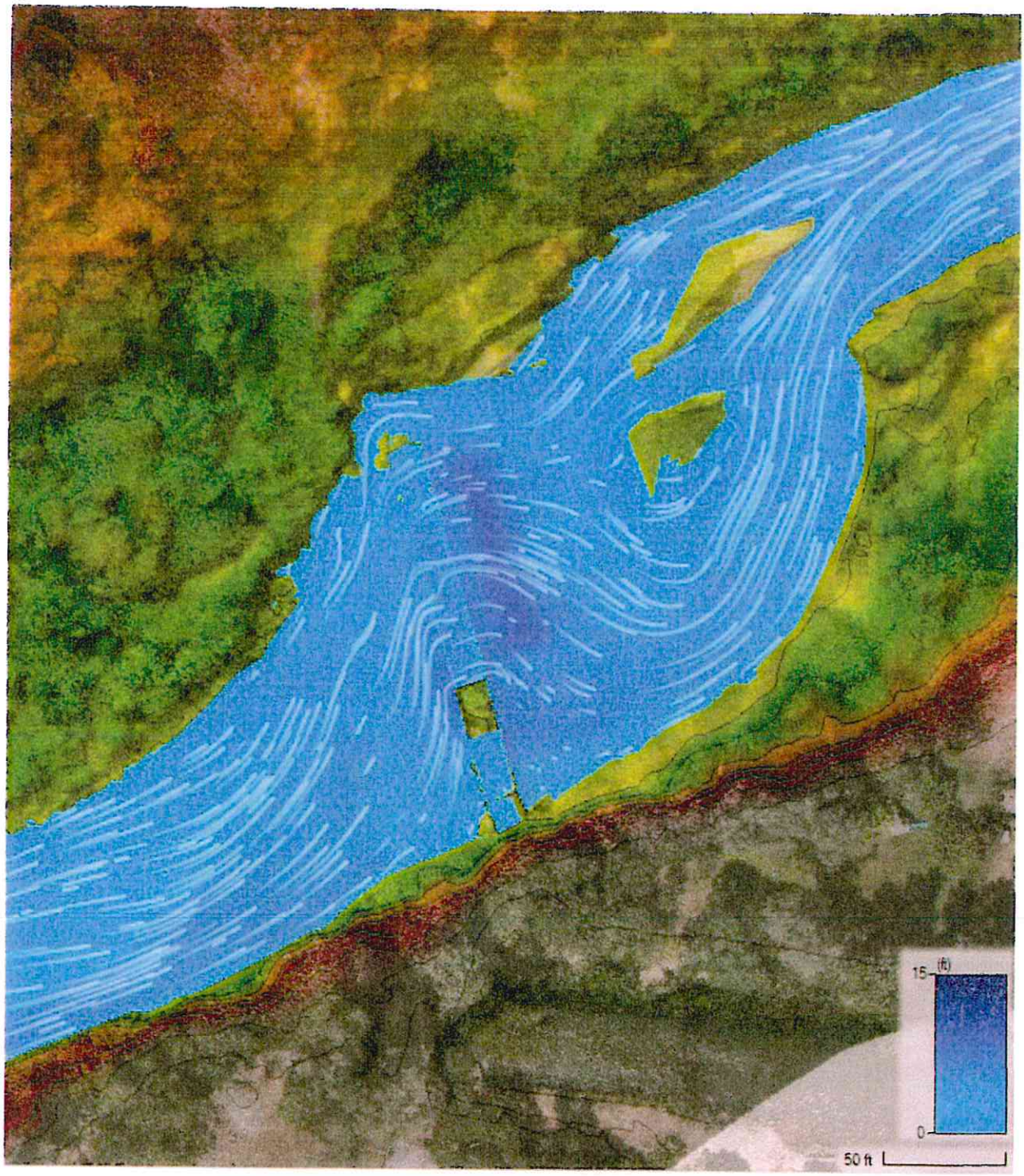

Figure 2.9 Simulated depth with streamlines at low adult fish passage flow of 217 cfs.

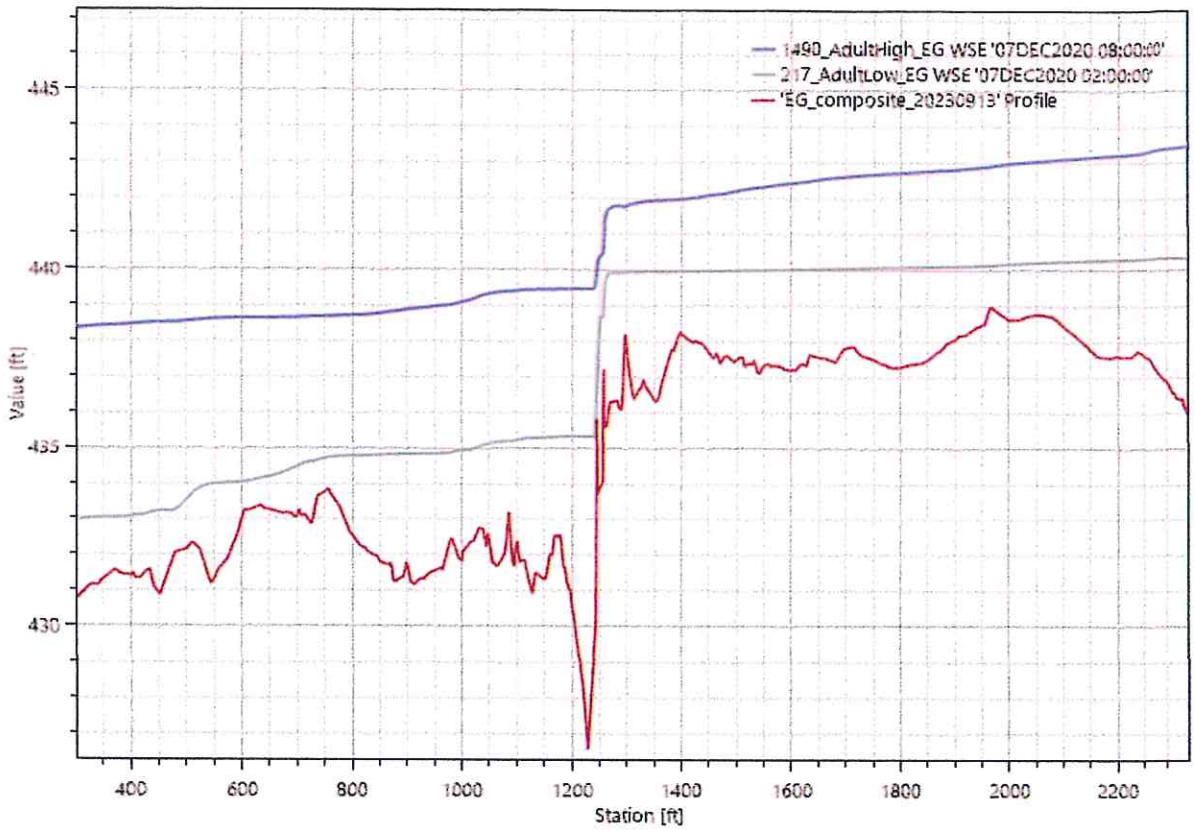

Figure 2.10 Water surface and bed profiles for existing conditions at low (217 cfs) and high (1490 cfs) fish passage flows.

Attraction flow, which leads upstream migrating fish to the fishway entrance appears to be within fish passage guidelines, which specify that between 5% and 10% of the total flow should be passing through the fishway entrance (NMFS, 2022). At the high fish passage flow of 1490 cfs, approximately 176 cfs is passing through the single fishway entrance notch in the sheet pile which is approximately 11% of the total flow. At the lower fish passage flow, the percentage is increased to 40% of the total flow.

One issue that is not easily highlighted by the hydraulic model is the potential for stranding of fish within the sheet pile cells not connected to the fishway flow path. This is of particular concern for juvenile fish which may not have the jumping abilities to jump out of a cell into the fishway path if they are inadvertently swept into the non-fishway part of the sheet pile structure. With the consistent flow releases from Whiskeytown Dam, it is unlikely that any of the cells would be dewatered at low flows, however fish trapped within the cells nearest the bank could be subject to predation.

2.7 Recreational Uses

The current sheet pile structure in Clear Creek poses a significant hazard to navigation for any boaters. At high flows strong hydraulics could flip and/or pin a boat and hold a person underwater. At low flows, boats would likely become stuck on the sheet pile, which could also tear an inflatable raft. Currently, to

safely pass the project site, boaters would need to pull over upstream of the structure and portage around the site (which may also result in trespassing). This portage would be difficult and brushy.

The level of use of Clear Creek through the project site by boaters and other recreationists is not well known. Clear Creek from Whiskeytown Dam downstream to Igo is popular class 4 kayaking run. Clear Creek upstream of project is not a standard whitewater kayaking/rafting run but could become a popular float for tubers and other boaters now that much of the low river corridor has public access. In addition to improving fish passage conditions, some of the alternatives described in this report could also improve the overall recreational value of lower Clear Creek.

2.8 Existing Conditions Summary

Key findings of the existing conditions analysis include:

- The existing siphon facility appears to be relatively stable and unlikely to fail.
- The existing facility functions as a grade control structure preventing downstream channel incision from propagating upstream. Propagation of incision upstream would likely negatively impact the adjacent high-quality floodplain habitat by reducing the frequency of inundation and reducing water tables currently supporting native riparian species. Propagation upstream could also lead to bank instability and sloughing impacting neighboring properties and infrastructure along the left (south) bank.
- In low flow conditions (flows less than ~2,500 cfs) the existing facility creates a backwater condition extending about 1,300 feet upstream which leads to sand deposition in the channel upstream of the siphon.
- Presence of adult salmonids spawning upstream of the siphon suggest that under existing conditions the site is not a full barrier to adult upstream passage. However, the existing conditions do not meet criteria for fish passage facilities and has been observed to cause delays in upstream passage.
- The hydraulic conditions at the existing siphon are not conducive to upstream passage of juvenile salmonids. The highly turbulent hydraulic conditions within the sheet pile also likely hinder downstream passage of juvenile salmonids by trapping and/or disorienting downstream migrants.
- The high velocities over the sheet pile and sharp edges of the sheet pile likely hinder upstream passage of adult Pacific Lamprey.
- The site is a significant hazard to navigation for any boaters as sharp edges and shallow depths may damage boats. The depth of the downstream scour hole and high velocities over the sheet pile wall could also be a danger to waders.

3 ALTERNATIVES ANALYSIS

NHC presented four preliminary alternatives to the Clear Creek Technical Team (CCTT) during the September quarterly meeting. No additional alternatives were identified by CCTT and other stakeholders. This section presents a more detailed discussion of the four alternatives, of which one will be selected to advance to a 30% and 60% design. The overall objective of these alternatives is to provide upstream and downstream volitional fish passage to adult and juvenile salmonids and adult Pacific lamprey. Ancillary to this primary objective, the alternatives are also developed with consideration to the following:

- Maintain function and performance of ACID facilities.
- Improve transport capacity of fine sediment in the channel and reduce trapping of fine sediment.
- Prevent channel incision from continuing to head cut upstream and cause bank instability and/or loss of function of upstream floodplain habitat.
- Improve safety and function for recreational users at the site.
- Minimize maintenance requirements.

Alternative 1 presents a "remove and replace" option where the existing siphon and sheet pile are removed and replaced by a new, lower siphon. Alternative 2 proposes the construction of a rock ramp nature-like fishway over the existing sheet pile and siphon. Alternative 3 proposes a more temporary option which leaves the siphon in place and retrofits the sheet pile structure for improved juvenile salmonid and lamprey passage. Alternative 4 can be thought of as a design to be performed in coordination and complementary to design elements proposed under Alternatives 1 and 2. Under Alternative 4, there is a proposal to decommission the ACID canal upstream of the siphon and replacing the ACID diversion on the Sacramento River in Redding with a pump station downstream, closer to the current points of use by ACID irrigators. Overall, this analysis is designed to promote discussion and selection of a preferred alterative during closely following the CCTT December meeting.

Each alternative includes a construction cost estimate. Due to the lack of design detail at this level of design, the cost estimates are high level estimates intended to provide an initial estimate of cost and for comparison of alternatives. Costs are based on experience with similar projects in Northern California and those published in cost-books. Each cost includes 25% contingency which will be reduced in further levels of design as site nuances and designs are better understood.

3.1 Alternative 1 – Remove Sheet Pile and Rebuild Siphon

Alternative 1 is centered around the removal of the existing sheet pile grade control structure and creating a natural channel through the project site passible by target species as well as many other non-target species. Work would entail three parts (not necessarily presented in temporal order at this point). The first part would be a complete removal of the sheet pile grade control structure and any concrete used on abutments. Second the existing siphon pipeline would be removed (at least in part, under the existing clear creek channel) and rebuilt along or adjacent to the existing alignment but set lower to be

completely covered by a natural channel post construction. Third, the existing channel would be regraded and shaped into a natural planform through the project reach. This would likely include construction of habitat features in-channel (e.g., pools, large wood, etc.) and riparian zone restoration (e.g., plantings, seeding).

The rebuilt channel through the project site would be based upon reference reach channel geometries, located upstream of the project site. Channel dimensions and planforms utilized in the 3C restoration project (Pryor, 2021) would provide good initial design analogs to emulate through the ACID siphon project site. An iterative design process would also ensure that the proposed channel provides for hydraulic conditions suitable for upstream and downstream migrating salmonids and lamprey (Lamprey Technical Workgroup, 2022; NMFS, 2022, 2023).

Due to anthropomorphic changes in the hydrology and sediment regime of the Sacramento River, a head cut has propagated upstream in Clear Creek from the mouth. The sheet pile wall was built to prevent excessive exposure or undermining of the siphon pipeline due to the propagation of this head cut. With the removal of the sheet pile grade control structure, the head cut will continue to propagate upstream, likely to a bedrock outcrop located approximately 3000 ft upstream. Based on a preliminary equilibrium profile shown in Figure 3.1, approximately 3 to 5 feet of incision could be expected immediately upstream of the current sheet pile weir location (with additional bend and general scour). Approximately, 1000' upstream there could be expected to be between 0 to 3 feet of incision along the thalweg. Based on the preliminary profile shown, the new siphon would need to be placed at least 8' lower than its current position. If this alternative is selected, more detailed geomorphic analysis could necessitate additional cover to protect the new siphon.

In addition to the need to rebuild the siphon due to head cut propagation, it is also possible that adjacent floodplains would become perched and geotechnical instabilities (particularly along the banks) could occur as the channel degrades. Riparian vegetation on perched floodplains would likely degrade in heath due to a lowering of the water table and reduced frequency of inundation during floods. Off channel habitat for aquatic species would also be degraded due to reduced vegetation and reduced inundation. On the geotechnical side, bank instabilities, particularly on the over-steepened right bank just upstream of the project, would likely become exacerbated by channel degradation. Some of these areas could see bank stabilization constructed concurrently with the primary components of this alternative. It is likely that an adaptive management plan would need to be developed to address the issue of the perched floodplain and geotechnical instabilities. Post construction, it is likely that floodplain grading/lowering and/or side channel excavation would need to be performed after the channel has reached its new equilibrium slope to reestablish floodplain connectivity and riparian habitat health.

Since this alternative completely removes the sheet pile and covers the siphon pipeline, there is an overall improvement to the recreational qualities of the site. The channel can be designed to further improve boat navigability. The overall reach would probably be viewed as an easy to navigate riffle or small rapid by experienced boaters. During summer low flows, waders and swimmers will move through the channel relatively easily. Most importantly, this alternative removes the hazard of sharp metal and complex hydraulics created by the existing sheet pile grade control structure.

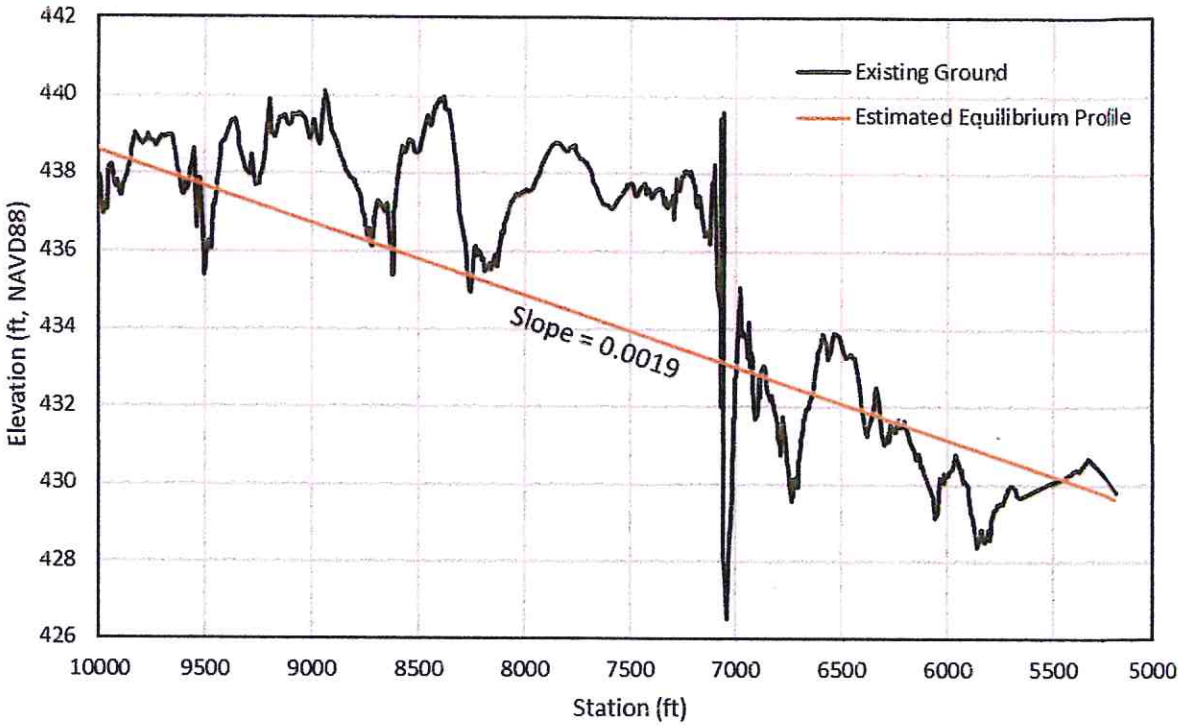

Figure 3.1 Existing longitudinal profile through siphon reach with estimated equilibrium profile superimposed. Sheet pile grade control structure can be seen in profile at approximately STA 71+00.

3.1.1 Cost Estimate

The cost estimate assumes the entirety of the siphon will need to be replaced. Relative to other alternatives, the control of water costs will likely be increased for this alternative to allow removal of the old siphon pipe and placement of the new siphon pipe under the existing channel. It was assumed the project would provide ACID water through the existing siphon during construction of the new siphon parallel to the existing siphon. The demolition of the old siphon and reconstruction of the channel would occur after the new siphon is brought online which may require two years of construction to complete.

Table 3.1 Cost estimate for Alternative 1 Remove Sheet Pile and Rebuild Siphon

Item	Description	Cost
1	Mobilization/Demobilization	$ 178,000
2	Clearing	$ 18,000
3	Control of Streamwater	$ 240,000
4	Channel Restoration	$ 185,000

5	Demolition and off haul	$ 200,000
6	Siphon	$ 495,000
7	Siphon Headworks	$ 50,000
	Sub-total	$ 1,366,000
	Contingency (25%)	$ 342,000
	Total	$ 1,708,000

3.2 Alternative 2 – Nature-Like Fishway

Alternative 2 proposes the construction of a nature-like fishway consisting of a channel spanning roughened channel. This would entail either a full or partial removal the sheet pile weir structure. The existing siphon would remain in-place and unmodified. The roughened channel would provide unimpeded volitional passage through the project site for both target and non-target species. Additionally, unlike Alternative 1, the structure would maintain the existing channel grade upstream of the sheet pile. This would mitigate geotechnical concerns related to bank instabilities as well as prevent perching of floodplains upstream of the project sites.

Fish passage design flows for the nature-like fishway (NLF) are reported in Table 2.1. The intent of the nature-like fishway is to pass adult and juvenile salmonid and steelhead and lamprey across a range of flows where these fish typically migrate. NMFS (NMFS, 2022) design criteria for nature-like fishways on the west coast are summarized in Table 3.2 below. In addition to the general west coast guidelines, NMFS has published a California specific pre-design guidelines document which modifies the general west coast guidelines to accommodate the unique and highly varied hydrology of California (NMFS, 2023).

Table 3.2 Nature-like fishway design guidelines from NMFS (2022, 2023) for roughened channels.

Design Guideline	Criteria	Modifications for California
Maximum Average Channel Velocity	5 ft/s maximum at 5% exceedance flow	5 ft/s, but use site specific high fish passage flow (Table 2.1)
Pool Depth	4 ft deep pool below each drop structure	> 2 ft deep pool below hydraulic drops
Maximum Hydraulic Drop	0.5 ft (juvenile limited)	
Maximum Fishway Slope	5%	
Channel Stability	Immobile	Allow scour up to 4 ft in pools
Channel Roughness	Roughness elements extend at least to high fish passage flow water	

Design Guideline	Criteria	Modifications for California
	surface and cover 20% - 40% of NLF	

A conceptual design consisting of a simplified digital elevation model was developed to allow for an initial analysis of fish passage criteria and to assess the overall feasibility of the alternative (Figure 3.2). If this alternative is selected, the rock ramp NLF would be significantly refined to allow more detailed analysis of hydraulics and analysis of fish passage success. The conceptual design consists of a channel spanning rock ramp with a centerline average slope set to 5%. A low flow "notch" is placed down the centerline which is intended to consolate flow at or near the low fish passage flows. This notch would help ensure adequate depth for successful passage of adult salmonid. At higher flows, large boulder roughness elemetns would be built throughout the rock ramp to add complexity and areas of relatviely calmer water for resting areas and linking a lower velocity passage pathways for juvenile salmonids and lamprey. In this conceptual design, the ramp crest is set directly above the existing siphon pipe and covers the existing concrete encased pipe a minimum of 0.5 ft at the ramp centerline (cover will increase toward channel margins).

To test the feasibilty of the rock ramp shown in Figure 3.2, the existing conditions HEC-RAS hydraulic model was modified to include the simple surface developed for the concept. This terrain configuration was tested under the low fish passage flow of 200 cfs, and the high fish passage flow of 1490 cfs. The velocities with streamlines for the high fish passage flow are shown in Figure 3.3. These results show that while velocity is fairly high down the center of the ramp (around 8 to 10 ft/s), there is also clear pathways with lower velocities along the margin of the rock ramp. Additionally, the model does not include the added complexity of the large boulder roughness elements which would provide resting areas with low velocity. At the low fish passage flow of 200 cfs, depths are greater than 1 ft down the center of the ramp and velocity is sufficiently low to provide for passage of salmonid and lamprey. As noted, if this alternative is pursued, the rock ramp would have additional compleixty incorporated to further improve fish passage conditions. In general, these preliminary results show that a nature-like fishway rock ramp would provide for excellent fish passage conditions for both salmonid and lamprey.

In addition to providing for volitional fish passage, the rock ramp would also serve as a grade control structure. As noted under the Alternative 1 discussion, if the sheet pile structure were removed, a head cut would likely propagate upstream. Under Alternative 2, the rock ramp would be constructed of large, stable rock and would continue to halt upstream progression of the head cut. On the upstream side of the rock ramp, it can be expected that sediment would continue to deposit upstream of the structure on the receding limb of large floods as described in the existing conditions analysis. It is possible that enough deposition could occur to form a new equilibrium slope that provides for unimpeded sediment transport through the reach. Once/if the channel upstream of the ramp fills in, it could be expected that a gravel armor layer would develop down the thalweg of the aggraded channel. While the deposition of finer material upstream of the rock ramp is not ideal for spawning habitat, it is understood that this lower reach is not ideal spawning habitat. Therefore, it is more important to provided excellent fish passage conditions for fish to reach the ideal spawning grounds further upstream.

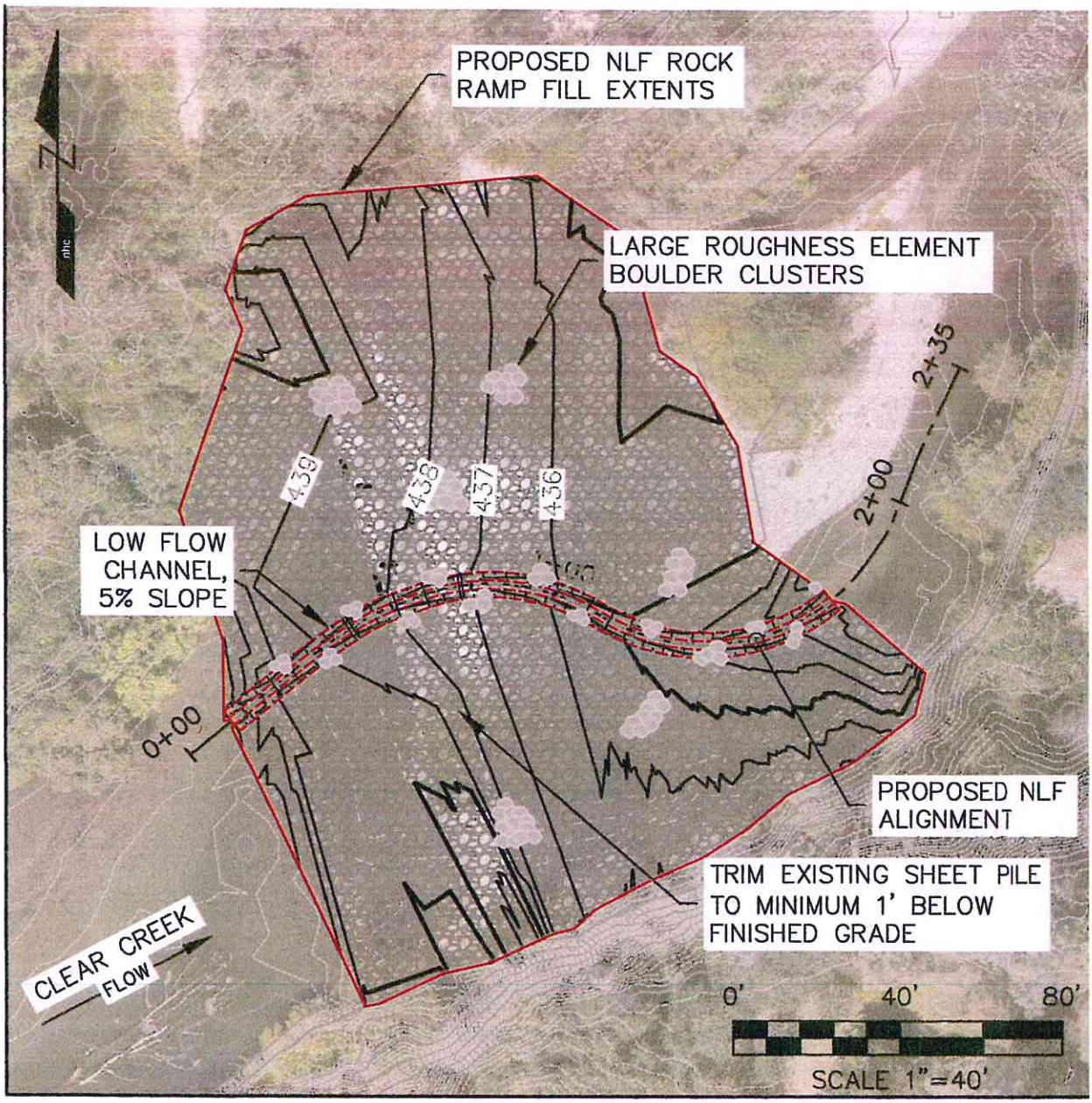

Figure 3.2 Conceptual layout for rock ramp nature-like fishway. The rock ramp centerline is comprised of a low flow notch set at a 5% average slope. Large boulder roughness elements are placed strategically throughout the fishway to provide hydraulic heterogeneity, to promote successful passage of multiple species and ages.

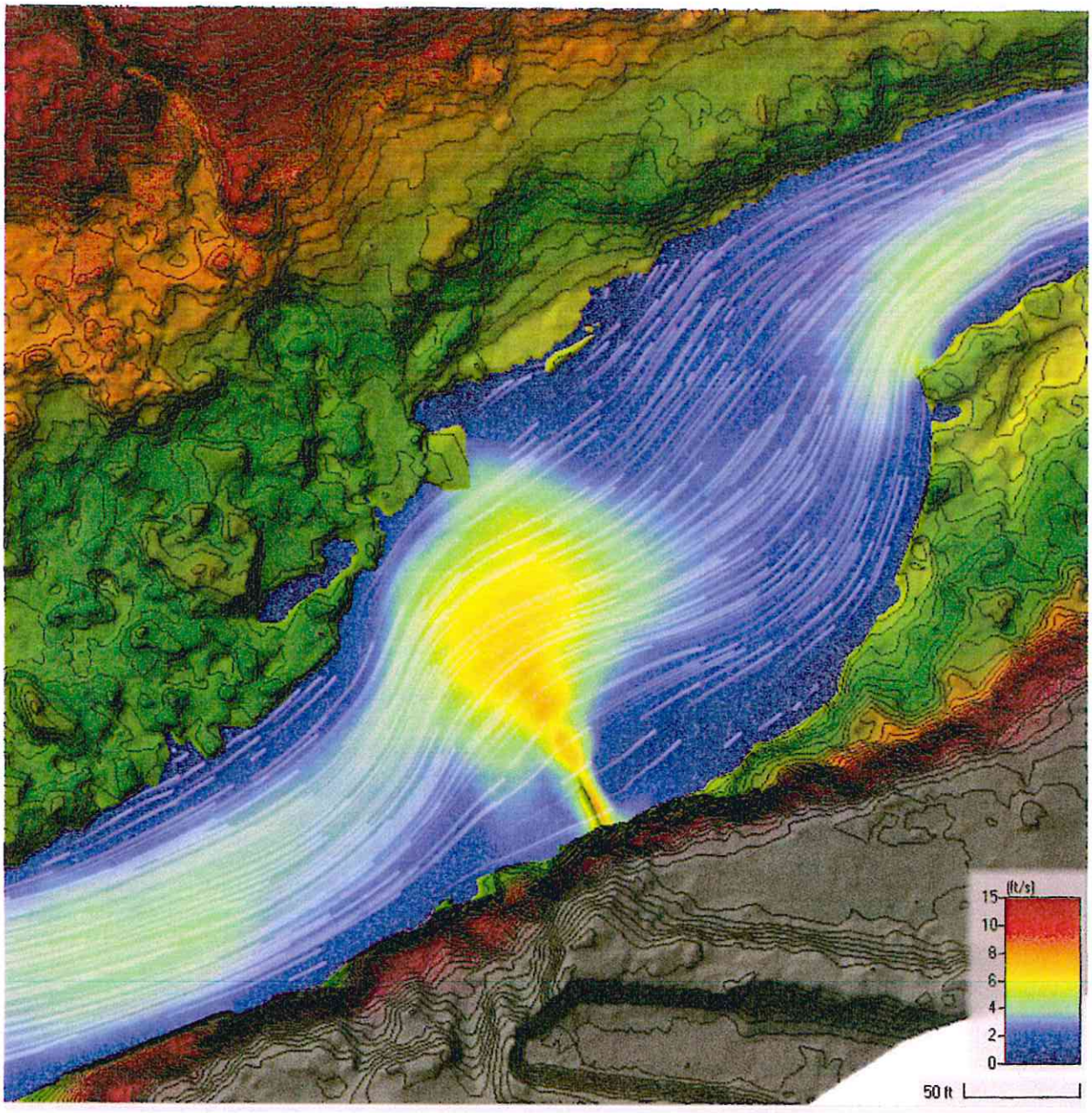

Figure 3.3 Preliminary velocity with streamlines at high fish passage flow of 1490 cfs with nature-like fishway rock ramp shown in Figure 3.2. Flow is left to right and north up (same orientation as shown in concept figure).

Addressing the ancillary goal of recreational use, the rock ramp could provide for much improved and safer access and passage of boaters. The rock ramp at low to moderate flows would likely be viewed as a moderate rapid that could be navigable by experienced boaters (certainly more navigable than the difficult rapids in the gorge reach of Clear Creek). Additionally, at the lowest summer flows, waders and

swimmers would not be subject to the strong hydraulics and sharp metal edges present at the existing sheet pile structure.

Two notable modifications could be made to the basic underlying design of Alternative 2. First, if cost needs to be reduced or if a full channel spanning rock ramp is not feasible for some other reason, the design of a partially spanning rock ramp could be pursed. This increase complexity during the engineering and design phase of the project, however, it is likely that construction costs could be reduced due to lower quantities of rock. It is possible that fish passage success would be slightly reduced under the partially spanning fish passage structure since fish would need to locate the entrance to the fishway providing an additional difficulty to successful passage.

The second modification to this alternative would be incorporating a siphon replacement into the design. Removing and replacing the siphon at a lower elevation would allow the crest of the nature-like fishway to be lowered. This would allow a reduction in backwater effects at low flows and potentially help with the sand deposition currently observed upstream of the siphon. The lowered fishway crest would a allow a more uniform water surface profile to encourage movement of sediment through the reach at lower flows than currently noted in the existing conditions analysis. Since the siphon would be rebuilt, this would add considerably to the design and implementation costs of this alternative. If ACID intends to keep the canal in-use for the long term, this could be a good route to explore that further improves the geomorphic and aquatic health of Clear Creek. If there is question as to how long the ACID canal will be in use upstream of the siphon, a complete rebuild of the infrastructure may not be a prudent use of implementation funds.

3.2.1 Cost Estimate

The cost estimate assumes the project will partially be constructed in the wet using supersacks or K-rail to push streamflow around active construction. The barrier would likely have to be adjusted during construction to work around active work areas. Demolition and off haul will be limited to removing sections of the sheet-pile wall which extend within 2 feet of the finished grade (i.e. not full removal of the buried sections of the sheet pile). Placement of the of the rock ramp includes both hauling material to the site and placement within the channel.

Table 3.3 Cost estimate for Alternative 2 Nature-Like Fishway

Item	Description	Cost
1	Mobilization/Demobilization	$ 55,000
2	Clearing	$ 18,000
3	Control of Streamwater	$ 100,000
4	Demolition and offhaul	$ 50,000
5	Placement of Rock Ramp	$ 200,000
	Sub-total	$ 423,000
	Contingency (25%)	$ 106,000

Total	$	529,000

3.3 Alternative 3 – Retrofit Sheet Pile

Alternative 3 would maintain the siphon in its current location and condition and would make some modifications to the existing sheet pile grade control structure to make fish passage improvements. If further erosion around the siphon pipeline is determined to be a concern, additional concrete and/or rock could be placed around the pipe to stabilize the channel. Since monitoring and modeling efforts have shown the existing sheet pile structure to be passible for adult salmonids over a reasonable large range of flows, the primary focus of this alternative is to improve juvenile and lamprey passage.

While there is sufficient depth through the existing fishway route for juvenile fish passage, there are still velocity barriers along with areas of high turbulence that likely significantly impeded juvenile fish passage. Additionally, there are stranding concerns for juvenile fish that may get trapped in one of the sheet pile cells not connected to the fishway path shown in Figure 2.1. Given the relatively large hydraulic drop over a short distance, there is not much that can be done to reduce the high degree of turbulence, there are some modifications that could be performed to reduce stranding and velocities.

Some minor modifications to the sheet pile crests could dramatically help with the standing issue by creating additional notches or orifices between the disconnected cells and the fishway cells. These would need to be hydraulically sized to ensure velocities aren't too high for juvenile salmonid. Additionally, the existing fishway path notches could be resized larger to help reduce velocity through the primary flow path. The addition of orifices in the sheet pile wall could also help provide additional juvenile outmigration routes. Note that the creation of additional connections between cells would need be carefully investigated to ensure the primary fishway flow path through the sheet pile structure is clear. It is assumed that once juvenile fish move downstream of the sheet pile structure, they will not be able to swim back upstream. This is not so much an issue for out-migrating juvenile salmon as it is for resident, non-target species.

Lamprey passage at the sheet pile structure is likely largely limited by the sharp corners and disconnected, rough surfaces. Lampreys are bottom oriented fish and ideally, they would pass upstream moving through lower velocity flow paths along the channel bottom. They can, however, use burst-and-attach locomotion to move through areas of high velocity or sudden drops. There are some lamprey specific retrofits that could be built to facilitate passage over the ACID sheet pile structure. The simplest option would likely be to install smooth metal plates vertical walls (as shown in Figure 3.4) with large radius (3" – 4") curves that straddle the upstream and the downstream sheet pile walls. These would likely be placed off to the north side of the sheet pile in a lower velocity area. A more complex lamprey fishway comprised of metal ducts could also be designed as shown in Figure 3.4. While such a structure could provide better lamprey passage since vertical walls wouldn't be used, the larger footprint could be difficult to construct in a location that is not subject to strong current during flood events.

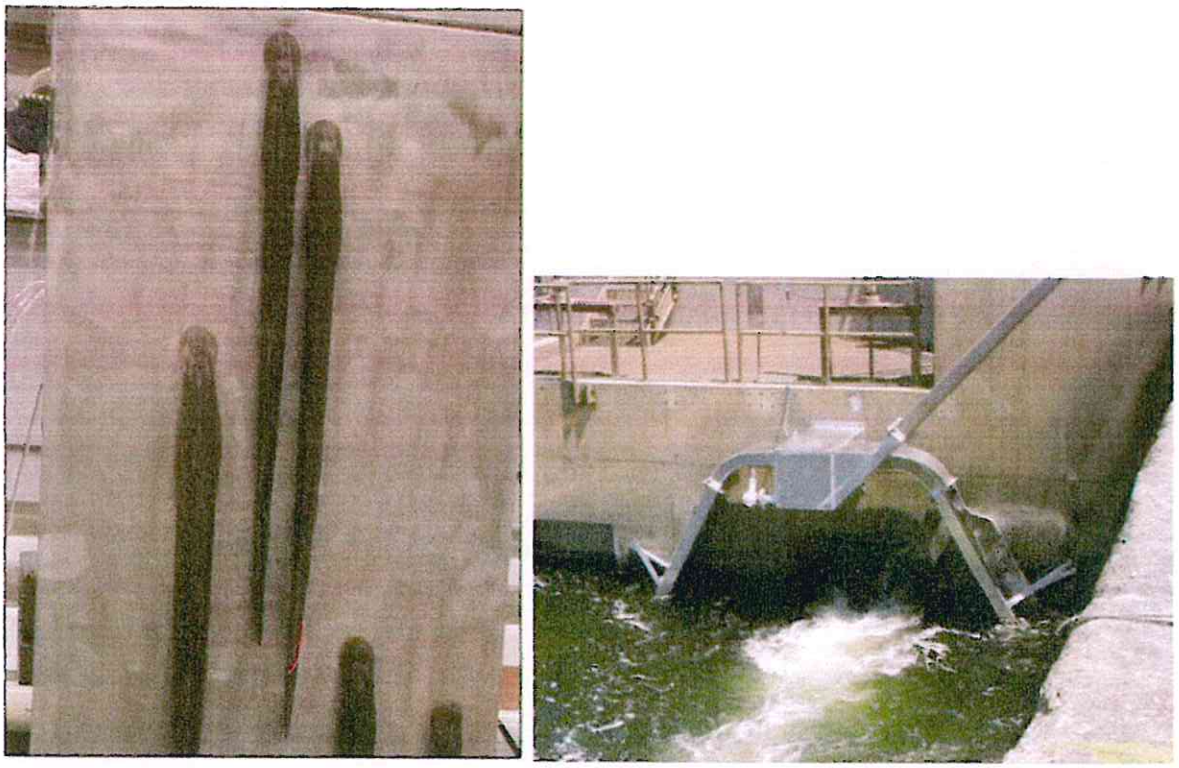

Figure 3.4 Left: Example of lamprey climbing a vertical, smooth metal surface like what could be proposed for passage over the upstream and downstream sheet pile walls. Photo from Yakama Nation Fisheries as published by the Lamprey Technical Workgroup (2022). Right: Example of ducted lamprey passage structure at Three Mile Falls as published by the Lamprey Technical Workgroup (2022).

The final retrofit that would benefit all life stages of nearly all aquatic species would be to remove the hazard of sharp metal edges in fish passage route. This retrofit can be as simple as placing a slotted pipe placed over the sheet piles or welding a round pipe/bar (per NMFS communication with Mark Gard).

Note that this alternative would not improve upon the hazards the existing structure poses to recreational users. Boaters, swimmers, and waders would still be subject to sharp metal edges, increase entrapment risks, and strong/complex hydraulics. As such, public use of this stretch of river would likely want to be discouraged by the relevant agencies.

3.3.1 Cost Estimate

The cost estimate assumes the project will partially be constructed in the wet using supersacks or K-rail to push streamflow around active construction. Construction will be limited to a short location of the existing wall and would not require the entire channel. Demolition would include removing portions of the sheet pile wall to improve fish passage and offhaul of material including some removal of sediment adjacent to the wall. It is assumed sediment would be reworked on-site, and offhaul would only include steel. Manufacture and placement of the lamprey passage includes procurement of materials and installation of structures onsite.

Table 3.4 Cost estimate for Alternative 3 Retrofit Sheet Pile

Item	Description	Cost
1	Mobilization/Demobilization	$ 20,000
2	Clearing	$ 14,000
3	Control of Streamwater	$ 50,000
4	Demolition and offhaul	$ 20,000
5	Manufacture and placement of lamprey passage	$ 50,000
	Sub-total	$ 154,000
	Contingency (25%)	$ 39,000
	Total	$ 193,000

3.4 Alternative 4 – Decommission Siphon

This alternative proposes decommissioning the siphon and relocating the point of diversion for the irrigation network to a pump station on the Sacramento River downstream and closer to the current points of use. Ideally this would also be conducted in coordination with the removal of the ACID diversion dam on the Sacramento River in Redding. Fish passage over the sheet pile structure would still need to be addressed. This could be accomplished with a complete removal of sheet pile structure as described in Alternative 1 or the nature-like fishway of Alternative 2 or a partial removal of sheet pile (and removal of siphon) coupled with smaller and shorter fishway.

Table 3.5 ACID diversion flow rates per Table caption

Month	Contract Total (acre-feet)	Month Averaged Diversion Flow	
		(cfs)	(GPM)
April	8000	134	60,300
May	10000	163	73,000
June	22000	370	166,000
July	25000	407	182,000
August	26000	423	190,000
September	19000	319	143,000
October	18000	293	131,000

Two preliminary pump station location and pipeline alignments are identified in Figure 3.5. Pump station locations were identified based aerial imagery along with some local knowledge of the river morphology gained from other projects in the area. They are located within deeper, persistent pools with stable

downstream hydraulic controls. Pump station 1 would be located along the outside bank of a meander bend which can help reduce sedimentation issues along the intake. If this alternative is pursued, a much more detailed analysis of the river corridor would be needed to identify ideal pump station locations more precisely on the Sacramento River.

Below Knight Road

Figure 3.5 Two possible locations for proposed ACID pump stations along the Sacramento River downstream of Redding. Red lines define an approximate pipeline alignment connecting pump station to existing canal (blue line). Both alignments as shown are primarily located on industrial and/or municipally owned land.

In addition to likely being good locations along the river for pump stations, both stations allow for pipelines connecting to the existing ACID canal that are relatively short and located largely on municipally owned/managed land. The short pipeline run to the canals would minimize the significant cost of running large HDPE pipes. While landowners have not been approached at this point, the municipally owned land would likely be easier to gain access to for construction as well. Lastly, an outlet structure would need to be built along the ACID canal to transition the pipeline into the existing canal.

Coupled with constructing a pump station to serve ACID water users, this alternative would also allow for the removal the ACID diversion dam on the Sacramento River in Redding. This would phase would likely occur after the canal is switched over to the pump intake and the upper ACID canal abandoned. As such, planning and removal of the ACID dam would likely fall under a different, larger project scope.

Specific to the ACID siphon crossing Clear Creek, this alternative would allow for some flexibility in addressing the fish passage objective central to this project. Technically, fish passage could be improved with the proposed designs discussed under Alternative 1, 2, and 3. With that, we would suggest fish passage be addressed using a slightly modified version of the nature-like fishway proposed under Alternative 2. As the siphon will not be used anymore, we propose removal of the pipe which would allow for a slightly lowered fishway crest. This would minimize low flow backwater effects upstream of the fishway and promote better transport of fine sediment through the project reach. Beyond this change, the fishway would still consist of a roughened rock-ramp with a low flow channel which would be hydraulically designed to provide for excellent fish passage conditions for a variety of species across a wide range of flows. Note that the lowered crest would either allow for a slightly lower gradient rock ramp or the length of the ramp could be reduced to help minimize material volumes. While the full sheet pile removal proposed under Alternative 1 would be possible under the Alternative 4 proposal, the nature-like fishway alternative is preferred due to the benefits of continued grade control.

Overall, it is seen that this alternative can be viewed as complementary to the nature-like fishway design presented in Alternative 2. As such, this canal decommissioning, pump station/pipeline construction, and dam removal could all occur at some point after a nature-like fishway is constructed at the existing ACID siphon site.

3.4.1 Cost Estimate

The overall cost of replacing the upstream ACID diversion dam with a new pump station is well above the scope of this project to estimate. A similar sized pump station located on the Sacramento River near RM 79 (Woodland-Davis Water Project) cost approximately $140,000,000 to design and construct in the 2010s. That project also included treatment of the water for domestic use but did not include removal of a dam.

The cost estimate provided in the table below only accounts for work that would be required at the ACID siphon crossing of Clear Creek. The control of water assumes the project will partially be constructed in the wet using supersacks or K-rail to push streamflow around active construction. The barrier would likely have to be adjusted during construction to work around active work areas. Some additional pumping or control of water may be required to remove and backfill the existing siphon from the site and costs increased to account for this. Construction will be limited to a short location of the existing wall and would not require the entire channel. Demolition and off-haul would include the full removal of the existing siphon and sections of the sheet-pile wall which extend within 2 feet of the finished grade (i.e. not full removal of the buried sections of the sheet pile).

Table 3.6 Cost estimate for improvements at the ACID siphon crossing if the siphon were to be decommissioned.

Item	Description	Cost
1	Mobilization/Demobilization	$ 85,000
2	Clearing	$ 18,000
3	Control of Streamwater	$ 150,000

4	Demolition and offhaul	$	200,000
5	Placement of Rock Ramp	$	200,000
	Sub-total	$	653,000
	Contingency (25%)	$	163,000
	Total	$	816,000

3.5 Summary of Alternatives

A summary of all four alternatives is provided in Table 3.7 below. Currently, Alternative 2 is the preferred alternative which provides for significant improvement in fish passage through the project site while minimizing impacts to adjacent floodplains and landowners. It also provides for the greatest amount of flexibility when considering the canal decommissioning activities described under Alternative 4. While Alternative 1 provides for excellent fish passage conditions, the requirement to rebuild the siphon makes it less appealing if decommissioning of the ACID canal and diversion dam is at all likely soon.

Table 3.7 Summary of four alternatives presented in this analysis.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Fish Passage Performance	Excellent, same as natural channel.	Excellent, same as natural channel between low and high fish passage flows.	Unchanged for adult salmonid. Minor improvements for juvenile and major improvement for lamprey depending on design.	Excellent, same as Alternative 2 with added benefit of option to remove large dam on the Sacramento River.
Potential Impacts to Existing Floodplain Habitat	Could result in perched floodplain if head cut progresses upstream.	Maintains existing floodplain conditions upstream.	No change.	See Alternative 2.
Reduce Sand Trapping in Channel	Best, restores natural channel slope through project reach	Similar conditions to existing, with option to improve sediment mobility by lower crest.	No change	See Alternative 2.
Potential Impacts to Rancheria Property	Potential for bank instabilities and reduced floodplain connectivity.	Minimal, would need to ensure flood elevations do not change.	No change.	See Alternative 2.
Recreational Safety	Greatly improved	Improved	No change (poor)	See Alternative 2.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Potential Maintenance Requirements	No long-term regular maintenance. Would need an adaptive management plan to address potential impacts to banks and floodplains.	Minimal, but may need to remove debris if recreational use increases.	Lamprey passage structure could need regular repair and maintenance. May need to periodically clear any orifices created in sheet pile.	See alternative 2 for ACID siphon site. Pump stations and pipelines would require regular maintenance of equipment and infrastructure. Pumping costs could be substantial.
Implementation Cost	$1,700,000	$529,000	$193,000	$816,000[1]

[1]Cost is only for improvements at the ACID siphon site under Clear Creek. The overall project cost for a new ACID pump station and abandonment of portions of the canal are likely in the $150,000,000 ballpark.

4 CONCLUSIONS AND NEXT STEPS

Existing hydrologic, hydraulic, and geomorphic conditions at the ACID Siphon site have been described in detail. The results of that analysis have been used to develop an alternatives analysis where four conceptual alternatives were presented and analyzed. Alternative 1 described a complete removal of existing in-channel infrastructure followed by rebuilding the ACID siphon and regrading and restoring the Clear Creek channel. Alternative 2 proposed constructing a nature-like fishway rock ramp at to provide for volitional fish passage over existing infrastructure. Alternative 3 provided a series of relatively simple sheet pile retrofit options aimed primarily at improving Pacific Lamprey passage and juvenile salmonid passage. Alternative 4 proposes an additional layer to the fish passage solution identified in Alternative 2, where the ACID canal is decommissioned allowing for some additional flexibility in the siphon fish passage structure. This could also include the removal of the ACID diversion dam on the Sacramento River. At this point, NHC recommends Alternative 2 be pursued since it allows the greatest benefit to fish passage while providing for flexibility in the future if ACID wishes to pursue decommissioning of their canal. The results of this analysis will be discussed at the December Clear Creek Technical Team meeting, at which the preferred alternative will be ideally formally selected.

5 REFERENCES

ACOE (2023). *HEC-RAS*. [online] Available from: https://www.hec.usace.army.mil/software/hec-ras/.

Boyce, J., Goodman, D. H., and Reid, S. B. (2022). *Regional Implementation Plan for measures to Conserve Pacific Lamprey, California-Sacramento Regional Management Unit*. Technical Report. U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, California.

California Department of Fish and Wildlife (2009). *California Salmonid Habitat Restoration Manual, Part XII: Fish Passage Design and Implementation*. California Department of Fish and Wildlife, Sacramento, CA.

East, A. E., Logan, J. B., Dartnell, P., Lieber-Kotz, O., Cavagnaro, D. B., McCoy, S. W., and Lindsay, D. N. (2021). Watershed Sediment Yield Following the 2018 Carr Fire, Whiskeytown National Recreation Area, Northern California. *Earth and Space Science*, 8(9), e2021EA001828. doi:10.1029/2021EA001828.

England Jr., J. F., Cohn, T. A., Faber, B. A., Stedinger, J. R., Thomas Jr., W. O., Veilleux, A. G., Kiang, J. E., and Mason, Jr., R. R. (2019). *Guidelines for determining flood flow frequency — Bulletin 17C* (4-B5). USGS Numbered Series. U.S. Geological Survey, Reston, VA. 168 pp. [online] Available from: http://pubs.er.usgs.gov/publication/tm4B5 (Accessed 23 July 2022).

Gallagher, A. S. (1999). Barriers. In M.B. Bain and N.J. Stevenson (Eds.), *Aquatic habitat assessment: common methods*. American Fisheries Society, Bethesda, Maryland.

Gard, M. (2020). *Clear Creek ACID Siphon Monitoring*. unpublished memo. California Department of Fish and Wildlife.

Goodman, D. H., and Reid, S. B. (2017). Climbing above the competition: Innovative approaches and recommendations for improving Pacific Lamprey passage at fishways. *Ecological Engineering*, (107), 224–232.

Graham Matthews & Associates (2013). *2010 - 2013 Clear Creek Geomorphic Monitoring: Bedload sampling and gravel injection evaluation*. Final Report.

Lamprey Technical Workgroup (2022). *Practical guidelines for incorporating adult Pacific lamprey passage at fishways, Version 2.0*. White Paper. [online] Available from: https://www.pacificlamprey.org/ltwg/.

Lang, M., and Love, M. (2014). *Comparing Fish Passage Opportunity Using Different Fish Passage Design Flow Criteria in Three West Coast Climate Zones*. Contract Report. National Marine Fisheries Service.

McBain and Trush (2001). *Final Report: Geomorphic Evaluation of Lower Clear Creek Downstream of Whiskeytown Dam, California*. Report submitted to Clear Creek Restoration Team.

Moyle, P. B., Quinones, R. M., Katz, J. V., and Weaver, J. (2015). *Fish species of special concern in California*. California Department of Fish and Wildlife, Sacramento.

National Marine Fisheries Service (2008). *Draft Biological Opinion on the Long-Term Central Valley Project and State Water Project Operations Criteria and Plan*.

National Marine Fisheries Service (2014). *Recovery Plan for Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead*. California Central Valley Area Office.

NMFS (2022). *NOAA Fisheries West Coast Region Anadromous Salmonid Passage Facility Design Manual*. National Marine Fisheries Service, Portland, Oregon.

NMFS (2023). *NOAA Fisheries Pre-Design Guidelines for California Fish Passage Facilities*. National Marine Fisheries Service.

Pelletier, J. D., and Orem, C. A. (2014). How do sediment yields from post-wildfire debris-laden flows depend on terrain slope, soil burn severity class, and drainage basin area? Insights from airborne-LiDAR change detection. *Earth Surface Processes and Landforms*, 39(13), 1822–1832. doi:10.1002/esp.3570.

Pryor, C. (2021). *Clear Creek As-Built Survey Technical Report*. Yurok Tribe Fisheries Department, Arcata, California.

Santi, P. M., and Rengers, F. K. (2022). 9.32 - Wildfire and Landscape Change. In J. (Jack) F. Shroder (Ed.), *Treatise on Geomorphology (Second Edition)* (pp. 765–797). Academic Press, Oxford [online] Available from: https://www.sciencedirect.com/science/article/pii/B9780128182345000171 (Accessed 30 November 2023).

U.S. Geological Survey (2019). *The StreamStats Program*. [online] Available from: https://streamstats.usgs.gov/ss/ (Accessed 17 October 2023).

Warrick, J. A., Hatten, J. A., Pasternack, G. B., Gray, A. B., Goni, M. A., and Wheatcroft, R. A. (2012). The effects of wildfire on the sediment yield of a coastal California watershed. *GSA Bulletin*, 124(7–8), 1130–1146. doi:10.1130/B30451.1.

Date: 03/14/2024 Agenda Item No. 7b.

Agenda Title: Consider/Approve the Sacramento River Settlement Contractor Non-Profit Corporation applying for a grant to California Fish and Wildlife on behalf of ACID to evaluate Sacramento River diversion alternatives.
Discussion: In the WSRCD Clear Creek report referenced in item 7a. alternative #4 calls for consideration of moving the ACID point of diversion on the Sacramento River. While this alternative was rejected in the study, it did start conversations between ACID staff/2 board members and numerous agencies and organizations about the benefits/costs of considering an alternative diversion site. Subsequently, SRSC is proposing to apply for a CDFW grant to further study this issue.
Fiscal Impact: None
Recommendation: SRSC recommends that ACID approve SRSC applying for a CDFW grant to study the feasibility of moving the diversion location.
Attachments: None.

2810 Silver Street, Anderson, CA 96007 | **Phone:** 530-365-7329 | **Fax:** 530-365-7623
www.andersoncottonwoodirrigationdistrict.org

Date: 03/14/2024 Agenda Item No. 7c.

Agenda Title: Discuss & Consider approval to authorize adding Daniel Ruiz as an authorized signatory for NRCS (Natural Resources Conservation Service) projects, Tri Counties bank account, RBC (Royal Bank of Canada) investment account, issue a new credit card for Daniel Ruiz, and adopt Resolution No. 2024-01 updating Local Agency Investment Fund authorization to transfer money.
Discussion: Daniel Ruiz will begin as ACID General Manager on March 18, 2024. The above-referenced authorizations will replace our former manager with Mr. Ruiz and enable him to fulfill his role.
Fiscal Impact: None
Recommendation: Needed for Mr. Ruiz to serve as General Manager.
Attachments: Resolution No. 2024-01

RESOLUTION NO. 2024 - 01

RESOLUTION OF THE BOARD OF DIRECTORS OF ANDERSON-COTTONWOOD IRRIGATION DISTRICT TO AUTHORIZE THE TRANSFER OF MONEY IN THE LOCAL AGENCY INVESTMENT FUND

WHEREAS pursuant to Chapter 730 of the statutes of 1976, Section 16429.1 was added to the California Government Code to create a Local Agency Investment Fund in the State Treasury for the deposit of money of a local agency for purposes of investment by the State Treasurer; and

WHEREAS the Board of Directors does hereby find that the deposit and withdrawal of money in the Local Agency Investment Fund, in accordance with the provisions of §16429.1 of the Government Code, for the purpose of investment as stated therein is in the best interest of Anderson-Cottonwood Irrigation District.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors does hereby authorize the deposit and withdrawal of Anderson-Cottonwood Irrigation District monies in the Local Agency Investment Fund in the State Treasury in accordance with the provisions of §16429.1 of the Government Code for the purpose of investment as stated therein, and verification by the State Treasurer's Office of all banking information provided in that regard.

BE IT FURTHER RESOLVED that the following Anderson-Cottonwood Irrigation District officers shall be authorized to order the deposit or withdrawal of monies in the Local Agency Investment Fund: Daniel Ruiz, General Manager; Teresa White, Financial Manager; James Rickert, Board Member.

PASSED AND ADOPTED this 14th day of March 2024, by the Board of Directors of Anderson-Cottonwood Irrigation District:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____

Dan Woolery, President
Board of Directors
Anderson-Cottonwood Irrigation District

Date: March 14, 2024, Agenda Item No. 7d.

Agenda Title: Discuss, & Approve Terri White's Salary Increase
Discussion: Discuss and read Terri's new salary information to the public.
Fiscal Impact: N/A
Recommendation: The District is recommending a salary increase for several reasons. Terri has shown tremendous dedication to the District as well as fulfilling the needs of her job as the Finance Manager. Terri has trained two Administrative Assistants and helped the new General Managers get acquainted with the office procedures and customers and is an asset to the District.
Attachments: See At-will employment agreement

AT-WILL EMPLOYMENT AGREEMENT
BETWEEN
ANDERSON-COTTONWOOD IRRIGATION DISTRICT
AND
TERESA WHITE

WHEREAS, this Agreement is made between Anderson-Cottonwood Irrigation District (hereinafter referred to as "ACID") and Teresa White (hereinafter referred to as "White"), and collectively hereinafter referred to as "the Parties", on this 14th day of March, 2024.

WHEREAS, ACID desires to continue to employ White as District Financial Manager and White desires to continue her employment as District Financial Manager upon the terms and conditions set forth below.

WHEREAS, the Parties, by execution of this Agreement, agree that all earlier agreements, amendments, understandings, communications, representations, or promises, whether written or oral, are hereby revoked and superseded by this Agreement.

NOW THEREFORE, in consideration of the foregoing, and of the terms and conditions set forth herein, the Parties agree as follows:

1. TERM. This Agreement shall begin on March 14, 2024, and terminate upon the death or permanent disability of White, unless terminated earlier by either party in accordance with the provisions of this Agreement.

2. DISTRICT FINANCIAL MANAGER DUTIES. This is an at-will position. Either White or ACID can terminate employment for any or no cause. This position is not part of the collective bargaining unit represented by Teamsters Local No. 137. White shall perform the duties of District Financial Manager as set forth in the job description attached hereto as Exhibit "A" and subject to modification by the Board of Directors.

////

3. COMPENSATION. ACID shall compensate White for the performance of services during the term of this Agreement as set forth below:

(a) ACID shall pay White $79,040 per year, payable in 24 equal installments, subject to all withholdings and deductions required by law.

(b) In recognition of White's performance of other managerial duties, and her willingness to perform additional duties while ACID is without a General Manager, White shall receive a one-time stipend in the amount of $3,120, subject to all withholdings and deductions required by law.

4. COMPENSATION IS TOTAL. White's position is exempt, and she shall not be entitled to overtime pay, compensating time off, or other compensation or reimbursement for hours worked for ACID, no matter when said work is performed, nor how much time is required. It is expressly understood that the compensation provided to White as listed above will be the total compensation for the services and duties to be performed by White in carrying out all her responsibilities hereunder.

5. TRAVEL. Anytime White's duties require travel, she will be entitled to mileage reimbursement at the then current IRS rate. The costs and expenses of preapproved travel, including meals and lodging, will be paid by ACID or reimbursed to White in accordance with per diem rates established by IRS and in place at the time expenses are incurred. White will submit records of mileage, meals, and lodging in accordance with ACID policy.

6. MEDICAL BENEFITS. Although White is eligible to participate in ACID's medical benefit plans, she has declined to participate. As such, ACID shall not contribute to White's purchase of medical insurance.

////

////

7. DENTAL AND VISION INSURANCE. ACID shall contribute toward White's purchase of ACID selected dental and vision insurance coverage consistent with the contribution received by other ACID employees.

8. SICK LEAVE. White will accrue sick leave of up to eight hours per month. White is not entitled to compensation for any unused sick leave upon separation of employment.

9. VACATION. White shall accrue paid vacation at the rate of .83 days per pay period and shall accrue no more than sixty (60) days. All vacation must be scheduled in advance and approved by the General Manager. Once this maximum accrual level is reached, WHITE will cease accruing additional vacation until her balance falls below this level.

10. HOLIDAYS. White is eligible for eight scheduled holidays and one floating holiday, consistent with other ACID employees.

11. CONTRIBUTIONS TO RETIREMENT. White shall not be eligible for any District contribution to a retirement plan.

12. EVALUATION. An evaluation will be conducted annually by the General Manager. At this time the General Manager may recommend a salary increase, if any, to the ACID Board of Directors for its consideration.

13. TERMINATION OF AGREEMENT:

(a) FOR CAUSE: This Agreement may be terminated by ACID for cause amounting to breach of the terms and conditions of this Agreement, or for facts which in the reasonable opinion of the Board otherwise render White unfit or unqualified to continue as District Financial Manager. Notice of the intended termination for cause, and the grounds constituting such cause, shall be provided to White no less than 15 days before the date of termination, and, if requested by White, the Board shall schedule a meeting with White to review and consider any facts or circumstances offered by White in

mitigation of the Board's intended action. Notwithstanding the foregoing, the Board shall be entitled to meet in closed session without White to deliberate and decide its action. The decision of the Board shall be final.

(b) WITHOUT CAUSE: This Agreement may also be terminated without cause. If White is terminated by the Board of Directors without cause while she is still willing and able to perform the duties of District Financial Manager, ACID agrees to pay White one month's salary. Such payment will release ACID from any further obligations under this Agreement, except payment of any unused vacation leave accrued as of the date of termination.

(1) Pursuant to Government Code section 53243.2, any funds received by White from ACID, resulting from the Board's decision to terminate her without cause, shall be fully reimbursed to ACID if White is convicted of a crime involving the abuse of her powers of office. If ACID funds the criminal defense of White against charges involving the abuse of her office or position, and she is then convicted of those charges, White shall fully reimburse ACID for all District funds paid for her criminal defense.

(c) RESIGNATION: White may resign at any time. White agrees to give ACID at least 30 calendar days' advance written notice of resignation.

(d) TERMINATION BY DEATH: This Agreement shall terminate immediately upon the death of White, and all rights and obligations of the Parties under the Agreement shall be deemed fully satisfied.

(e) TERMINATION BY MUTUAL CONSENT: Notwithstanding any other provision of this Agreement, the Parties may by mutual consent terminate this Agreement at any time.

IN WITNESS THEREOF, the parties hereof have executed this Agreement on this 14th day of March, 2024.

DATE: _____

_____
President of the Board
ANDERSON-COTTONWOOD IRRIGATION DISTRICT

DATE: _____

_____
TERESA WHITE

EXHIBIT A
JOB DESCRIPTION
DISTRICT FINANCIAL MANAGER

Chief Financial Officer Job Description
September 2022

Finance Manager:

- Establishes financial operational strategies and customer-service strategies;-resolves problems; implements change.
- Analyzing and identifying opportunities for improvement, cost reduction, and systems enhancement; Developing financial strategies by forecasting capital, facilities, and staff requirements.
- Updates job knowledge by remaining aware of new regulations; and participating in educational opportunities.
- Accomplishes financial mission by completing related results as needed.
- Develop a system to account for financial transactions by establishing a chart of accounts; and defining bookkeeping policies and procedures.
- Maintains subsidiary accounts by verifying, allocating, and posting transactions.
- Balances subsidiary accounts by reconciling entries.
- Maintains general ledger by transferring subsidiary account summaries.
- Balances general ledger by preparing a trial balance; and reconciling entries.
- Maintains historical records by filing documents.
- Prepares financial reports by collecting, analyzing, and summarizing account information and trends.
- Handles all aspects of payroll, including tax payments, quarterlies, and annual reports.
- Complies with federal, state, and local legal requirements; enforcing adherence to requirements; filing reports; and advising management on needed actions.
- Works closely with auditors before/during/after the annual audit
- Works closely with the General Manager to develop an annual budget for the District.

Date:03/14/2024 Agenda Item No. 7e.

Agenda Title: Discuss and approve Shady Lane compaction bid from SMCI. Discuss & appoint SHN as project manager.
Discussion: During the 2023 irrigation season Shady Lane suffered from high groundwater, impacting nearby properties. ACID has studied improving the lateral in that area with a pipeline and with shotcrete lining. Both options were found to be prohibitively expensive ($550,000 approximately). The ACID Board directed staff and SHN to look for other options. The attached bids represent a compaction option on the upper 600 feet of the lateral where groundwater issues were the worst.
Fiscal Impact: See attached bids
Recommendation: ACID Board to decide to approve one or both bids
Attachments: Bids from Steve Manning Construction and SHN engineering. (Attachment)

S M C I

STEVE MANNING CONSTRUCTION, INC.

GENERAL ENGINEERING CONTRACTOR
CA LIC #754330

Attention ACID: February 29, 2024

BID DATE: February 15, 2024
JOB DESCRIPTION: ACID – Shady Lane Canal Shaping and Compacting

Steve Manning Construction, Inc. is pleased to have the opportunity to quote to your firm the following items of work on the Shady Lane Project.

Steve Manning Construction Inc (SMCI):

1. Is a Union Contractor Signatory to the Operating Engineers Local 3 and Laborers Local 185 all prices include prevailing wage rates

SEE ATTACHED PAGE FOR BID ITEM PRICING AND SCOPE OF WORK

SPECIAL CONDITIONS:

- All underground to be located prior to work. SMCI will not be responsible for unmarked items.

EXCLUSIONS:

1. All SWPPP work (reports, inspections, implementation, installation, BMPs, etc.)
2. All permits and fees
3. All materials testing.
4. Surveying
5. Bonding
6. Liquidated Damages
7. Warranty
8. Driveway and street repair work.

If you have any questions, or require additional information, please feel free to contact me.

Thank you,
Bill Spoon
Bill Spoon
Project Manager
Steve Manning Construction Inc.
Cell: 530-605-5704
bspoon@smci-const.com

IMPROVEMENT AREA - Shady Lane

Item	Descriptions	Qty.	Unit	Unit Cost	Extended AMOUNT
1	Mobilization	1	LS	$5,000.00	$5,000.00
6	Vegetation Removal, Clearing and Grubbing (stripping vegetation)	1	LS	$5,000.00	$5,000.00
7	Canal Shaping and Grading 600lf	3	days	$3,000.00	$9,000.00
8	Import and Placement of Clay from Hawes	180	CY	$100.00	$18,000.00
9	Compact with excavator mounted vibe plate	3	days	$3,700.00	$11,100.00
	Total Improvement Area Quote Price				$48,100.00

From: Steve Nelson
Sent: Friday, March 1, 2024 1:28 PM
To: Dan Woolery
Cc: Bruce Grove
Subject: Shady Lane

Dan

Attached is a proposal for my involvement in the oversight of work by Steve Manning Construction to compact the channel of the canal.

Please sign after it is approved and return a copy to me.

Let me know if you have any questions.

Steve Nelson
Office: 530-221-5424
Cell: 530-945-6076

Civil Engineering, Environmental Services,
Geosciences, Planning & Permitting, Surveying
www.shn-engr.com
350 Hartnell Avenue, Suite B
Redding, CA 96022-1875

Reference: 523031
(523000.023

Addendum No. 3 To Agreement
Dated November 14, 2023
Proposal to Provide Civil and Design Engineering Services
(Project Name Shady Lane Canal)

Additional Scope of Work

SHN proposes to furnish engineering oversight and inspection service for the construction of the reshaping and lining the canal channels from the inlet structure at Shady Lane to approximate station 6+80 (680 lf).
All exclusions will remain the same as in the original Service Agreement as referenced.

Related Costs

SHN agrees to provide services covered by this Addendum on a time and expenses basis. Fees are estimated to be $7,800

SHN Consulting Engineers & Geologists, Inc.		**Client:**	**ACID Irrigation District**
Address:	812 W. Wabash Ave. Eureka, CA 95501-2138	Address:	2810 Howard St Anderson, CA 96007
By:	**Bruce Grove**	By:	**Dan Woolery**
Title:	**Regional Principal**	Title:	**Chairman of the Board**
Signature:		Signature:	
Date:		Date:	

Date: 03/14/2024 Agenda Item No. 7f.

Agenda Title: Discuss and approve hiring of a temporary employee to fill in for permanent employee out on disability.
Discussion: ACID currently has one employee out on disability and their return date is uncertain. The Operations Manager is requesting that he be authorized to fill this position with a temporary employee until the permanent employee returns to work.
Fiscal Impact: Cost of temporary employee probably offset by salary savings from employee unable to work.
Recommendation: Operation Manager recommends approval
Attachments: none

2810 Silver Street, Anderson, CA 96007 | **Phone:** 530-365-7329 | **Fax:** 530-365-7623
www.andersoncottonwoodirrigationdistrict.org

Date: 03/14/2024 Agenda Item No. 7g.

Agenda Title: Discuss status of Strategic Planning Committee.
Discussion: ACID Board has recently appointed 2 Board members and 5 community members to the Strategic Planning Committee. Shortly after that action, General Manager Dahl resigned. General Manager Ruiz starts March 18. Should the Strategic Planning Committee delay its deliberations until Manager Ruiz has time to settle in and gain familiarity with district issues?
Fiscal Impact: None
Recommendation: Board decision
Attachments: None