From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 5/4/2020 8:31:40 AM
To: Kevin Spesert [kspesert@sitesproject.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: VP Table 3-1
Attachments: Table 3-1 Value Planning.pptx

Hi Kevin,

Attached is Table 3-1 in PowerPoint format. These were the diversion criteria used for the VP report based on conversations with CDFW. We will be re-initiating these conversations soon and the criteria may be revised for the EIR/EIS analysis. I cc'd Ali in case you have specific questions on potential changes to the criteria; we are working with ICF and Jacobs to develop a strategy for moving forward with discussions with CDFW.

Thanks!
Erin

Erin Heydinger, PE, PMP
Asst. Project Manager
Water/Wastewater

HDR
2379 Gateway Oaks Dr, #200
Sacramento, CA 95833
D 916.679.8863 M 651.307.9758

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TABLE 3-1. ASSUMED DIVERSION AND OPERATIONS CRITERIA (SCENARIO B)

Location	Criteria
Wilkins Slough Bypass Flow	8,000 cfs April/May 5,000 cfs all other times
Fremont Weir Notch	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 5%
Flows into the Sutter Bypass System	No restriction due to flow over Moulton, Colusa, and Tisdale Weirs
Freeport Bypass Flow	Modeled WaterFix Criteria (applied on a daily basis) Post-Pulse Protection (applied on a moving 7-day average) Post-Pulse (3 levels) = January–March Level 2 starts January 1 Level 1 is initiated by the pulse trigger
Net Delta Outflow Index (NDOI) Prior to Project Diversions	44,500 cfs between March 1 and May 31

From: Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]
Sent: 5/4/2020 9:50:43 AM
To: Cordova, Daniel A [dcordova@usbr.gov]; Carper, Mark A [mcarper@usbr.gov]
CC: Ivie, Melissa M [mivie@usbr.gov]; Davis, Ryan A [rdavis@usbr.gov]; Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [John.Spranza@hdrinc.com]; Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Briard, Monique [Monique.Briard@icf.com]; Tannourji, Danielle [Danielle.Tannourji@icf.com]; christian.havelaar@icf.com; Davis, Ryan A [rdavis@usbr.gov]
Subject: RE: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological
Attachments: OneDrive_1_5-4-2020.zip

Good morning Dan and Mark
We have revised the post-construction monitoring reports to reflect some confusion with terminology related to "phase 1". We hope that these reports now meet your needs.

Let us know if you have any questions/concerns.

Happy Monday!
Jelica

Jelica Arsenijevic
Due to COVID-19, I will be working from home. Please contact me via cell # listed below. Be safe out there!

D 916-679-8854
M 209-329-6897

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From: Arsenijevic, Jelica
Sent: Friday, April 24, 2020 8:27 AM
To: 'Cordova, Daniel A' <dcordova@usbr.gov>
Cc: Ivie, Melissa M <mivie@usbr.gov>; Carper, Mark A <mcarper@usbr.gov>; Davis, Ryan A <rdavis@usbr.gov>; Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Briard, Monique <Monique.Briard@icf.com>; Tannourji, Danielle <Danielle.Tannourji@icf.com>; christian.havelaar@icf.com; Davis, Ryan A <rdavis@usbr.gov>
Subject: RE: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological

Sounds good Dan! Thank you and happy Friday!

Jelica Arsenijevic
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M 209-329-6897

hdrinc.com/follow-us

From: Cordova, Daniel A [mailto:dcordova@usbr.gov]
Sent: Friday, April 24, 2020 8:26 AM
To: Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Cc: Ivie, Melissa M <mivie@usbr.gov>; Carper, Mark A <mcarper@usbr.gov>; Davis, Ryan A <rdavis@usbr.gov>; Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Briard, Monique <Monique.Briard@icf.com>; Tannourji, Danielle <Danielle.Tannourji@icf.com>; christian.havelaar@icf.com; Davis, Ryan A <rdavis@usbr.gov>
Subject: Re: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological

Since this is being provided to the FWS for reporting, I think clarifying the phases in the memos is appropriate. Perhaps removing the term "phase" and just explaining that the work detailed in the memos has been completed would suffice.

Thank you,

Dan

From: Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Sent: Friday, April 24, 2020 8:15 AM
To: Cordova, Daniel A <dcordova@usbr.gov>
Cc: Ivie, Melissa M <mivie@usbr.gov>; Carper, Mark A <mcarper@usbr.gov>; Davis, Ryan A <rdavis@usbr.gov>; Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Briard, Monique <Monique.Briard@icf.com>; Tannourji, Danielle <Danielle.Tannourji@icf.com>; christian.havelaar@icf.com <christian.havelaar@icf.com>; Davis, Ryan A <rdavis@usbr.gov>
Subject: RE: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological

Good morning Dan
The intent of using the Phase 1 term was to distinguish what activities were completed vs. what remains. Now that you've brought that to attention, we agree that there is no context.

Would you like us to revise the introduction section of the memo's to provide context – highlighting that the initial intent (what is in the original PD) identified 36 bore locations and 20 CPT tests? I'm confident that ICF can revise memo fairly quickly. If yes, both memo's will be revised and resent.

Thanks!

Jelica Arsenijevic
Due to COVID-19, I will be working from home. Please contact me via cell # listed below. Be safe out there!

D 916-679-8854
M 209-329-6897

hdrinc.com/follow-us

From: Cordova, Daniel A [mailto:dcordova@usbr.gov]
Sent: Friday, April 24, 2020 7:00 AM
To: Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Subject: Re: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological

Thanks Jelica,

The report calls the work conducted "Phase I", but doesn't put it into context. I don't recall the project description we sent to FWS having the project broken into phases. Can you tell me how the phases have been identified?

Thanks,

Dan

From: Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Sent: Thursday, April 23, 2020 2:50 PM
To: Cordova, Daniel A <dcordova@usbr.gov>; Ivie, Melissa M <mivie@usbr.gov>; Carper, Mark A <mcarper@usbr.gov>
Cc: Davis, Ryan A <rdavis@usbr.gov>; Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Briard, Monique <Monique.Briard@icf.com>; Tannourji, Danielle <Danielle.Tannourji@icf.com>; christian.havelaar@icf.com <christian.havelaar@icf.com>
Subject: [EXTERNAL] Sites/NODOS Phase 1 Geotechnical Post-Construction Monitoring Report Summaries - Biological and Archaeological

Hello
Hope this note finds you doing well. Attached are the biological and archaeological post-construction monitoring's report summaries for Phase 1 geotechnical studies. ICF did an outstanding job monitoring and summarizing their efforts.

If, by chance, your email system stripped the attachments (due to size), I can upload the documents to OneDrive.

Please let us know if you have any questions or concerns.

Jelica Arsenijevic
Environmental Project Manager

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Sacramento, CA 95833
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M 209-329-6897

Jelica.Arsenijevic@hdrinc.com

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From: Kevin Spesert [kspesert@sitesproject.org]
Sent: 5/4/2020 10:13:14 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Jerry Brown [jbrown@sitesproject.org]
CC: Marcia Kivett [MKivett@sitesproject.org]
Subject: RE: Enviro Slide Deck
Attachments: Sites_Overview PPT_Environmental jdb.pptx

Here is the revised version…I think I caught all of Ali's edits…but please take another look to make sure I got them all..

Thanks!

Kevin

Kevin Spesert
Real Estate & Public Affairs Manager
Sites Project Authority
Phone: 530.632.4071
Email: kspesert@sitesproject.org
Web: www.SitesProject.org
P.O. Box 517
122 Old Hwy 99W
Maxwell, CA 95955

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 4, 2020 8:32 AM
To: Jerry Brown <jbrown@sitesproject.org>; Kevin Spesert <kspesert@sitesproject.org>
Cc: Marcia Kivett <MKivett@sitesproject.org>
Subject: RE: Enviro Slide Deck

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1. We're inconsistent on our use of AFY or ac-ft/yr. I'd suggest AFY and just be consistent throughout.
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I am happy to double check once the diversion criteria table is in the file.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

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Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Marcia Kivett <MKivett@sitesproject.org>
Subject: Enviro Slide Deck

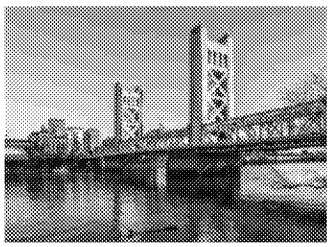
Kevin – I don't what happened on the sharepoint but here is a copy of the revised slide deck incorporating the 3 additional slides. I'd like the deck for our meetings this week (starting tomorrow morning @9) with enviro groups and Chuck Bonham. Please take liberties to make the additional slides 8, 9, 14 look good. Let me know when its ready. Thanks

Ali – FYI and let me and Kevin know if you have any concerns or would like to add other material. thanks

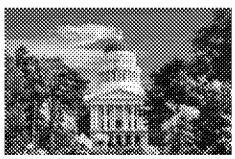

Sites Reservoir
Sites

21st Century Solution to California's Water Reliability Challenges

Sites Reservoir is a generational opportunity to construct a multi-benefit water storage project that helps **restore flexibility, reliability, and resiliency** to our statewide water supply

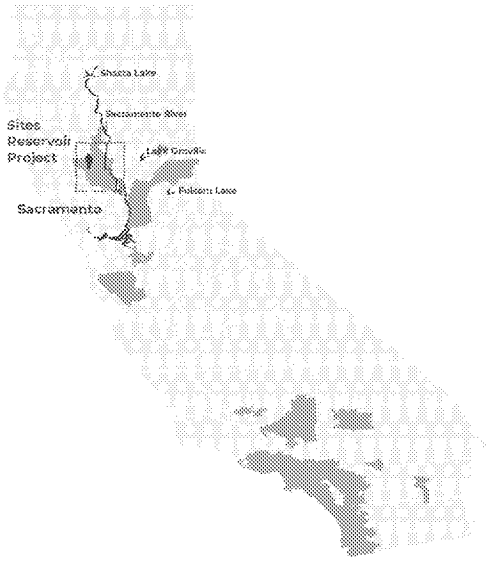




Sites

Our Strength is in Our Broad Statewide Participation

Diverse statewide representation of public agencies advancing Sites Reservoir



Participants include counties, cities, water and irrigation districts

Urban and Rural

Sacramento Valley

San Joaquin Valley

Bay Area

Southern California

Sites

Our Strength is in Our Broad Statewide Participation

Sacramento Valley

Carter Mutual Water Company
City of American Canyon
Colusa County
Colusa County Water Agency
Cortina Water District
Davis Water District
Dunnigan Water District
Glenn County
Glenn-Colusa Irrigation District
LaGrande Water District
Placer County Water Agency
Reclamation District 108
City of Roseville
Sacramento County Water Agency
City of Sacramento
Tehama-Colusa Canal Authority
Westside Water District
Western Canal Water District

Bay Area

Santa Clara Valley Water District
Zone 7 Water Agency

San Joaquin Valley

Wheeler Ridge-Maricopa Water Storage District

Southern California

Antelope Valley - East Kern Water Agency
Coachella Valley Water District
Desert Water Agency
Metropolitan Water District
San Bernardino Valley Municipal Water District
San Gorgonio Pass Water Agency
Santa Clarita Valley Water Agency

Sites

Rightsized to Meet Our Current and Future Water Supply Needs

Sites Reservoir has been designed and optimized to meet our water supply needs for today and in the future

The Sites Project Authority conducted a **rigorous Value Planning effort** to review the project's proposed operations and facilities **to develop a project that is "right sized" for our investors and participants** while still providing water supply reliability and enhancing the environment

Rightsizing the reservoir was **responsive to input** from **state and federal agencies, NGOs, elected officials, landowners and local communities**

The **feedback we received** through a robust outreach effort was **critical** to developing a reservoir that is the **right size for both people and the environment**

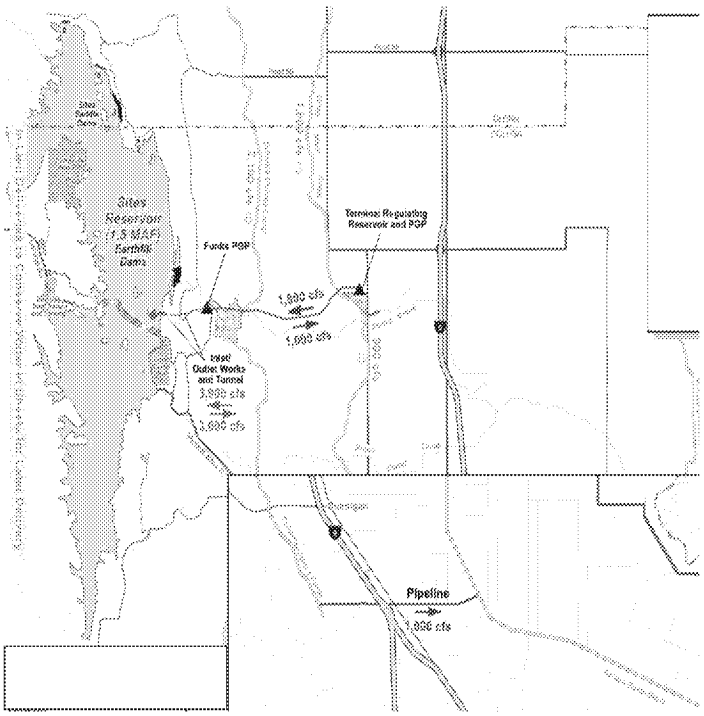
Sites

Rightsized to Meet Our Current and Future Water Supply Needs

1.5 million acre-feet

Utilizes the existing **Glenn-Colusa Irrigation District** and **Tehama-Colusa Canal Authority** canals to convey water to Sites Reservoir from the Sacramento River

Delivers water back to the Sacramento River through the **Tehama-Colusa Canal** and through the **Colusa Basin Drain** for participant deliveries and for the environment



Rightsized to Meet Our Current and Future Water Supply Needs

Member	Reservoir Participation(AFY)
Public Water Agencies	
North of Delta	52,142
South of Delta	140,750
Subtotal Public Water Agencies	192,892
State of CA	~ 40,000
Total Requirement	~230,000

Participant Demand

Participant water subscriptions allocated in the **current participation agreement**

Allocation of State of California water subscription is based on the **Proposition 1 water investment**

- Water for Delta Smelt
- Water for Refuges

Release Capacity from Sites

The "rightsized" project can deliver water to meet the demands of our participants and California's investment of water for the environment

Long term average ~240,000 AFY

Year Type	1,000 cfs Release Capacity (AFY) to the Colusa Basin Drain
Wet	90 - 120
Above Normal	260 - 290
Below Normal	245 - 275
Dry	355 - 385
Critically Dry	210 - 240

Sites

Assumed Diversion and Operations Criteria

Location	Criteria
Wilkins Slough Bypass Flow	8,000 cfs April/May 5,000 cfs all other times
Fremont Weir Notch	Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 5%
Flows into the Sutter Bypass System	No restriction due to flow over Moulton, Colusa, and Tisdale Weirs
Freeport Bypass Flow	Modeled WaterFix Criteria (applied on a daily basis) Post-Pulse Protection (applied on a moving 7-day average) Post-Pulse (3 levels) = January–March Level 2 starts January 1 Level 1 is initiated by the pulse trigger
Net Delta Outflow Index (NDOI) Prior to Project Diversions	44,500 cfs between March 1 and May 31

Sites

Assumed Release Criteria

Most releases occur in dry years for water supply and environmental benefits

Priority of releases assume the following:

- Provide water to project participants north and south of the delta
- Provide water to Cache Slough area via Yolo bypass
- Provide water for incremental Level 4 refuge deliveries
- Support Reclamation goals through exchanges

Deliveries to SWP contractors supplement Table A (start @ 85% allocation and more aggressive releases starting @ 65%)

Sites

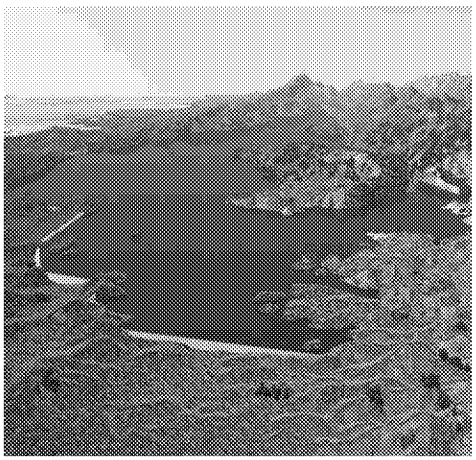
Rightsized to Meet Our Current and Future Water Supply Needs

The Value Planning process has **resulted** in a project that has a **smaller footprint** and **operated in a different manner** then originally designed

Due to these changes the Authority will **revise and recirculate its Draft EIR**

Work with **landowners, tribes, stakeholders, NGOs, and local communities** to develop a **collaborative environmental review process**

It is essential that we **build a project now that makes sense for all our participants** – local, state, and federal



Sites

Rightsized to Meet Our Current and Future Water Supply Needs

Reservoir Size (MAF)	1.5
Project Cost (2019$, billions)	$2.4 - $2.7
Contingency Cost (2019$, billions)	$0.6
Total Project Cost (2019$, billions)	$3.0 - $3.3
Annualized AFY release	240,000
Range of Annual Costs During Repayment Without WIFIA Loans (2020$, $/AF)	$650 - $710
Range of Annual Costs During Repayment With WIFIA Loans (2020$, $/AF)	$600 - $660

The rightsized project is **roughly $2 Billion less** then the 2017 preferred alternative

Cost savings primarily from the **removal** of the **Delevan Diversion** facility on the Sacramento River and the **Delevan Pipeline**

Lowered the Annual Cost during repayment ($/AF)

Significant savings to participants with finance through a **WIFIA** government backed loan

Sites

Provides Statewide Benefits for Generations to Come

Sites Reservoir provides many multi-layered benefits

Off-stream Storage

Does not create a barrier to native fish migration

Federal and State Agencies Manage Environmental Water

Adaptable to current and future conditions and priorities

Local Leadership and Cooperation

Aligns with Sacramento Valley's values and fosters regional and statewide collaboration

Cooperative Operation

Increases effectiveness and efficiency of existing water storage infrastructure

Adaptable to Climate Change

Contributes to system reliability and performance with climate change

Dry Year Water Supply

Reliable dry year water supply for California communities, farms and businesses

Recreational Opportunities

Provides northern Sacramento Valley with additional opportunities for recreation

Environmental Support

Provides environmental water in drier periods for native fish, and habitat for native species and birds

Sites

Provides Statewide Benefits for Generations to Come

Sites Reservoir provides water dedicated to environmental use

A significant portion of the **Sites Reservoir Project's annual water supplies will be dedicated to environment uses:**

- **Preserve cold-water** pool in **Lake Shasta** later into the summer months to support **salmon development, spawning and rearing**
- Provide a **reliable supply of refuge water** to improve **Pacific Flyway** habitat for **migratory birds** and other **native species**
- Provide **water dedicated** to help improve conditions for the **Delta Smelt**

Water dedicated for the environment provided by Sites Reservoir will be **managed by state resources agency managers** who will decide how, and when, this water would be used - creating a water asset for the state that **does not currently exist**

Sites

Possibilities of Environmental Water Uses

Member	Reservoir Participation(AFY)
Public Water Agencies	
North of Delta	52,142
South of Delta	140,750
Subtotal Public Water Agencies	192,892
State of CA	~ 40,000
Total Requirement	~230,000

Potential Beneficiary
Level 4 refuge water
Enhanced Delta Ecosystem
Improve Survival of Anadromous Fish

Sites creates a resource that can be managed for the benefit of the species.

Water for the environment is managed by state resource agencies.

There is flexibility to manage these benefits each year.

The range of possibilities will be covered in the recirculated Draft EIR.

Sites

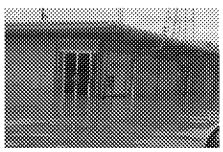
Provides Statewide Benefits for Generations to Come

Sites Reservoir provides regional flood protection benefits

Provides significant **regional flood protection benefits** for the Sacramento Valley

Will capture and store **flood flows** that would normally impact the community of **Maxwell** - protecting homes, business and farms

Will help to **limit "down stream" flooding issues** by capturing storm flows that sometimes overwhelm the regions flood control facilities



Sites

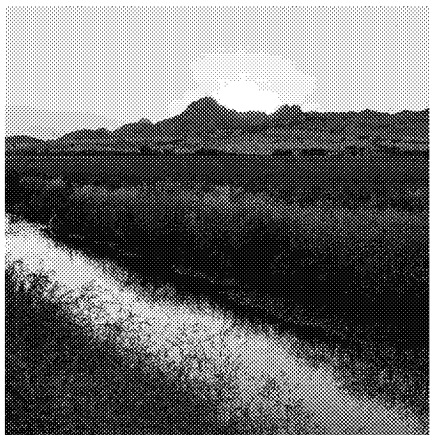
Provides Statewide Benefits for Generations to Come

Sites Reservoir will benefit the local and regional economy

Create **hundreds of construction-related jobs** during each year of the construction period, and **long-term jobs related to operations**

Creates **new recreation opportunities** in the Sacramento Valley which adds to the **region's economy**

Adding **resiliency** to the water supply will **strengthen the statewide economy** and **business** that rely on a reliable source of water for their operations – particularly agriculture



Sites

We are On-Track to Deliver This Vital Project for the People of California

Key Milestones Through 2021

Meet **eligibility requirements under Prop 1 (WSIP)** in order to access the remainder of the $816 Million in funding

Recirculate Draft EIR for public comment, proactively engage stakeholders, develop responses to comments to support environmental feasibility determination

Complete Feasibility Report

Secure environmental permit certainty and **draft permit applications**

Update and **refine cost estimate** and **affordability analysis**

Develop Plan of Finance

Improve definition of **SWP/CVP** exchange, including **Operations Plan**

Enhance landowner, stakeholder & NGO engagement

Develop Operating Agreement Term Sheets with: DWR, USBR, TCCA, GCID, CBD Authority

Sites


Questions
Sites

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 5/4/2020 10:28:30 AM
To: Kevin Spesert [kspesert@sitesproject.org]; Alicia Forsythe [aforsythe@sitesproject.org]
CC: Marcia Kivett [MKivett@sitesproject.org]
Subject: Re: Enviro Slide Deck

Looks good to me. Thanks to you both for your contributions.

From: Kevin Spesert <kspesert@sitesproject.org>
Date: Monday, May 4, 2020 at 10:13 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>, Jerry Brown <jbrown@sitesproject.org>
Cc: Marcia Kivett <MKivett@sitesproject.org>
Subject: RE: Enviro Slide Deck

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Kevin Spesert
Real Estate & Public Affairs Manager
Sites Project Authority
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P.O. Box 517
122 Old Hwy 99W
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From: Spranza, John [John.Spranza@hdrinc.com]
Sent: 5/4/2020 12:56:38 PM
To: Lecky, Jim [Jim.Lecky@icf.com]; Monique Briard (monique.briard@icf.com) [monique.briard@icf.com]; Berryman, Ellen (Ellen.Berryman@icf.com) [Ellen.Berryman@icf.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]; laurie.warner.herson [laurie.warner.herson@phenixenv.com]; Fisher, Linda [Linda.Fisher@hdrinc.com]
Subject: Emailing: EFFECTS OF SITES RESERVOIR DIVERSIONS ON SACRAMENTO RIVER HABITAT_110317
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TECHNICAL MEMORANDUM

Effects of Sites Reservoir Diversions on Sacramento River Habitat

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DATE:	November 2, 2017	

The Sites Project draft EIR/EIS (DEIRS) has been released for public review on August 14, 2017. The DEIRS identified potential effects related to the proposed diversions off the Sacramento River to fill Sites Reservoir. Following the release of the DEIRS, additional analysis was performed to refine DEIRS findings related to the effects of proposed Sacramento River diversions on Sacramento River flow and the ecologically sensitive fish habitat downstream of the three intakes. This analysis was based on the modeling performed for the DEIRS Alternative D, and was focused on the Sacramento River reach from Red Bluff to Knights Landing, covering the portion of the River that would be affected by the diversions at the three intakes. The analysis included a review of historical hydrology, a review of literature and data sources on fish presence and available habitat, and estimating potential effect of the Sites Reservoir diversions within the study reach. This Technical Memorandum (TM) summarizes the objectives of this analysis, methods used and the results.

1.0 Background

The DEIRS Alternative D includes a 1.8 MAF Sites Reservoir, and three intakes to divert water off the Sacramento River to fill the proposed Sites Reservoir. Two of the intakes are existing diversion facilities at Red Bluff and Hamilton City, and the third intake is a new proposed diversion facility at Delevan. Together, the three intakes can divert up to a maximum of 5900 cfs. Alternative D included bypass flow requirements downstream of the intakes at Red Bluff and Hamilton City, at Wilkins Slough and Freeport, that would limit the amount of Sacramento River flow that can be diverted to fill Sites Reservoir. In addition to the bypass flow criteria, a criterion to protect pulse flows in the Sacramento River was included in the Alternative D, to minimize potential effects of the Sites diversions on migrating juvenile salmonids. Sacramento River diversions to fill Sites Reservoir can occur in any month once the proposed diversion requirements are met. It is anticipated Sites Reservoir would be filled primarily during November through March months.

DEIRS No Action Alternative and Alternative D were modeled using CalSim II to simulate CVP-SWP operations along with proposed Sites Reservoir operations. CalSim II simulates storages and flows on a monthly timestep. A daily timestep model called Upper Sacramento River Daily Operations Model (USRDOM) was used to refine the Sites Reservoir diversions considering the bypass flow and the pulse protection criteria. CalSim II and USRDOM results formed the basis of the analyses performed in the DEIRS to assess potential effects to the aquatic resources.

2.0 Objectives

The purpose of this analysis is to evaluate potential effects of Sites Reservoir diversions on the ecologically-important habitats along the Sacramento River downstream of Red Bluff. This analysis helps formulate responses to two primary questions:

- Are the ecologically-important habitats along the Sacramento River affected because of the diversions to fill Sites Reservoir?

- Are there alternate diversion operations that could alleviate any potential effects?

The information presented in this TM also aids in understanding the hydrology, fisheries and habitat characteristics of the Sacramento River reach from Red Bluff to Knights Landing. The analysis documented in this TM should be considered preliminary and its use should be limited for screening purposes given the nature of the information and tools used.

3.0 Fish Summary

This section summarizes an effort to understand the important fish species and their life history processes in the Sacramento River reach from Red Bluff to Knights Landing. Based on a survey of the recent scientific literature a framework of fish life history processes and their hydraulic dependencies was developed for a few focal species. Table 1 summarizes the relative sensitivities of four focal fish species to changes in Sacramento River flows at and below Red Bluff. Focal species evaluated include Sacramento River ESU winter-run Chinook salmon, Central Valley ESU spring-run Chinook salmon, California Central Valley DPS steelhead, and southern DPS green sturgeon. These species were analyzed in the Sites DEIRS, and are included as focal species for more detailed analysis here because they are endangered or threatened under the federal Endangered Species Act (ESA) and/or California ESA, and because they rely on the Sacramento River Below Red Bluff and above Knights Landing for major portions of their life histories. Life history information and important stressors for the focal species, by developmental life-stage, used in Table 1 is largely summarized from NMFS (2014), USBR (2008), Beamsderfer et al. (2004), and Michel et al. (2015).

Color coding is used in Table 1 to identify the relative importance of various stressors to negatively influence each focal species, by noted life-stage. Orange shading identifies stressors that are likely most consequential to the survival and condition of a focal species life stage. Dark green identifies stressors that are potentially important and consequential, but likely less so than those in orange shading. Cells noted as N/A (in light green shading) indicate stressors that are least likely to negatively influence a focal species life stage.

For example, winter-run Chinook (WRC) salmon adults typically return from the ocean during the winter, and hold in the mainstem of the Sacramento River until the spring-summer spawning season. Most spawning and egg incubation occurs below Keswick Dam, but above Red Bluff. Incubated eggs hatch in August, with most juvenile WRC salmon rearing in the Sacramento River mainstem or estuarine Delta waters for 5-9 months prior to emigrating in the spring. Interpreting Table 1, the most sensitive life-history stages for WRC salmon include: decreased survival and egg viability of immigrating and holding adults from warm water temperatures during the months of December to July; passage impairments and stranding of rearing and emigrating juveniles in side-water and floodplain habitats during the months of July through April; decreased survival of rearing and emigrating juveniles from warm water temperatures from July through April, and; extended emigration travel times increased predation risks to juveniles from July through April. Spawning adults and incubating eggs are not identified as relatively high-risk life stages for WRC salmon since this species generally spawns upriver of the upstream-most Sites diversion location.

Based on the information summarized in Table 1, rearing and emigrating juveniles of all focal species are sensitive to changes in water depth, velocity, and temperature in the Sacramento River reaches from Red Bluff to Knights Landing. Juveniles of focal species may be found in the Sacramento River during most months of the year. Unsuitable water temperature is likely the most important stressor for focal species adults during immigration and holding periods in the reaches of interest, which for focal species ranges most months of the year. Focal salmonid species largely spawn in Sacramento River tributaries (i.e., CCV steelhead and spring-run Chinook salmon) or spawn primarily in the Sacramento River mainstem above Red Bluff (i.e., winter-run Chinook salmon). As such, spawning adults and incubating eggs are not shown in Table 1 as relatively high sensitivity species life-stages. Alternatively, green

sturgeon is known to spawn in the Sacramento River mainstem from Keswick Dam to Hamilton City, and its immigrating and spawning adult life-stages are shown as sensitive to changes in water temperature, depth, and velocity.

Sacramento River flow diversions between Red Bluff and Delevan during the anticipated Sites fill season (typically, November through March) coincide largely with focal species rearing and emigrating juvenile life-stages. These life-stages and functions are therefore most sensitive to flow-related passage impairments (e.g., stranding in off-channel and near-channel habitats), decreases in access to floodplain and near-channel rearing habitats, increases in water temperature, and decreases in flow velocities (increased risk of predation).

4.0 Habitat Characteristics

This section summarizes an effort to understand the ecologically-important riverine habitats and features along the mainstem Sacramento River from Bend Bridge to Knights Landing. The study area was divided into three reaches – Bend Bridge[1] to Hamilton City, Hamilton City to Delevan and Delevan to Knights Landing. This effort resulted in information on the species that utilize these habitats and their hydraulic dependencies, the distribution and total area of natural habitat features, estimated acreage of habitat inundation for specific flows based on hydraulic modeling, and the ranges of flows that activate and inundate secondary channel features. Using the information collected on habitat availability and the modeled flow inundation flow – area – depth relationships that integrate salmonid floodplain rearing habitat depth criteria were developed for different habitat types for three reaches in the study area.

4.1 Habitat Mapping

An ecological framework was developed that identifies key species and habitats along the Sacramento River channel corridor, and their hydraulic dependencies and ecological processes. Emphasis was placed on identifying, quantifying, and mapping natural habitats that could potentially support the species and processes identified in the ecological framework, or that could be influenced by the hydraulic effects of the diversions being considered by the Sites Project. Habitat features identified in the ecological framework were quantified (acres) and mapped using recent GIS data developed for the California Department of Water Resources (DWR) to assist with the development of the Central Valley Flood Protection Plan (CVFPP) (DWR, 2017).

4.2 Inundation Area Mapping

Inundation polygons were generated from results of Sacramento River HEC-RAS 5.0.3 steady-state simulations for different flows. The Sacramento River HEC-RAS model is a sub-section of the Sacramento River Routing model, which was developed, calibrated, and validated in 2014 for Central Valley Floodplain Evaluation and Delineation (CVFED). This sub-section was converted from HEC-RAS version 4 to version 5.0.3 and includes the Sacramento River reach from Keswick Dam to Knights Landing. Steady state simulations of this 1D hydraulic model were used to estimate the water surface elevations in the study reach for 40 flow profiles ranging from 5,000 cfs to 55,900 cfs. Using the water surface elevation outputs from the HEC-RAS simulations coupled with a LiDAR terrain model of the Sacramento River basin, inundation polygon areas were calculated along the three study sub-reaches.

4.3 Flow – Inundation Area Analyses

The inundation areas for each flow profile were overlaid onto the habitat area maps described above, and intersected to calculate the total amount of inundated habitat within each study reach for a given flow profile. This analysis provided an initial estimate of the relationship between flow and area of inundated floodplain habitat along the Sacramento River channel corridor. The inundation areas from

[1] For the habitat area mapping, Bend Bridge was used as the upstream boundary for the study reach to capture any effects on the habitat upstream of Red Bluff due to the diversions at the Red Bluff intake.

the HEC-RAS model were further refined by excluding areas with depths greater than 5 feet, recognizing the suitability of habitat for chinook salmon and steelhead fry and juveniles (Hampton et al, 1997). Figures 1 to 3 show the flow-inundation area curves the three reaches for selected habitat types that describe the relationship between flow and inundated habitat areas less than 5 feet in depth. As shown in these figures there is a strong correlation between the flow and the habitat available. There is a significant quantity of hydraulically connected floodplain and off-channel habitat between Red Bluff and Delevan available as rearing habitat for salmonids. However, in Reach 3, as flows exceed 5 feet in depth, available inundated habitat begins to decline likely due to changes in channel geometry, largely a result of levees and other flood management infrastructure.

4.4 Secondary Channel Features Mapping

In addition, secondary channels and off-channel shallow water habitat features were also identified and mapped based on Kondolf and Stillwater Sciences, 2007 study. Locations of 17 low-elevation secondary channel features within reaches 1 and 2, the flows at which those features begin to become activated (inundated), and the flows at which they become fully connected (contiguous) to the main channel (allowing fish to move freely between the interior portions of the secondary channel features and the main Sacramento River channel) were identified. These activation flows are summarized in Figure 4. Activation flow thresholds are also represented in Figures 1 to 3. As shown in these figures, the secondary channel features identified in this evaluation would be highly sensitive to changes in flows ranging from 6,000 cfs to about 15,000 cfs.

5.0 Hydrologic Characteristics

This section summarizes historical flow characteristics in the Upper Sacramento River. USRDOM hydrologic model (CH2M HILL, 2011) was used to simulate historic river flows in the Sacramento River from Keswick to Knights Landing on a daily timestep for water years 1963 to 2010. The analysis was used to understand the tributary flow contributions, frequencies and the durations of flows at various locations along the Sacramento River. Daily flow data from the USRDOM was used to evaluate flow characteristics at six locations along the Sacramento River:

1. Keswick Dam
2. Bend Bridge
3. Red Bluff (downstream of Tehama-Colusa Canal (TCC) intake)
4. Hamilton City (downstream of Glenn-Colusa Canal (GCC) intake)
5. Delevan (downstream of proposed new intake)
6. Wilkins Slough

This analysis was limited to November through March, which is the anticipated to be the primary fill season for the Sites Reservoir.

Tributary flows were estimated for three reaches of the river upstream of the three Sites Reservoir intakes (Keswick to Red Bluff, Red Bluff to Hamilton City and Hamilton City to Delevan) to understand the unregulated flow contribution at each intake. Estimates of tributary flow contributions were computed based on differences in daily flows between downstream and upstream locations of each reach. Hence, the tributary flow values reported in this study include both gains and losses in the main channel of the river within each reach.

The data was used to determine the frequency (number of days) that various flow levels were exceeded at each location. The following flow levels were used for this analysis: 5,000 cfs, 10,000 cfs, 15,000 cfs, 20,000 cfs, 25,000 cfs, and 30,000 cfs. This analysis was extended to evaluate how often such flow levels were exceeded for 7 consecutive days or more. The results from this evaluation can be used to understand the duration and frequency of sustained flow levels at various locations along the Sacramento River.

5.1 Sources of Flow

Figures 5 through 9 show hydrographs for six locations for example years representing different Water Year Types (WYTs). Each figure contains two charts; top plot displays flow hydrographs at the six locations along the River, and bottom plot shows flow contribution from different sources at Delevan location, which would be the furthermost downstream intake for Sites Reservoir. The bottom area (green shade) represents the volume of flow at Keswick. The next three areas represent the incremental quantities of flow from the tributaries for the three Sacramento River reaches. The sum of the four areas is equal to the total flow at Delevan.

As shown in the charts, flows increase significantly from Keswick to Red Bluff because of large gauged and ungauged tributary contributions. There are relatively small tributary flow contributions in the two reaches from Red Bluff to Hamilton City and from Hamilton City to Delevan. Flow at Wilkins Slough never exceeds 32,000 cfs because of the spills into Sutter bypass at Moulton Weir, Colusa Weir, and Tisdale Weir.

The proportion of flow at Delevan from unregulated tributaries compared to the proportion received from Keswick is highly correlated to the hydrologic conditions. Tributary contribution is much greater in wetter WYTs than in drier WYTs. In 1995, which is a wet year, almost half of Delevan's flow is from tributaries. However, in 1985, a dry year, most of the flow is from Keswick. Individual storm events provide large tributary flow contributions; thus, flow levels at Delevan tend to be greatly affected by tributaries in wetter years than in drier years. However, as shown in the figures, there can be isolated storm events that occur even in critically dry conditions, which can affect tributary contribution at Delevan. For example, in 1988, a critically dry year, two storm events in December and January increase tributary flow enough to potentially allow for diversion opportunities to fill Sites Reservoir.

Table 2 shows the average flow contribution from tributaries between Keswick and Delevan in November through March. As shown, tributary contribution tends to be greatest in January, followed closely by February and March.

5.2 Frequency and Duration of Flow

There is a recognition that timing, duration, and frequency are critical variables that influence the functionality and usability of floodplains as rearing habitat by salmonids. Similarly, there is evidence that sustained high flows (pulses) could act as cues for migrating salmonids. Bypass flow requirements and pulse flow protections were incorporated into the proposed diversion criteria in the DEIRS Alternative D. To understand historically what percent of time such sustained high flows occurred in the Sacramento River, a duration-frequency analysis was performed for various flows, at several locations along the Sacramento River using the 47-year daily flow dataset from USRDOM.

Figure 10 shows the percent of time from 1963 to 2010 that various flow levels were sustained or exceeded for seven consecutive days or more in November through March. For example, about 60% of the days in November through March contributed to flow events that exceeded 5,000 cfs for seven days or longer, at Keswick. In contrast, only 20% of the days contributed to flow evens that exceeded 10,000 cfs for seven days or longer. For an event of at least 15,000 cfs lasting for seven days or more at Bend Bridge, Figure 7 illustrates that about 20% of November through March contributes to such events over the 47-year historical period analyzed.

DEIRS Alternative D pulse protection criterion assumed that if the Bend Bridge flow is between 15,000 cfs and 25,000 cfs for seven consecutive days then it qualifies as pulse event and the diversions to fill Sites Reservoir are limited. Table 3 shows the proportion of days in each month or the entire primary fill season where 15,000 cfs and 25,000 cfs flows were exceeded for seven consecutive days or more at Bend Bridge in the 47-year historical period analyzed. It also shows the proportion of days where flow at Bend Bridge fell between these two flow levels. As shown, high flows tend to be sustained the longest in February. Over a quarter of the days in this month contribute to 7-day flow events greater than 15,000

cfs. However, the relatively low percentages displayed in the third column demonstrates that Bend Bridge flow is rarely between 15,000 cfs and 25,000 cfs for seven consecutive days or longer. It appears that most of the time when flow exceeds 15,000 cfs at Bend Bridge, it also exceeds 25,000 cfs.

6.0 Diversion Scenarios

As described earlier, DEIRS Alternative D includes three intakes to divert water off the Sacramento River to fill Sites Reservoir. Two of the three intakes are existing diversion facilities for Tehama Colusa Canal near Red Bluff and Glenn Colusa Canal near Hamilton City. Third intake is a proposed new facility near Delevan with a diversion capacity of 2,000 cfs, and would be the farthest downstream of the three intakes. The existing facilities at Red Bluff and Hamilton City can divert up to a maximum of 2,100 cfs and 1,800 cfs, respectively; however, the actual capacities would be based the unused capacities available following any diversions to meet existing demands. Between the three intakes, the maximum diversion capacity to fill Sites Reservoir assumed in the DEIRS for Alternative D was 5,900 cfs. Also, in the Alternative D priority is given to the diversions at Red Bluff Intake, then Delevan Intake, and lastly, Hamilton City Intake.

The analysis described in this section considered two alternate diversion priority schemes for the DEIRS Alternative D that would allow for the diversions to occur at the farthest downstream location first.

- "Alternative D – Delevan Priority": DEIRS Alternative D with priority given to downstream intakes, in the order of Delevan, Hamilton City and Red Bluff
- "Alternative D – 3,000 cfs Delevan Priority": DEIRS Alternative D with priority given to downstream intakes same as the above scenario, and assuming Delevan intake capacity expanded to 3,000 cfs

The additional diversion scenarios continue to preserve the diversion volume modeled in DEIRS Alternative D, and only change the intake where the diversion would occur.

Daily diversions for DEIRS Alternative D simulated using the USRDOM were modified to create the "Alternative D – Delevan Priority" and "Alternative D – 3,000 cfs Delevan Priority" scenarios. For the "Alternative D –Delevan Priority" scenario, flows that were diverted at Red Bluff in the DEIRS Alternative D were shifted to Delevan up to its capacity. Then, any flows that were diverted at Hamilton City were shifted to Delevan if any capacity was left. Finally, any remaining diversions at Red Bluff were shifted to Hamilton City if any capacity remained. The same procedure was used for the "Alternative D – 3,000 cfs Delevan Priority" scenario, except that the capacity of the Delevan Intake was increased from 2,000 cfs to 3,000 cfs.

Table 4 and Figure 11 show the long-term average annual diversion volume at each intake and the total for the three Alternative D diversion scenarios. As shown, the annual diversion volume for all three scenarios remains at 542 TAF. The distribution of diversions among the three intakes changes, and the diversion volumes are progressively lower at Red Bluff and Hamilton City intakes in the two new scenarios compared to the DEIRS Alternative D, as the diversion at Delevan Intake increases.

Using the modified daily diversions from the two new scenarios, DEIRS Alternative D USRDOM was used to simulate the daily Sacramento River flows downstream of the three intakes for the 82-year simulation period (WY 1922 – 2003). Figure 12 shows the timeseries comparison of Sacramento River flows downstream of the three intakes, for the DEIRS Alternative D and the two new scenarios for WY 1946. As expected, the river flows are progressively higher in the Reaches 1 and 2 under the new scenarios relative to the DEIRS Alternative D, while no changes are found in the Reach 3 as the total diversion volume remains unchanged.

7.0 Inundated Habitat Analysis

The primary objective of the analysis described in the TM is to understand potential changes to the inundated habitat along the Sacramento River because of the diversions to fill Sites Reservoir. The results from the flow and habitat analyses described above were synthesized together to understand the likely effects on the habitat.

Inundated habitat area was estimated for the DEIRS No Action Alternative, DEIRS Alternative D and the two new Alternative D diversion scenarios, using simulated Sacramento River flows from USRDOM and the flow-inundated habitat area curves developed for three reaches of the Sacramento River shown in Figures 1 to 3. Reach 1 stretches from Red Bluff to Hamilton City, Reach 2 stretches from Hamilton City to Delevan, and Reach 3 stretches from Delevan to Knights Landing. For each reach the simulated daily flow was translated into the potential inundated habitat area using the relationships shown in Figures 1 to 3. The total inundated habitat area for each reach was the average of the areas computed using the simulated flow at upstream and downstream ends of each reach.

Figures 13 to 17 show example daily inundated habitat area for the No Action Alternative, Alternative D, and the two new diversion scenarios, for the three reaches downstream of each intake for different water year types.

The computed inundated habitat areas for each day were aggregated by month and for the entire season during the primary fill season (Nov – Mar), over the 82-year period. When aggregating by month and by season, only the habitat areas on the day when diversions to fill Sites would occur were considered. Figure 18 shows the results for the long-term average for each reach and for the Sacramento River from Red Bluff to Knights Landing. As shown in Figure 18, the inundated habitat area in the Sacramento River reach from Red Bluff to Knights Landing is lower in DEIRS Alternative D than the No Action Alternative during November through March, when averaged over the 82-year period. The figure also illustrates that the Alternative D – Delevan Priority scenario would result in higher inundated habitat area than the DEIRS Alternative D, and the Alternative D – 3,000 cfs Delevan Priority scenario would result in higher inundated habitat area than the Alternative D – Delevan Priority scenario. However, the new Alternative D scenarios continue to show lower inundated habitat compared to No Action Alternative for the Sacramento River reach from Red Bluff to Knights Landing.

In Reach 1, the Alternative D – 3,000 cfs Delevan Priority scenario often provides a habitat area equal to or better than the No Action Alternative. In Reach 2, shifting diversions downstream and increasing the Delevan Intake capacity increases the inundated habitat area, but it rarely exceeds the habitat area under the No Action Alternative. There is no change in the inundated habitat area in Reach 3 under the three Alternative D scenarios. This is expected as Reach 3 is downstream of Delevan Intake, the farthest downstream intake to fill Sites Reservoir, and the total diversion upstream of Reach 3 does not change among the three Alternative D scenarios.

8.0 Summary and Conclusions

Preliminary analysis was performed to refine the DEIRS findings related to the effects of proposed Sacramento River diversions on Sacramento River flow and the ecologically sensitive fish habitat downstream of the three intakes. Information was collected on the fish life history processes in the Sacramento River reach downstream of the intakes, which indicated potential presence of key salmonids in this reach during the primary filling season (Nov – Mar) for Sites Reservoir. Further, available habitats along the Sacramento River were identified, mapped and quantified. Flow inundation maps were prepared based on steady state HEC-RAS modeling for flows ranging from 5000 cfs to 55,900 cfs. Acreages of suitable habitats for salmonids were determined for each flow by overlaying the inundation area for a given over the map of habitat. This process resulted in flow – inundated habitat area relationships for the reaches downstream of each of the three intakes. Using the daily Sacramento River flows the inundated fish habitat area were estimated for Sacramento River reach from Red Bluff to

Knights Landing. Results show that overall the inundated habitat area is lower under the DEIRS Alternative D compared to the No Action Alternative. Two variations of Alternative D diversion operations were developed with downstream-most intakes prioritized for filling Sites – one with Delevan Intake at 2,000 cfs capacity consistent with the DEIRS, and the other with 3,000 cfs capacity. The two additional scenarios show that diverting water from the downstream intakes would help in minimizing the reduction in inundated habitat under Alternative D compared to the No Action Alternative. For Red Bluff to Hamilton City reach, the prioritizing downstream intakes allows maintaining similar inundated habitat areas under Alternative D as the No Action Alternative. Prioritizing downstream helps the Hamilton City to Delevan reach, but the inundated habitat area is still lower than the No Action Alternative. Changes to the inundated habitat area in reach downstream of Delevan remain unaffected by prioritizing downstream intakes for Sites diversion, as the total volume of diversion to fill Sites remained same.

9.0 Next Steps

- Consider changes in inundated habitat area in the Sutter Bypass.
- Explore alternate Sites fill scenarios such as diverting for shorter duration and higher levels, or diverting at lower levels and for longer durations to minimize the reduction in the inundated habitat.

10.0 References

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Table 1: Framework of Focal Fish species life History Processes and Hydraulic Dependencies in the Sacramento River Reach from Red Bluff to Knights Landing

			Reach	Red Bluff to Hamilton City		Hamilton City to Delevan		Delevan to Knights Landing		Sutter Bypass				Yolo Bypass	
			Sub-Reach	Overall	Near Diversion	Overall	Near Diversion	Overall	Near Diversion	Overall	Moulton Weir	Colusa Weir	Tisdale Weir	Overall	Fremont Weir
Species	Life Stage	Evaluation Period	Flow-Related Attribute												
Winter Run	Adult Immigration and Holding	Dec-Jul	Stage	Passage/Barriers	N/A	Passage/Barriers	N/A	Passage/Barriers	N/A	N/A	N/A	N/A	N/A	Passage/Barriers	N/A
			Water Temp	Survival, egg viability	N/A	Survival, egg viability	N/A	Survival, egg viability	Survival, egg viability	N/A	N/A	N/A	N/A	Survival, egg viability	N/A
	Spawning, Egg Incubation, and Initial Rearing	Apr-Aug	Depth, velocity, water temp, Habitat available	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Juvenile Rearing and Emigration	Jul-Apr	Stage	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Floodplain Activation/Area	N/A	N/A	N/A	Floodplain Activation/Area	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	Survival	N/A	N/A	N/A	Survival	N/A
Spring Run	Adult Immigration and Holding	Feb-Sep	Stage	Passage/Barriers	N/A	Passage/Barriers	N/A	Passage/Barriers	N/A	N/A	N/A	N/A	N/A	Passage/Barriers	N/A
			Water Temp	Survival, egg viability	N/A	Survival, egg viability	N/A	Survival, egg viability	Survival, egg viability	N/A	N/A	N/A	N/A	Survival, egg viability	N/A
	Spawning, Egg Incubation, and Initial Rearing	Sep-Apr	Depth, velocity, water temp, Habitat available	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Juvenile Rearing and Emigration	All Year	Stage	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Floodplain Activation/Area	N/A	N/A	N/A	Floodplain Activation/Area	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	Survival	N/A	N/A	N/A	Survival	N/A
	Smolt Emigration	Oct-Jun	Stage	Passage/Barriers	Entrainment, Impingement, Predation	Passage/Barriers	Entrainment, Impingement, Predation	Passage/Barriers	Entrainment, Impingement, Predation	Floodplain Activation/Area	N/A	N/A	N/A	Floodplain Activation/Area	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	Survival	N/A	N/A	N/A	Survival	N/A
Steelhead	Adult Immigration and Holding	Aug-Mar	Stage	Passage/Barriers	N/A	Passage/Barriers	N/A	Passage/Barriers	N/A	N/A	N/A	N/A	N/A	Passage/Barriers	N/A
			Water Temp	Survival, egg viability	N/A	Survival, egg viability	N/A	Survival, egg viability	Survival, egg viability	N/A	N/A	N/A	N/A	Survival, egg viability	N/A
	Spawning and Egg Incubation	Dec-Apr	Depth, velocity, water temp, Habitat available	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

			Reach	Red Bluff to Hamilton City		Hamilton City to Delevan		Delevan to Knights Landing		Sutter Bypass				Yolo Bypass	
			Sub-Reach	Overall	Near Diversion	Overall	Near Diversion	Overall	Near Diversion	Overall	Moulton Weir	Colusa Weir	Tisdale Weir	Overall	Fremont Weir
Species	Life Stage	Evaluation Period	Flow-Related Attribute												
	Juvenile Rearing and Emigration	All Year	Stage	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Floodplain Activation/Area	N/A	N/A	N/A	Floodplain Activation/Area	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	Survival	N/A	N/A	N/A	Survival	N/A
	Smolt Emigration	Oct-May	Stage	Passage/Barriers	Entrainment, Impingement, Predation	Passage/Barriers	Entrainment, Impingement, Predation	Passage/Barriers	Entrainment, Impingement, Predation	Floodplain Activation/Area	N/A	N/A	N/A	Floodplain Activation/Area	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	N/A	N/A	N/A	N/A	Survival	N/A
Green Sturgeon	Adult Immigration and Holding	Aug-Mar	Stage	Passage/Barriers	N/A	Passage/Barriers	N/A	Passage/Barriers	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival, egg viability	N/A	Survival, egg viability	N/A	Survival, egg viability	Survival, egg viability	N/A	N/A	N/A	N/A	N/A	N/A
	Spawning and Egg Incubation	Mar-Sep	Depth	Suitability	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Velocity	Suitability	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Egg mortality	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Juvenile Rearing and Emigration	All Year	Stage	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	Passage/Barriers, Floodplain Activation/Area	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Velocity	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	Travel time, predation	Entrainment, Impingement, Predation	N/A	N/A	N/A	N/A	N/A	N/A
			Water Temp	Survival	N/A	Survival	N/A	Survival	Survival	N/A	N/A	N/A	N/A	N/A	N/A

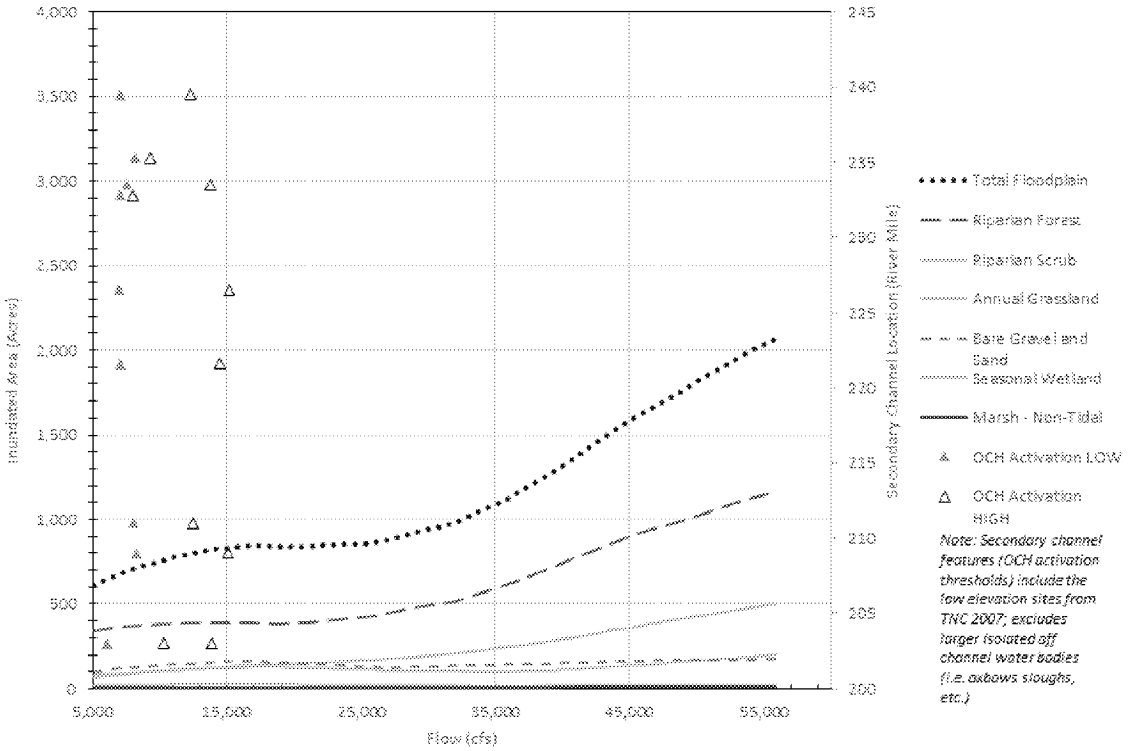


Figure 1. Reach 1 Secondary Channel Activation and Flow- Habitat Inundation Area Curves for Water Depths ≤ 5 Feet

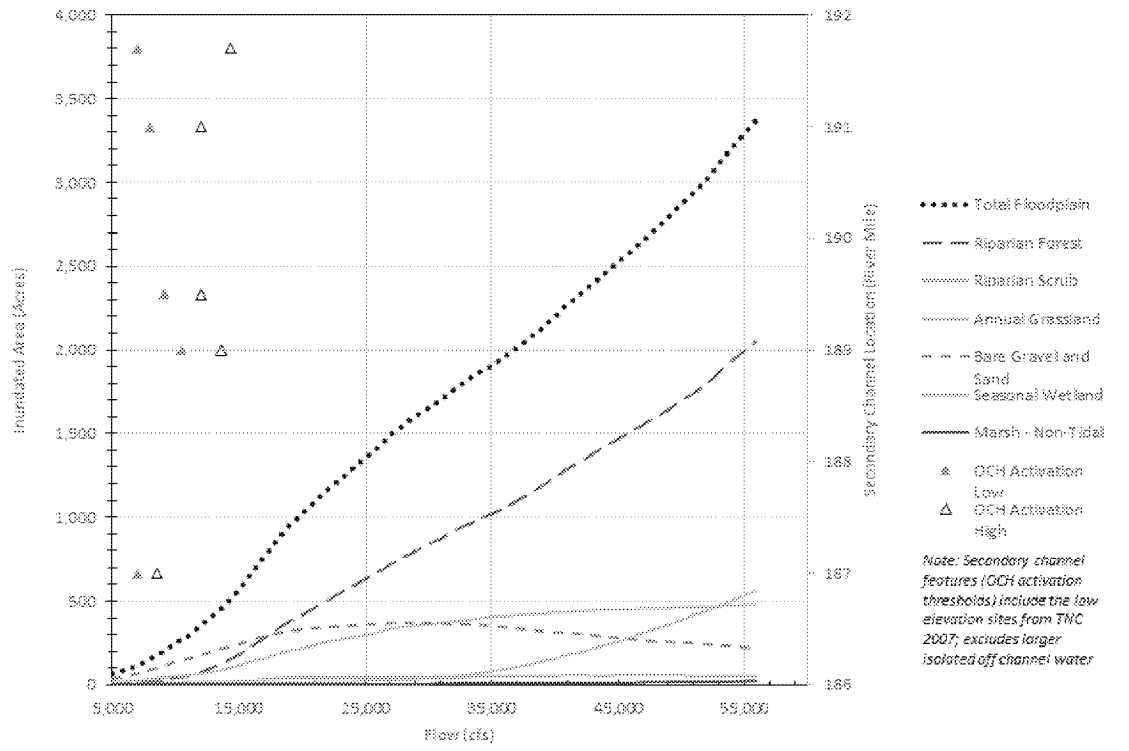


Figure 2. Reach 2 Secondary Channel Activation and Flow- Habitat Inundation Area Curves for Water Depths ≤ 5 Feet

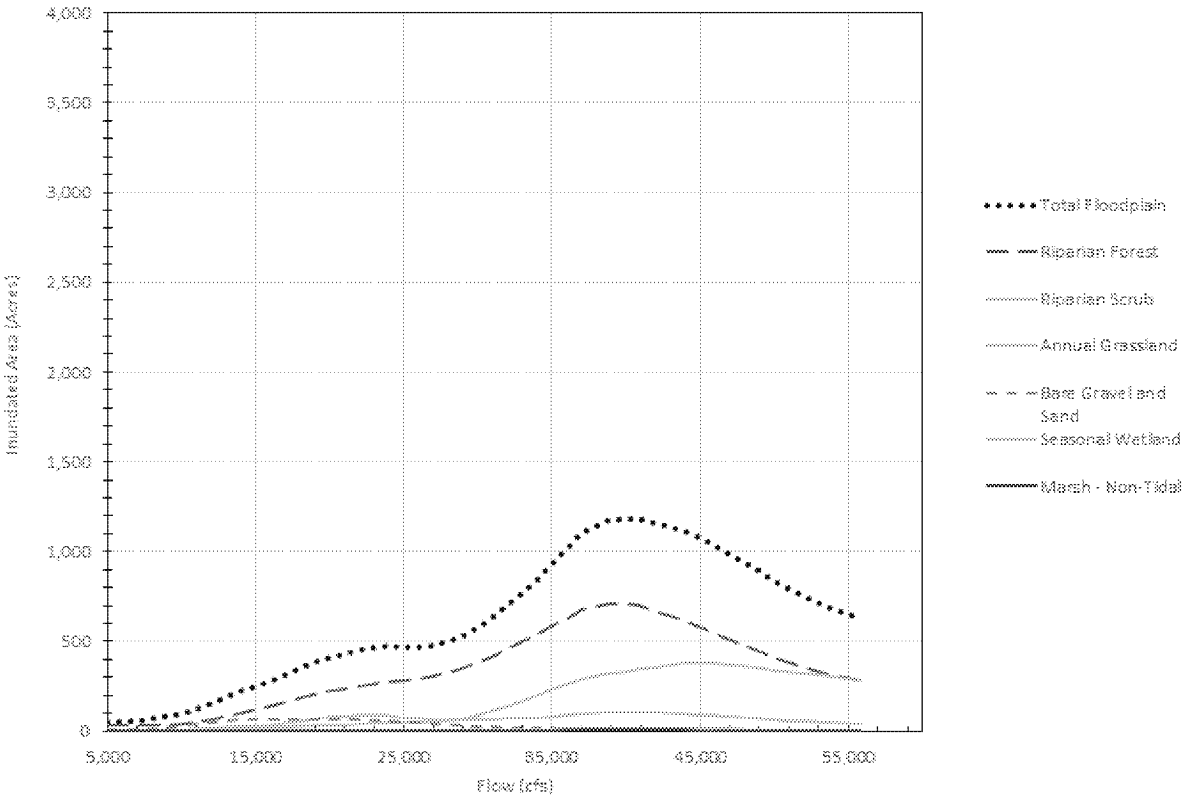


Figure 3. Reach 3 Flow- Habitat Inundation Area Curves for Water Depths ≤ 5 Feet

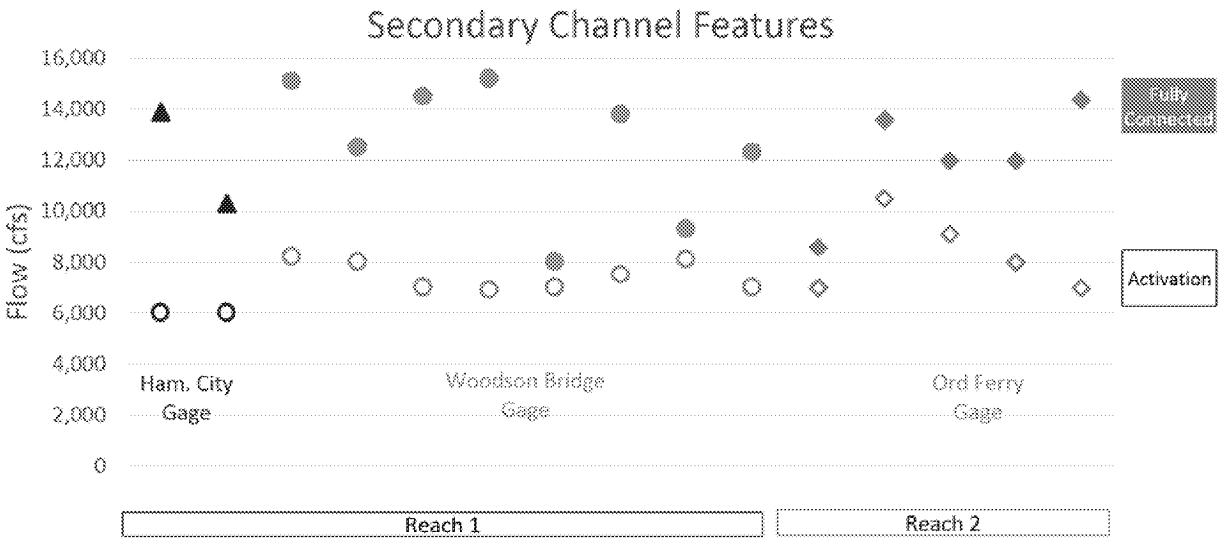


Figure 4. Secondary Channel Features Identified in Reaches 1 and 2, and their Activation and Fully Connectivity Flow Thresholds

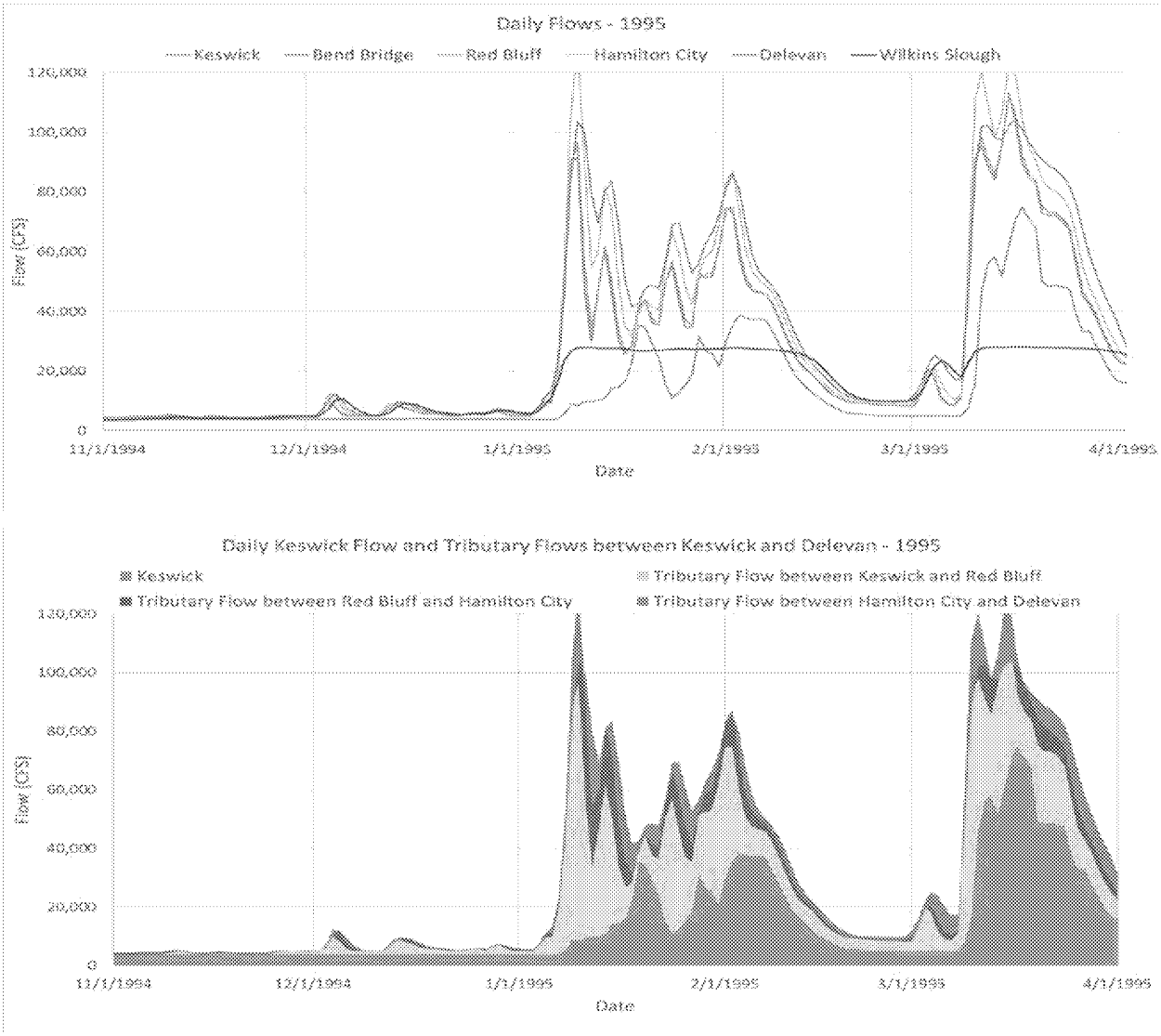


Figure 5. Sacramento River Daily Flow Hydrographs and Sources of Flow at Delevan Location for a Wet Year (1995).

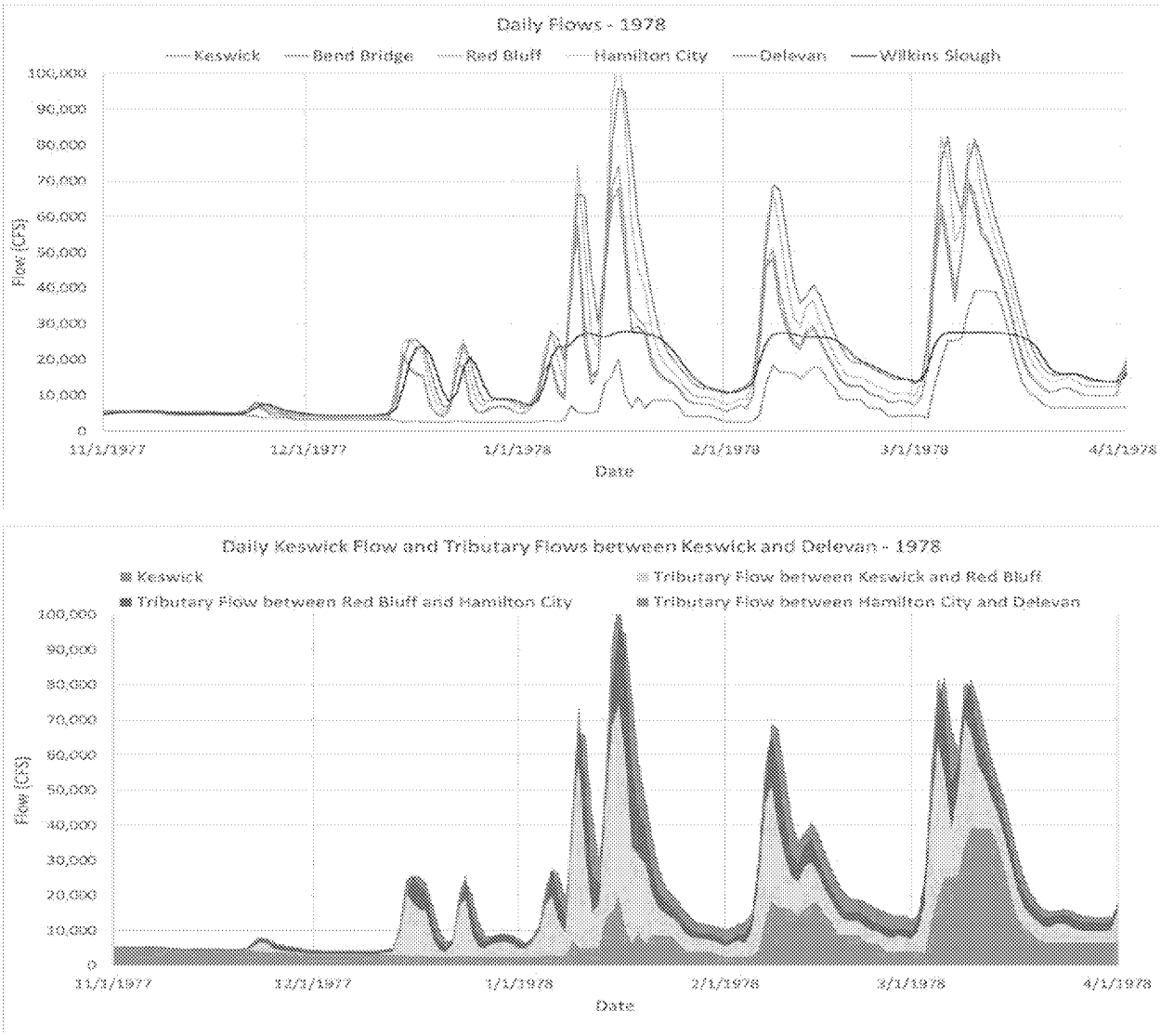
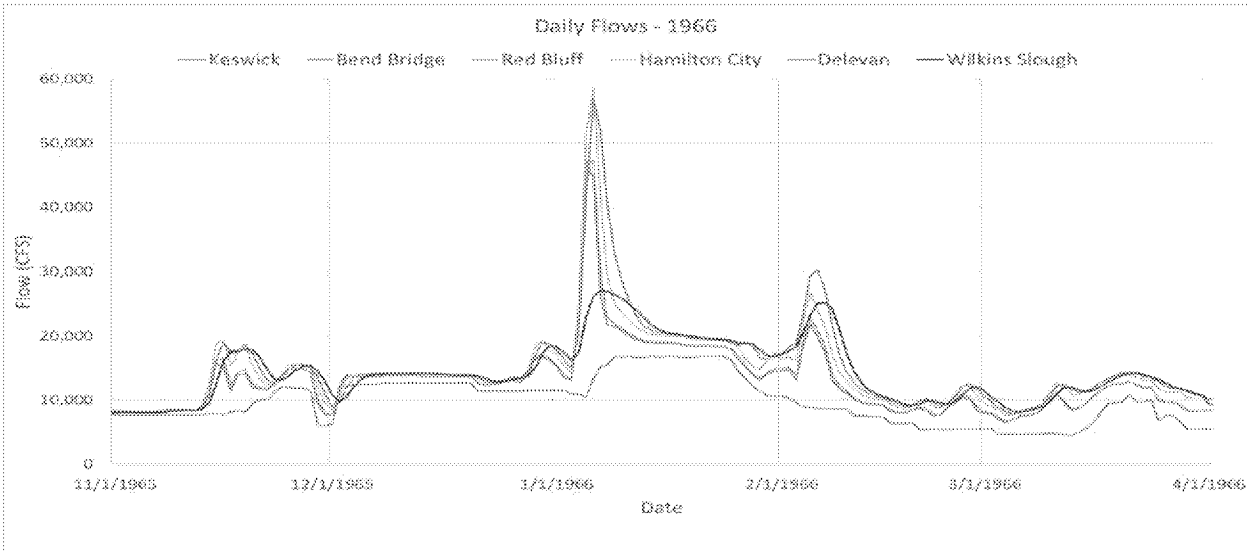


Figure 6. Sacramento River Daily Flow Hydrographs and Sources of Flow at Delevan Location for an Above Normal Year (1978).



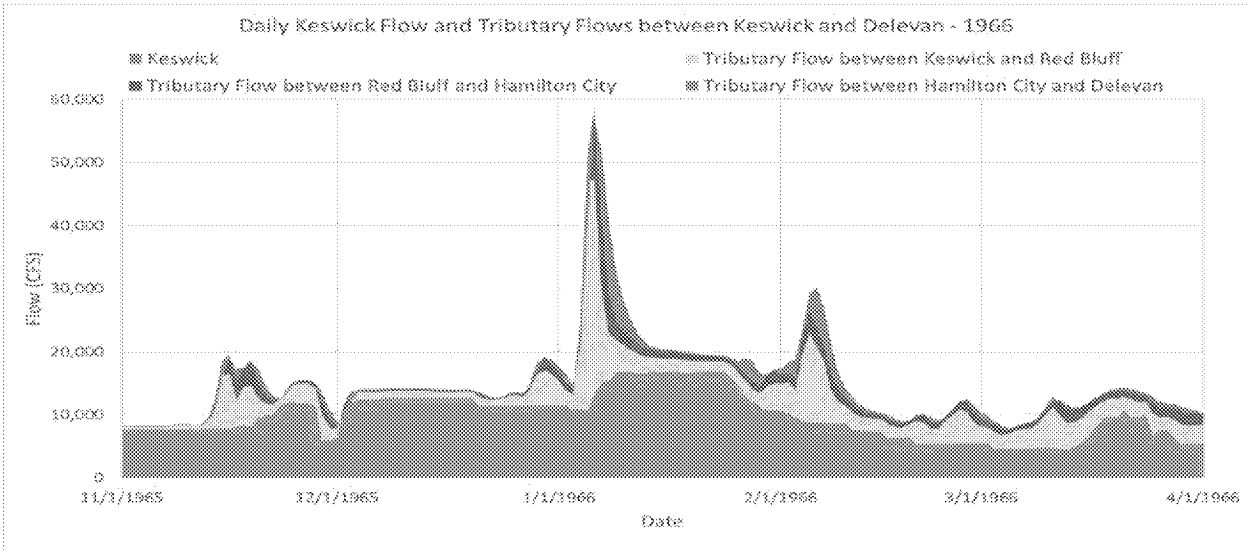


Figure 7. Sacramento River Daily Flow Hydrographs and Sources of Flow at Delevan Location for a Below Normal Year (1966).

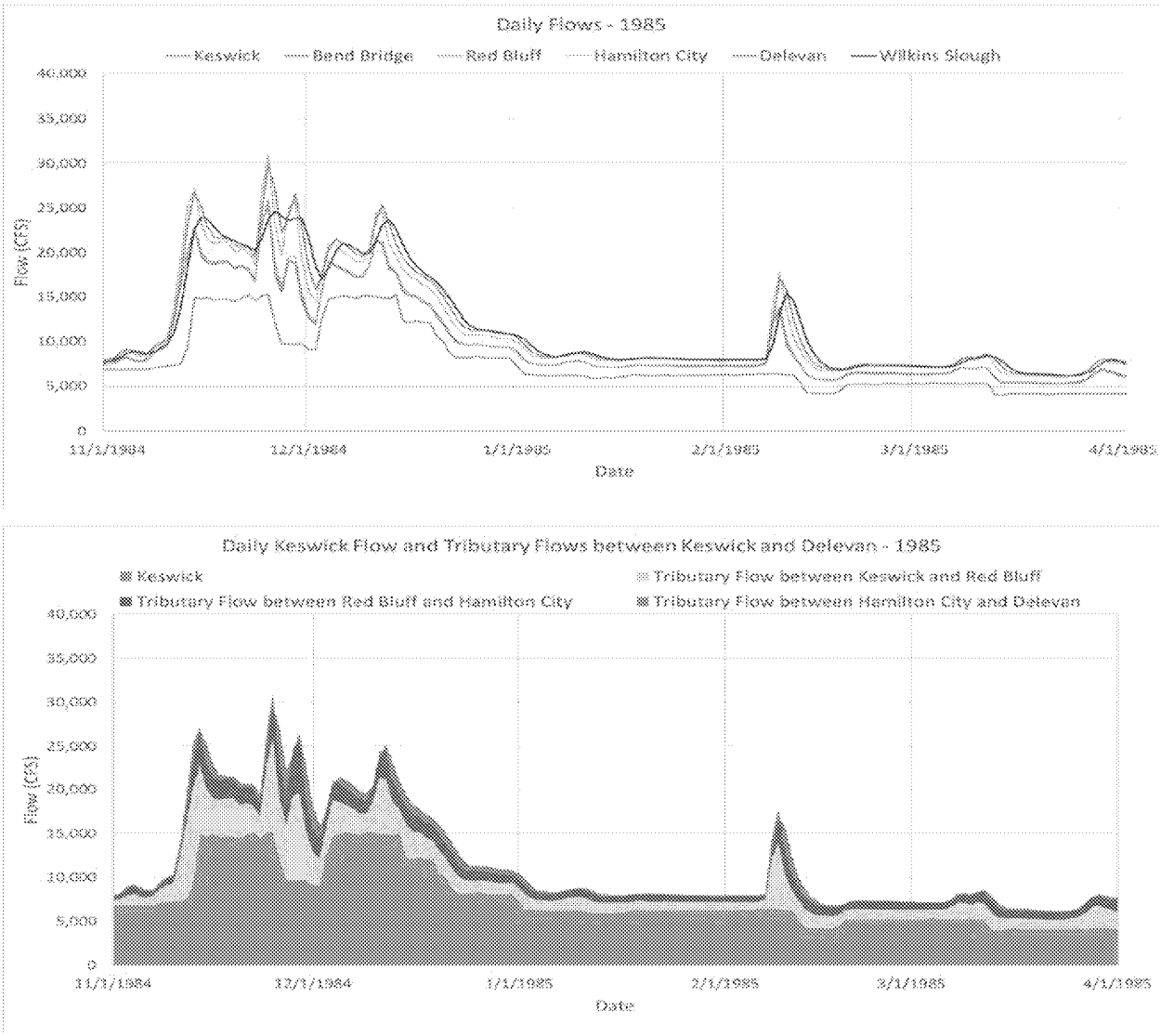
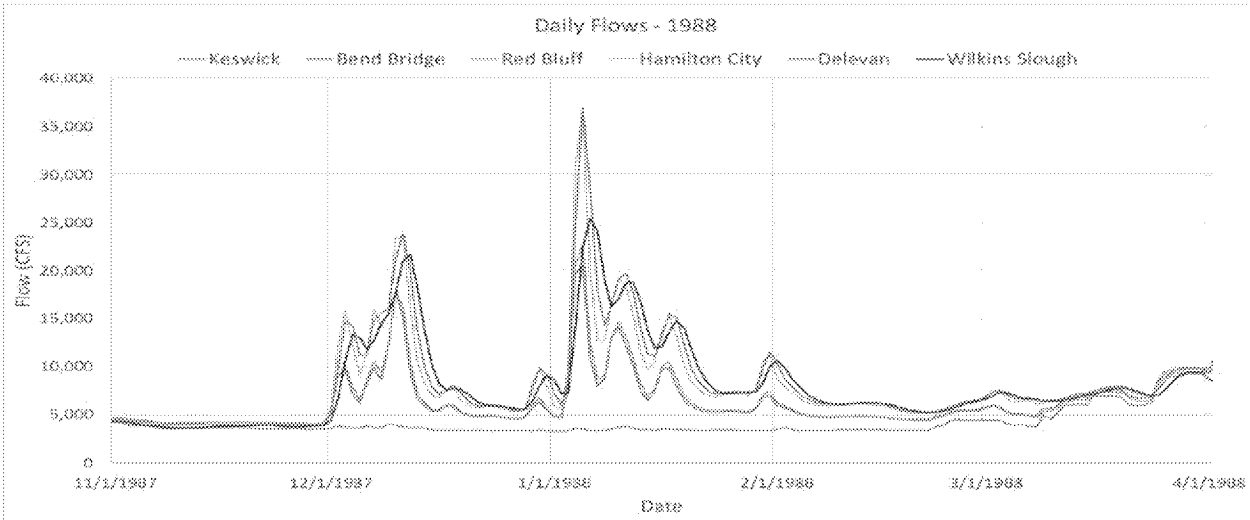


Figure 8. Sacramento River Daily Flow Hydrographs and Sources of Flow at Delevan Location for a Dry Year (1985).



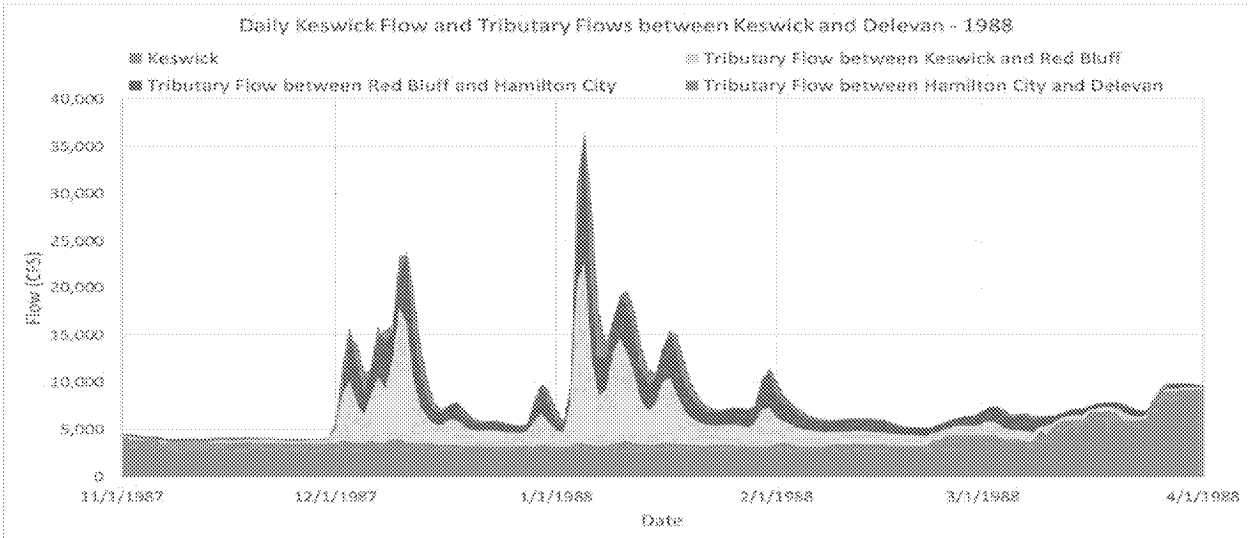


Figure 9. Sacramento River Daily Flow Hydrographs and Sources of Flow at Delevan Location for a Critical Year (1988).

Table 2. Simulated Historical Tributary Flow Contribution in November – March (1963-2010).

Average Flow Contribution from Tributaries during 1963 - 2010 (TAF)						
Sacramento River Reach	November - March	November	December	January	February	March
Keswick to Bend Bridge	1,520	107	256	428	374	354
Bend Bridge to Red Bluff	57	-6	6	22	19	16
Red Bluff to Hamilton City	711	35	115	205	180	176
Hamilton City to Delevan	242	2	27	73	77	63

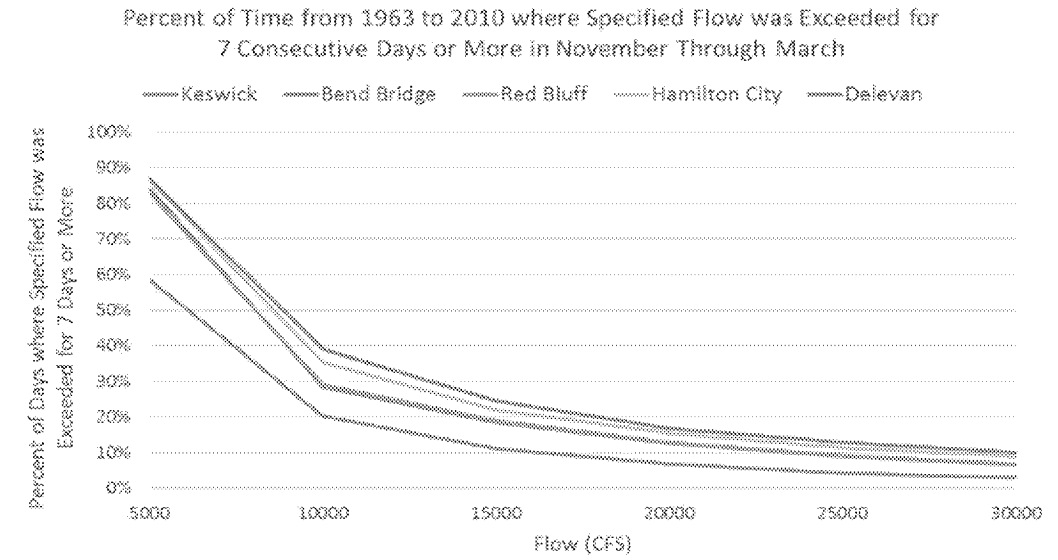


Figure 10. Percent of Days where Flow was Exceeded for at Least 7 Days in November – March (1963-2010)

Table 3. Percent of Days Bend Bridge Flows Exceeding 15,000 cfs and 25,000 cfs for Seven Consecutive Days in November – March (1936-2010)

	Percent of Days where 15,000 cfs was Exceeded for 7 Days or More at Bend Bridge	Percent of Days where 25,000 cfs was Exceeded for 7 Days or More at Bend Bridge	Percent of Days Where Bend Bridge Flow was Between 15,000 cfs and 25,000 cfs for 7 Days or More
November – March	19%	9%	3%
November	5%	0%	2%
December	15%	6%	3%
January	24%	11%	4%
February	28%	15%	3%
March	22%	12%	2%

Table 4. Long-term Average Diversions to Fill Sites Reservoir from the Sacramento River at Three Intakes for DEIRS Alternative D and Two Additional Scenarios with Diversions Prioritized from Downstream Intakes

Diversions to Fill Sites Reservoir (TAF)				
Scenario	Red Bluff	Hamilton City	Delevan	Total Diversion
No Action Alternative	0	0	0	0
Alternative D	272	98	172	542
Alternative D – Delevan Priority	167	92	283	542
Alternative D – 3,000 cfs Delevan Priority	83	73	386	542

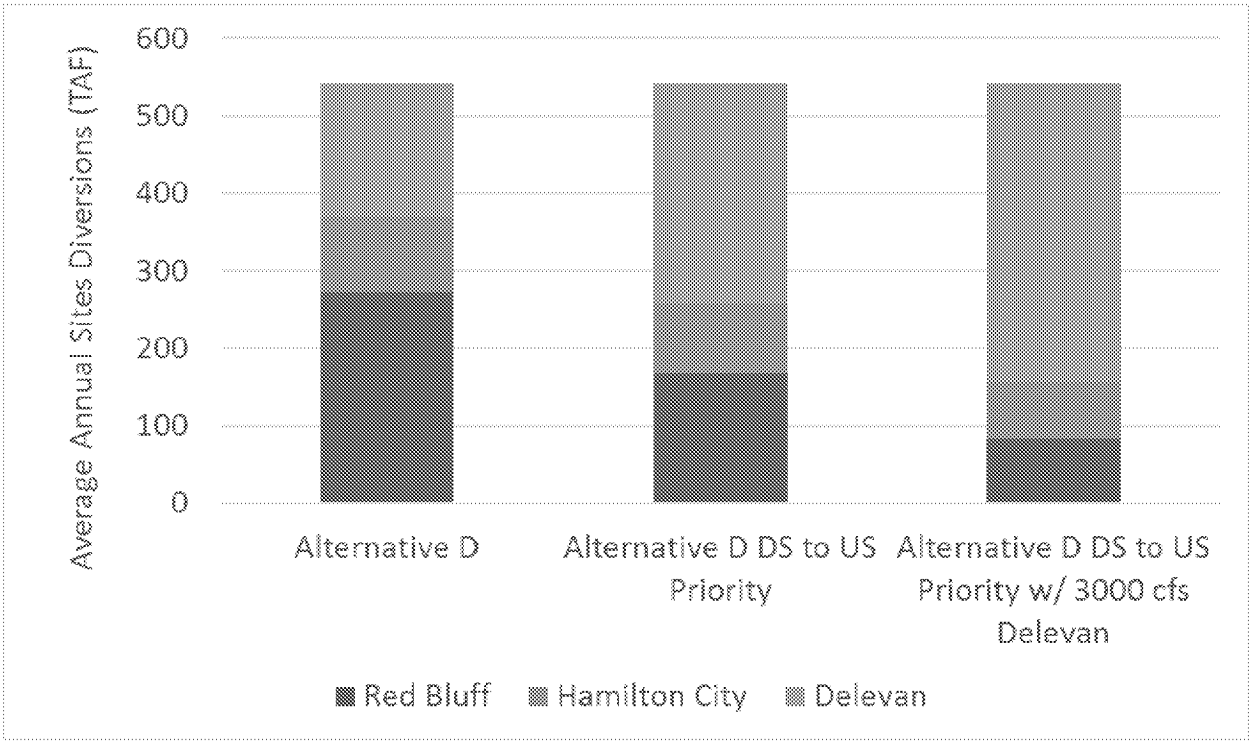


Figure 11. Long-term Average Diversions to Fill Sites Reservoir from the Sacramento River at Three Intakes for DEIRS Alternative D and Two Additional Scenarios with Diversions Prioritized from Downstream Intakes

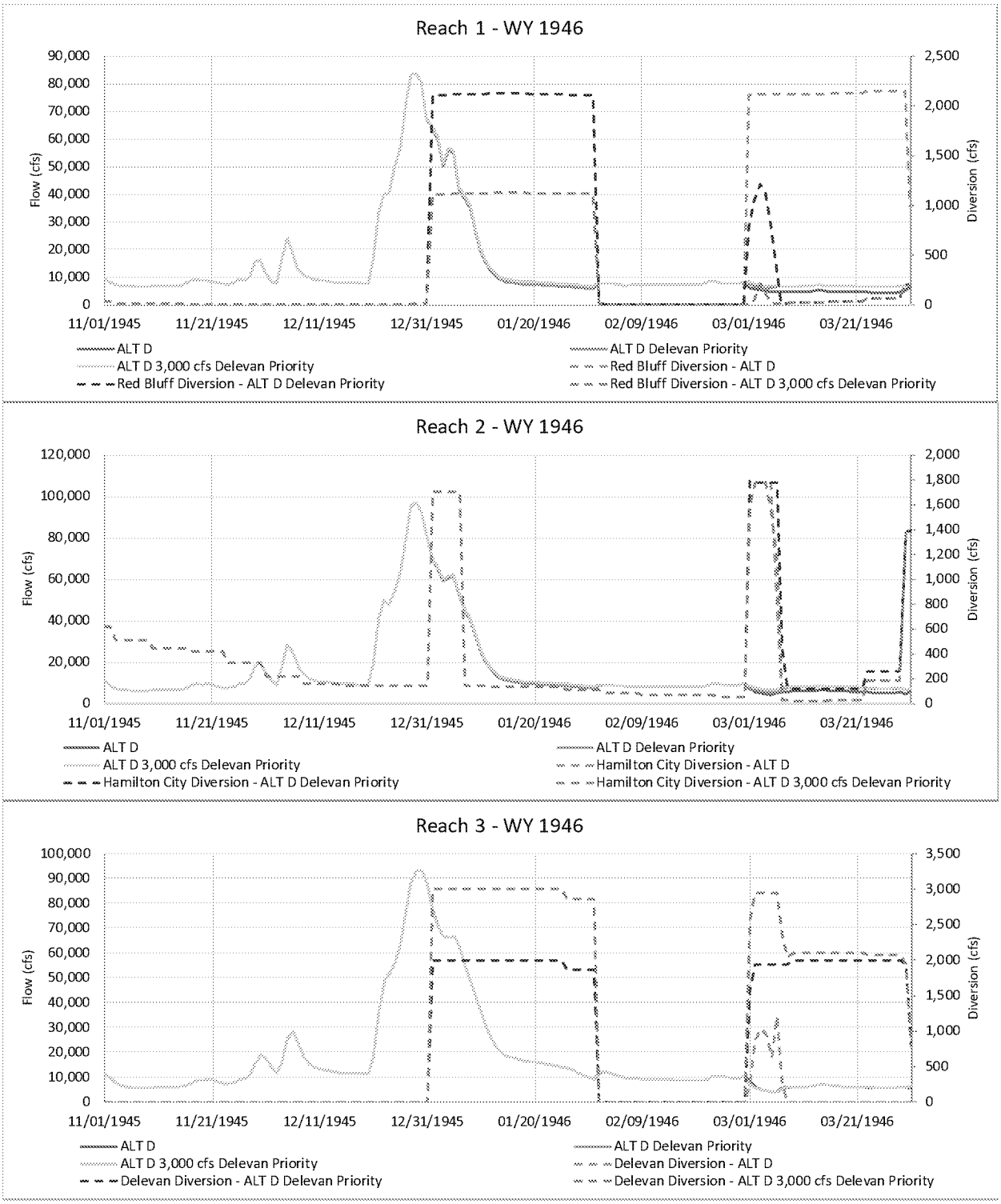


Figure 12. Daily Sacramento River Flows for the Three Alternative D Scenarios Downstream of Each of the Three Intakes Including Diversions at Each Intake

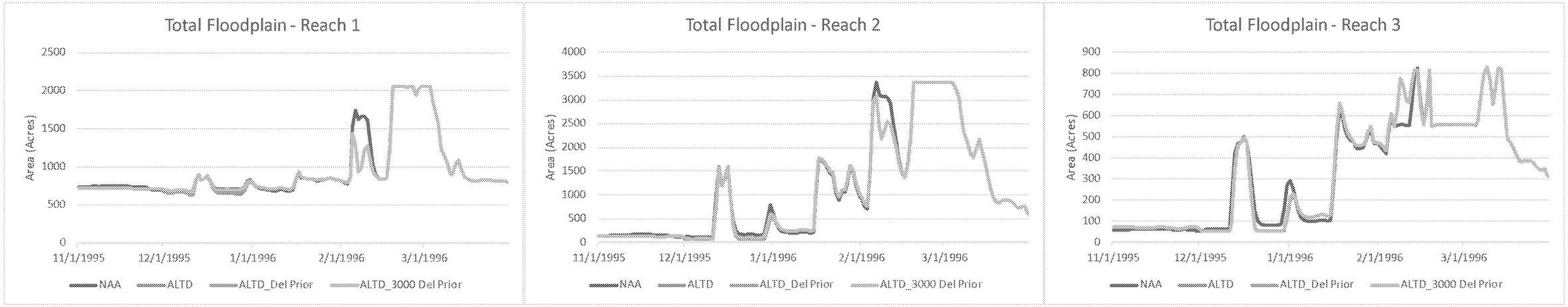


Figure 13: Timeseries Comparison of Daily Inundated Habitat Area for No Action Alternative and the Three Alternative D Scenarios for a Wet Year (1996)

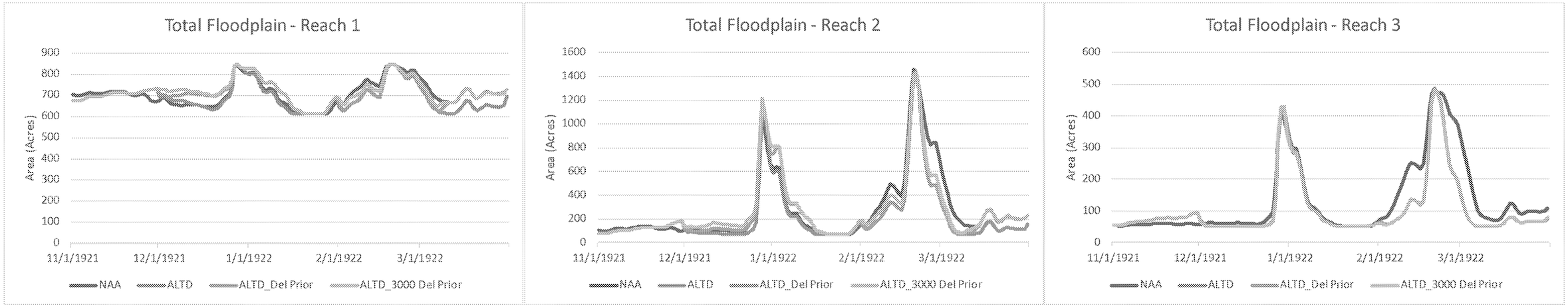


Figure 14: Timeseries Comparison of Daily Inundated Habitat Area for No Action Alternative and the Three Alternative D Scenarios for an Above Normal Year (1922)

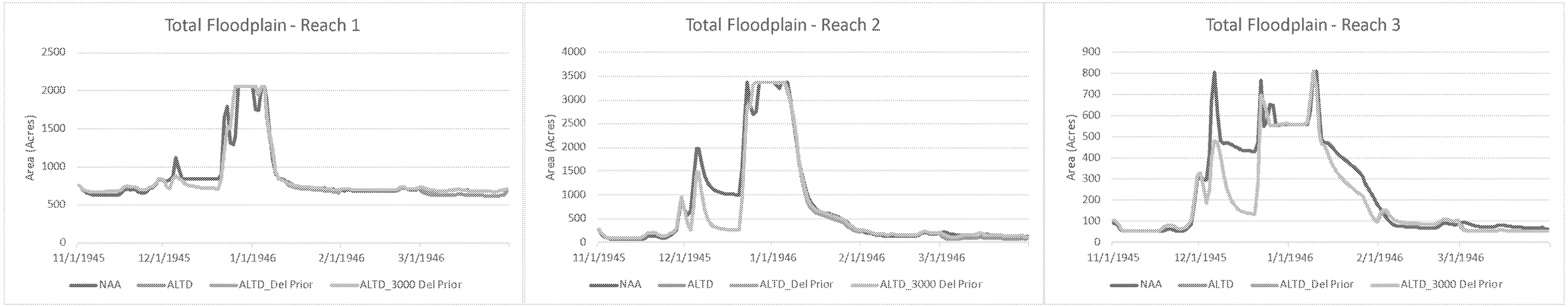


Figure 15: Timeseries Comparison of Daily Inundated Habitat Area for No Action Alternative and the Three Alternative D Scenarios for a Below Normal Year (1946)

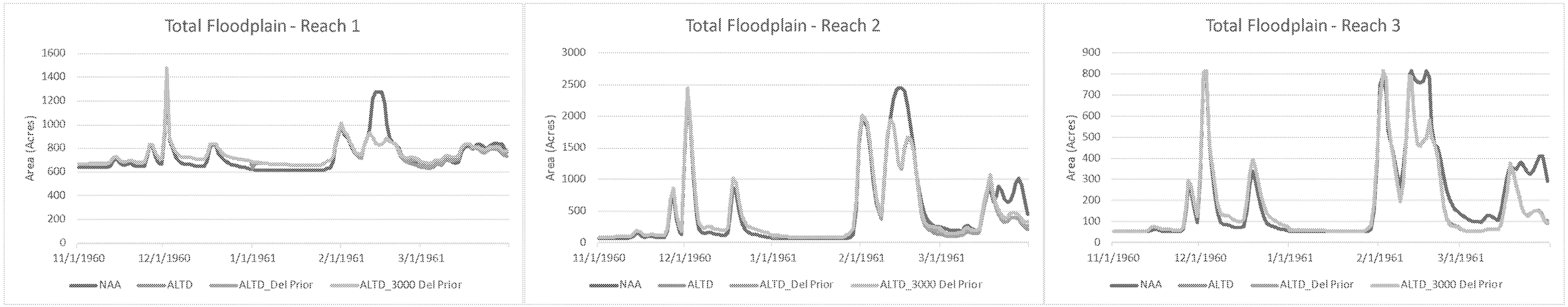


Figure 16: Timeseries Comparison of Daily Inundated Habitat Area for No Action Alternative and the Three Alternative D Scenarios for a Dry Year (1961)

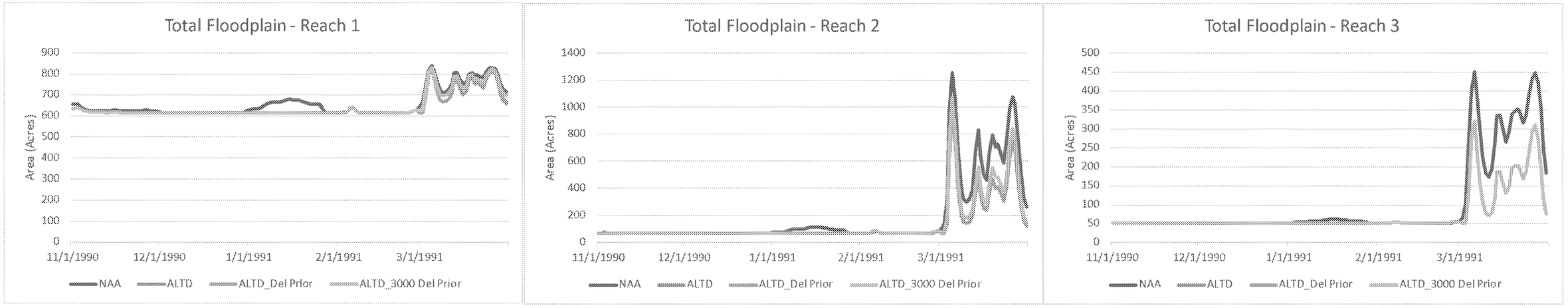


Figure 17: Timeseries Comparison of Daily Inundated Habitat Area for No Action Alternative and the Three Alternative D Scenarios for a Critical Year (1991)

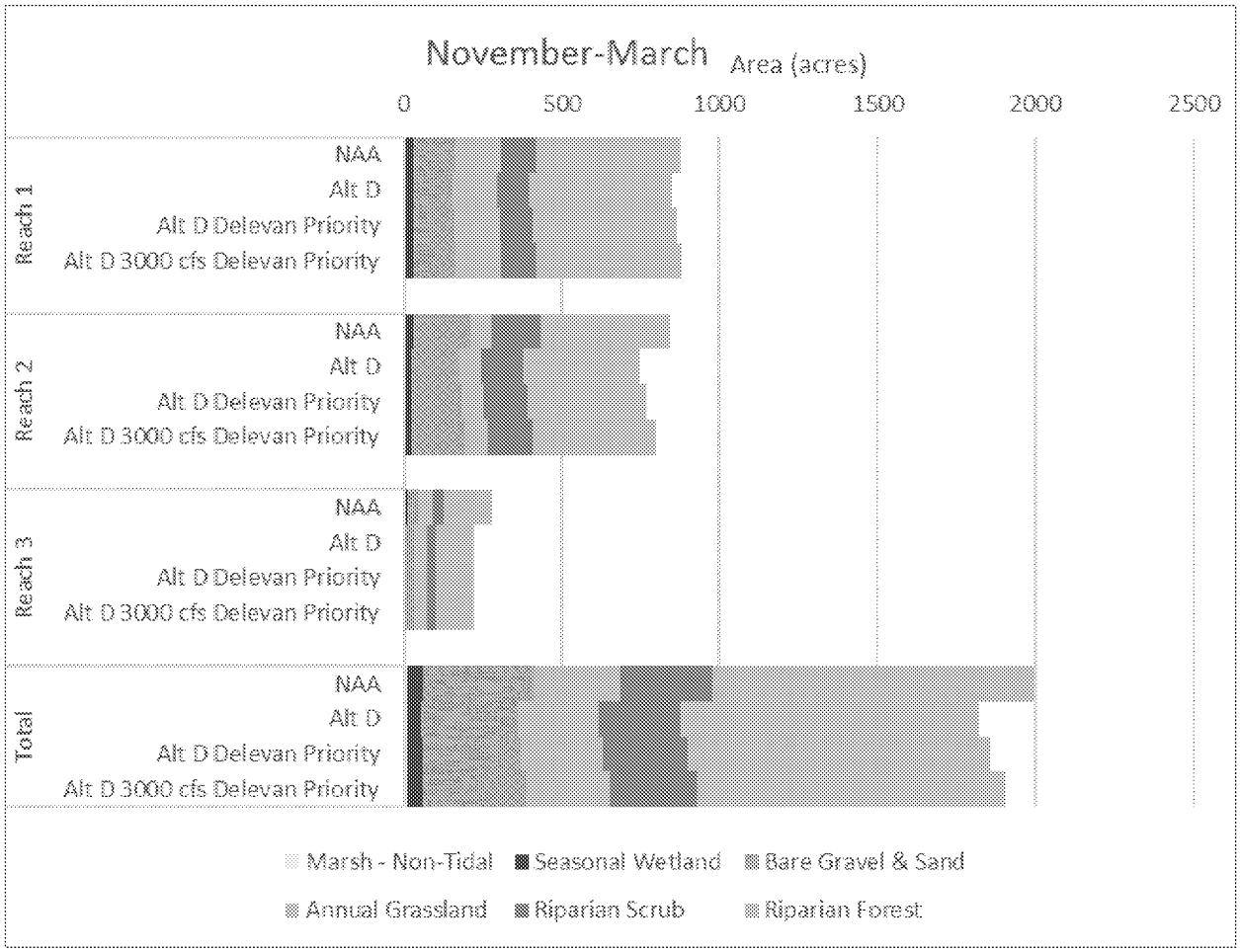


Figure 18: Long-term Average Inundated Habitat Areas for No Action Alternative and the Three Alternative D Scenarios during November and March of water years 1922 to 2003

Draft Operations Priorities and Work Flow

5/4/2020

Operations Tasks	Description	Status	Next Steps	Product	Target Completion Date	Initial Discussion with Work Group	Work Group Review
Priority 1							
Accounting Logic	Refine accounting logic for releases and Delta exports	Tier off of recent USBR Feasibility Report code improvements	Develop CalSim code to better track water accounting	CalSim code and improved results transparency	June 15	May 15	May 29
Participate Demands	Refine participant demand patterns to improve ops flexibility	Provided summary of NOD and SOD demand patterns	Review member opportunities and make assumptions	Memo on refined demand patterns and assumptions	June 15	May 15	May 29
Shasta Exchange/No Reclamation Investment	Develop ops logic and code to implement no USBR investment exchange	Preparing memo evaluating ROC on LTO ops and potential exchange criteria	Meet with CVO to discuss opportunities and proposed criteria	Ops assumptions and CalSim code for USBR non-investment operations	June 15	May 15	May 29
DWR/SWP Operations Coordination	Develop ops logic and code to implement SWP integration	Review ITP to evaluate new SWP ops criteria	Meet with SWPAO to discuss opportunities	Ops assumptions and CalSim code for SWP operations	June 15	May 15	May 29
CDFW Scenario	Develop approach and ops logic for CDFW diversion criteria	Evaluating sensitivity to ROC on LTO baseline and ITP	Review with fisheries and env team	Revised river and Delta diversion criteria and ops logic, daily model and CalSim code revisions	June 15	May 15	May 29

Operations Tasks	Description	Status	Next Steps	Product	Target Completion Date	Initial Discussion with Work Group	Work Group Review
Priority 2							
Sutter Bypass	Develop Tisdale Weir and Sutter Bypass operation and code	Evaluating hydrology and weir spill rule curves – daily model	Coordinate with fisheries team to review and develop strategy	Code for daily and CalSim model logic and criteria	June 15	May 15	May 29
Fremont Weir Notch/Yolo Bypass	Refine hydrology and daily flow pattern diversion criteria and assumptions	Review ROC on LTO notch implementation	Review latest notch info and consult with fisheries team	Revised daily flow representation and diversion logic, CalSim code revisions	June 15	May 15	May 29
Freeport Bypass	Refine hydrology and daily flow pattern assumptions	Start mid-May	Review WaterFix daily flow pattern and propose refinements	Revised daily flow representation and diversion logic, CalSim code revisions	June 15	May 15	May 29
Priority 3							
Delta Water Quality	Evaluate potential impacts to WQ under ROC on LTO and ITP	Start mid-May	Review USBR Feasibility Report WQ results	Strategy to avoid Delta WQ impacts to x2 and CCWD etc, CalSim logic	July 31	May 15	May 29
Fisheries Modeling	Integrate life cycle modeling into modeling analysis framework	Initiated discussions with ICF, schedule meeting with fish team	Develop analysis framework	Revise OBAN and IOS models for river mortality and life cycle analysis	June 15	May 15	May 29
Georgiana Slough	Conduct DSM2 analysis to further analyze	Conducted preliminary sensitivity	Coordinate with Fisheries team to further	Ops strategy and criteria to avoid	June 15	May 15	May 29

Operations Tasks	Description	Status	Next Steps	Product	Target Completion Date	Initial Discussion with Work Group	Work Group Review
	reverse flow issue		evaluate options to avoid reverse flows	reverse flows if possible			
Priority 4							
Voluntary Agreement	Review potential VA actions and influence on Sites operations	Evaluating Tisdale Weir notch proposal and flow timing	Review additional VA actions that my influence Sites operations	Memo summarizing VA actions that may impact Sites ops	June 15	May 15	May 29
Tools Development							
ROC on LTO updates	Update Sacramento river daily and temperature models	Currently working with USBR on Feasibility Report that uses updated models	Update models to work with Sites latest code and ops logic	Update model tool kit	July 31	N/A	N/A
Sutter Bypass	Refine Sutter Bypass 2D model to allow evaluation of weir spills and habitat	Developing proposed methodology similar to that applied to the Sacramento River	Review with fisheries team	Hydraulic model and GIS to display habitat changes	July 31	N/A	N/A
Bypass Functional Flows	Refine post-processing to evaluate weir spills, frequency, depth, acreage, and duration	Provided preliminary results to ICF for review	Review with fisheries team	Updated methodology and post-processing tools	July 31	N/A	N/A

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/5/2020 3:30:05 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: ICF alternatives memo
Attachments: _DRAFT_Preliminary_Alts_Description_042120_lwh.docx; ICF Prelim Alternatives.docx

Hi Ali,

I have put the two 'action' alternatives in a table and include a third column for either no project/no action or a CDFW alternative. As you will see, they generally modelled Alt 1 after VP7 (1.5 MAF/earth dam) and Alt 2 after VP6 (1.3 MAF/hardfill dam). They assume many of the same facilities and operations identified in the VP report. But they have some questions that I have highlighted in yellow in the memo and table regarding flood control features, recreational facilities, bypass facilities and membership/demand. I think we can circulate the table to our internal PD team for review/input.

We may also want to circulate the proposed changes to the project objectives. I am supportive of the revisions cold water but concerned with being too specific, particularly regarding Shasta cold water pool management.

One other item to note, we may need to clarify with ICF that the road to the south end of the reservoir is part of all alternatives, even with a bridge. I revised their wordings to clarify.

Take a look at my comments and let me know if you want me to circulate the table or table and memo to the team (Authority/Integration).

Thanks,

Laurie

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

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Facilities/Operations	Action Alternative 1 (Derived from VP7)	Action Alternative 2 (Includes Parts of VP6)	No Project/No Action
Diversion/Reservoir Infrastructure Details			
Diversion	Diversion from Sacramento River into exiting Tehama-Colusa (T-C) Canal diversion at Red Bluff and the existing GCID Main Canal Diversion at Hamilton City	Same as Alt 1	
Reservoir Size	1.5 MAF	1.3 MAF	
Dam	Earth Dam	Hardfill dam	
Spillway		Same as Alt 1	
Funks/Terminal Regulating Reservoir (TRR)	Footprint as described in VPR w/ 2 tunnels	Same as Alt 1	
Holthouse/Fletcher	eliminated	Same as Alt 1	
Flood Control - Infrastructure to allow for local flood control	1) releases into Funks and Stone Corral creeks; and 2) emergency outflow structure to releases north of Hunters Watershed	[TBD - may be different based on reservoir footprint]	
Recreation	Two primary areas with infrastructure ad one day-use boat ramp w/parking	[Consider making this different than Alternative 1, but don't include "more" recreational opportunities than Alternative 1]	
Reservoir Management		Same as Alt 1	
Operations			

One Operational (Criteria) Option based on VPR Table 3.1 Scenario B but anticipated to be modified by future modeling efforts
• Describe assumed diversion and operations criteria (Scenario B)
• Authority to confirm pulse flow protection is in our "final" operational scenario
	• Wilkins Slough Bypass Flow –
	  ○ 8,000 cfs April/May
	  ○ 5,000 cfs all other times
	• Fremont Weir Notch
	  ○ Prioritize the Fremont Weir Notch, Yolo Bypass preferred alternative, flow over weir within 5%
	• Flows into the Sutter Bypass System
	  ○ No restriction due to flow over Moulton, Colusa, and Tisdale Weirs
	• Freeport Bypass Flow
	  ○ Modeled WaterFix Criteria (applied on a daily basis)
	  ○ Post-Pulse Protection (applied on a moving 7-day average)
	  ○ Post-Pulse (3 levels) = January–March
	  ○ Level 2 starts January 1
	  ○ Level 1 is initiated by the pulse trigger
	• Net Delta Outflow Index (NDOI) Prior to Project Diversions
	  ○ 44,500 cfs between March 1 and May 31
		Same as Alt 1	

Facilities/Operations	Action Alternative 1 (Derived from VP7)	Action Alternative 2 (Includes Parts of VP6)	No Project/No Action
Bypass Releases			
Bypass Releases into Funks Creek and Stone Corral Creek	Provide more detail regarding timing, frequency, duration, and volume than was in 2017 Draft EIR/EIS	[Should this differ from Alt 1?]	
Membership and Demand			

General Description of participation for north and south of Delta members to leave room for Reclamation or change in participation of members depending on who might want to obtain water and when.	• Description could include current participant subscriptions of approximately 230 TAF (p 6 of VPR)
	  ○ 192,892 AF public water agency participation
	  ○ 40,000 AF State of California (WSIP) participation (includes commitment of Level 4 refuge water [average 26 TAFY])
	• Description should include general break out of south of Delta and North of Delta members:
	  ○ South of Delta Members: total of 140,750 AF described in 3 different groups
	  ▪ Those that take water based on Table A: volume?
	  ▪ Those that have storage that could take water any time: volume?
	  ▪ Those that take water on hybrid pattern yet to be defined by Authority, members, or Rob Tull: volume?
	  ○ North of Delta Members: total of 54,142 AF described as ??? (Authority: Rob Tull to describe?)
	• Reclamation to be included in membership because of potential funding partner
	  ○ Describe range or some minimum of water Reclamation could get; reasonable to reflect what Reclamation could get, as a starting point, in the VP document (see below) to analyze in the EIR.
		[Would there be the benefit to the Authority to have a different membership mix/water allocation as part of this alternative? Would it show any different/reduced impacts based on timing/conveyance/releases? It could just be described as releasing x acre feet per month from Month X to Month Y and not trying to determine who takes what during that time period.]	

Reclamation Involvement And Exchanges			
• Potential Funding Partner • Cooperative Agreement (assumes exchange would be described via a Cooperation Agreement regardless of federal funding)	• Exchange of water between Sites Reservoir and Shasta Lake to meet CVP TCCA agricultural water service and Settlement Contractor contract demands as well as downstream flow and Delta water quality requirements • Portion of the water demand within the CVP service area along the T-C Canal and GCID Main Canal south	Same as Alt 1	

Facilities/Operations	Action Alternative 1 (Derived from VP7)	Action Alternative 2 (Includes Parts of VP6)	No Project/No Action

	of Sites Reservoir could be met from releases from Sites Reservoir in the spring and allow an equal amount of water to be retained in Shasta Lake (via exchange) to improve summer cold water pool management.
	• The exchange could occur when Sacramento River flows at Keswick and temperatures at Clear Creek are within a specific range and not compromised by reduced Shasta Lake releases into the Sacramento River.
	• This exchange would likely occur in April through May (and possibly June) in dry and critically dry years.
	• Shasta Lake releases of exchange water are proposed to be scheduled to benefit downstream temperatures in the Sacramento River, which would likely occur in September, October, or November. Withdrawals from Shasta would be coordinated with Reclamation. Based on conversations with Reclamation, this analysis assumes that no carryover storage of exchange water would be allowed between years.
	• Annual exchange with Shasta could range from 0 to 300 TAF, with annual average of 60 TAF with no Delevan Pipeline and would be subject to the following restrictions:
	  ○ All water stored in Shasta would be subject to spill at any date and would be the first water in Shasta to spill (or can this water be diverted?)
	  ○ All operations associated with this exchange would be subject to river temperature constraints (ensures there is no impact by reducing releases to store, and ensures a benefit when water is released later in the year).
	  ○ All operations are subject to approval by the State Water Resources Control Board and must comply with any applicable State or federal laws, regulations, or guidelines.		

Conveyance Release			
Dunnigan Release	Two Options: • Release 1000 cfs into new pipeline to Colusa Basin Drain, or • Release into new pipeline to Sacramento River	Release 1,000 cfs into new pipeline to Sacramento River; no Colusa Basin Drain option	

Facilities/Operations	Action Alternative 1 (Derived from VP7)	Action Alternative 2 (Includes Parts of VP6)	No Project/No Action
Transportation			
Provide route to west side of reservoir	Bridge, and road to south end of reservoir (does not go to Ladoga)	Two Options: • Bridge, and road to south end of reservoir (does not go to Ladoga) • Road only around south end of reservoir, continues to Ladoga	

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/6/2020 7:46:12 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: ICF alternatives memo

Just a quick follow-up to me email from yesterday (below); I can provide more of a narrative summary when we send out the table but wanted to have you take a look at the table first. Also, I've caught a typo in my email and edited below.

From: Laurie Warner Herson
Sent: Tuesday, May 5, 2020 3:30 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: ICF alternatives memo

Hi Ali,

I have put the two 'action' alternatives in a table and include a third column for either no project/no action or a CDFW alternative. As you will see, they generally modelled Alt 1 after VP7 (1.5 MAF/earth dam) and Alt 2 after VP6 (1.3 MAF/hardfill dam). They assume many of the same facilities and operations identified in the VP report. But they have some questions that I have highlighted in yellow in the memo and table regarding flood control features, recreational facilities, bypass facilities and membership/demand. I think we can circulate the table to our internal PD team for review/input.

We may also want to circulate the proposed changes to the project objectives. I am supportive of the revisions ~~cold water~~ but concerned with being too specific, particularly regarding Shasta cold water pool management.

One other item to note, we may need to clarify with ICF that the road to the south end of the reservoir is part of all alternatives, even with a bridge. I revised their wordings to clarify.

Take a look at my comments and let me know if you want me to circulate the table or table and memo to the team (Authority/Integration).

Thanks,

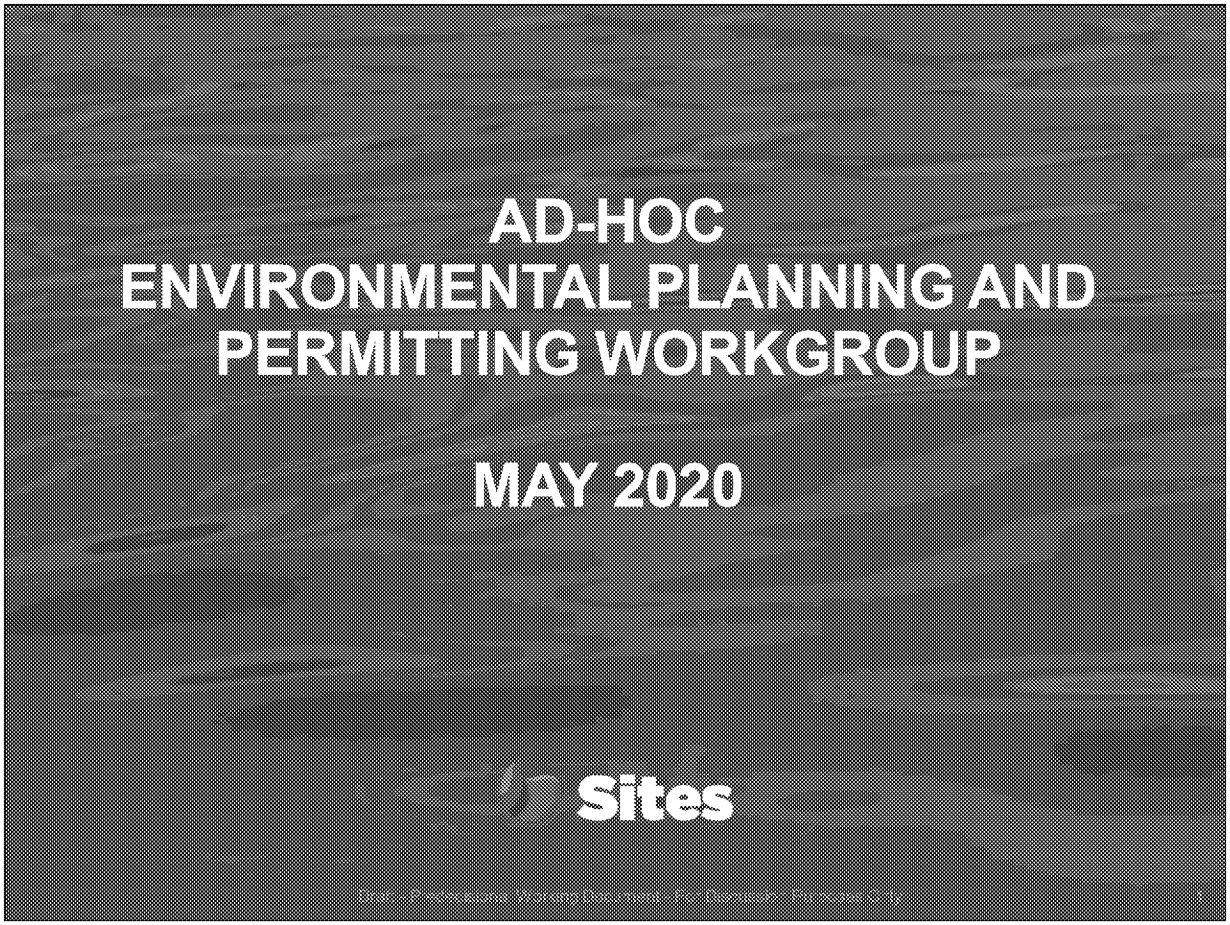
Laurie

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/



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Agenda

- Previous Action Item Review
- Project Description
  - Baseline
  - Alternatives
- ICF Work Plan Review
- Planning and Permitting Schedule Updates
- Upcoming Work and Priorities
- Next Meeting
- New Action Item Review

Speaker: Ali

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Previous Action Item Review

Action Item Review

	Action Item	Owner	Deadline	Notes
1	Schedule (carried over from previous mtg)	All/Sites Integration	April Work Group Meeting	Provide clarity on critical path schedule items with a focus on what is needed for the January 1, 2022 requirements (graphic is desired). Develop simplified chart of schedule for April package.
2	Value Planning Alternative Tables (Slides 13 and 14)	All/Sites Integration	Value Planning Report	Update/change VP 5 Alternate 1 and VP 6 Alternate 1a to VP 5 Option 1 and VP6 Option 2
3	Align Contract Amendment 2 Task Breakdowns among the service areas	Sites Integration/Controls	--	Work with Controls to line up the task breakdowns (i.e. Project Description, DEIR/EIS, BA, ITP, etc.) among the service providers (specifically ICF and Integration Environmental Planning and Permitting) so it is clearer how much is spent for a specific task. Do not include All's time in the task breakdown reporting keep it separate.
4	Organizational Assessment Comments	Work Group Members	April Work Group Meeting	Provide comments in either track changes mode or comment bubbles on the Organizational Assessment

Speaker: Linda

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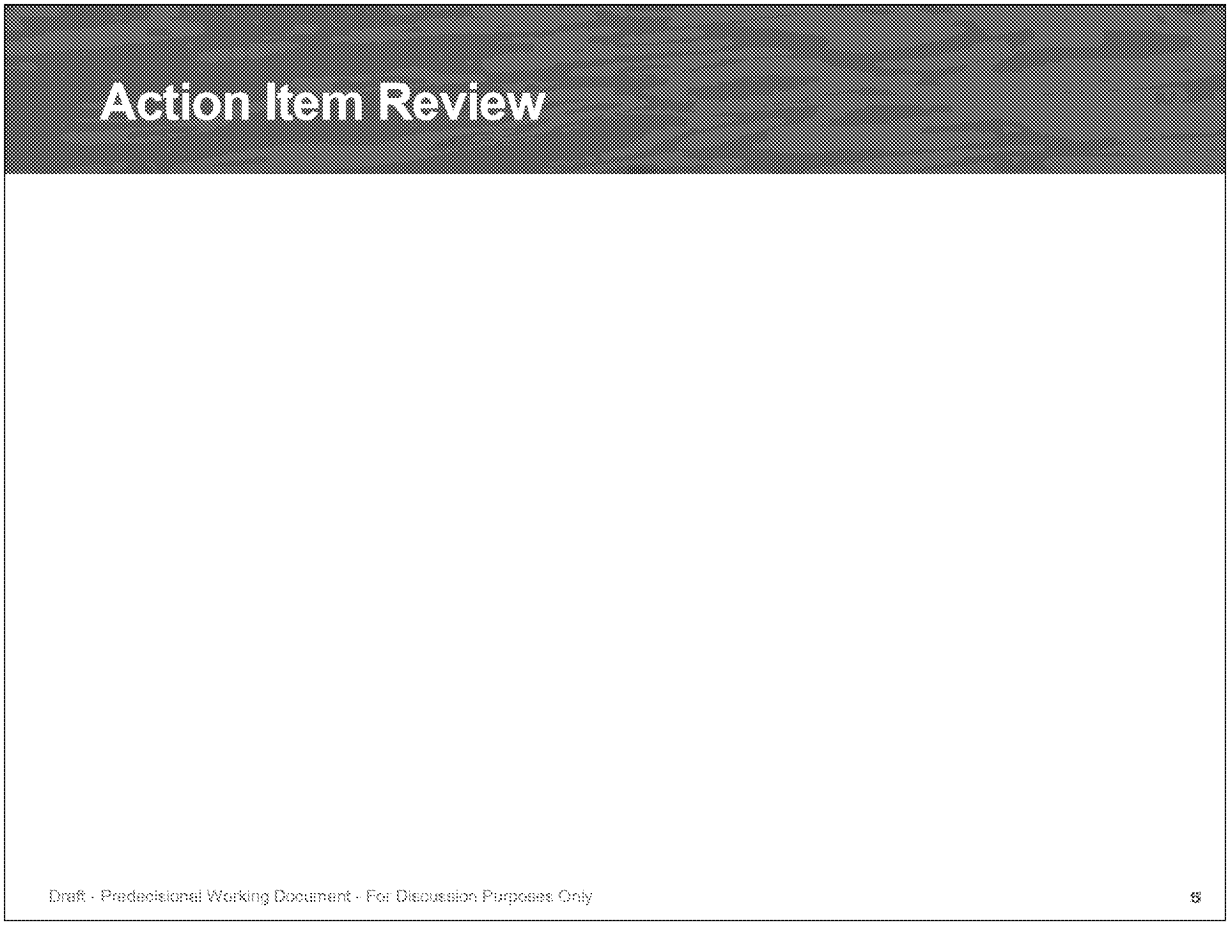

Speaker: Linda

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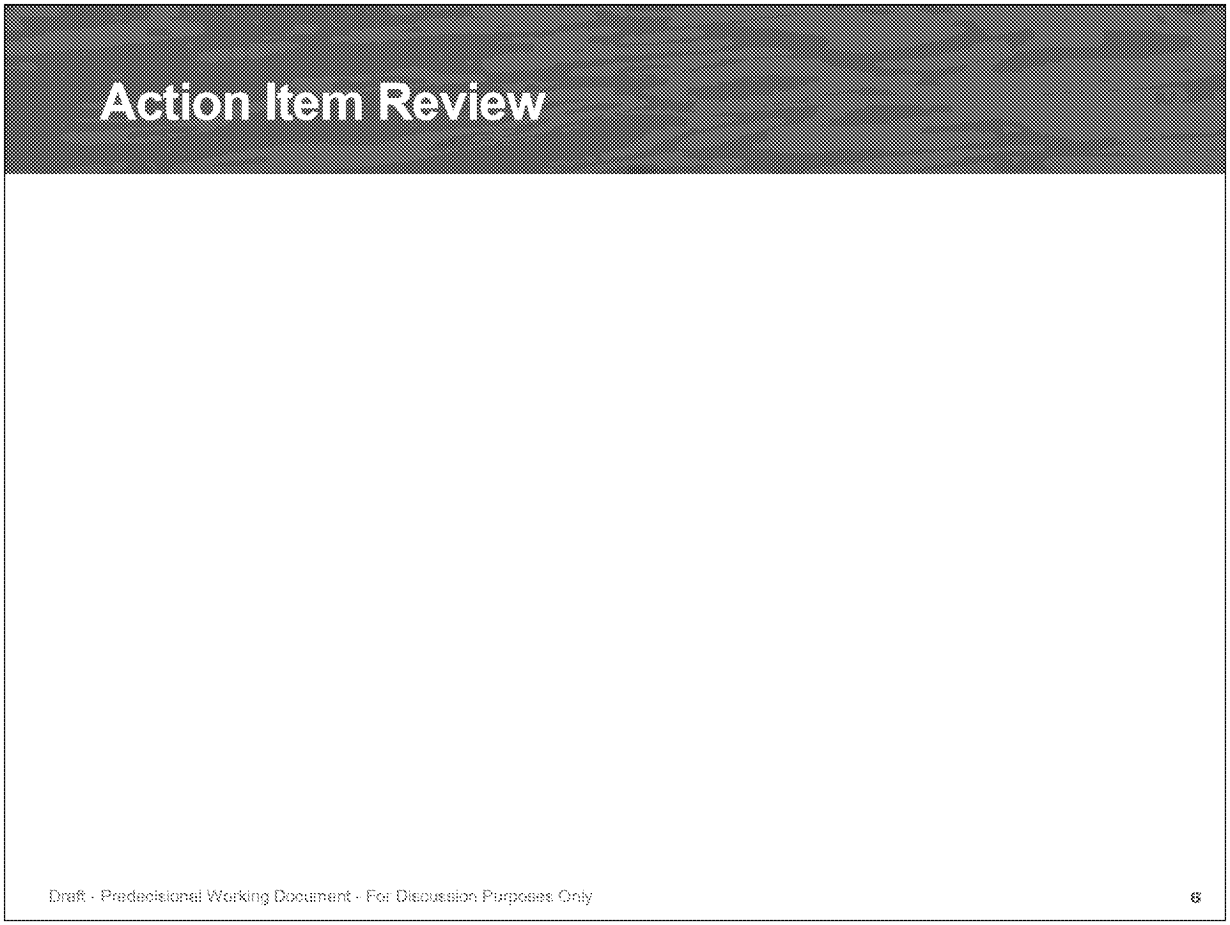

Speaker: Linda

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Project Description Update

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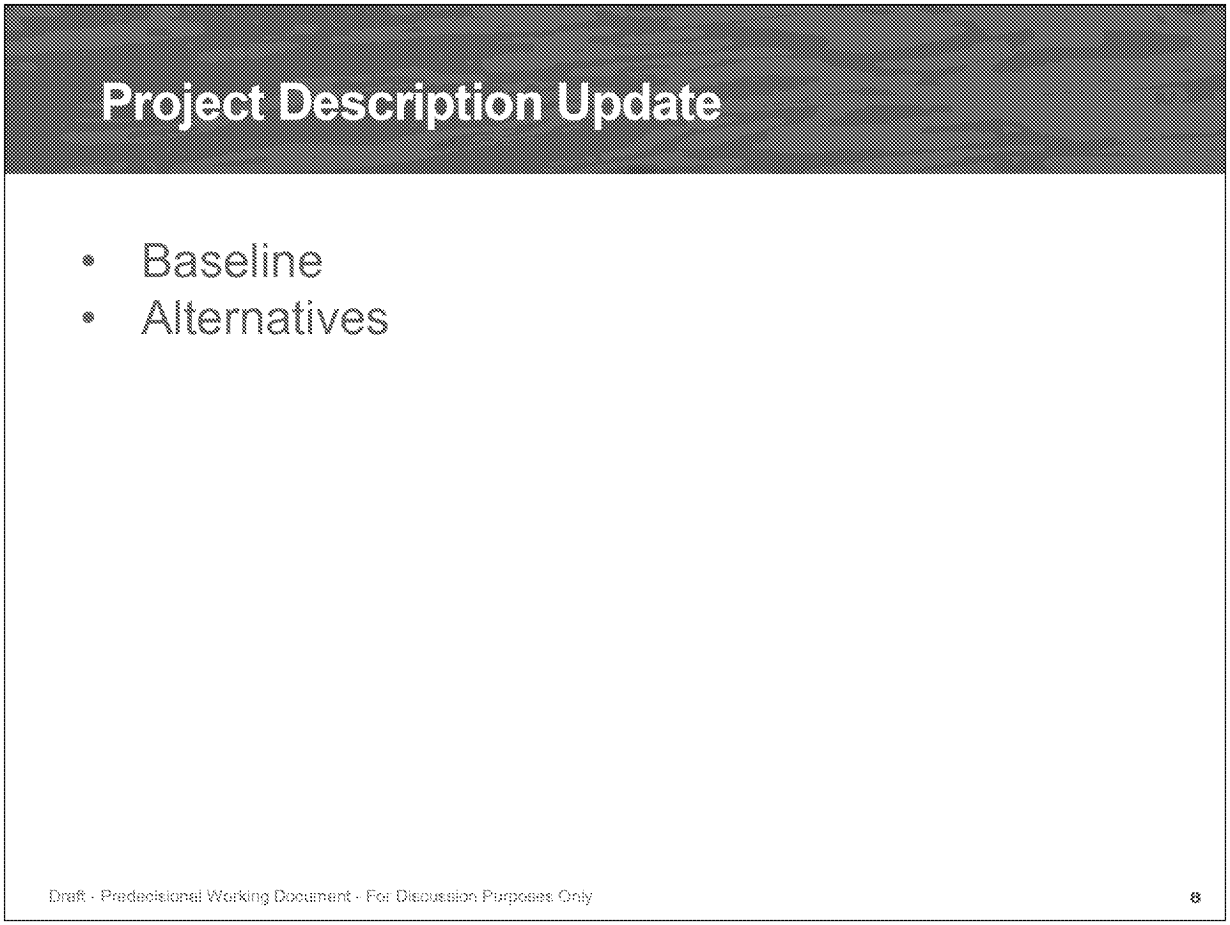

Speaker: Ali

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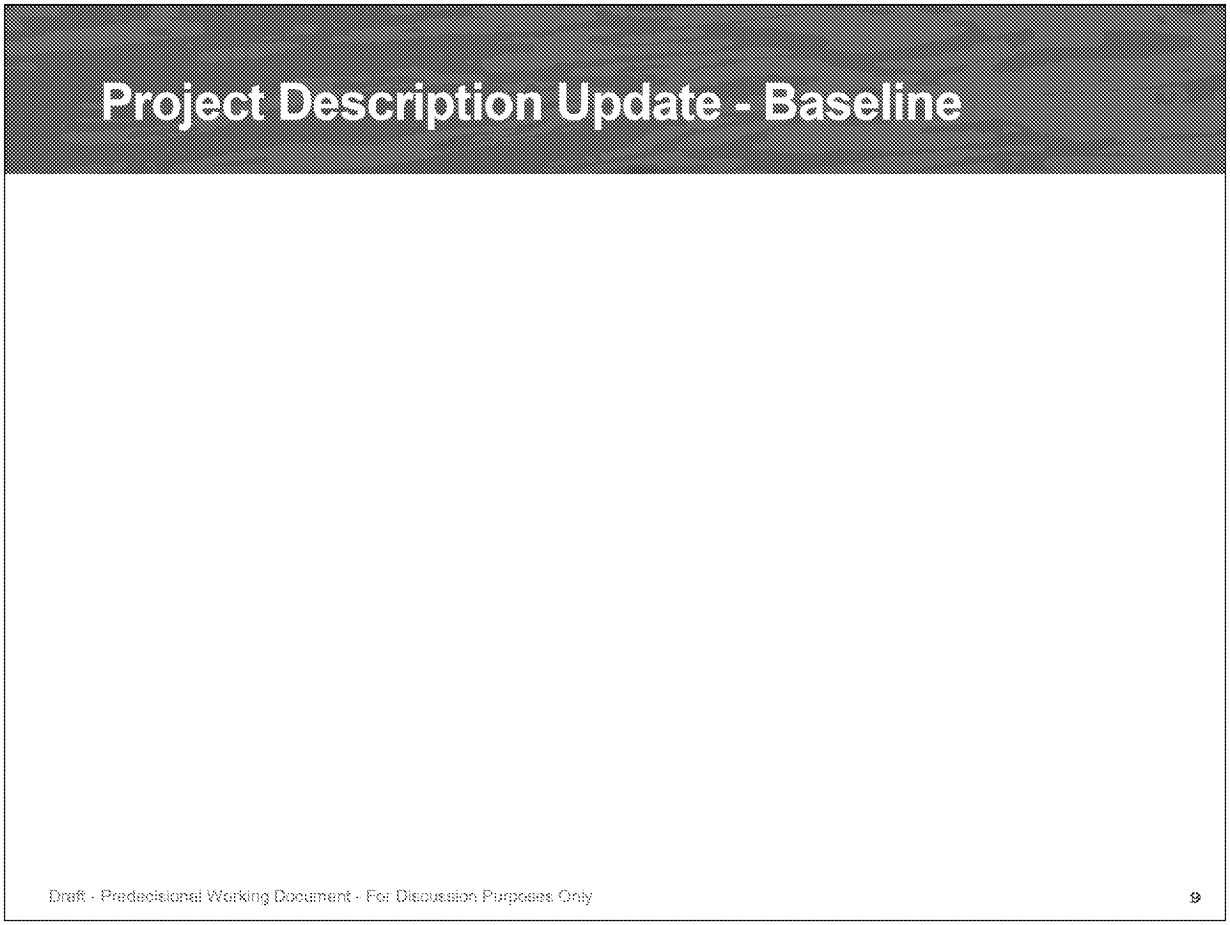

Speaker: Ali

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Project Description Update - Baseline

Speaker: Ali

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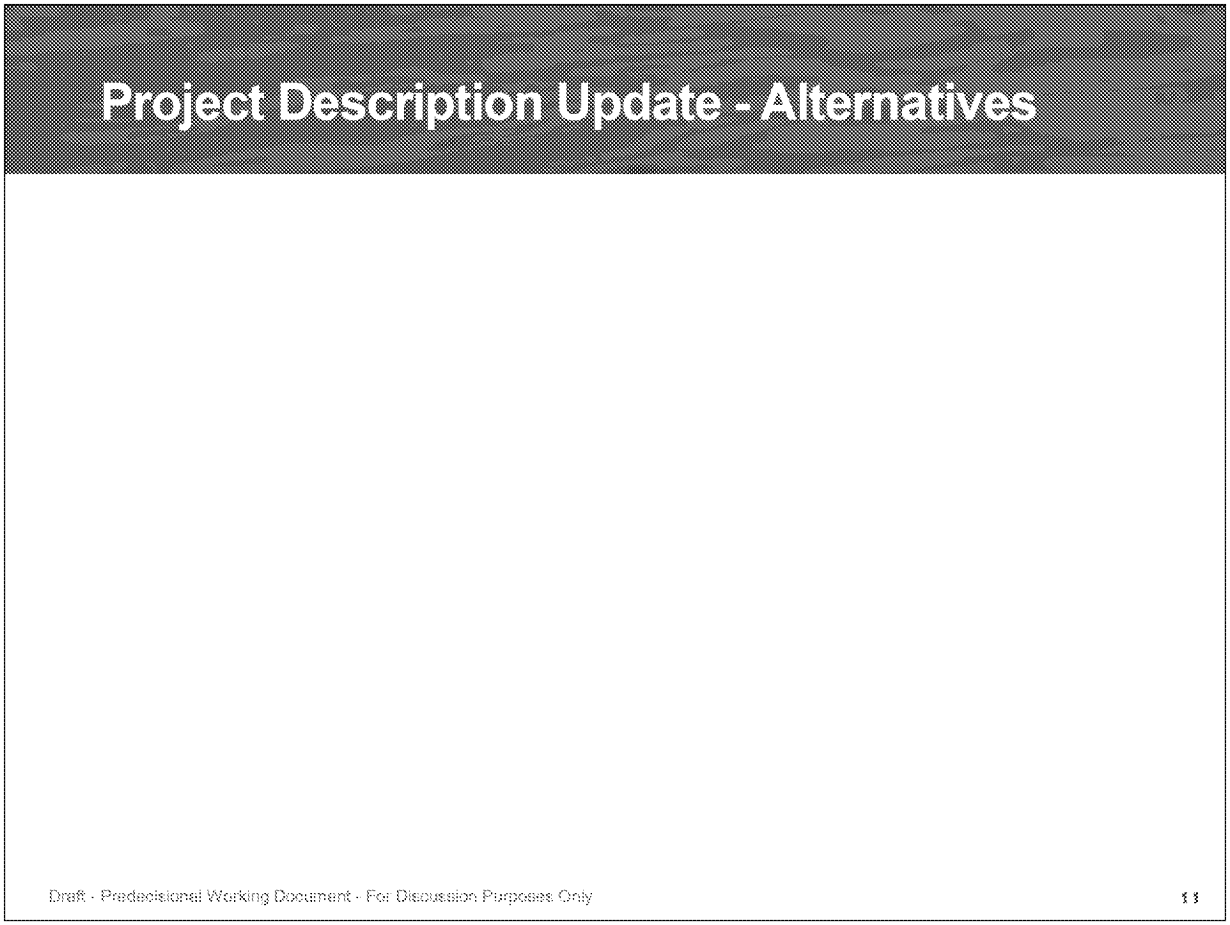

Speaker: Ali

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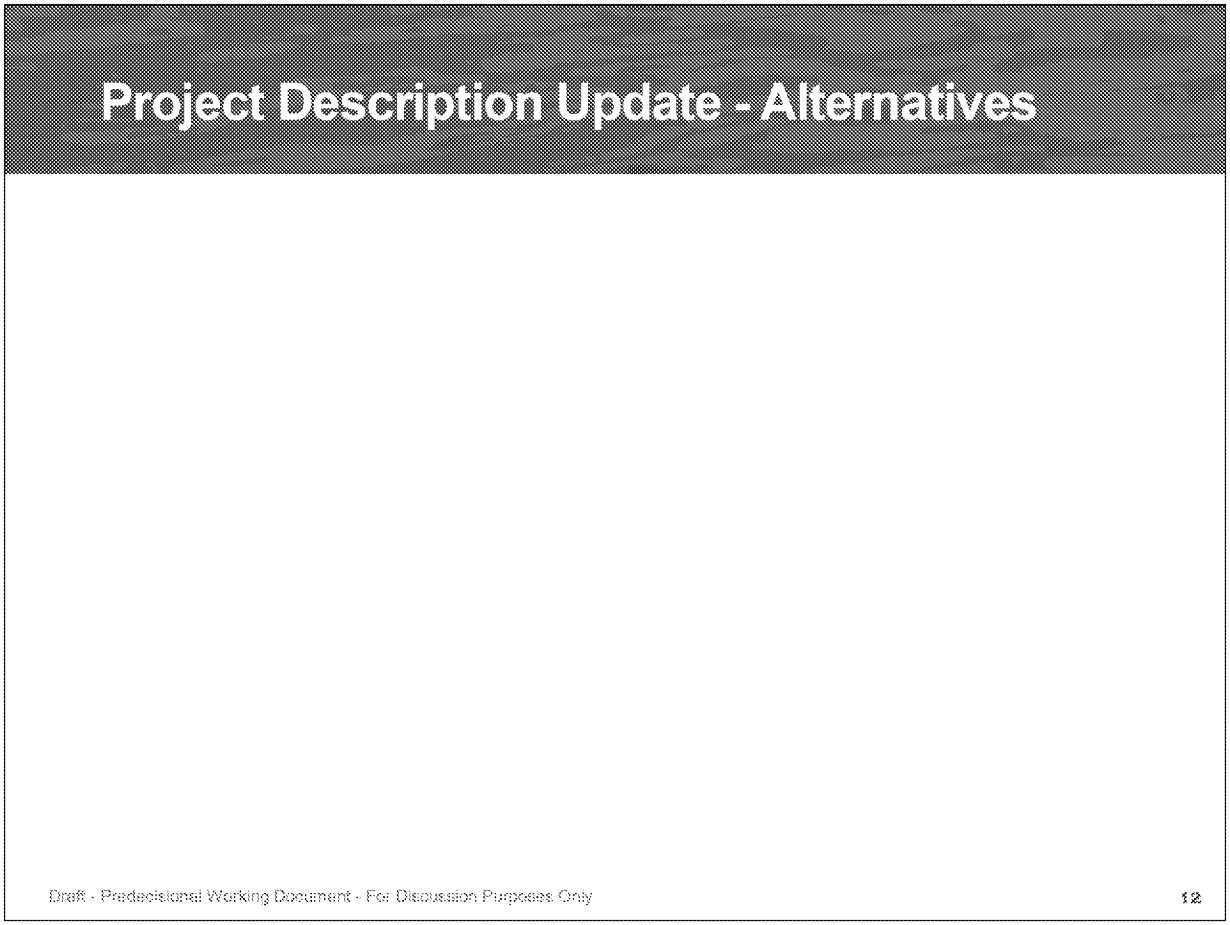

Speaker: Ali

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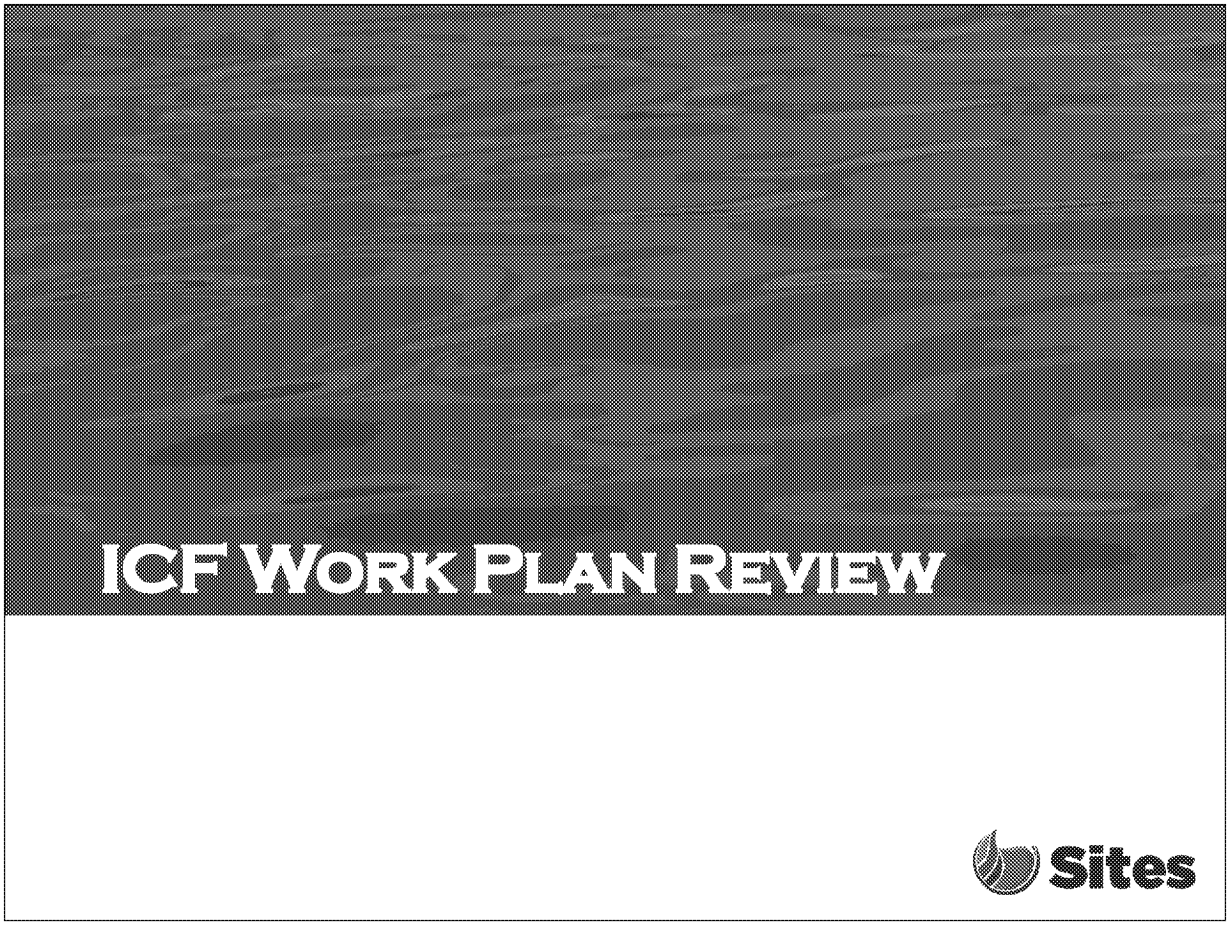

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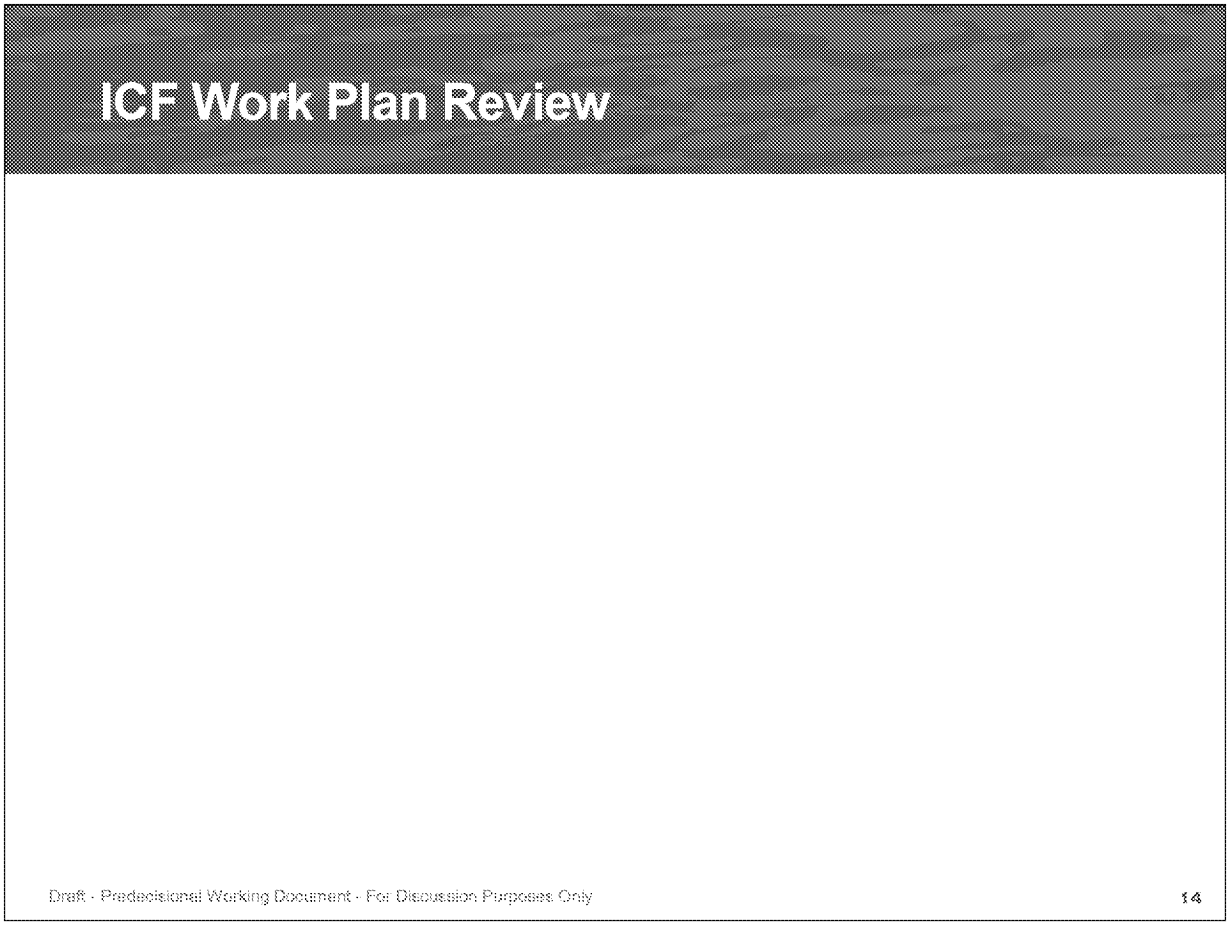

Speaker: John

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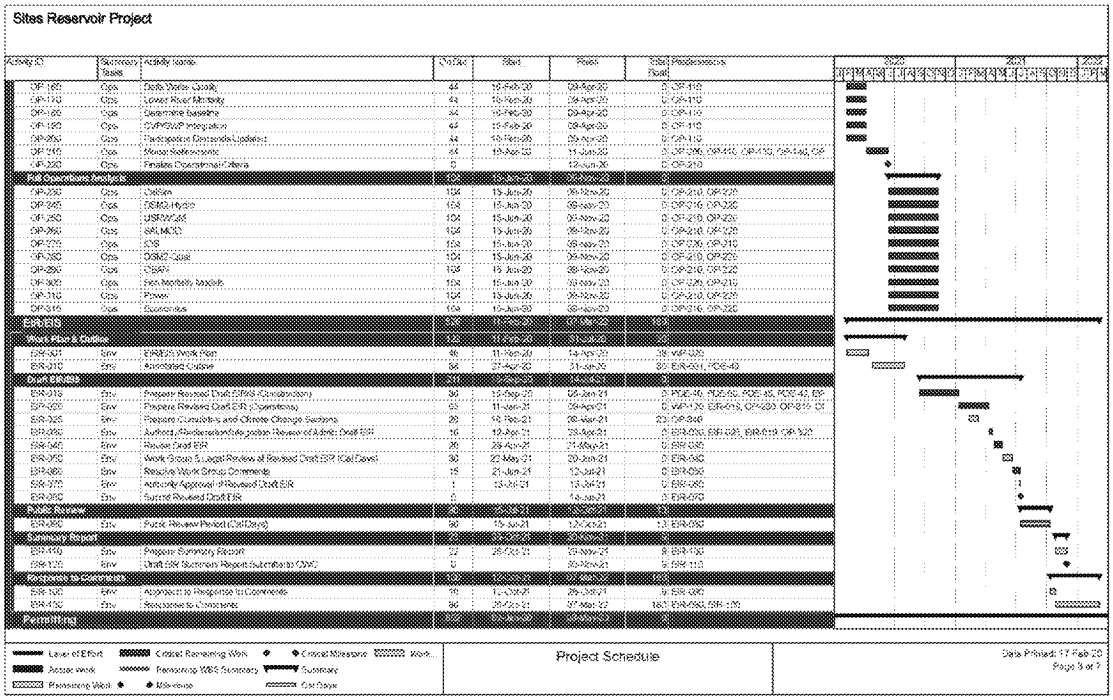
Planning and Permitting Schedule Updates Thru 12/2021

Planning and Permitting Schedule Updates



Speaker:

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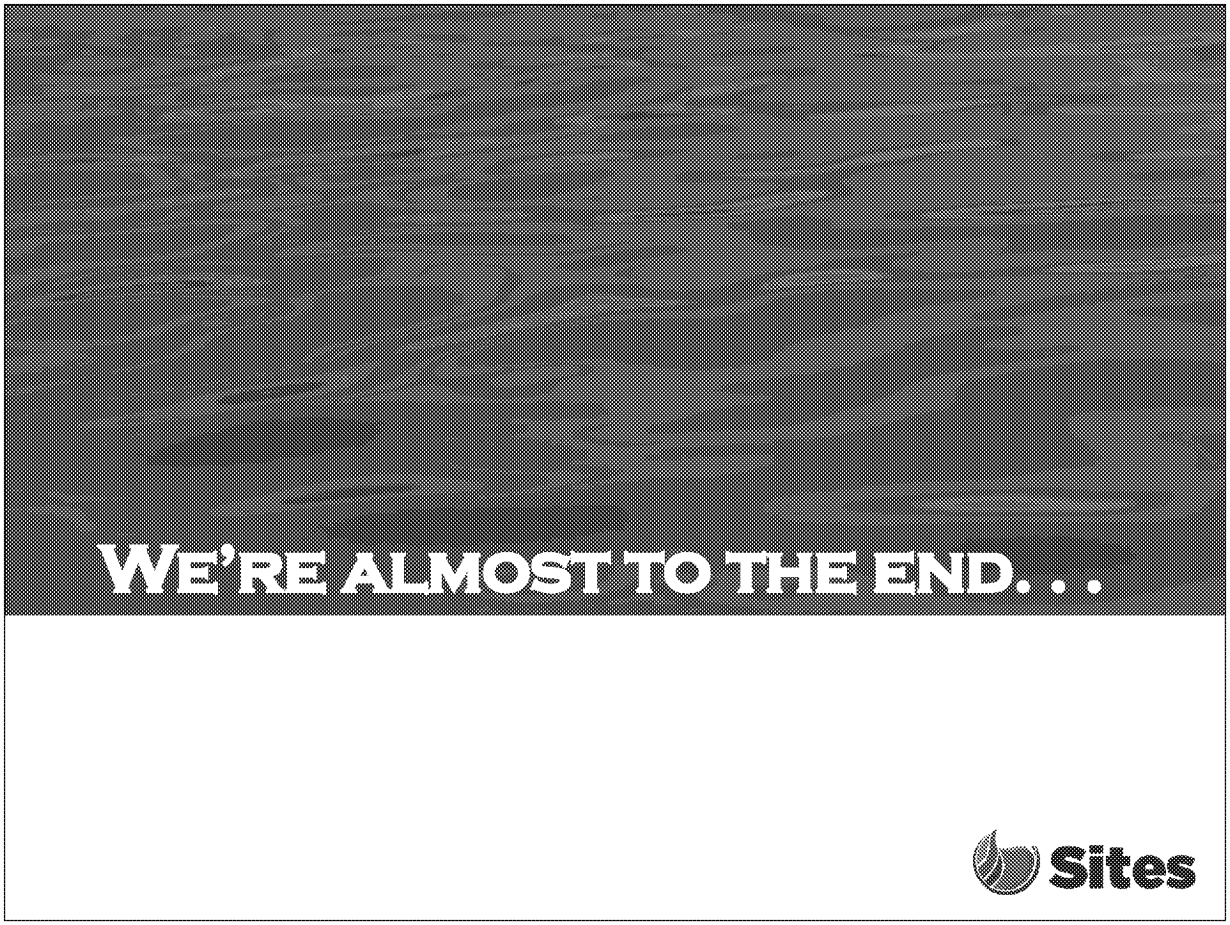

Upcoming Work and Priorities – May/June Focus

Speaker: Ali

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Schedule Next Meeting

- Before June Reservoir Committee meeting (June 19)
  - Topics –

Speaker: Ali / Linda

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New Action Item Review

- Identify and Assign Action Items

Speaker: Group

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From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/6/2020 4:50:08 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Heydinger, Erin (Erin.Heydinger@hdrinc.com) [Erin.Heydinger@hdrinc.com]
Subject: FW: [EXTERNAL] Sites Feasibility Report - environmental feasibility summary report appendix

Hi Ali,

In responding to your comments on my draft report, I reached out to Ryan to confirm the language being used in Reclamation's Feasibility Report for consistency. Ryan has confirmed that they are not changing the conclusions re: environmental feasibility in the Reclamation Feasibility Report, please see the highlighted text below. I will add a slightly modified version of this text to the Sites environmental feasibility summary report conclusions.

As we moved through discussions with Reclamation, particularly with Kellye, it was determined that the report would really just be a summary of the CEQA/NEPA process to date and would not address any changes to the project. Per your recommendations, I am making the report more NEPA focused but based on Reclamation's approach, I am not sure we need to do much more. Ryan sent a follow up email to let me know that AECOM would not be getting the chapter that addresses environmental feasibility (which In assume is Findings and Conclusions) from AECOM until May 21st but that AECOM confirmed they would keep the earlier text provided below.

I am happy to discuss further once I send my edited version to you. I apologize for my delay now – there has been a lot going on in the last couple of weeks and I was late in getting back to this. Ideally we will have a draft in Ryan's hands by Monday morning (before the next management meeting on Tuesday).

Thanks,

Laurie

From: Davis, Ryan A [mailto:rdavis@usbr.gov]
Sent: Wednesday, May 6, 2020 3:59 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: RE: [EXTERNAL] Sites Feasibility Report - environmental feasibility summary report appendix

Hey Laurie,

The following is the only text referencing Environmental Feasibility in the 2019 version of the FR. I'm not sure if this paragraph would change but we haven't received this chapter yet from AECOM. Does this help?

"Environmental Feasibility
The environmental effects for Alternative D are evaluated in the Sites Reservoir Draft EIR/EIS (Reclamation and Authority 2017). An environmentally preferred alternative that is consistent with NEPA requirements will be identified in the Final EIR/EIS. Constructing Sites Reservoir would affect environmental resources in the Primary, Secondary, and Extended Study Areas. Beneficial effects correspond to the following resource areas: water management, agricultural resources, fisheries and aquatic resources, socioeconomics, power and energy, and recreation. Some adverse effects would be temporary, construction-related effects that would be reduced to less-than-significant levels through mitigation. Other adverse effects would be permanent, including effects on terrestrial wildlife, land use, air quality, GHGs, and cultural resources. The Draft EIR/EIS is incorporated by reference into this document. The Draft EIR/EIS evaluates the representative environmental effects, and the proposed mitigation measures are presented in Appendix 1A of the EIR/EIS, and are included in the alternative cost estimates. As part of the project planning process, Reclamation and the Authority will incorporate environmental commitments and Best Management Practices (BMPs) to avoid or minimize potential project impacts. The evaluation of environmental feasibility is an ongoing process that will incorporate public comment on the Draft EIR/EIS into the Final EIR/EIS. The ROD will not be completed until pre-construction permits and approvals have been acquired."

When will your team be ready for our next meeting?

Thanks,

Ryan A. Davis, EIT
Project Manager, Water Supply Planning Branch
US Bureau of Reclamation
Interior Region 10: California-Great Basin
2800 Cottage Way, Sacramento, CA 95825
Email: rdavis@usbr.gov
Office: (916) 978-5083
Cell: (916) 206-5133

From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Wednesday, May 6, 2020 3:43 PM
To: Davis, Ryan A <rdavis@usbr.gov>
Subject: [EXTERNAL] Sites Feasibility Report - environmental feasibility summary report appendix

Hi Ryan,

In making final edits, I want to clarify with you how the Sites environmental feasibility summary report will be utilized as part of Reclamation's NODOS Feasibility Report. In my conversations with Kellye, she indicated that she expected a Sites memo/report that summarizes the EIR/EIS process to date but does not specifically make any conclusion(s) regarding environmental feasibility since that would be part of the body of Reclamation's report.

I am concerned that making my report more NEPA focused and adding detail about NEPA requirements/feasibility (per our QC reviewer's input) may not be consistent with what is already included your feasibility report. Do you have any suggestions/guidance?

Thanks,

Laurie

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

A Program for Cover Crop Habitat on Idled Lands in the Sacramento Valley
(Draft 5/5/2020)

As part of the ongoing efforts by farmers and ranchers to improve the region's ecology and pursue land stewardship, the farming and water leaders in the Sacramento Valley are pursuing a program to support and incentivize the cultivation of non-irrigated cover crops on fallowed or idled lands, referred to as idled lands from this point forward, to provide habitat for birds and other terrestrial species. Non-irrigated cover crops have the potential to create critical nesting habitat, increase soil organic matter, reduce topsoil erosion, increase air quality, and improve soil health on idled fields. The development of a flexible cover crop program will enable these lands to contribute wildlife habitat benefits that would otherwise not exist without this program.

Crop Idling in the Sacramento Valley

Farmers and ranchers idle ground every year for various reasons, including agronomic practices, dry year response (including water curtailments), water transfers and other land management practices. Land idling typically occurs every year; however, the overall area of land idled increases during dry years.

Habitat Values from Cover Crops

Non-irrigated cover crop can create important habitat for a wide range of species such as American Bittern, Gadwall, Mallard, Northern Harrier, Red-winged Blackbird, and Ring-necked Pheasant. Local breeding waterfowl populations, Mallard and Gadwall, have been in a steep decline and the Central Valley Joint Venture has made it a priority to increase the availability of breeding habitat for them in the Sacramento Valley. This upland habitat provided by cover crops on idled fields, will be a significant step towards creating this type of seasonal upland habitat for nesting waterfowl. While habitat is important every year, there may be increased opportunities to maximize habitat creation during dry years.

State Policy

For the past decade farmers, conservation partners and water suppliers in the Sacramento Valley have been working to advance these types of programs in the policy arena. As examples,

- SB 749 (Wolk), approved in 2016, provided the policy that "landowners shall be encouraged to cultivate or retain nonirrigated cover crops or natural vegetation to provide waterfowl, upland game bird, and other wildlife habitat, provided that all other water transfer requirements are met." The legislation further directed the Department of Water Resources (DWR) to implement these provisions for land idling transfers.
- SB 1386 (Wolk), approved in 2018, directed the Natural Resources Agency, Department of Food and Agriculture and the California Environmental Protection Agency to recognize that "…protection and management of natural and working lands provides multiple public benefits, including, but not limited to, assisting with adaptation to the impacts of climate change, improving water quality and quantity, flood protection,

ensuring healthy fish and wildlife populations…" when establishing policies and regulations.

- AB 2697 (Gallagher), approved in 2018, directed the Department of Fish and Wildlife to "establish the Nesting Bird Habitat Incentive Program, which may include direct payments or other incentives, to encourage landowners to voluntarily cultivate or retain upland cover crops or other upland vegetation on idled lands to provide waterfowl, upland game bird, and other wildlife habitat cover."
- AB 2106 (Aguiar-Curry), introduced in 2020, would revise the Nesting Bird Habitat Incentive Program "to authorize the inclusion of direct payments or other incentives to encourage landowners to voluntarily cultivate or retain upland cover crops, grasses, forbs, pollinator plants, or a combination thereof to provide waterfowl and other game bird nesting habitat cover for certain purposes, including encouraging the use of idle agricultural lands for wildlife habitat, as specified. The bill would additionally authorize moneys in the Nesting Bird Habitat Incentive Subaccount to be allocated by the department for the purposes of the program."

These programs are intended to promote cover crops on land idled for water transfers and to protect working lands; yet they have not been fully implemented to meet these purposes.

Schedule

In practice, these management actions would include planting a cover crop in the late fall or early winter and letting that crop establish using winter precipitation. As farmers make the decision to idle their lands for any reason they would be encouraged to leave the cover crops undisturbed on those idle fields through the waterfowl nesting season (April 1 – July 15). After the end of the nesting period farmers would again be able to work their fields in preparation for the next season crop. For rice ground, this timeline does not conflict with the growing schedule and farmers would be able to winter flood those fields for waterfowl hunting, assuming there is adequate water availability.

Goal

In the Sacramento Valley, there is a critical need to provide nesting upland habitat for waterfowl and other birds. When idled grounds are managed to remove all vegetation there is a significant missed opportunity to provide the important habitat described. In addition, despite the policy to encourage these efforts, DWR typically requires idled grounds participating in a water transfer program to be tilled which ensures that there is no standing vegetation on those fields.

Our goal is to work with a broad partnership of farmers, conservation organizations and water suppliers to advance this program and to work with policy-makers to embrace these ideas, help implement the state policies described above, and advance this program across the Sacramento Valley.

For additional information on a potential cover crop program on idled rice ground, see the attached white paper, "Rethinking the Model of Idled Agricultural Lands: Transforming Idled Lands into Seasonal Upland Nesting Habitat."

From: Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]
Sent: 5/8/2020 2:20:02 PM
To: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Spranza, John [John.Spranza@hdrinc.com]
CC: Frederiksen, Lee E. [Lee.Frederiksen@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Luu, Henry [Henry.Luu@hdrinc.com]
Subject: RE: Project Description Kickoff

I'm available any time before our 1pm call or after it.

Jelica Arsenijevic
Due to COVID-19, I will be working from home. Please contact me via cell # listed below. Be safe out there!

D 916-679-8854
M 209-329-6897

hdrinc.com/follow-us

From: Laurie Warner Herson [mailto:laurie.warner.herson@phenixenv.com]
Sent: Friday, May 8, 2020 2:07 PM
To: Spranza, John <John.Spranza@hdrinc.com>
Cc: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Luu, Henry <Henry.Luu@hdrinc.com>; Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Subject: Re: Project Description Kickoff

Me too, except that I have a call from 7:30-8:30 am.

On May 8, 2020, at 1:58 PM, Spranza, John <John.Spranza@hdrinc.com> wrote:

I could do after 3:30 or before noon.

John Spranza

D 916.679.8858 M 818.640.2487

From: Frederiksen, Lee E.
Sent: Friday, May 8, 2020 1:23 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Luu, Henry <Henry.Luu@hdrinc.com>
Subject: RE: Project Description Kickoff

Maybe we could do it Monday afternoon. I have another meeting from 3 to 4.

Lee Frederiksen, PE

D 916.817.4883 M 916.213.0569

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From: Laurie Warner Herson [mailto:laurie.warner.herson@phenixenv.com]
Sent: Friday, May 8, 2020 1:08 PM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>
Cc: Alicia Forsythe <aforsythe@sitesproject.org>; Spranza, John <John.Spranza@hdrinc.com>; Luu, Henry <Henry.Luu@hdrinc.com>
Subject: Re: Project Description Kickoff

Yes, I think we need to reconcile any inconsistencies

On May 8, 2020, at 12:52 PM, Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com> wrote:

Hi Laurie,

The engineering schedule is attached. I agree that it would good to go over this together. Would you be available to do so on Monday?

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Laurie Warner Herson [mailto:laurie.warner.herson@phenixenv.com]
Sent: Thursday, April 30, 2020 4:04 PM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>; Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Spranza, John <John.Spranza@hdrinc.com>
Subject: RE: Project Description Kickoff

Hi Lee –

John, Jelica, Linda and I met today to go over a list of ICF information needs (it's a refined version of the multi-page doc they sent). Jelica has tried to reconcile their info needs with the Engineering schedule and scope. She has developed a table that John is editing and will be sending to Ali by tomorrow morning for a quick review before it gets forwarded to you.

Once you have seen the table, we would like to sit down with you and go through the list and confirm a realistic schedule for when information can be made available to ICF.

Thank you,

Laurie

From: Frederiksen, Lee E. [mailto:Lee.Frederiksen@hdrinc.com]
Sent: Thursday, April 30, 2020 3:44 PM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: FW: Project Description Kickoff

Hi Ali,

Can we schedule a meeting soon to discuss the engineering support for the EIR/S. Please refer to my email below for our understanding at the time we were scoping 1B and 2, and Jeff's email below for his questions. Now we also have the two options coming out of the value planning report.

I would like to clarify the engineering support, and be sure it meshes with the available budgets and schedule. Feel free to call to discuss.

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Frederiksen, Lee E.
Sent: Thursday, April 30, 2020 3:40 PM
To: 'Herrin, Jeff' <jeff.herrin@aecom.com>
Cc: 'Forrest, Michael' <michael.forrest@aecom.com>; 'Smith, Michael (orange)' <michael.g.smith@aecom.com>
Subject: RE: Project Description Kickoff

Hi Jeff,

Please discard my previous email. I misstated the understanding for Amendment 1b. It was as follows:

1. One set of drawings for the value planning recommended project, VP7. (Amendment 1B)
2. The second alternative would be Reclamation's Alternative A and as such only limited additional engineering effort would be required. (Amendment 2)
3. The third alternative was going to be a modified Alternative A. It was understood that the modified Alternative A would have similar facilities but would operate differently. As such very limited additional engineering effort would be required. (Amendment 2)

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Frederiksen, Lee E.
Sent: Thursday, April 30, 2020 3:34 PM

To: 'Herrin, Jeff' <jeff.herrin@aecom.com>
Cc: Forrest, Michael <michael.forrest@aecom.com>; Smith, Michael (orange) <michael.g.smith@aecom.com>
Subject: RE: Project Description Kickoff

Hi Jeff,

I will schedule a meeting with the environmental team to lock this down. At the time of our scoping Amendment 1B my understanding was:

1. One set of drawings for the value planning recommended project, VP7.
2. The second alternative would be Reclamation's Alternative A and as such only limited additional engineering effort would be required.
3. The third alternative was going to be a modified Alternative A. It was understood that the modified Alternative A would have similar facilities but would operate differently. As such very limited additional engineering effort would be required.

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Herrin, Jeff [mailto:jeff.herrin@aecom.com]
Sent: Wednesday, April 29, 2020 3:38 PM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>
Cc: Forrest, Michael <michael.forrest@aecom.com>; Smith, Michael (orange) <michael.g.smith@aecom.com>
Subject: Project Description Kickoff

Lee,

Do you know when we will get clarification on which alternatives we need to evaluate? We generally know what to evaluate, but there are some specifics it would be helpful to clarify.

- Do we need a full set of drawings for both a 1.5 MAF and a 1.3 MAF reservoir? Do we need to include any other reservoir sizes? I'm not sure if the environmental team will retain a 1.8 MAF reservoir as one of the alternatives. I don't know if they can get by with one set of drawings with supporting tables of information for each reservoir size, or if they need a separate drawing for the dams under each alternative.
- Do we need to develop the South Road with no bridge? I don't believe CEQA requires it, but it seems like the County may want to retain it as an alternative.

There could be other issues as well. Ali had previously mentioned that the EIR/S alternatives may not be the same as VP5, VP6, and VP7.

Also, per today's call, it seems like there could still be some reprioritization of tasks. That being the case I'm wondering if we should move forward to complete all of the activities in Task Order 1, or if the Authority wants to phase Task Order 1 activities with some kind of checkpoints before we begin certain tasks. My concern is that the budget is tight and that we could push forward to complete our scope of work, but half way through get a request that would redirect activities

when we have expended too much of our budget to easily respond. It sounded like the Environmental Team is still planning to develop their list of needs from Engineering.

Jeff Herrin
Water Resources Planner, Water Business Unit, Sacramento, CA
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M +1-916-432-0956
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<5.7 Sites_April2020_Updatev1.xlsx>

Sites Reservoir Project Key Milestones June 2020 thru December 2021

Milestone	Scheduled Date
For EIR Analysis • Establish modeled Release and Diversion Criteria • Define Project Baseline and Alternatives	June 2020
Perform Operations Analysis	Jun 2020-Nov 2020
Re-analyze Public Benefits	Nov 2020- Apr 2021
Complete USBR Final Federal Feasibility Report	Dec 2020
Complete Negotiation of Key Terms for Coordinated Operations with CVP and SWP	June 2021
Submit State Prop 1 Feasibility Report	July2021
Release Recirculated Draft EIR for 60-day public review	July 2021
Complete Plan of Finance and Allocation of Benefits and Costs	Aug 2021
Receive confirmation of local agency participation for Prop 1	Oct 2021
CWC determination of Prop 1 Construction Funds Eligibility	Dec 2021
Submit Water Rights Application to SWRCB	Mar 2022
Issue Final EIR	Mar 2022

Key Activities that need to be coordinated with CDFW for Sites Reservoir construction and operations permitting

-

Key Activities that need to be coordinated with CDFW for Sites Reservoir contracting of the environmental benefits under the Prop 1 WSIP State investment

-

File Provided Natively

Project Description Team Meeting - Agenda

Affordable Water, Sustainably Managed

Our Core Values – Safety, Trust and Integrity, Respect for Local Communities, Environmental Stewardship, Shard Responsibility and Shared Benefits, Accountability and Transparency, Proactive Innovation, Diversity and Inclusivity
Our Commitment – To live up to these values in everything we do

Meeting Information:

Date:	November 18, 2020	**Location:**	Microsoft Teams
Start Time:	1:00 p.m.	**Finish Time:**	2:30 p.m.
Purpose:	Coordination on Project Description Development		

Meeting Participants:

Jelica Arsenijevic, Sites Integration	Mike Hendrick, ICF	John Spranza, Sites Integration
Ellen Berryman, ICF	Jeff Herrin, AECOM	Ellen Unsworth, ICF
Robert Boling, HDR	Erin Heydinger, HDR	Laurie Warner Herson, Sites Integration
Monique Briard, ICF	Jim Lecky, ICF	Nicole Williams, ICF
Jerry Brown, Sites Authority	Henry Luu, HDR	
Linda Fisher, Sites Integration	Conner McDonald, CMD West	
Michael Forrest, AECOM	Steve Micko, CH2M	Additional Team Members
Ali Forsythe, Sites Authority	Pete Rude, CH2M	
	Kevin Spesert, Sites Authority	

Agenda:

Discussion Topic	Topic Leader	Time Allotted
1. Introductions and Safety Moment (Steve Micko)	Ali / Steve	10 mins
2. Open Topics from Team – Please bring any topics you'd like to discuss	Team	15 mins
3. Operations Project Description a. Overview of Assumptions / Approach for Alternatives b. Modeling Deliverables and Schedule (Jan 4, Jan 12)	Erin / Group	20 mins
4. Construction Appendix a. Comments from Team in Doc b. Air Quality Formatting	HR / HC Teams / Nicole	40 mins
5. Action Items and Next Meeting	Team	5 mins

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/11/2020 11:28:07 AM
To: Westcot, Cathy [Cathy.Westcot@hdrinc.com]; Spranza, John [John.Spranza@hdrinc.com]; Frederiksen, Lee E. [Lee.Frederiksen@hdrinc.com]; Arsenijevic, Jelica [Jelica.Arsenijevic@hdrinc.com]
CC: Luu, Henry [Henry.Luu@hdrinc.com]; Heydinger, Erin [Erin.Heydinger@hdrinc.com]; Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: schedule

Hi Cathy – we received the EIR/EIS work plan on schedule on April 30th.

From: Westcot, Cathy [mailto:Cathy.Westcot@hdrinc.com]
Sent: Monday, May 11, 2020 11:23 AM
To: Spranza, John <John.Spranza@hdrinc.com>; Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>; Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Cc: Luu, Henry <Henry.Luu@hdrinc.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; aforsythe (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: RE: schedule

John,

I have input the changes I received from Erin and Lee and created a new tab for each area and called it Ali-Updated or Lee-Updated. That way you can see the changes, I tried to highlight the major ones in orange. Looks like nothing critical changed unless the EIR/EIS Work Plan schedule dates have changed.

If you need any additional information, just let me know.

Cathy Westcot, PMP
Project Controls Director, Sites Reservoir

HDR
2379 Gateway Oaks Dr #200
Sacramento, CA 95833
D 916-679-8743 M 916-213-3076
cathy.westcot@hdrinc.com

hdrinc.com/follow-us

From: Spranza, John
Sent: Monday, May 11, 2020 8:54 AM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>; Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Cc: Luu, Henry <Henry.Luu@hdrinc.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>; aforsythe (aforsythe@sitesproject.org) <aforsythe@sitesproject.org>; Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Westcot, Cathy <Cathy.Westcot@hdrinc.com>
Subject: RE: schedule

Thanks Lee,
I just spoke with Cathy and I asked her to take these dates, along with any similar HC/HR changes made to Operations and Planning and run the P6 to show how these changes affect Planning, Permitting and Ops area schedules. Once we get that output back from Cathy later today then I'll be able to focus on where we are and address items in permitting more efficiently; as will Planning and Operations.
John

John Spranza

D 916.679.8858 M 818.640.2487

From: Frederiksen, Lee E.
Sent: Friday, May 8, 2020 11:24 AM
To: Spranza, John <John.Spranza@hdrinc.com>; Arsenijevic, Jelica <Jelica.Arsenijevic@hdrinc.com>
Cc: Luu, Henry <Henry.Luu@hdrinc.com>; Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: FW: schedule

Hi John and Jelica,

I have attached my edits to the schedule. We will review with the engr/geotech on Monday. We will also be developing a detailed schedule by facility. The changes in the dates are due to getting the HC and HR onboard a month late. I have kept the final due dates the same for the feasibility level design and have not verified with the teams that they can make up a month in time.

I am still a bit concerned that there is a disconnect between environmental and engineering. I would be happy to walk through the engineering schedule with you.

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

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From: Frederiksen, Lee E.
Sent: Friday, May 8, 2020 9:19 AM
To: Cathy Westcot (Cathy.Westcot@hdrinc.com) <Cathy.Westcot@hdrinc.com>
Subject: schedule

Hi Cathy,

I have made my edits to the schedule. I have highlighted in blue the text changes. The changes are intended to add clarity. Is this what was needed?

Thanks.
Lee

Lee Frederiksen, PE
Senior Vice President | Practice Leader, Civil Works

HDR
2635 Iron Point Road, Suite 300
Folsom, CA 95630
D 916.817.4883 M 916.213.0569
lee.frederiksen@hdrinc.com

hdrinc.com/follow-us

From: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Sent: 5/11/2020 12:17:27 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: Project Description Meeting

Agreed. Yes I'll talk to Henry.

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 11, 2020 12:16 PM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: RE: Project Description Meeting

Thanks Erin. Can you and Henry talk about this and provide her direction? I get that she wants to be included, but I am just not sure that it's the best use of the limited funds. We aren't going to discuss geotech in these meetings – or if we do, we can have her there for a focused discussion topic. But we were going to handle geotech outside of these meetings, so I am really torn on the need to have her at them.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Monday, May 11, 2020 11:42 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: FW: Project Description Meeting

FYI. I am guessing Jeriann wants to be included in these meetings…. I responded to your comment on the PMP. I understand why she wants to attend but am also not sure it's needed, since there is also a weekly Feasibility Study meeting with the engineering and geotech teams.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: Alexander, Jeriann <jalexander@fugro.com>
Sent: Monday, May 11, 2020 11:36 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: Project Description Meeting

I checked the Sharepoint site for a calendar of meetings and I could not find it.
Do you know when the next meeting is?

Best Regards,

Jeriann N. Alexander, PE, REPA
Principal Engineer
Fugro

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E jalexander@fugro.com | **W** www.fugro.com

A 2420 Del Paso Road, Suite 250, Sacramento, California 95834, USA
A 1777 Botelho Drive, Suite 262, Walnut Creek, California 94596, USA
A 469 Roland Way, Oakland, California 94621, USA

Together we create a safe and liveable world.

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/12/2020 3:17:23 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Spranza, John [John.Spranza@hdrinc.com]; Heydinger, Erin (Erin.Heydinger@hdrinc.com) [Erin.Heydinger@hdrinc.com]
Subject: FW: Sites - preliminary alternative for EIR/EIS analsyis

FYI – please see Jeff's initial response to the alts table. Clearly, the south road will be at a program level.

From: Laurie Warner Herson
Sent: Tuesday, May 12, 2020 3:11 PM
To: Herrin, Jeff <jeff.herrin@aecom.com>
Cc: Luu, Henry <Henry.Luu@hdrinc.com>; Forrest, Michael <michael.forrest@aecom.com>
Subject: RE: Sites - preliminary alternative for EIR/EIS analsyis

Hi Jeff,

I am not sure why ICF suggested including the hardfill dam – we can change that to rockfill if that is the appropriate approach. We really only want to address feasible alternatives that meet the project objectives.

There hasn't been a decision to include an alternative from Reclamation's Feasibility Report. It was discussed but I think the approach now is to look at a 1.3 MAF similar to Alt A but without Delevan and more like the VP alternatives in configuration.

If you have more comments, please send either as mark-ups to the table or in a bullet list in an email.

Thanks,

Laurie

From: Herrin, Jeff [mailto:jeff.herrin@aecom.com]
Sent: Tuesday, May 12, 2020 2:46 PM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Cc: Luu, Henry <Henry.Luu@hdrinc.com>; Forrest, Michael <michael.forrest@aecom.com>
Subject: RE: Sites - preliminary alternative for EIR/EIS analsyis

We had a kickoff for the emergency release design memo today. My guess is that we will have similar facilities for both reservoir sizes, but this wasn't evaluated previously.

These alternatives vary from what we have in Task Order 1. We did not anticipate evaluating two different dam types. We understood that the Authority would be using Alternative 1 from Reclamation's feasibility report. Alternative A has zoned rockfill, not a hardfill dams. I need to see if we have funds to look at both dam types under the current budget. We also were not anticipating looking at the southern road. We should discuss how we can scale back the level of design for the southern road option as far as possible.

From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Tuesday, May 12, 2020 2:05 PM
To: Herrin, Jeff <jeff.herrin@aecom.com>; Rude, Pete/RDD <Pete.Rude@jacobs.com>

Cc: Luu, Henry <Henry.Luu@hdrinc.com>
Subject: [EXTERNAL] Sites - preliminary alternative for EIR/EIS analsyis

Hi Jeff and Pete –

ICF has provided the Authority with preliminary alternatives to be included in the revised Draft EIR/EIS (see attached memo report). They are based on the VP alternatives and consistent with the recommendations in the VP report - ICF's Alt 1 is essentially VP7 while ICF's Alt 2 is the smaller reservoir size with release to the Sacramento River.

The integration team met with Ali yesterday to work through the alternatives as outlined by ICF. I have attached a table that we prepared based on ICF's memo; you will see Ali's edits to the table and notes regarding items where we need further input. She has asked me to forward this to you for your review. We particularly need your input on the Emergency Releases section but would like you to look at the overall table for any concerns/suggestions.

You can send back any edits/notes via email or by directly editing the file in SharePoint:

https://sitesreservoirproject.sharepoint.com/:w:/r/ProjectDescription/_layouts/15/Doc.aspx?sourcedoc=%7B8FFA6494-A8C2-4782-816B-3C28F38E2D69%7D&file=ICF%20Prelim%20Alternatives.docx&action=default&mobileredirect=true

It would be great if you could get back to us by COB tomorrow. We would like to take the preliminary alternatives to the ad hoc Environmental Work Group next Tuesday.

Thank you,

Laurie

Laurie Warner Herson
Sites Integration Team

Principal/Owner

Phenix
Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

Workgroup Chartering Document

Status: **Ad Hoc**

- Leaders: Chair — WR-M WSD, Rob Kunde; Vice Chair — Colusa County, Mike Azevedo
- Members (10): GCID, Thad Bettner; SCVWD, Eric Leitterman, Cindy Kao; CVWD, Robert Cheng, Ivory Reyburn; Dunnigan, Bill Vanderwaal; Westside WD, Dan Ruiz; SBVMWD, Bob Tincher, Heather Dyer; Zone 7, Amparo Flores; MWDSC, Randall Neudeck

  NOTE: Should a work group member not be able to participate, one of the alternates will be asked to participate. Should more than 10 participants to the Phase 2 (2019) Reservoir Project Agreement plan to attend, at least 3 days prior, the meeting will be publicly noticed along with posting of the agenda.

- Alternates (3): Davis WD/TC4, Jeff Sutton; SCVWA, Dirk Marks; American Canyon, Rick Kaufman
- Non-Voting (2): Rob Cooke – DWR; TBD - Reclamation
- Expertise: Staff from participating agencies who have specific expertise that is relevant to the matter being addressed by this work group.
- Staff Support:
  1. The Executive Director, the EPC Manager, or the Reservoir Operations Manager (which is currently vacant).
  2. Legal counsel on an as needed basis.
  3. Other specialty advisors or experts on an as needed basis.
- Formation: March 19, 2020

- Expires: End of the Phase 2 Amendment Reservoir Project Agreement

Related Documents:

- Attachment A: Work Group Chartering Process, General Requirements

Purpose: To advise the Reservoir Committee on matters related to

1. The proposed reservoir operation to include in the EIR/S, permit applications, Project Operations Plan, the Authority-led Feasibility, to comply with other statutory requirements, and WSIP-related agreements for public benefits.

2. The proposed cooperative or integrated operations with Reclamation and Department of Water Resources that will be needed to optimize both consumptive water supplies and water-based public benefits as defined, respectively in Reclamation's Feasibility Report and to provide the water-based public benefits as approved by the California Water Commission as part of their administration of Prop 1, Chapter 8 (WSIP).

3. The feasibility-level engineering of the reservoir, pipeline, and appurtenant structures for incorporation into both the Final EIR/S, the Authority-led Feasibility Study to fulfill Prop 1 funding eligibility requirements, and the integration of Reclamation's feasibility studies.

Meeting Frequency: When either the Leader determines or a Reservoir Committee Chairperson requests that a potential issue exists to warrant convening the work group to develop a recommended resolution or response for the Reservoir Committee to then consider and act upon.

Work Group's Roles and Responsibilities:

- The primary focus areas of this workgroup are

  a. The new or expanded facilities that will convey water to/from the Sacramento River for storage in the proposed Sites Reservoir. This includes canals, pipelines, regulating reservoirs, pumping plants, both the primary and saddle dams, and grid interconnection facilities.

  b. Providing input and reviewing the engineering documents that will be relied upon in the EIR/S, and permit applications, and the Authority-led Feasibility Study.

  c. Input to the development of an over-arching procurement strategy by project phases and to solicit proposals from consultants to perform work to advance the project in Phase 2. This will include preparation and review of solicitation documents, participation in the proposal reviews

and rankings, interviews with short-listed firms, and development of a recommendation to execute selective contracts.

d. Developing and refining the range of operational strategies addressing the anticipated competing uses for consumptive and public benefit allocations for consideration by the Reservoir Committee.

e. Developing the details of the water supply components of the operational strategies to produce a refined approach that will serve as the foundation to work with USBR and DWR to initially develop foundational operating principles that will eventually become the basis for a cooperative operating agreement to integrate Sites operations (both consumptive and Prop 1) with the CVP operations and SWP operations.

f. Refining the range of the Prop 1 water-related public benefits (i.e. ecosystem, water quality, and emergency response) for inclusion into the WSIP-related agreements and serve as the basis for initial pre-application discussions with the permitting agencies.

g. Review of Reclamation's Feasibility to ensure consistency with the Authority-led feasibility studies.

h. Input & review of the WSIP-related agreements for water-related benefits

i. Support the development of pre-application work efforts anticipating the need for:

   - A revised water right application to the SWRCB,
   - Incidental take authorization from state and federal wildlife agencies (involving the CDFW, NMFS, and USFWS),
   - Modification of the flood protection and Sacramento River water quality (involving the Central Valley Flood Protection Board, US Army Corps of Engineers, and RWQCB)
   - Compliance with other regulatory requirements

From: Tull, Robert/SAC [Robert.Tull@jacobs.com]
Sent: 5/18/2020 8:53:05 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]
CC: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Subject: RE: CASIM models Mass Balance Information

Sorry for any confusion. I forwarded Chuching's request to Lee since Lee led the value planning effort and coordinated with Brian on the financials.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 18, 2020 8:18 AM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: [EXTERNAL] FW: CASIM models Mass Balance Information

Hey Rob – I wanted to follow up on this. I am totally good with you replying directly to Chuching and other member requests. But please copy Erin or I next time (or both of us). I just don't want to get blindsided by something as we weren't in the loop. We could have also headed this off a little quicker and not had this have to go thru a few different folks before we were able to get Chuching the spreadsheet.

Totally good with you replying directly and taking care of these things. Just please copy us.

Thank you!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, May 13, 2020 10:59 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: FW: CASIM models Mass Balance Information

FYI, this is the email thread Rob was referring to on the phone.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

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From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Wednesday, May 13, 2020 9:30 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: FW: CASIM models Mass Balance Information

I have to pump the brakes. I assumed since I was looped in that they were looking for the cash flow tool. Do you know what file Chuching is referring to, Erin?

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Luu, Henry <Henry.Luu@hdrinc.com>
Sent: Wednesday, May 13, 2020 8:58 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Subject: RE: CASIM models Mass Balance Information

Hi JP,

Would you mind providing the document to Chuching? It's my second week on this project and am still familiarizing myself with the sharepoint site, but a quick search of the document did not yield any spreadsheet results.

Thank you,
Henry M. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Frederiksen, Lee E.
Sent: Wednesday, May 13, 2020 8:14 AM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Tull, Robert/SAC (Robert.Tull@jacobs.com) <Robert.Tull@jacobs.com>; Luu, Henry <Henry.Luu@hdrinc.com>; JP Robinette (JRobinette@BrwnCald.com) <JRobinette@BrwnCald.com>
Subject: RE: CASIM models Mass Balance Information

Hi Chuching,

I have transitioned off of the Sites Project. JP or Henry will email you the financial model "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx".

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Wang,Chuching [mailto:cwang@mwdh2o.com]
Sent: Tuesday, May 12, 2020 4:04 PM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>
Cc: Tull, Robert/SAC (Robert.Tull@jacobs.com) <Robert.Tull@jacobs.com>
Subject: FW: CASIM models Mass Balance Information

Hi, Lee,

Would you email me the financial model "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx"?
Thank you.

Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Monday, May 11, 2020 5:16 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: CASIM models Mass Balance Information

Hi Chuching,

See responses to your questions below.

1. Appendix D was prepared by Brian Grubbs at Montague-DeRose the financial consultant. I suggest contacting Lee Fredrickson at HDR to obtain the supporting spreadsheet. His email is Lee.Frederiksen@hdrinc.com.

2. yes - Study #4 in the Reservoir Sizing and Conveyance TM in Appendix B-1 is identified as "Scenario B – 1,000 cfs conveyance capacity & 1.5 MAF storage capacity", which is based on the "DCR2015_merge_SitesON_WaterFixOFF_CALSIM_DRAFT_11-25-19_P2b_1_5_scnB_1kPipe" CalSim II study.

3. yes – the values are the long term average annual releases from Sites for each of the participating entities that total to 243 TAF/year for the VP7

Let us know if you have any further questions.

Hope all is well with you and your family.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, May 11, 2020 12:42 PM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>; Whittington, Chad/SAC

<Chad.Whittington@jacobs.com>
Subject: [EXTERNAL] RE: CASIM models Mass Balance Information

Hi, Rob,

I am still studying the April "Sites Project Value Planning Alternatives Appraisal Report".

1. In Appendix D of the report, it mentioned an attached file: "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx".
Would you email me a copy of the file?
2. In page 7 of Appendix D (I only focused on VP7 data), the table listed "Annualized AF/Year Releases". Does it based on the CALSIM study
"DCR2015_merge_SitesON_WaterFixOFF_CALSIM_DRAFT_11-25-19_P2b_1_5_scnB_1kPipe" you sent to me before?
If it is not, would you send me the corresponding CALSIM study?
3. For "Annualized AF/Year Releases", does it mean long term average releases resulting from corresponding storage partitions, such as "PWA NOD", "PWA SOD", "State"?

Thank you in advance for your prompt response.

Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Tuesday, April 07, 2020 5:08 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: CASIM models Mass Balance Information

HI Chuching,

Glad to hear you thought the IncomeStatement Excel file was useful

See responses to your questions below.

1. Those climate options are used to make appropriate WYT estimates for each scenario. For this analysis, they should not be changed from "2015" since all of our facility sizing analysis has been conducted using DCR 2015 climate conditions. We have not developed any recent CalSim studies under 2030, 2070, or ELT climate conditions.
2. The "SitesDelivByParticipant_Indiv" tab was originally developed to address a question from one of the Phase 1 participants. The tab has not been updated for Phase 2 participation, which would include MWD.
3. Right now we are focused on modeling for the USBR Feasibility Report and preparation for analysis to support the Authority EIR/EIS. We are currently developing our future workplan and recognize we will need to include evaluation of Sites with a Delta Conveyance scenario, but don't have a schedule yet.

Let us know if you have any further questions.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, April 06, 2020 5:23 PM
To: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>
Subject: [EXTERNAL] RE: CASIM models Mass Balance Information

Chad/Rob,

I got chance to process the attached model runs.
The IncomeStatement excel file is truly a well done tool.

Questions:

1. I assume that the 9 CALSIM runs you shared with us are based on 2015 climate. In the spreadsheet tool, under the "Climate" control, we are given the choices of "2015, 2030, 2070 and ELT". Do you actually conduct those climate scenarios? If you do, would you share the results?
2. In the "SitesDelivByParticipant_" sheets, why there is no MWD entry?
3. For the 6000 cfs conveyance scenario, is it on your work plan? Any schedule estimate?

Best regards,
Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Wang,Chuching
Sent: Friday, March 13, 2020 3:50 PM
To: 'Whittington, Chad/SAC' <Chad.Whittington@jacobs.com>
Cc: Tull, Robert/SAC <Robert.Tull@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>
Subject: RE: CASIM models Mass Balance Information

Chad,

Thank you. I have already successfully downloaded the file.
I may contact you next week for questions.

Have a nice weekend!
Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager

Metropolitan Water District of Southern California
(213)217-6188

From: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Sent: Friday, March 13, 2020 1:14 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Tull, Robert/SAC <Robert.Tull@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>
Subject: RE: CASIM models Mass Balance Information

Chuching,

In response to your request, I have sent you a file transfer of CalSim runs and Income Statement reports used for the evaluation of various reservoir sizes and release capacities. Let me know if you got the email titled "CalSim Models – Scenario B Facility Sizing Analysis". It should include the following link to the transfer:
https://jftt.jacobs.com/download.aspx?ID=c15874d1-0786-400e-939b-f3053ff2b92a&RID=55439d6d-6f08-4087-ad77-374b9af8c698

The content of the package is described in the attached document. Along with nine CalSim II studies, three Income Statements have been developed. Each Income Statement evaluates the results of a single release capacity at various reservoir sizes. CalSim II studies and Income Statements have been grouped together in three subfolders of this package – one for each of the evaluated release capacities.

This analysis includes diversion criteria assumptions from Scenario B, which are defined on the second page of the attached word document.

Please let me know if you have any questions or trouble accessing the contents of this package.

Thanks,

Chad Whittington
Jacobs
Water Resources Engineer | BIAF
916.286.0354
Chad.Whittington@jacobs.com

2485 Natomas Park Dr., Suite 600
Sacramento, CA 95833
USA
www.jacobs.com

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Monday, March 09, 2020 11:20 AM
To: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>
Subject: FW: CASIM models Mass Balance Information

Chad/Reed,

Please prepare the income statement for the Capacity and conveyance analysis.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, March 09, 2020 11:15 AM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>
Subject: [EXTERNAL] CASIM models Mass Balance Information

Rob,
For the new CALSIM analysis you have done (various reservoir sizes, various release capacities), would you provide us the mass balance information regarding the where about of released water?
We are interested in learning the SOD water supply benefit comparison.

If it is possible, would you also provide me the CALSIM model runs (input & output) on a flash drive (as done in the past)? So that we can conduct certain analysis ourselves.
Thank you very much.

Chuching

Chuching Wang, Ph.D., P.E.
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Sent: 5/18/2020 9:21:38 AM
To: Tull, Robert/SAC [Robert.Tull@jacobs.com]
CC: Heydinger, Erin [Erin.Heydinger@hdrinc.com]
Subject: RE: CASIM models Mass Balance Information

No problem at all. I want you to take these on and respond. Just want

---

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Monday, May 18, 2020 8:53 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Cc: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: RE: CASIM models Mass Balance Information

Sorry for any confusion. I forwarded Chuching's request to Lee since Lee led the value planning effort and coordinated with Brian on the financials.

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 18, 2020 8:18 AM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: [EXTERNAL] FW: CASIM models Mass Balance Information

Hey Rob – I wanted to follow up on this. I am totally good with you replying directly to Chuching and other member requests. But please copy Erin or I next time (or both of us). I just don't want to get blindsided by something as we weren't in the loop. We could have also headed this off a little quicker and not had this have to go thru a few different folks before we were able to get Chuching the spreadsheet.

Totally good with you replying directly and taking care of these things. Just please copy us.

Thank you!

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Sent: Wednesday, May 13, 2020 10:59 AM

To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: FW: CASIM models Mass Balance Information

FYI, this is the email thread Rob was referring to on the phone.

Erin

Erin Heydinger PE, PMP
D 916.679.8863 M 651.307.9758

hdrinc.com/follow-us

From: JP Robinette <JRobinette@BrwnCald.com>
Sent: Wednesday, May 13, 2020 9:30 AM
To: Heydinger, Erin <Erin.Heydinger@hdrinc.com>
Subject: FW: CASIM models Mass Balance Information

I have to pump the brakes. I assumed since I was looped in that they were looking for the cash flow tool. Do you know what file Chuching is referring to, Erin?

JP Robinette, PE*
Brown and Caldwell
JRobinette@brwncald.com
T 916.853.5312 | **C** 801.819.4306
*Professional Registration in Specific States

From: Luu, Henry <Henry.Luu@hdrinc.com>
Sent: Wednesday, May 13, 2020 8:58 AM
To: JP Robinette <JRobinette@BrwnCald.com>
Subject: RE: CASIM models Mass Balance Information

Hi JP,

Would you mind providing the document to Chuching? It's my second week on this project and am still familiarizing myself with the sharepoint site, but a quick search of the document did not yield any spreadsheet results.

Thank you,
Henry N. Luu, PE
D 916.679.8857 M 916.754.7566

hdrinc.com/follow-us

From: Frederiksen, Lee E.
Sent: Wednesday, May 13, 2020 8:14 AM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Tull, Robert/SAC (Robert.Tull@jacobs.com) <Robert.Tull@jacobs.com>; Luu, Henry <Henry.Luu@hdrinc.com>; JP Robinette (JRobinette@BrwnCald.com) <JRobinette@BrwnCald.com>
Subject: RE: CASIM models Mass Balance Information

Hi Chuching,

I have transitioned off of the Sites Project. JP or Henry will email you the financial model "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx".

Thanks.
Lee

Lee Frederiksen, PE
D 916.817.4883 M 916.213.0569

hdrinc.com/follow-us

From: Wang,Chuching [mailto:cwang@mwdh2o.com]
Sent: Tuesday, May 12, 2020 4:04 PM
To: Frederiksen, Lee E. <Lee.Frederiksen@hdrinc.com>
Cc: Tull, Robert/SAC (Robert.Tull@jacobs.com) <Robert.Tull@jacobs.com>
Subject: FW: CASIM models Mass Balance Information

Hi, Lee,

Would you email me the financial model "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx"?
Thank you.

Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Monday, May 11, 2020 5:16 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: CASIM models Mass Balance Information

Hi Chuching,

See responses to your questions below.

1. Appendix D was prepared by Brian Grubbs at Montague-DeRose the financial consultant. I suggest contacting Lee Fredrickson at HDR to obtain the supporting spreadsheet. His email is Lee.Frederiksen@hdrinc.com.

2. yes - Study #4 in the Reservoir Sizing and Conveyance TM in Appendix B-1 is identified as "Scenario B – 1,000 cfs conveyance capacity & 1.5 MAF storage capacity", which is based on the "DCR2015_merge_SitesON_WaterFixOFF_CALSIM_DRAFT_11-25-19_P2b_1_5_scnB_1kPipe" CalSim II study.

3. yes – the values are the long term average annual releases from Sites for each of the participating entities that total to 243 TAF/year for the VP7

Let us know if you have any further questions.

Hope all is well with you and your family.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, May 11, 2020 12:42 PM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: [EXTERNAL] RE: CASIM models Mass Balance Information

Hi, Rob,

I am still studying the April "Sites Project Value Planning Alternatives Appraisal Report".

1. In Appendix D of the report, it mentioned an attached file: "Sites Value Planning-FM-VP Alternatives - 04-10-2020.xlsx".
Would you email me a copy of the file?
2. In page 7 of Appendix D (I only focused on VP7 data), the table listed "Annualized AF/Year Releases". Does it based on the CALSIM study
"DCR2015_merge_SitesON_WaterFixOFF_CALSIM_DRAFT_11-25-19_P2b_1_5_scnB_1kPipe" you sent to me before?
If it is not, would you send me the corresponding CALSIM study?
3. For "Annualized AF/Year Releases", does it mean long term average releases resulting from corresponding storage partitions, such as "PWA NOD", "PWA SOD", "State"?

Thank you in advance for your prompt response.

Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Tuesday, April 07, 2020 5:08 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>; Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Subject: RE: CASIM models Mass Balance Information

HI Chuching,

Glad to hear you thought the IncomeStatement Excel file was useful

See responses to your questions below.

1. Those climate options are used to make appropriate WYT estimates for each scenario. For this analysis, they should not be changed from "2015" since all of our facility sizing analysis has been conducted using DCR 2015 climate conditions. We have not developed any recent CalSim studies under 2030, 2070, or ELT climate conditions.
2. The "SitesDelivByParticipant_Indiv" tab was originally developed to address a question from one of the Phase 1 participants. The tab has not been updated for Phase 2 participation, which would include MWD.
3. Right now we are focused on modeling for the USBR Feasibility Report and preparation for analysis to support the Authority EIR/EIS. We are currently developing our future workplan and recognize we will need to include evaluation of Sites with a Delta Conveyance scenario, but don't have a schedule yet.

Let us know if you have any further questions.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, April 06, 2020 5:23 PM
To: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>
Subject: [EXTERNAL] RE: CASIM models Mass Balance Information

Chad/Rob,

I got chance to process the attached model runs.
The IncomeStatement excel file is truly a well done tool.

Questions:

1. I assume that the 9 CALSIM runs you shared with us are based on 2015 climate. In the spreadsheet tool, under the "Climate" control, we are given the choices of "2015, 2030, 2070 and ELT". Do you actually conduct those climate scenarios? If you do, would you share the results?
2. In the "SitesDelivByParticipant_" sheets, why there is no MWD entry?
3. For the 6000 cfs conveyance scenario, is it on your work plan? Any schedule estimate?

Best regards,
Chuching

Chuching Wang, Ph.D., P.E.
Senior Engineer
Bay Delta Initiatives
Office of The General Manager
Metropolitan Water District of Southern California
(213)217-6188

From: Wang,Chuching
Sent: Friday, March 13, 2020 3:50 PM
To: 'Whittington, Chad/SAC' <Chad.Whittington@jacobs.com>

Cc: Tull, Robert/SAC <Robert.Tull@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>
Subject: RE: CASIM models Mass Balance Information

Chad,

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I may contact you next week for questions.

Have a nice weekend!

Chuching

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From: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>
Sent: Friday, March 13, 2020 1:14 PM
To: Wang,Chuching <cwang@mwdh2o.com>
Cc: Tull, Robert/SAC <Robert.Tull@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>; Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <CChilmakuri@mwdh2o.com>
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The content of the package is described in the attached document. Along with nine CalSim II studies, three Income Statements have been developed. Each Income Statement evaluates the results of a single release capacity at various reservoir sizes. CalSim II studies and Income Statements have been grouped together in three subfolders of this package – one for each of the evaluated release capacities.

This analysis includes diversion criteria assumptions from Scenario B, which are defined on the second page of the attached word document.

Please let me know if you have any questions or trouble accessing the contents of this package.

Thanks,

Chad Whittington

Jacobs
Water Resources Engineer | BIAF
916.286.0354
Chad.Whittington@jacobs.com

2485 Natomas Park Dr., Suite 600
Sacramento, CA 95833
USA
www.jacobs.com

From: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Sent: Monday, March 09, 2020 11:20 AM
To: Whittington, Chad/SAC <Chad.Whittington@jacobs.com>; Leaf, Rob/SAC <Rob.Leaf@jacobs.com>; Thayer, Reed/SAC <Reed.Thayer@jacobs.com>
Subject: FW: CASIM models Mass Balance Information

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Please prepare the income statement for the Capacity and conveyance analysis.

Thanks,
Rob

From: Wang,Chuching <cwang@mwdh2o.com>
Sent: Monday, March 09, 2020 11:15 AM
To: Tull, Robert/SAC <Robert.Tull@jacobs.com>
Cc: Neudeck,Randall D <rneudeck@mwdh2o.com>; Chilmakuri,Chandra Sekhar <cchilmakuri@mwdh2o.com>
Subject: [EXTERNAL] CASIM models Mass Balance Information

Rob,
For the new CALSIM analysis you have done (various reservoir sizes, various release capacities), would you provide us the mass balance information regarding the where about of released water?
We are interested in learning the SOD water supply benefit comparison.

If it is possible, would you also provide me the CALSIM model runs (input & output) on a flash drive (as done in the past)? So that we can conduct certain analysis ourselves.
Thank you very much.

Chuching

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From: Alicia Forsythe [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A6CDF06A7E904B65BAA21702A82AD329-AFORSYTHE]
Sent: 5/19/2020 10:11:03 AM
To: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]; Linda Fisher (linda.fisher@hdrinc.com) [linda.fisher@hdrinc.com]; John Spranza (john.spranza@hdrinc.com) [john.spranza@hdrinc.com]; Monique Briard (Monique.Briard@icf.com) [Monique.Briard@icf.com]; Williams, Nicole [Nicole.Williams@icf.com]; Jelica Arsenijevic (Jelica.Arsenijevic@hdrinc.com) [Jelica.Arsenijevic@hdrinc.com]
Subject: FW: Sites - Ad Hoc Environmental Planning and Permitting Work Group
Attachments: EPP WG_20200518_Sites Prelim Alternatives_Draft_RKComments.doc

See below and attached. This is different than my recollection, so lets probe this on the call. Colusa County was clear that they wanted the bridge. But I recall Gary saying that they also wanted the road in one of the alternatives so that if the bridge didn't work out for some reason, they had an option.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Rob Kunde <rkunde@wrmwsd.com>
Sent: Tuesday, May 19, 2020 8:07 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: Re: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Ali:

I made some comments on the Transportation/Circulation element as highlighted in the attached. The rest of the Table looks good. My comment on the 1.3 MAF south road is not intended to preclude evaluation of that alternative, but there was unanimous consent in the VP Work Group for a bridge in the 1.3MAF alternative. Colusa County felt strongly that the south of reservoir route to Lodoga would take too long for emergency response and cost too much to maintain.

Robert J. Kunde, P.E.

Retired Annuitant

Wheeler Ridge-Maricopa Water Storage District

12109 Highway 166, Bakersfield, CA 93313

cell: 661-345-3719 email: rkunde@wrmwsd.com

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 18, 2020 5:08 PM
To: Fisher, Linda; 'Rcheng@cvwd.org'; Bill Vanderwaal (WVanderwaal@rd108.org); ERIC LEITTERMAN (eleitterman@valleywater.org); Heather Dyer (heatherd@sbvmwd.com); Jeff Davis (jdavis@sgpwa.com); Jeff Sutton (jsutton@tccanal.com); Arsenijevic, Jelica; Spranza, John; Laurie Warner Herson; Michael Azevedo

(mjazevedo@countyofcolusa.com); Randall Neudeck (rneudeck@mwdh2o.com); Marks, Jason; Rob Kunde; Thad Bettner (tbettner@gcid.net); bbarker@pcwa.net; Joseph, Trevor; VBradshaw@mwdh2o.com; Briard, Monique; Lecky, Jim; Jim Watson; Marcia Kivett; Williams, Nicole; Jerry Brown
Subject: RE: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Work Group Members – Attached is a preliminary alternatives summary table for discussion on our Work Group call tomorrow.

We look forward to the discussion.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

-----Original Appointment-----
From: Fisher, Linda <Linda.Fisher@hdrinc.com>
Sent: Monday, April 27, 2020 9:05 AM
To: Fisher, Linda; 'Rcheng@cvwd.org'; Bill Vanderwaal (WVanderwaal@rd108.org); ERIC LEITTERMAN (eleitterman@valleywater.org); Heather Dyer (heatherd@sbvmwd.com); Jeff Davis (jdavis@sgpwa.com); Jeff Sutton (jsutton@tccanal.com); Arsenijevic, Jelica; Spranza, John; Laurie Warner Herson; Michael Azevedo (mjazevedo@countyofcolusa.com); Randall Neudeck (rneudeck@mwdh2o.com); Marks, Jason; Alicia Forsythe; Robert J. Kunde (rkunde@wrmwsd.com); Thad Bettner (tbettner@gcid.net); bbarker@pcwa.net; VBradshaw@mwdh2o.com; Briard, Monique; Lecky, Jim; Jim Watson; Marcia Kivett; Williams, Nicole
Cc: Joseph, Trevor; Jerry Brown
Subject: Sites - Ad Hoc Environmental Planning and Permitting Work Group
When: Tuesday, May 19, 2020 2:00 PM-4:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: webex call/meeting

5/14/20 Update: Agenda for next Tuesday's meeting and minutes from the March meeting are attached.

Agenda and materials will be sent ahead of the meeting.
-- Do not delete or change any of the following text. --

When it's time, join your Webex meeting here.

Meeting number (access code): 968 038 899

Meeting password: p3kJpDJ7xJ9

Join meeting

Join by phone

Tap to call in from a mobile device (attendees only)

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Join from a video system or application

Dial 968038899@meethdr.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

Join using Microsoft Lync or Microsoft Skype for Business

Dial 968038899.meethdr@lync.webex.com

If you are a host, go here to view host information.

Need help? Go to http://help.webex.com

Ad Hoc Environmental Planning and Permitting Work Group Agenda

Sites Program Management Team

Date: May 19, 2020 **Location:** Webex meeting

Time: 2:00 PM to 4:00 PM

Leader:	Thad Bettner	**Recorder:**	HDR – Sites Integration

Purpose: Ongoing update for the Ad Hoc Environmental Planning and Permitting Work Group for 2020

Attendees:

Mike Azevedo, Colusa County	Eric Leitterman, SCVWD	Ali Forsythe, Sites Authority
Ben Barker, PCWA	Jason Marks, City of Roseville	Jim Lecky, ICF
Thad Bettner, GCID	Randall Neudeck, MWD	John Spranza, Sites Integration
Dee Bradshaw, MWD	Jeff Sutton, TCCA	Laurie Warner Herson, Sites Integration
Robert Cheng, CVWD	Bill Vanderwaal, RD 108	Jim Watson, Sites Authority
Jeff Davis, SGPWA	Jelica Arsenijevic, Sites Integration	Nicole Williams, ICF
Heather Dyer, SBVMWD	Monique Briard, ICF	
Trevor Joseph, City of Roseville	Jerry Brown, Sites Authority	
Rob Kunde, WR-M WSD	Linda Fisher, Sites Integration	

Agenda:

Discussion Topic	Topic Leader	Time Allotted
1. Introductions	Thad	5 min
2. Review/Update of Action Items from Previous Meeting	Ali	15 min
3. Project Description Update		
a. Baseline	Nicole/John	15 min
b. Project Objectives	Laurie/Nicole	15 min
c. Alternatives	Laurie/Nicole	15 min
4. ICF EIR/EIS Work Plan Overview	Monique/Nicole	15 min
5. Environmental Process Flow Chart	Laurie/Jelica	10 min
6. Upcoming Work and Priorities	Ali	10 min
7. Schedule Next Meeting	Linda	5 min
8. Action Item Review	All	5 min

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/19/2020 10:46:31 AM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Linda Fisher (linda.fisher@hdrinc.com) [linda.fisher@hdrinc.com]; John Spranza (john.spranza@hdrinc.com) [john.spranza@hdrinc.com]; Monique Briard (Monique.Briard@icf.com) [Monique.Briard@icf.com]; Williams, Nicole [Nicole.Williams@icf.com]; Jelica Arsenijevic (Jelica.Arsenijevic@hdrinc.com) [Jelica.Arsenijevic@hdrinc.com]
Subject: RE: Sites - Ad Hoc Environmental Planning and Permitting Work Group

I think you are both correct

From: Alicia Forsythe [mailto:aforsythe@sitesproject.org]
Sent: Tuesday, May 19, 2020 10:11 AM
To: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>; Linda Fisher (linda.fisher@hdrinc.com) <linda.fisher@hdrinc.com>; John Spranza (john.spranza@hdrinc.com) <john.spranza@hdrinc.com>; Monique Briard (Monique.Briard@icf.com) <Monique.Briard@icf.com>; Williams, Nicole <Nicole.Williams@icf.com>; Jelica Arsenijevic (Jelica.Arsenijevic@hdrinc.com) <Jelica.Arsenijevic@hdrinc.com>
Subject: FW: Sites - Ad Hoc Environmental Planning and Permitting Work Group

See below and attached. This is different than my recollection, so lets probe this on the call. Colusa County was clear that they wanted the bridge. But I recall Gary saying that they also wanted the road in one of the alternatives so that if the bridge didn't work out for some reason, they had an option.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

From: Rob Kunde <rkunde@wrmwsd.com>
Sent: Tuesday, May 19, 2020 8:07 AM
To: Alicia Forsythe <aforsythe@sitesproject.org>
Subject: Re: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Ali:

I made some comments on the Transportation/Circulation element as highlighted in the attached. The rest of the Table looks good. My comment on the 1.3 MAF south road is not intended to preclude evaluation of that alternative, but there was unanimous consent in the VP Work Group for a bridge in the 1.3MAF alternative. Colusa County felt strongly that the south of reservoir route to Lodoga would take too long for emergency response and cost too much to maintain.

Robert J. Kunde, P.E.

Retired Annuitant

Wheeler Ridge-Maricopa Water Storage District

12109 Highway 166, Bakersfield, CA 93313
cell: 661-345-3719 email: rkunde@wrmwsd.com

From: Alicia Forsythe <aforsythe@sitesproject.org>
Sent: Monday, May 18, 2020 5:08 PM
To: Fisher, Linda; 'Rcheng@cvwd.org'; Bill Vanderwaal (WVanderwaal@rd108.org); ERIC LEITTERMAN (eleitterman@valleywater.org); Heather Dyer (heatherd@sbvmwd.com); Jeff Davis (jdavis@sgpwa.com); Jeff Sutton (jsutton@tccanal.com); Arsenijevic, Jelica; Spranza, John; Laurie Warner Herson; Michael Azevedo (mjazevedo@countyofcolusa.com); Randall Neudeck (rneudeck@mwdh2o.com); Marks, Jason; Rob Kunde; Thad Bettner (tbettner@gcid.net); bbarker@pcwa.net; Joseph, Trevor; VBradshaw@mwdh2o.com; Briard, Monique; Lecky, Jim; Jim Watson; Marcia Kivett; Williams, Nicole; Jerry Brown
Subject: RE: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Work Group Members – Attached is a preliminary alternatives summary table for discussion on our Work Group call tomorrow.

We look forward to the discussion.

Ali

Alicia Forsythe | Environmental Planning and Permitting Manager | Sites Reservoir Project | 916.880.0676 | aforsythe@sitesproject.org | www.SitesProject.org

-----Original Appointment-----
From: Fisher, Linda <Linda.Fisher@hdrinc.com>
Sent: Monday, April 27, 2020 9:05 AM
To: Fisher, Linda; 'Rcheng@cvwd.org'; Bill Vanderwaal (WVanderwaal@rd108.org); ERIC LEITTERMAN (eleitterman@valleywater.org); Heather Dyer (heatherd@sbvmwd.com); Jeff Davis (jdavis@sgpwa.com); Jeff Sutton (jsutton@tccanal.com); Arsenijevic, Jelica; Spranza, John; Laurie Warner Herson; Michael Azevedo (mjazevedo@countyofcolusa.com); Randall Neudeck (rneudeck@mwdh2o.com); Marks, Jason; Alicia Forsythe; Robert J. Kunde (rkunde@wrmwsd.com); Thad Bettner (tbettner@gcid.net); bbarker@pcwa.net; VBradshaw@mwdh2o.com; Briard, Monique; Lecky, Jim; Jim Watson; Marcia Kivett; Williams, Nicole
Cc: Joseph, Trevor; Jerry Brown
Subject: Sites - Ad Hoc Environmental Planning and Permitting Work Group
When: Tuesday, May 19, 2020 2:00 PM-4:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: webex call/meeting

5/14/20 Update: Agenda for next Tuesday's meeting and minutes from the March meeting are attached.

Agenda and materials will be sent ahead of the meeting.
-- Do not delete or change any of the following text. --

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http://help.webex.com

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/19/2020 12:39:44 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: RE: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Thanks for copying me. We originally had the road to Ladoga as an option – we may need to go back to that approach.

From: Alicia Forsythe [mailto:aforsythe@sitesproject.org]
Sent: Tuesday, May 19, 2020 12:26 PM
To: Rob Kunde <rkunde@wrmwsd.com>
Cc: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Subject: RE: Sites - Ad Hoc Environmental Planning and Permitting Work Group

Thanks Rob for the quick review and input. We'll chat on our call tomorrow. We were trying to reconfigure VP-5, VP-6, and VP-7 into 2 alternatives to keep the document streamlined. So we combined a few of the items. We can discuss tomorrow if we should take a different approach on the road vs bridge.

Ali

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To: Fisher, Linda; 'Rcheng@cvwd.org'; Bill Vanderwaal (WVanderwaal@rd108.org); ERIC LEITTERMAN (eleitterman@valleywater.org); Heather Dyer (heatherd@sbvmwd.com); Jeff Davis (jdavis@sgpwa.com); Jeff Sutton (jsutton@tccanal.com); Arsenijevic, Jelica; Spranza, John; Laurie Warner Herson; Michael Azevedo (mjazevedo@countyofcolusa.com); Randall Neudeck (rneudeck@mwdh2o.com); Marks, Jason; Alicia Forsythe; Robert J. Kunde (rkunde@wrmwsd.com); Thad Bettner (tbettner@gcid.net); bbarker@pcwa.net; VBradshaw@mwdh2o.com; Briard, Monique; Lecky, Jim; Jim Watson; Marcia Kivett; Williams, Nicole
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meeting here.

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Workgroup Chartering Document

Status: **Ad Hoc**

▪ Leaders:	Chair	Vice Chair
	WR-M WSD, Rob Kunde	Colusa County, Mike Azevedo
▪ Members (10):	GCID, Thad Bettner	SCVWD, Eric Leitterman Cindy Kao
	CVWD, Robert Cheng Ivory Reyburn	Dunnigan, Bill Vanderwaal
	Westside WD, Dan Ruiz	SBVMWD, Bob Tincher Heather Dyer
	Zone 7, Amparo Flores	MWDSC, Randall Neudeck

NOTE: Should a work group member not be able to participate, one of the alternates will be asked to participate. Should more than 10 participants to the Phase 2 (2019) Reservoir Project Agreement plan to attend, at least 3 days prior, the meeting will be publicly noticed along with posting of the agenda.

▪ Alternates (3):	Davis WD/TC4, Jeff Sutton	SCVWA, Dirk Marks
	American Canyon, Rick Kaufman	
▪ Non-Voting (2):	Rob Cooke – DWR	TBD - Reclamation

- Expertise: Staff from participating agencies who have specific expertise that is relevant to the matter being addressed by this work group.

- Staff Support:
  1. The Executive Director and the EPP Manager.
  2. Legal counsel on an as needed basis.
  3. Other specialty advisors or experts on an as needed basis.

- Formation: March 19, 2020

- Expires: End of the Phase 2 Amendment Reservoir Project Agreement

Related Documents:

- Attachment A: Work Group Chartering Process, General Requirements

Purpose: To advise the Reservoir Committee on matters related to

1. The proposed reservoir operation to include in the EIR/S, permit applications, Project Operations Plan, the Authority-led Feasibility, to comply with other statutory requirements, and WSIP-related agreements for public benefits.

2. The proposed cooperative or integrated operations with Reclamation and Department of Water Resources that will be needed to optimize both consumptive water supplies and water-based public benefits as defined, respectively in Reclamation's Feasibility Report and to provide the water-based public benefits as approved by the California Water Commission as part of their administration of Prop 1, Chapter 8 (WSIP).

3. The feasibility-level engineering of the reservoir, conveyance facilities, and appurtenant structures for incorporation into both the Final EIR/S, the Authority-led Feasibility Study to fulfill Prop 1 funding eligibility requirements, and the integration of Reclamation's feasibility studies.

Meeting Frequency: When either a Leader determines or a Reservoir Committee Chairperson requests that a potential issue exists to warrant convening the work group to develop a recommended resolution or response for the Reservoir Committee to then consider and act upon.

Work Group's Roles and Responsibilities:

- The primary focus areas of this workgroup are

  a. The new or expanded facilities that will convey water to/from the Sacramento River for storage in the proposed Sites Reservoir. This includes canals, pipelines, regulating reservoirs, pumping plants, both the primary and saddle dams, and grid interconnection facilities.

  b. Providing input and reviewing the engineering documents that will be relied upon in the EIR/S, and permit applications, and the Authority-led Feasibility Study.

  c. Input to the development of an over-arching procurement strategy by project phases and to solicit proposals from consultants to perform work to advance the project in Phase 2. This will include preparation and review of solicitation documents, participation in the proposal reviews and rankings, interviews with short-listed firms, and development of a recommendation to execute selective contracts.

d. Developing and refining the range of operational strategies addressing the anticipated competing uses for consumptive and public benefit allocations for consideration by the Reservoir Committee.

e. Developing the details of the water supply components of the operational strategies to produce a refined approach that will serve as the foundation to work with USBR and DWR to initially develop foundational operating principles that will eventually become the basis for a cooperative operating agreement to coordinate Sites operations (both consumptive and Prop 1) with the CVP operations and SWP operations.

f. Refining the range of the Prop 1 water-related public benefits (i.e. ecosystem, water quality, and emergency response) for inclusion into the WSIP-related agreements and serve as the basis for initial pre-application discussions with the permitting agencies.

g. Review of Reclamation's Feasibility to ensure consistency with the Authority-led feasibility studies.

h. Input & review of the WSIP-related agreements for water-related benefits

i. Support the development of pre-application work efforts anticipating the need for:

   - A revised water right application to the SWRCB,
   - Incidental take authorization from state and federal wildlife agencies (involving the CDFW, NMFS, and USFWS),
   - Modification of the flood protection and Sacramento River water quality (involving the Central Valley Flood Protection Board, US Army Corps of Engineers, and RWQCB)
   - Compliance with other regulatory requirements

Agenda Item 3.2
Communications & Government Affairs Update

Sites Reservoir Committee
May 21, 2020

Sites

Agenda Item 3.2 - Communications & Government Affairs Update

With the introduction of the new "right-sized" project alternative, staff and the Communications and Government Affairs team have been actively engaging in an extensive communications and outreach effort focused on;

- Introducing the project's new organization and direction
- Introducing the new "right-sized" project and its statewide benefits
- Discussing the proposed revision on the project's environmental review

Communications and outreach efforts included;

- Briefings with Federal & State elected officials
- Briefings with NGO's and public interest organizations
- Landowner coordination activities and briefings
- Media and development of project materials

Sites

Agenda Item 3.2 - Communications & Government Affairs Update

Briefings with Federal & State elected officials

- Provided briefings for federal electeds (Feinstein, Caramendi, LaMalfa, Huffman) with additional briefings for other electeds being planned
- Provided briefings for state electeds (Nielsen, Sen. Dahle, Gallagher, Assembly member Dahle) with additional briefings for other electeds being planned
- Conducted a "virtual" Capitol Hill Legislative Day and provided briefings for key Senate and House Committee staff. A second round of "virtual" meetings are being planned

Briefings with NGO's and public interest organizations

- Provided briefings for environmental NGOs and organizations to introduce the revised project and solicit feedback on the new environmental review process and the path forward
- NGOs briefed as part of this effort included; NRDC, Nature Conservancy, California Waterfowl, Ducks Unlimited,, Environmental Defense Fund, Friends of the River

Sites

Agenda Item 3.2 - Communications & Government Affairs Update

Landowner/local community coordination activities and briefings

- Began outreach to landowners and the local community to introduce the new project - including the development of a Landowner Newsletter to be published in late May/early June
- Began outreach to landowners along the proposed Dunnigan Pipeline/CBD and provided a briefing to the Yolo County Supervisor who represents the area to discuss potential land use issues

Media and project materials updates

- Distribution of a press release highlighting the right-sized project, distribution of an e-blast newsletter, preparation of newspaper Op-eds for publication, and distribution of content on the project's social media platforms.
- Updating of project informational materials including the general project fact sheets, FAQ , and website information
- Updates to the Message Platform based on participant input and feed back from the outreach meetings that have been conducted - a revised version of the Message Platform will be distributed to participants when completed

Sites

Questions

Sites

TECHNICAL MEMORANDUM

Sites Project Authority – Sacramento River Intake Fish Screen Operations

PREPARED FOR:	Rob Tull/SAC
PREPARED BY:	James Kapla/SEA Aaron George/SEA
DATE:	25 March 2020
PROJECT NUMBER:	D3205400.A.CS.OE.D1.D1-03-03

Introduction and Purpose

The Sites Reservoir Project is a proposed 1.8 million acre-foot off-stream reservoir intended to divert and store excess Sacramento River streamflows, providing approximately 500,000 acre-feet per year of additional water supply on average. The Project would provide multiple beneficial uses including a reliable water supply for cities and agriculture; dedicated water for fisheries and environmental purposes; increased habitat for migratory birds; and improved flexibility and drought resiliency for the Central Valley Project and the State Water Project.

The purpose of this technical memorandum (TM) is to summarize key operational parameters of three Sacramento River intakes intended to supply water to the proposed Project. This includes estimates of available diversion capacity at various streamflows, given instream flow requirements and pumping capability. The intake facilities under consideration include the following:

1. Tehama-Colusa Canal Authority (TCCA) Red Bluff
2. Glenn-Colusa Irrigation District (GCID) Hamilton City
3. Delevan (Proposed)

The location of each facility is shown in Figure 1. This TM includes the following sections:

- Introduction and Purpose
- Intake Facilities Overview
- Methodology, Assumptions and Limitations
- Red Bluff Facility Operations
- Hamilton City Facility Operations
- Delevan Facility Operations
- References
- Attachments

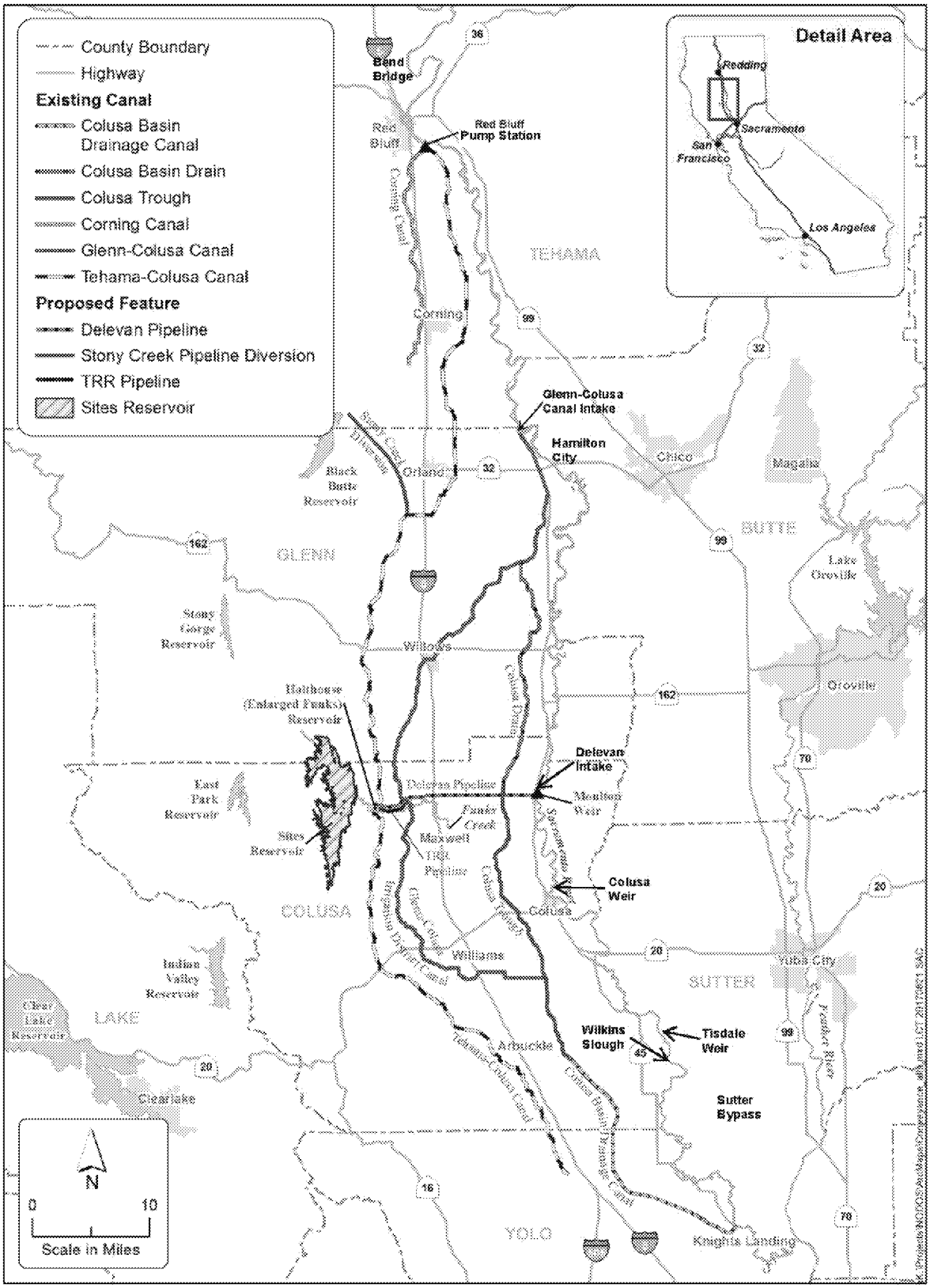


Figure 1. Sites Reservoir Project Facilities

Sites Project Authority – Sacramento River Intake Fish Screen Operations

Intake Facilities Overview

Table 1. Intake Facilities Overview
Sites Project Authority – Sacramento River Intake Fish Screen Operations

Intake Facility	Location	Screen Configuration	Fish Protection Screen Criteria	Screen Cleaning	Provisions for Fish Protection and Monitoring	Pumping Capability	Diversion Capacity	Operations
TCCA Red Bluff	River mile 244 near Red Bluff, CA.	• Flat plate screens in vertical configuration. • 60 screen bays with a total structure length of approximately 1,118 feet. • Effective screen height of 9.8 feet, from EL 235.83 to EL 245.67 (NAVD88).	• 1.75 mm slot size. • 0.33 fps approach velocity. • Sweeping velocity minimum 2x approach velocity.	• Four mechanical brush cleaners. • Sediment jetting system with one duty and one standby pump: 100 Hp rated at 3,500 gpm.	• Seven fish refuge bays, of which three are located at blowout panel openings. • Refuge bays include ¾-inch round bars with 1-inch clear openings. • Anchorages for fyke net frames located downstream of screen panels.	• Installed capacity of 2,000 cfs. – Pump Nos. 1 and 11: 300 Hp rated at 125 cfs. – Pump Nos. 3 through 9: 600 Hp rated at 250 cfs. • Future capacity of 2,500 cfs. – Future Pump Nos. 2 and 10: 600 Hp rated at 250 cfs. • All pumps are controllable with VFDs.	• Minimum is 80 cfs with all screen bays except 59 and 60 blocked off with solid panels, and maximum VFD turn-down on Pump Nos. 1 or 11. • Sites Reservoir maximum requirement is 2,100 cfs. • Maximum capacity of 2,500 cfs.	• Streamflows per USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA. • Existing minimum instream flow requirement of 3,250 cfs below intake for summer operations. • Red Bluff Diversion Dam located immediately downstream is operated with gates out.
GCID Hamilton City	River mile 206 near Hamilton City, CA.	• Flat plate screens in vertical configuration with 5 degree batter. • 87 screen bays with a total structure length of approximately 1,090 feet. • Original structure effective screen height of 11.5 feet, from EL 127.52 to EL 138.99 (NAVD88). • Extended structure effective screen height of 11.5 feet, from EL 126.72 to EL 138.19 (NAVD88).	• 1.75 mm slot size. • 0.33 fps approach velocity. • Sweeping velocity minimum 2x approach velocity.	• Eight mechanical brush cleaners.	• Three bypass bays with internal fish return system (not currently operated).	• Existing capacity of 3,000 cfs. - Pump Nos. 1 and 2: 206 Hp rated at 150 cfs and 10.3 feet TDH. - Pump Nos. 3 through 8: 550 Hp rated at 400 cfs and 10.3 feet TDH. - Pump No. 9: 270 Hp rated at 200 cfs and 10.3 feet TDH. - Pump No. 10: 135 Hp rated at 100 cfs and 10.3 feet TDH. • Diversion by gravity is available starting at an approximate intake afterbay WSEL of 136.0. Maximum gravity diversion rate is approximately 1,000 cfs with an intake afterbay WSEL > 145.0. • Deck at EL 154.8 is overtopped at streamflows greater than approximately 100,000 cfs.	• Minimum is 150 cfs. • Sites Reservoir maximum requirement is 1,800 cfs. • Maximum capacity is 3,000 cfs.	• Streamflows per USGS Gage 11383800 Sacramento River near Hamilton City, CA. • Existing minimum instream flow requirement of 4,000 cfs below intake for summer operations. • Average daily irrigation withdrawals from November 2012 through April 2018 were approximately 293 cfs. Monthly averages for this period were as follows: • November - 671 cfs • December - 336 cfs • January - 90 cfs • February - 51 cfs • March - 103 cfs • April - 513 cfs • Operated with Water Control Structure weir blocks removed.

Intake Facility	Location	Screen Configuration	Fish Protection Screen Criteria	Screen Cleaning	Provisions for Fish Protection and Monitoring	Pumping Capability	Diversion Capacity	Operations
Delevan (Proposed)	River mile 158.5 near Maxwell, CA.	• Flat plate screens in vertical configuration. • 32 screen bays with a total structure length of approximately 560 feet. • Effective screen height of 12.3 feet, from EL 38.33 to EL 50.67 (NGVD29).	• 1.75 mm slot size. • 0.33 fps approach velocity • Sweeping velocity minimum 2x approach velocity.	• Two mechanical brush cleaners. • Sediment jetting system.	• To be determined (TBD)	• Design capacity of 2,000 cfs. - Pump Nos. 1 through 4: rated at 500 cfs. - No VFDs are currently considered.	• Sites Reservoir maximum requirement is 2,000 cfs. • Minimum is 200 cfs (per AECOM). • Adjacent Maxwell ID intake and PS is 200 cfs.	• Streamflows per CA DWR Station BTC, Sacramento River at Butte City, CA. • Proposed minimum instream flow requirement of 5,000 cfs. • Proposed return flow requirement of 1,500 cfs; separate or combined facility TBD.

Methodology, Assumptions and Limitations

The following provides an overview of the methodology, assumptions and limitations associated with the estimates of available diversion capacity. Some information is common to all three intakes while other information is specific to TCCA Red Bluff, GCID Hamilton City or Delevan.

Common Attributes

Methodology

The analysis utilized the following general methodology at each intake facility location:

1. Identify appropriate Sacramento River streamflow data set, typically a U.S. Geological Survey (USGS) or California Department of Water Resources (CA DWR) stream gage.
2. Develop rating curve for correlating streamflow with water surface elevations (River stage) at the intake location.
3. Evaluate facility configuration and geometry to compare effective screen area with River stage.
4. Consider instream flow requirements, pump capability and other constraints.
5. Develop estimates of available diversion capacity versus streamflow, while maintaining approach velocities in accordance with fisheries design criteria (NMFS, 2018).

Assumptions

- Where river stage water surface elevation information is available at both the upstream and downstream ends of the intake facility, the water surface profile is averaged linearly across the face of the screeens.
- The intake screens are in a clean condition without significant accumulation of sediment and/or debris.
- Porosity controls provide balanced and uniform approach velocities through the intake screens.

Limitations

This memorandum provides high-level estimates of water availability at Project facilities and is intended to support water supply and operations modeling efforts. The estimates are based on recent historical streamflows, rating curves and pumping data. Actual withdrawal rates may be affected by a variety of factors including the following:

- Changing River morphology
- Ground subsidence
- Sediment and debris accumulation
- Non-uniform approach velocities
- Future winter irrigation demands
- Other proposed diversions not quantified herein
- Differing instream flow requirements
- Modifications to existing fisheries design guidelines and criteria

TCCA Red Bluff

Methodology

Historical streamflows for TCCA Red Bluff were obtained from USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA. The gage is located approximately 17 miles upstream of the site.

A composite rating curve was developed using data from the November 2009 Design Development Report (CH2M, 2009), including Appendix A, Table A-1 for the low end of rating curve (streamflow 0 cfs

to 24,999 cfs), and Table A-2 for the high end of rating curve (streamflow 25,000 cfs and greater). This curve was used for the purposes of generating stage-frequency data based on the USGS data set.

Existing estimates of diversion capacity are available in the table "Project Diversion as a Function of River Stage" located in the conformed construction drawings (CH2M, 2009a), as well as another table (Table 2) located in the Design Development Report. The values in the drawing set utilized a slightly lower, more conservative diversion capacity for a given streamflow and were therefore used for the purposes of evaluating diversion capacity.

River stage values interior to the existing rating curve were interpolated at 0.1-foot WSEL intervals, and extended at the upstream and downstream work points as necessary. Diversion rates for the additional data points were then calculated assuming an approach velocity equal to the average approach velocity from existing data. This results in approach velocities that are approximately 3 percent lower than the criteria velocity of 0.33 fps. This was deemed reasonable and appropriately conservative for this type of analysis.

Assumptions

- Instream flow requirement of 3,250 cfs.
- The Red Bluff Diversion Dam located immediately downstream of the Intake is operated with the gates removed.
- The additional water demand associated with the sediment jetting system is intermittent and has negligible impact.
- The minimum diversion of 80 cfs occurs with all screen bays except 59 and 60 blocked off with solid panels, and maximum VFD turn-down on Pump Nos. 1 or 11.
- Future Pump Nos. 2 and 10 are installed.

Limitations

- Additional pumping capacity is required to meet Project objectives (future Pump Nos. 2 and 10).
- Several tributaries including Red Bank Creek and Elder Creek are located between the Bend Bridge gage and the Red Bluff Intake. The tributaries are understood to have substantial streamflows in winter, but such flows were not quantified as part of this analysis. This is assumed to conservatively under-estimate diversion capacity at the intake location.

GCID Hamilton City

Methodology

Historical streamflows for GCID Hamilton City were obtained from USGS Gage 11383800 Sacramento River near Hamilton City, CA. The gage is located approximately 5 miles downstream of the site. The streamflows were adjusted to a location just upstream of the oxbow by adding historical pumping rates from the GCID Main Pump Station. Daily shift records of pump discharge (typically three shifts per day) were averaged to develop average daily pump discharge rates. This information was then correlated and added to the average daily streamflow data.

Water surface elevations were obtained from historical data collected by GCID from 2011 through 2018 at the upstream end of the intake structure, "Screen 85;" the downstream end of the screen structure, "Bypass Channel;" and the intake structure afterbay/pump station forebay, "Forebay." The water surface profile at the face of the screens was linearly averaged between "Screen 85" and "Bypass Channel." Where data was missing, the average differential was assumed in order to facilitate calculation of the profile.

A large data gap in water surface elevation data exists between April 2015 and December 2017. The average differential was 0.63 feet before that time, and 1.01 feet after that time. The cause of the

change is unknown, but could potentially be attributed to re-calibration of instruments, an increase in the headwater at the Gradient Structure, removal of a hydraulic constriction downstream, and/or some other contributing event. The removal of the weir blocks in the Water Control Structure were ruled out as a cause since this occurred circa 2006. The most recent average water differential value of 1.01 feet was assumed to be representative of current operations and was therefore utilized where necessary for the purposes of this diversion capacity analysis.

Operation of the GCID Main Pump Station impacts the water surface elevations (WSELs) at the screens, and the water surface profile along the screens for a given streamflow in the Sacramento River can vary with pump discharge. A higher pumped flowrate will result in a lower water surface profile through the oxbow as compared to the profile for a lower pumped flowrate – for the same streamflow. Therefore, a series of rating curves were developed for a range of pump station discharges and streamflows to account for the impact of drawdown on the water surface profile in the oxbow.

Table 2. GCID Hamilton City Rating Curves
Sites Project Authority – Sacramento River Intake Fish Screen Operations

Streamflow Above Oxbow (cfs)	Rating Curve Utilized
< 20,000	Low flow curve developed from data where Main Pump Station discharge is >2,500 cfs
20,000 to 30,000	Linear transition assumed between low and high flow curves (0.25 feet per 1,000 cfs)
> 30,000	High flow curve developed from data where Main Pump Station discharge is zero

The curves are based on empirical data and are intended to conservatively estimate water surface elevations in the oxbow over the range of operational conditions, particularly for low streamflows.

The rating curve was tabulated at 0.1-foot intervals (using the average WSEL at the screens) and estimates of available screen area were calculated. Separate calculations were made for the original intake screen structure and the fish screen extension (circa 2001), since the structures are not identical and have different geometry.

Existing estimates of diversion capacity are available in Table 1 of the Designer's Operating Criteria (USBR, 2010) and this information is plotted on the diversion capacity figure for reference. Diversion rates utilizing the developed rating curves were then calculated for both portions of the intake structure assuming an approach velocity of 0.33 fps.

Assumptions

- No other significant diversions or inflows are assumed to occur between the intake facility and the gage location. Therefore, the summation of the Main Pump Station discharge and gage streamflow is assumed to be representative of the Sacramento River streamflow immediately upstream of the oxbow.
- Instream flow requirement of 4,000 cfs.
- Minimum diversion of 150 cfs in accordance with pump capability.
- The bypass bays and internal fish return system are not operated.
- The Water Control Structure weir blocks were removed circa 2006 and are no longer utilized.
- November through April irrigation withdrawals are typically less than approximately 1,200 cfs.

Limitations

- A significant change in average water surface differential across the screens is evident in data before and after the April 2015 to December 2017 time period. This discontinuity is unexplained and associated impacts to diversion capacity are currently unknown.

- It is understood that gravity flow is possible starting at an afterbay WSEL of approximately 136.0 (streamflow of approximately 5,500 cfs). A review of the available data set indicates that there may be periods when gravity flow is possible (and probable), but the pumped flow is reported as zero. These periods typically occur at streamflows greater than approximately 20,000 cfs. Therefore, the rating curve for streamflows above approximately 20,000 cfs may slightly under-estimate available diversion capacity for certain conditions.

Delevan

Methodology

Historical streamflows were obtained from CA DWR Station BTC, Sacramento River at Butte City, CA. The gage is approximately 10 miles upstream of the site.

The rating curve (Figure 6) from the North of Delta Offstream Storage (NODOS) Sacramento River Fish Screen Facility Feasibility Study (CH2M, 2008) was utilized to inform this analysis. This curve was developed via analysis of existing ratings at the Butte City gage and USGS gage 11389500 Sacramento River at Colusa. The curve includes a River stage of 52.0 feet (NGVD29) at a streamflow of 6,000 cfs. A supporting field measurement of 53.5 feet at 6,212 cfs suggests that the actual stage may be even higher. However, a subsequent analysis by the California Department of Water Resources (CA DWR) recommended that a conservative value of 51.0 feet be used at 6,000 cfs for the purposes of the Feasibility Study.

For the diversion capacity analysis, the curve was adjusted in accordance with the 51.0-foot constraint, and linear interpolation was used to complete interior portions of the curve. River stage values for diversion capacities ranging from 0 cfs to 2,000 cfs were interpolated at 1-foot WSEL intervals.

Assumptions

- Streamflows were not adjusted to account for reach gains or losses (likely negligible) between the gage and intake facility.
- Instream flow requirement of 5,000 cfs.
- Minimum diversion of 200 cfs in accordance with proposed pump capability.

Limitations

- The design low WSEL for the fish screens of 51.0 feet at 6,000 cfs streamflow identified by CA DWR varies from the Figure 6 rating curve (AECOM, 2018 and CH2M, 2008) and measurements taken in the field. It appears that this elevation is conservatively low, and could be refined (raised) during future design. This may result in a slightly shorter intake structure with a reduced footprint.
- Additional water surface elevation measurements were identified in as a potential method to be taken to develop a more detailed rating curve for final design (CH2M, 2008).
- The proposed intake facility may also be required to operate as a flow release / discharge structure under certain scenarios. This analysis does not include consideration of specific fisheries criteria (i.e., exclusion barrier criteria) that would be required to accommodate this mode of operation.

TCCA Red Bluff Facility Operations

Table 3. TCCA Red Bluff Available Diversion Capacity by Streamflow

Sites Project Authority – Sacramento River Intake Fish Screen Operations

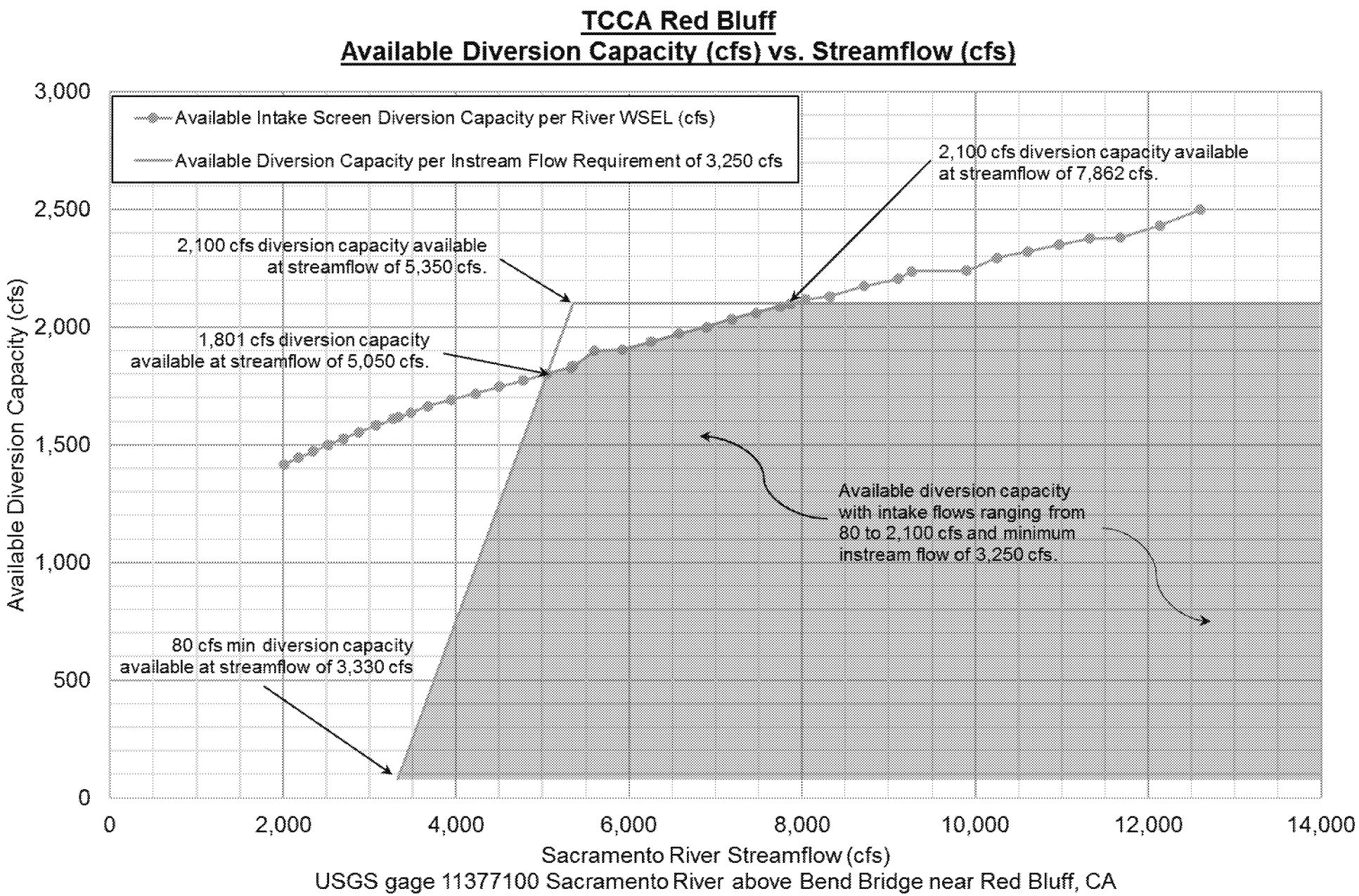
Streamflow at Gage (cfs)	River WSEL at U/S Work Point (feet, NAVD88)	Available Facility Diversion Capacity (cfs)
2,010	241.2	1,417
2,175	241.3	1,445
2,350	241.4	1,472
2,525	241.5	1,500
2,700	241.6	1,527
2,875	241.7	1,554
3,075	241.8	1,582
3,275	241.9	1,609
3,330	241.9	1,617
3,475	242.0	1,637
3,675	242.1	1,664
3,950	242.2	1,692
4,225	242.3	1,719
4,500	242.4	1,746
4,775	242.5	1,774
5,050	242.6	1,801
5,325	242.7	1,829
5,350	242.7	1,835
5,600	242.9	1,900
5,925	243.1	1,904
6,250	243.2	1,938
6,575	243.4	1,973
6,900	243.5	2,000
7,184	243.6	2,034
7,468	243.7	2,062
7,751	243.8	2,089
7,862	243.8	2,100
8,035	243.9	2,117
8,319	244.0	2,130

8,714	244.1	2,175
9,109	244.3	2,206
9,266	244.4	2,237
9,898	244.5	2,240
10,254	244.6	2,295
10,610	244.7	2,322
10,965	244.8	2,350
11,321	244.9	2,377
11,677	245.0	2,380
12,139	245.1	2,432
12,600	245.2	2,500

Diversions limited by instream flow requirement of 3,250 cfs

Diversions limited by River WSEL and submerged screen area

No restrictions (assumes use of future Pump Nos. 2 and 10)



GCID Hamilton City Facility Operations

Table 4. GCID Hamilton City Available Diversion Capacity by Streamflow

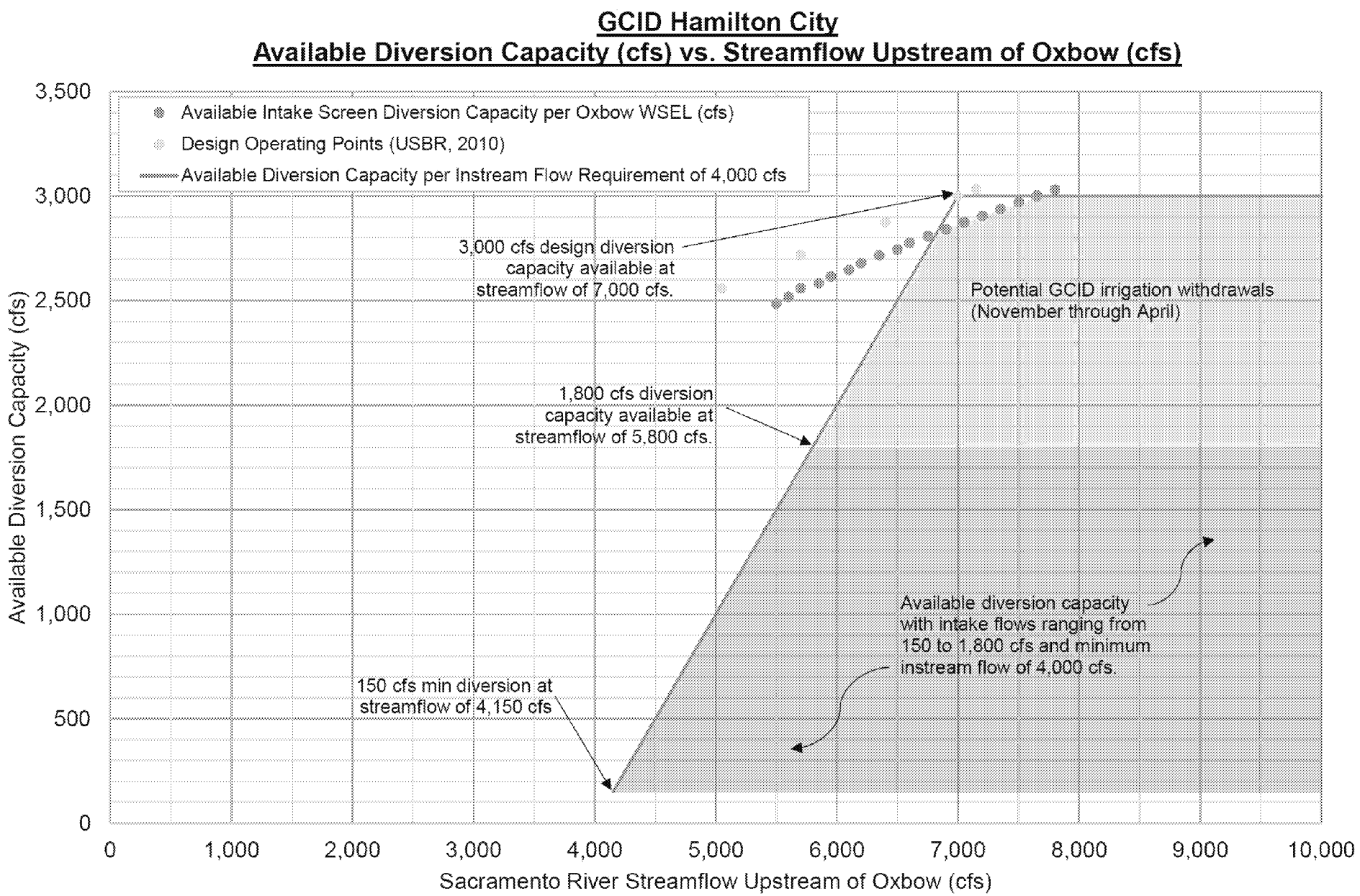
Sites Project Authority – Sacramento River Intake Fish Screen Operations

Streamflow Upstream of Oxbow (cfs)	River WSEL at U/S Oxbow (feet, NGVD29)	Available Facility Diversion Capacity (cfs)
900	132.5	1,744
938	132.6	1,777
977	132.7	1,809
1,018	132.8	1,841
1,061	132.9	1,873
1,105	133.0	1,906
1,151	133.1	1,938
1,200	133.2	1,970
1,250	133.3	2,002
2,690	133.4	2,035
2,765	133.5	2,067
2,842	133.6	2,099
2,921	133.7	2,131
3,002	133.8	2,164
3,086	133.9	2,196
3,172	134.0	2,228
3,260	134.1	2,260
3,351	134.2	2,292
3,445	134.3	2,325
3,541	134.4	2,357
3,639	134.5	2,389
3,741	134.6	2,421
3,845	134.7	2,454
3,952	134.8	2,486
4,062	134.9	2,518
4,176	135.0	2,559
4,292	135.1	2,583
4,412	135.2	2,615
4,534	135.3	2,647
4,661	135.4	2,679

4,791	135.5	2,717
4,924	135.6	2,744
5,061	135.7	2,776
5,203	135.8	2,808
5,348	135.9	2,841
5,497	136.0 (begin possible gravity diversion)	2,874
5,650	136.1	2,905
5,807	136.2	2,937
5,969	136.3	2,969
6,135	136.4	3,002
6,306	136.5	3,031

Diversions limited by instream flow requirement of 4,000 cfs

No restrictions, assuming GCID irrigation withdrawals are less than approximately 1,000 cfs

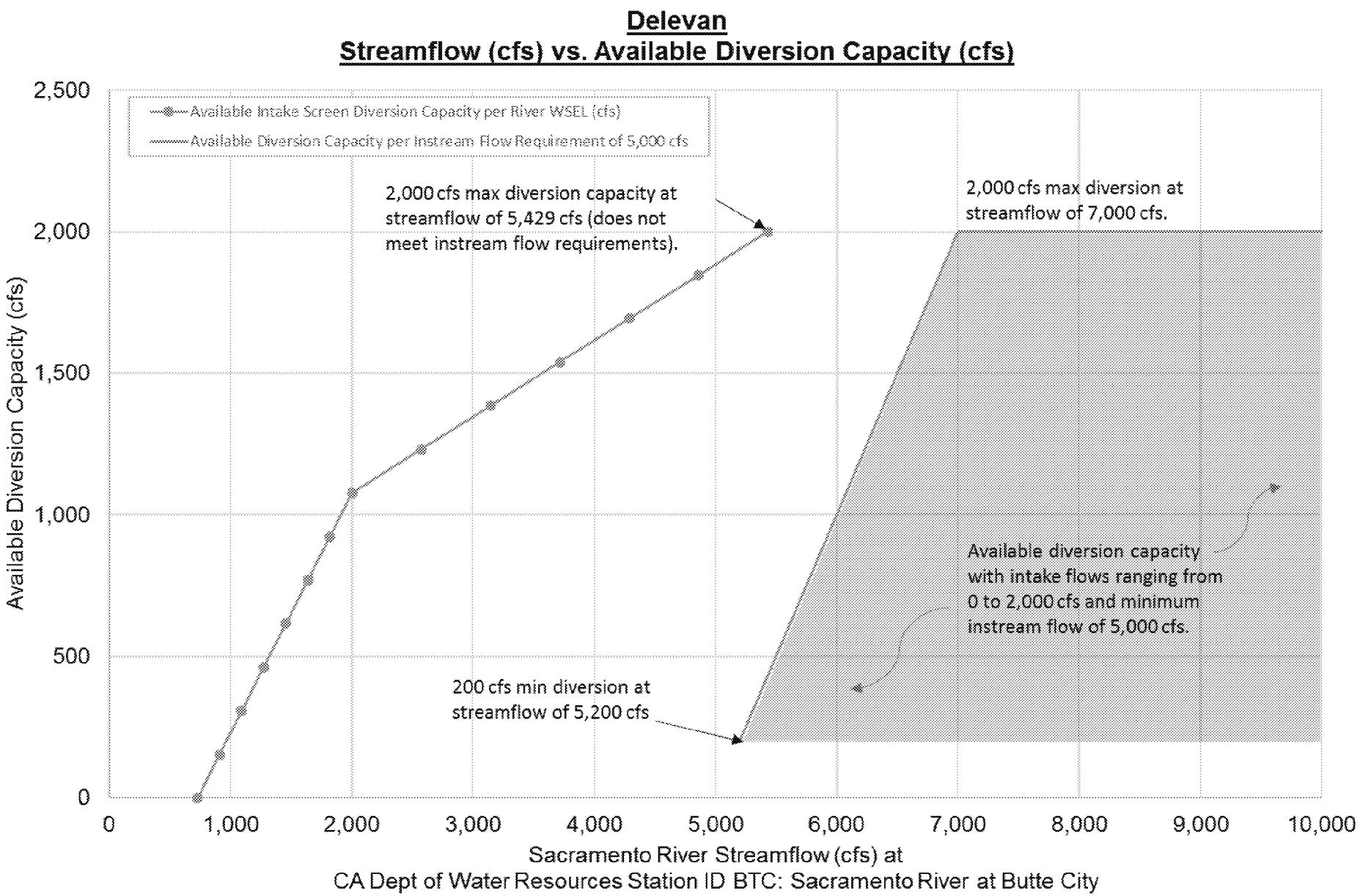

GCID Hamilton City
Available Diversion Capacity (cfs) vs. Streamflow Upstream of Oxbow (cfs)
Available Intake Screen Diversion Capacity per Oxbow WSEL (cfs)
Design Operating Points (USBR, 2010)
Available Diversion Capacity per Instream Flow Requirement of 4,000 cfs
3,000 cfs design diversion capacity available at streamflow of 7,000 cfs.
Potential GCID irrigation withdrawals (November through April)
1,800 cfs diversion capacity available at streamflow of 5,800 cfs.
Available diversion capacity with intake flows ranging from 150 to 1,800 cfs and minimum instream flow of 4,000 cfs.
150 cfs min diversion at streamflow of 4,150 cfs
Available Diversion Capacity (cfs)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000
Sacramento River Streamflow Upstream of Oxbow (cfs)

Delevan Facility Operations

Table 5. Delevan Available Diversion Capacity by Streamflow

Sites Project Authority – Sacramento River Intake Fish Screen Operations

Streamflow at Gage (cfs)	River WSEL at Fish Screens (feet, NGVD29)	Available Facility Diversion Capacity (cfs)
727	38.0	0
909	39.0	154
1,091	40.0	308
1,273	41.0	462
1,455	42.0	615
1,636	43.0	769
1,818	44.0	923
2,000	45.0	1,077
2,571	46.0	1,231
3,143	47.0	1,385
3,714	48.0	1,538
4,286	49.0	1,692
4,857	50.0	1,846
5,429	51.0	2,000



References

Table 6. References.

Sites Project Authority – Sacramento River Intake Fish Screen Operations

Intake Site	Document Number	Document Title	Description and Use
Common to All Three Intakes	1	CH2M. 2017. *Sites Reservoir Project Preliminary Operations Plan Under a Range of Hydrologic Conditions.* August.	Project operations.
	2	NMFS. 2018. National Oceanic and Atmospheric Administration (NOAA) Fisheries *West Coast Region Anadromous Salmonid Passage Design Guidelines, Peer Review Draft*. 16 August.	Fisheries design guidelines and criteria.
	3	URS Group, Inc. 2018. *North-of-the-Delta Offstream Storage Investigation Final Feasibility Study.* Prepared for the U.S. Bureau of Reclamation (USBR), Mid-Pacific Region. 18 October.	Project configuration and operations.
	4	USBR. 2009. Water Resources Technical Publication. *Guidelines for Performing Hydraulic Field Evaluations at Fish Screening Facilities.* Denver, Colorado. April.	Fish screen hydraulics.
Red Bluff	5	USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA.	Streamflow data. https://waterdata.usgs.gov/nwis/uv?site_no=11377100

Red Bluff	6	CH2M. 2009. *Design Development Report, Fish Passage Improvement Project at the Red Bluff Diversion Dam.* Prepared for the Tehama-Colusa Canal Authority and the USBR. November.	Rating Curve: • Appendix A, Table A-1 used to generate low end of rating curve, up to 24,999 cfs • Appendix A, Table A-2 used to generate high end of rating curve, 25,000 cfs and greater Diversion Capacity: • Table 2 provides design capacity at low River streamflow/stage conditions to maintain the maximum 0.33 fps approach velocity; however, this information was not used for purposes of this analysis. Capacity values from a similar table on the construction drawings were used instead since they were deemed to be more conservative (see below).
	7	CH2M. 2009a. *Conformed Construction Drawings for the Red Bluff Pumping Plant and Fish Screen.* Four volumes. Prepared for the Tehama-Colusa Canal Authority and the USBR. 29 October.	Diversion Capacity: • Volume 1, Drawing 602-D-4308, Table "Project Diversion as a Function of River Stage." Provides design capacity at low River streamflow/stage conditions to maintain the maximum 0.33 fps approach velocity (used for this analysis). • Volume 2, various drawings including Drawing 602-D-4390, "Typical Bay Section." Section of fish screen used to confirm design capacity for diversion at various water levels.
	8	USBR. 2018. *Tehama-Colusa Canal Authority Red Bluff Pumping Plant Post-Construction Fish Screen Hydraulic Evaluation.* March.	Post-construction hydraulic monitoring and evaluation.

GCID Hamilton City	9	Ayres Associates. 1995. *Riverbed Gradient Restoration Structures for the Sacramento River at the Glenn-Colusa Irrigation District Intake, California.* Prepared for the U.S. Army Corps of Engineers (USACE) Sacramento District. 10 July.	Hydraulic analysis of riverbed gradient structure alternatives.
	10	Ayres Associates. 1999. *Gradient Facility Project Report.* Prepared for USACE Sacramento District. June.	Design development of riverbed gradient structure.
	11	Ayres Associates. 2002. *Sacramento River Gradient Facility Post-Construction Evaluation Draft Report.* Prepared for USACE Sacramento District. July	Post construction monitoring and evaluation of riverbed gradient structure.
	12	CA DWR Station ID: HMC, Sacramento River at Hamilton City, CA	Streamflow data. http://cdec.water.ca.gov/dynamicapp/staMeta?station_id=hmc
	13	CH2M. 1985. *Plans for the Construction of Main Pump Station.* Prepared for Glenn-Colusa Irrigation District (GCID).	Record drawings of GCID Main Pump Station.
	14	CH2M. 1993. *Modifications to the CDF&G Fish Screens at the GCID Diversion.* Prepared for GCID. February.	Drawings for installation of screen cleaners and fish bypass. Used in conjunction with original drawings (USBR, 2007) to confirm design capacity for diversion at various water levels while maintaining maximum approach velocity of 0.33 fps.
	15	CH2M. 2008. *Glenn-Colusa Irrigation District Fish Protection Evaluation and Monitoring Program.* Prepared for GCID. January.	Hydraulic monitoring and evaluation.
	16	GCID operational flows and WSEL data.	Historical operations data collected by GCID from January 2011 through December 2018. Provided in numerous Excel files, compiled and processed by Jacobs for this evaluation. Includes Main Pump Station discharge and WSELs for the River, Oxbow (Screen 85), Bypass and Afterbay.
	17	GCID Main Pump Station Data	Pump specifications and pump curves.

GCID Hamilton City	18	McMillen, LLC. 2013. *Glenn-Colusa Irrigation District Gradient Facility, Sacramento River, CA, Water Data Collection Technical Memorandum.* Prepared for USACE Sacramento District. 21 June.	Water surface elevation data.
	19	USBR. 2010. *Designer's Operating Criteria for Hamilton City Pumping Plant Fish Screen Structure and Downstream Channel Structures.* Prepared for GGCID, California. Technical Service Center, Denver, Colorado. 26 January.	Diversion Capacity: • Table 1 summarizes design capacity for diversion at low river flow conditions to maintain maximum 0.33 fps approach velocity. Note that this table does not contain associated stage information, which was based on the low flow rating curve. • Provides minimum WSEL for full pumped flow of 3,000 cfs (El. 136.5 upstream of the weir)
	20	USBR. 1997. *Drawings for Specification No. 20-C0476.* Fish Screen Structure Extension, Fish Screen Structure Improvement Project, Glenn-Colusa Irrigation District, Central Valley Project Improvement Act. 21 October.	Volume III, various drawings including Drawing 602-D-4095 "Fish Screen Structure Sections." Sections used to confirm design capacity for diversion at various water levels while maintaining maximum approach velocity of 0.33 fps.
Delevan	21	AECOM. Delevan Intake Pumping-Generating Plant and Fish Screen Structure, Site Plan, Authority Project Alternative - D. Prepared for Sites Project Authority. 2018.	Intake and fish screen general arrangement drawing.
	22	CA DWR Station ID: BTC, Sacramento River at Butte City, CA	Streamflow data. http://cdec.water.ca.gov/dynamicapp/staMeta?station_id=btc
	23	CH2M. 2008. *North-of-Delta Offstream Storage – Sacramento River Fish Screen Facility Feasibility Study.* Prepared for California Department of Water Resources. June.	Rating Curve: • Figure 6 rating curve used to generate stage data at the intake based on streamflow. Diversion Capacity: • Fish screen drawings used to confirm design capacity for diversion at various water levels while maintaining maximum approach velocity of 0.33 fps.

Attachments

1 – TCCA Red Bluff

- November through April flow-duration curve
- Monthly flow-duration curves
- Annual stage-frequency curve
- November through April stage-frequency curve
- Monthly stage-frequency curves

2 – GCID Hamilton City

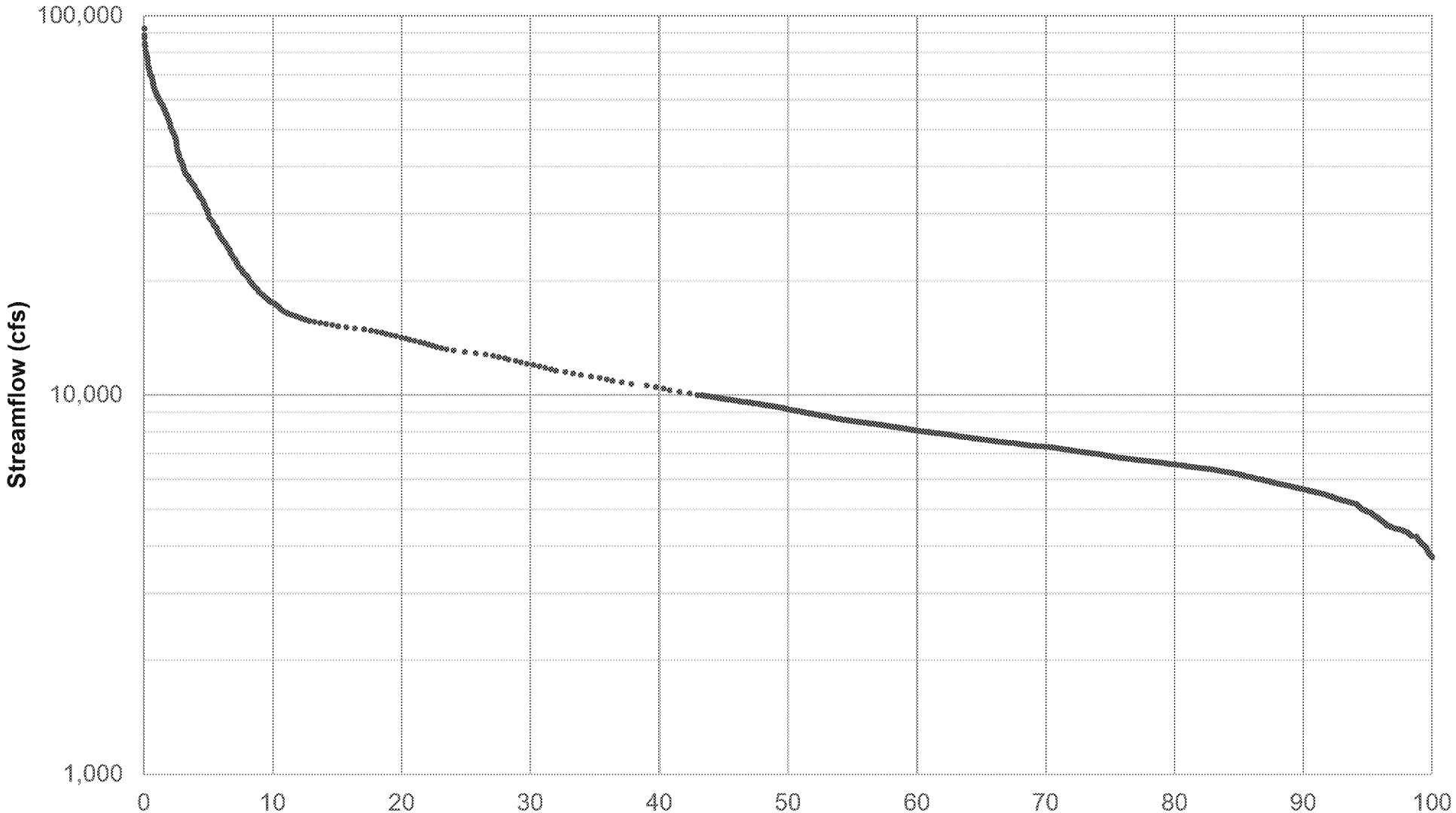
- Annual flow-duration curve
- November through April flow-duration curve
- Monthly flow-duration curves
- Annual stage-frequency curve
- November through April stage-frequency curve
- Monthly stage-frequency curves

3 – Delevan

- Annual flow-duration curve
- November through April flow-duration curve
- Monthly flow-duration curves
- Annual stage-frequency curve
- November through April stage-frequency curve
- Monthly stage-frequency curves

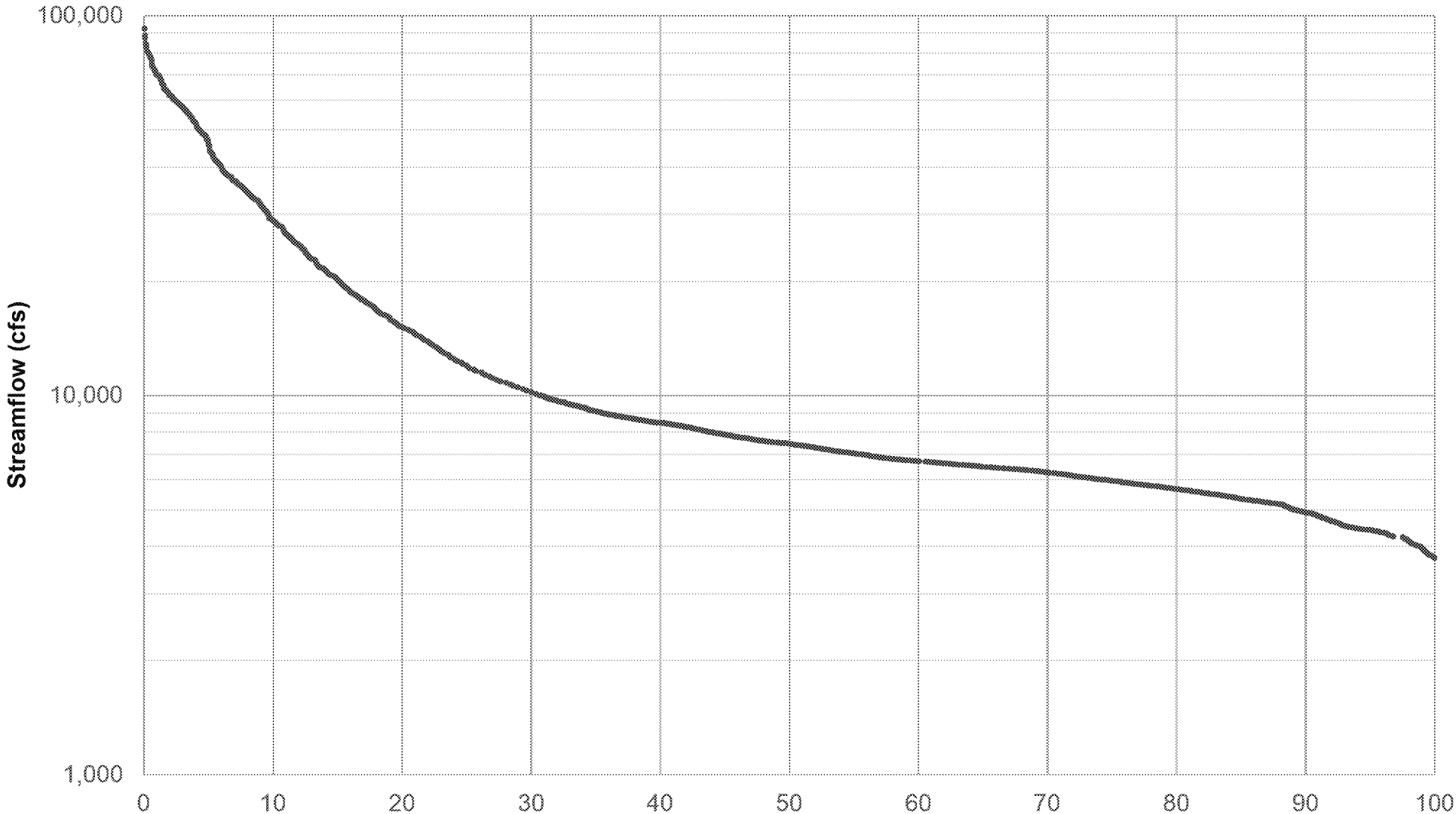
Attachment 1 – TCCA Red Bluff

Flow-Duration Curve - Annual
USGS 11377100 Sacramento River above Bend Bridge near Red Bluff, CA



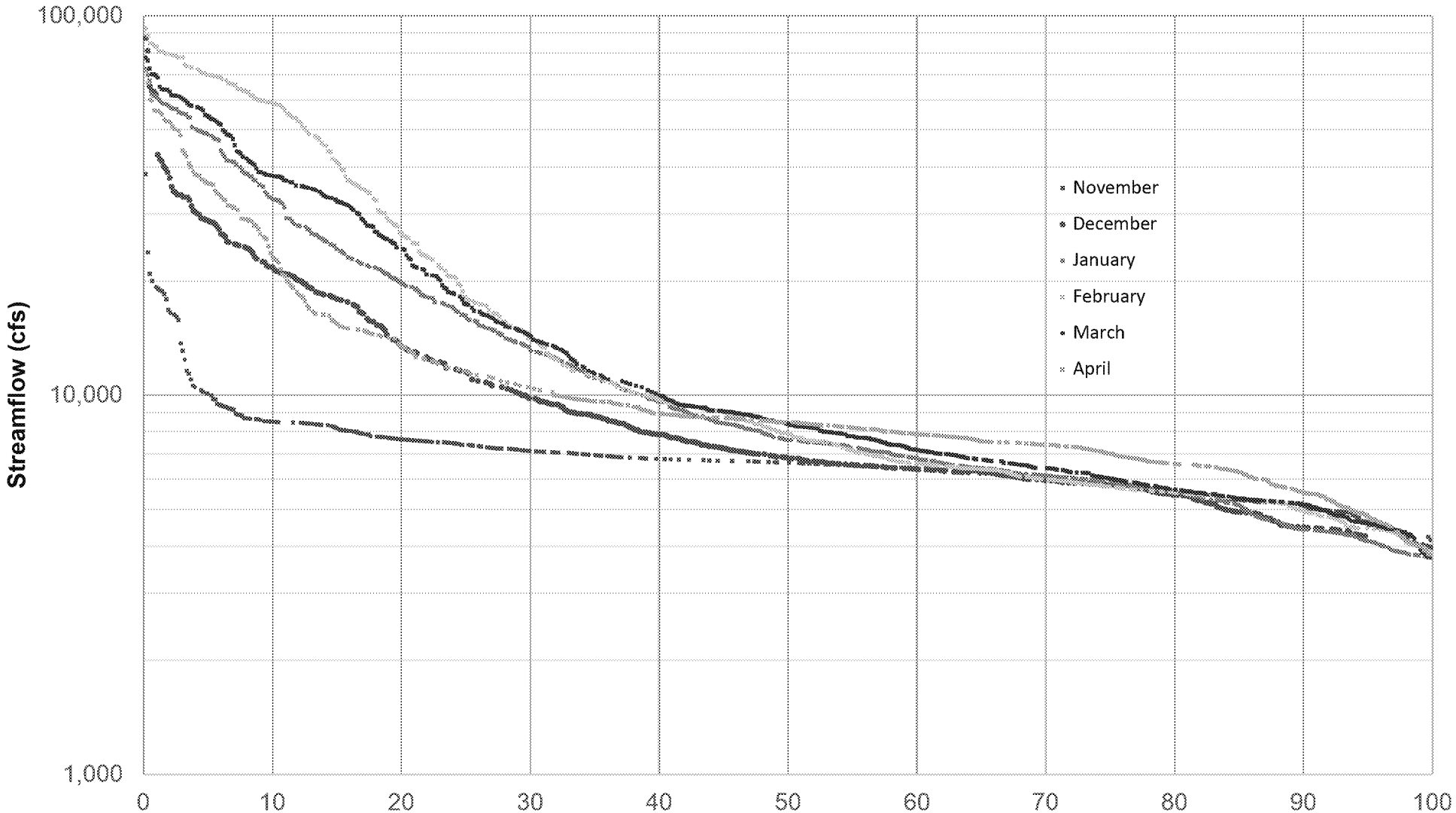
3/25/2020

Flow-Duration Curve - November-April
USGS 11377100 Sacramento River above Bend Bridge near Red Bluff, CA



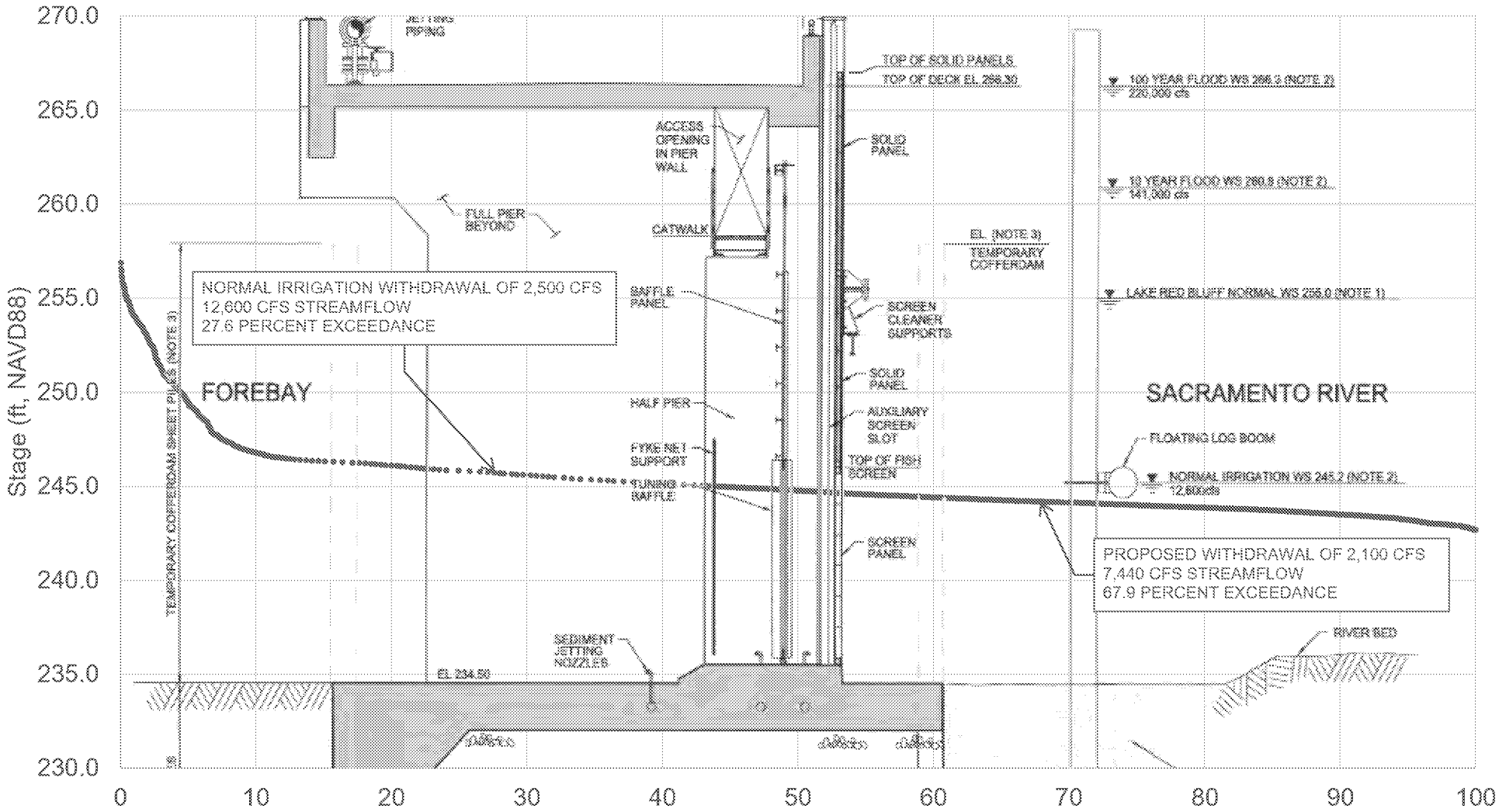
11/14/2019

Monthly Flow-Duration Curves - November-April
USGS 11377100 Sacramento River above Bend Bridge near Red Bluff, CA



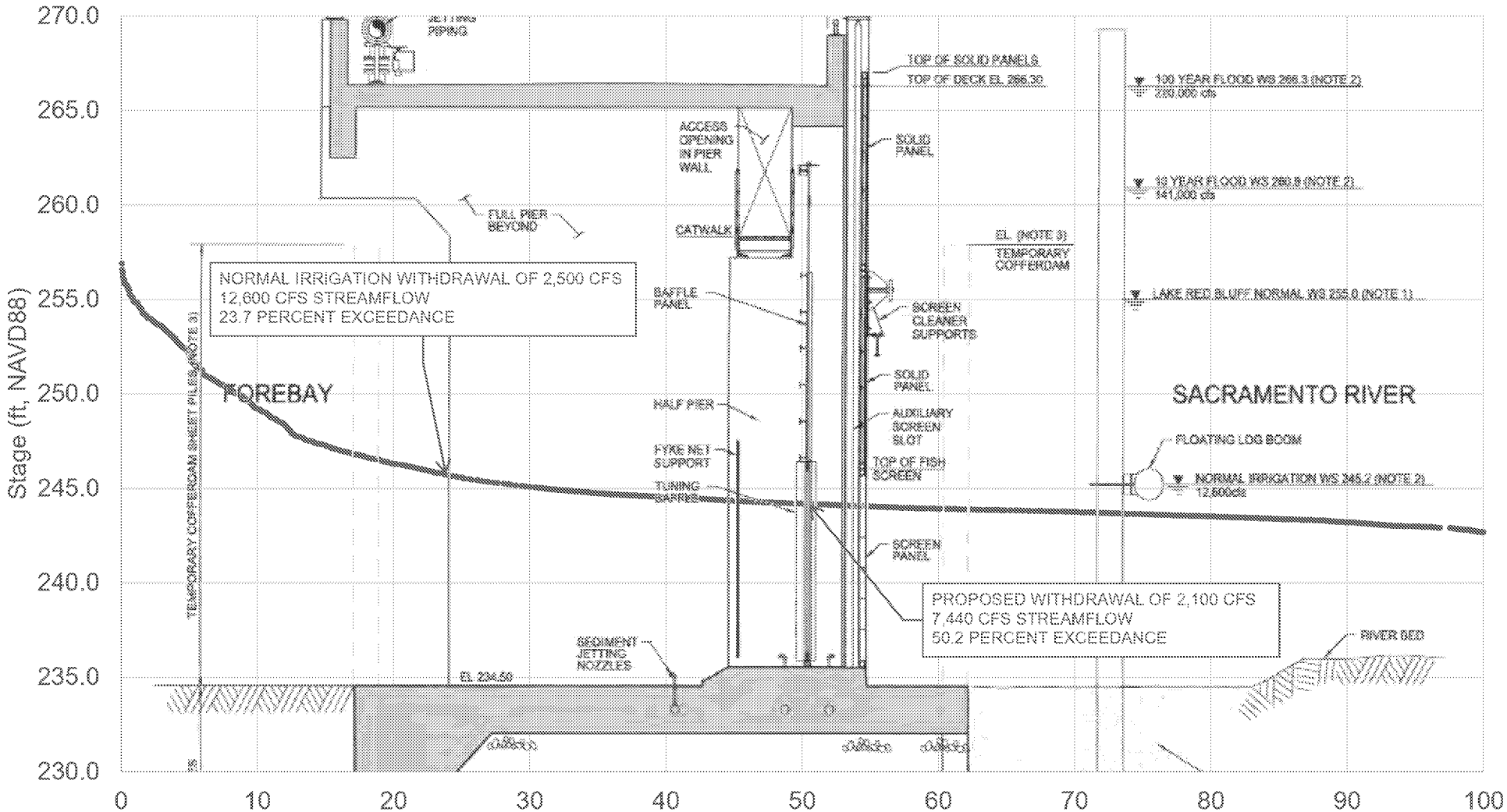
11/14/2019

Stage Frequency Curve - Annual
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



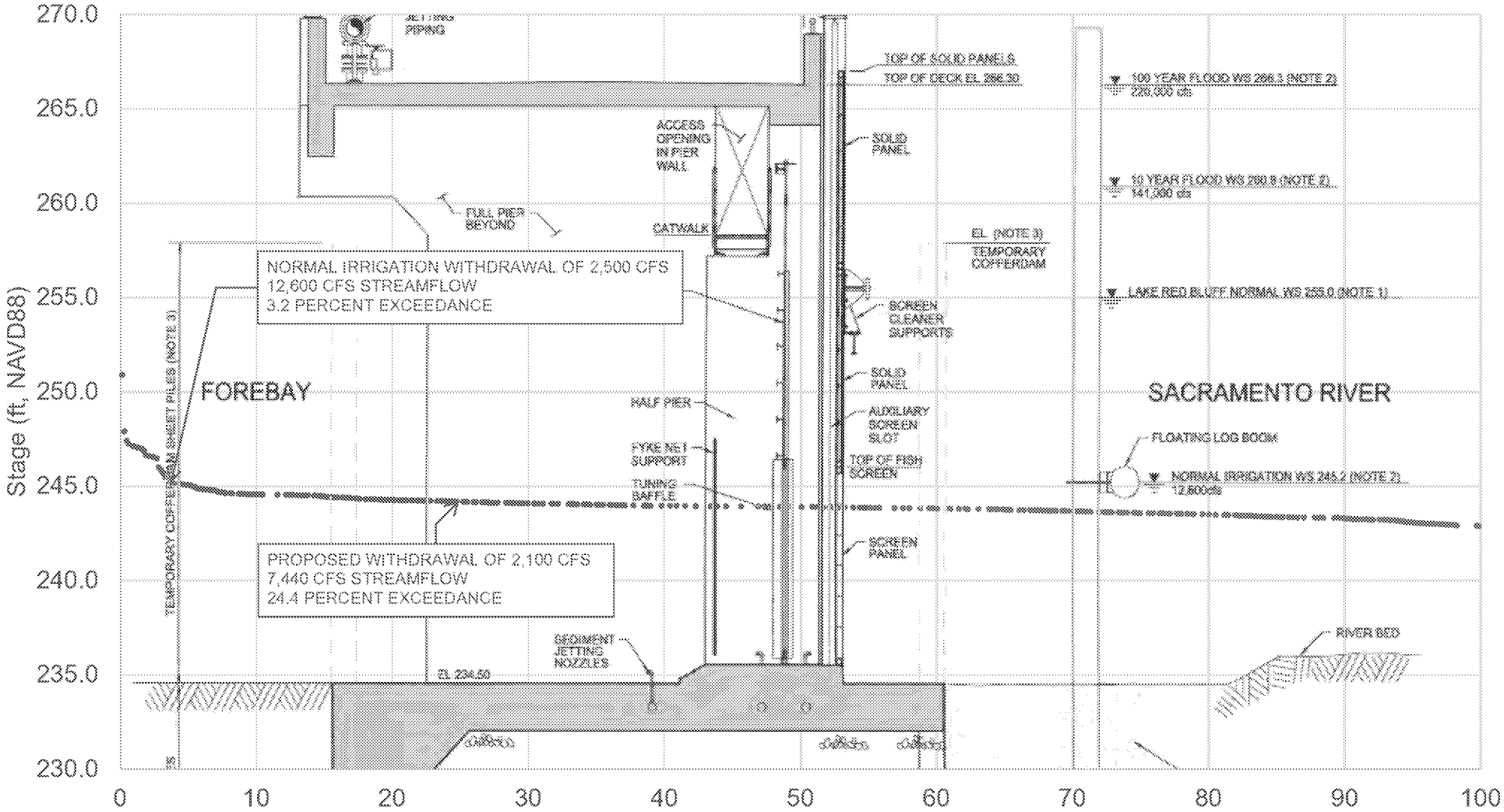
(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to January 2019)

Stage Frequency Curve - November-April
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

Stage Frequency Curve - November
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



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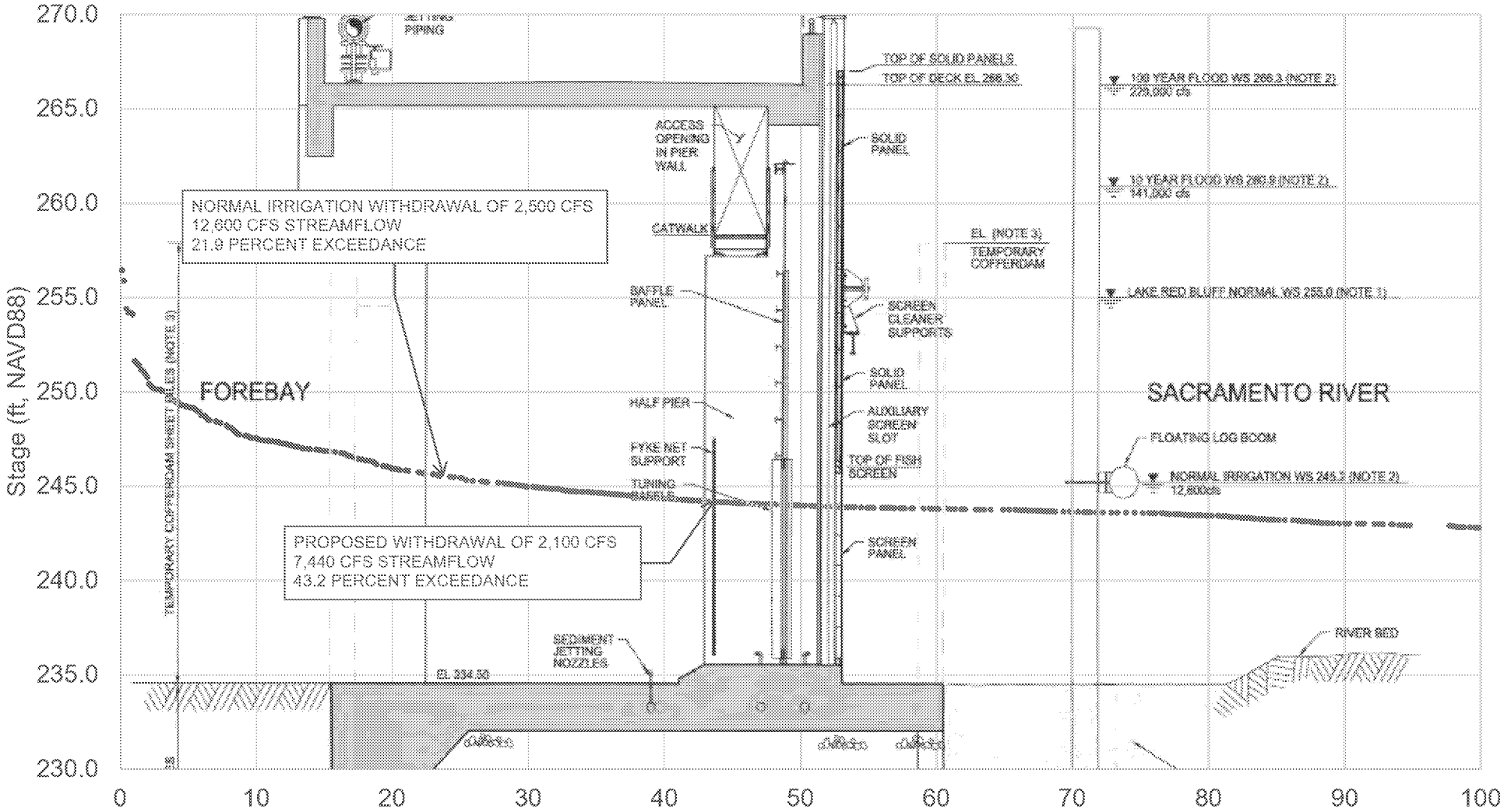
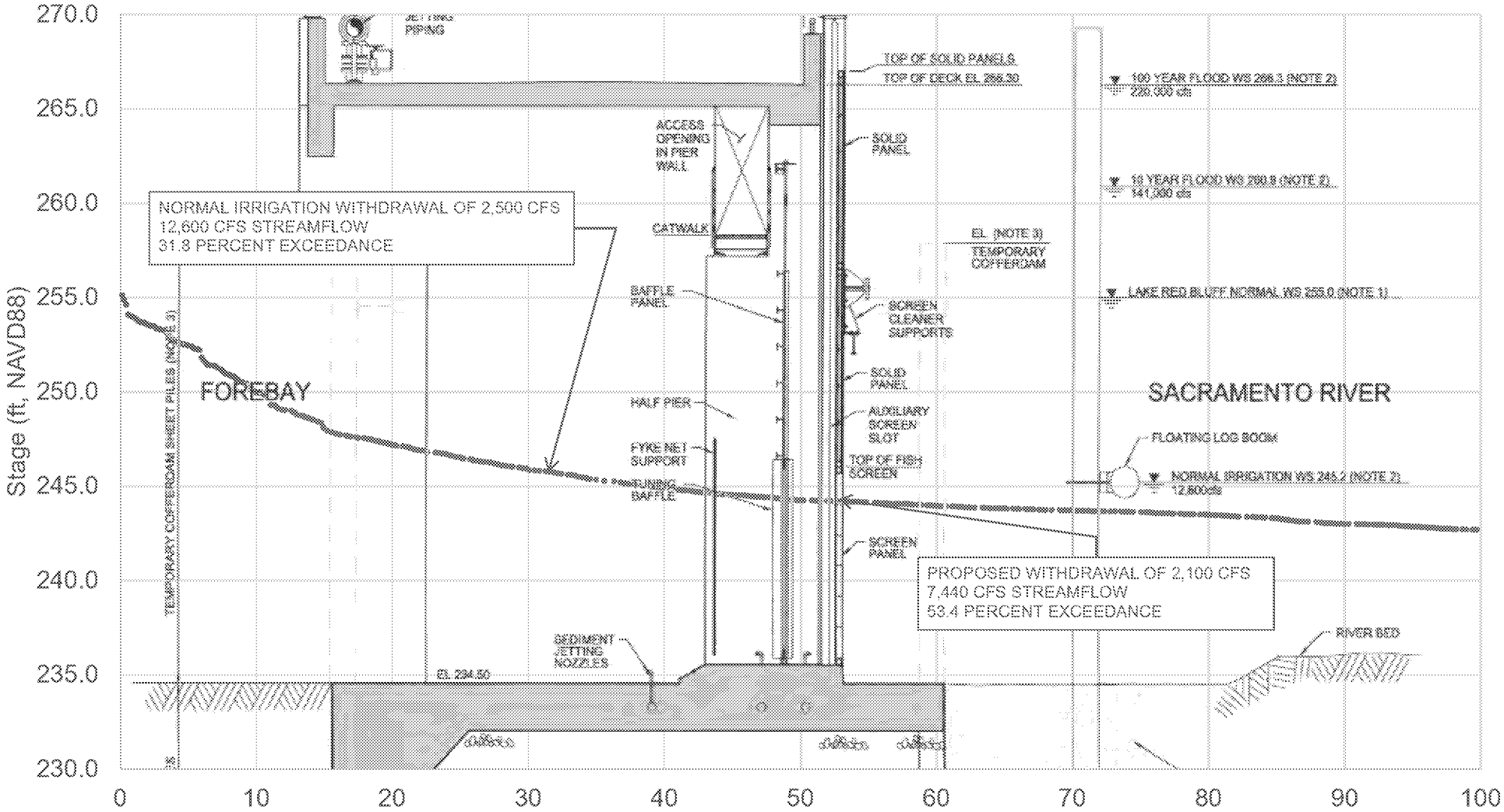
Stage Frequency Curve - December
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



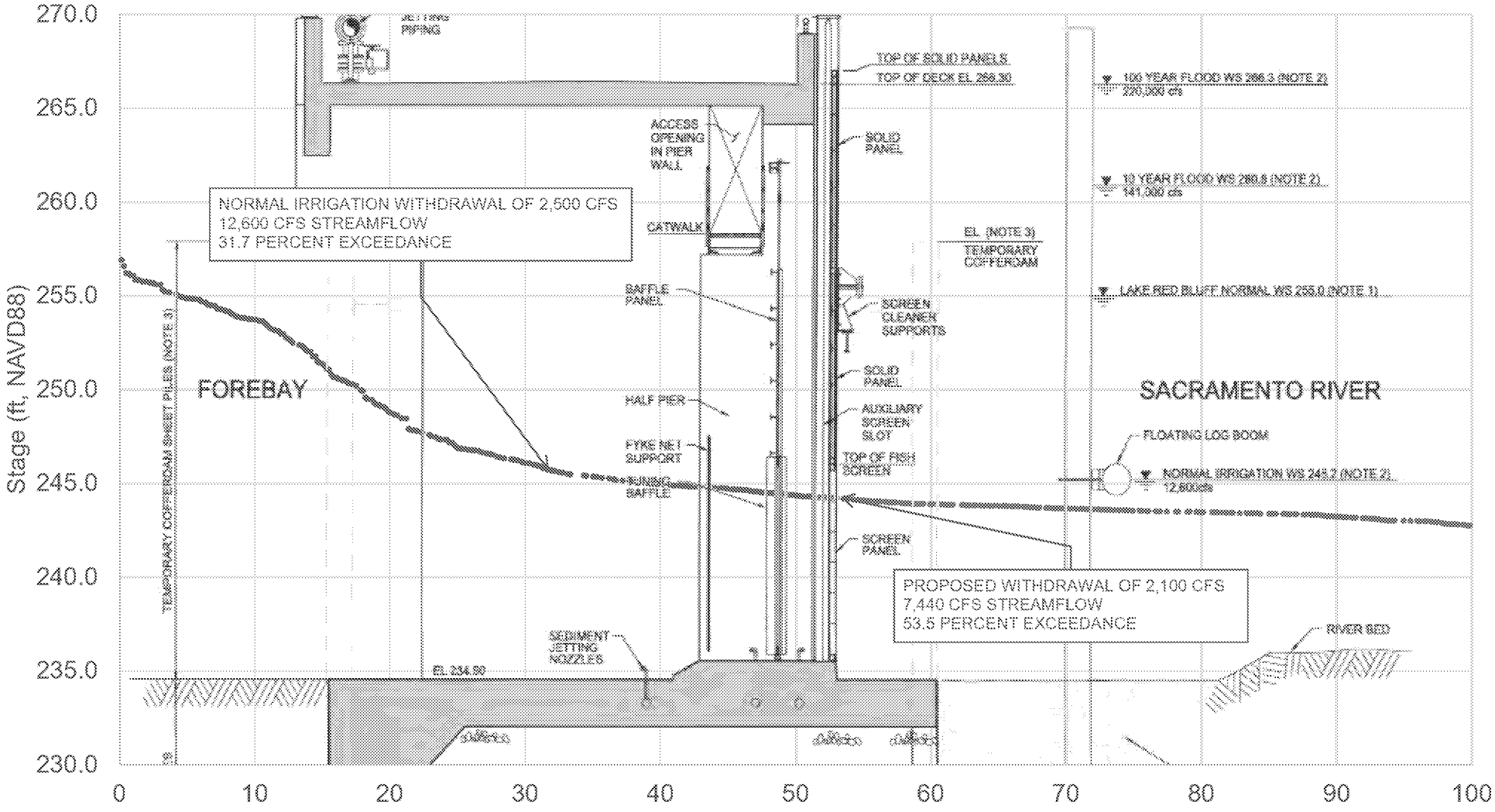
(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

Stage Frequency Curve - January
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



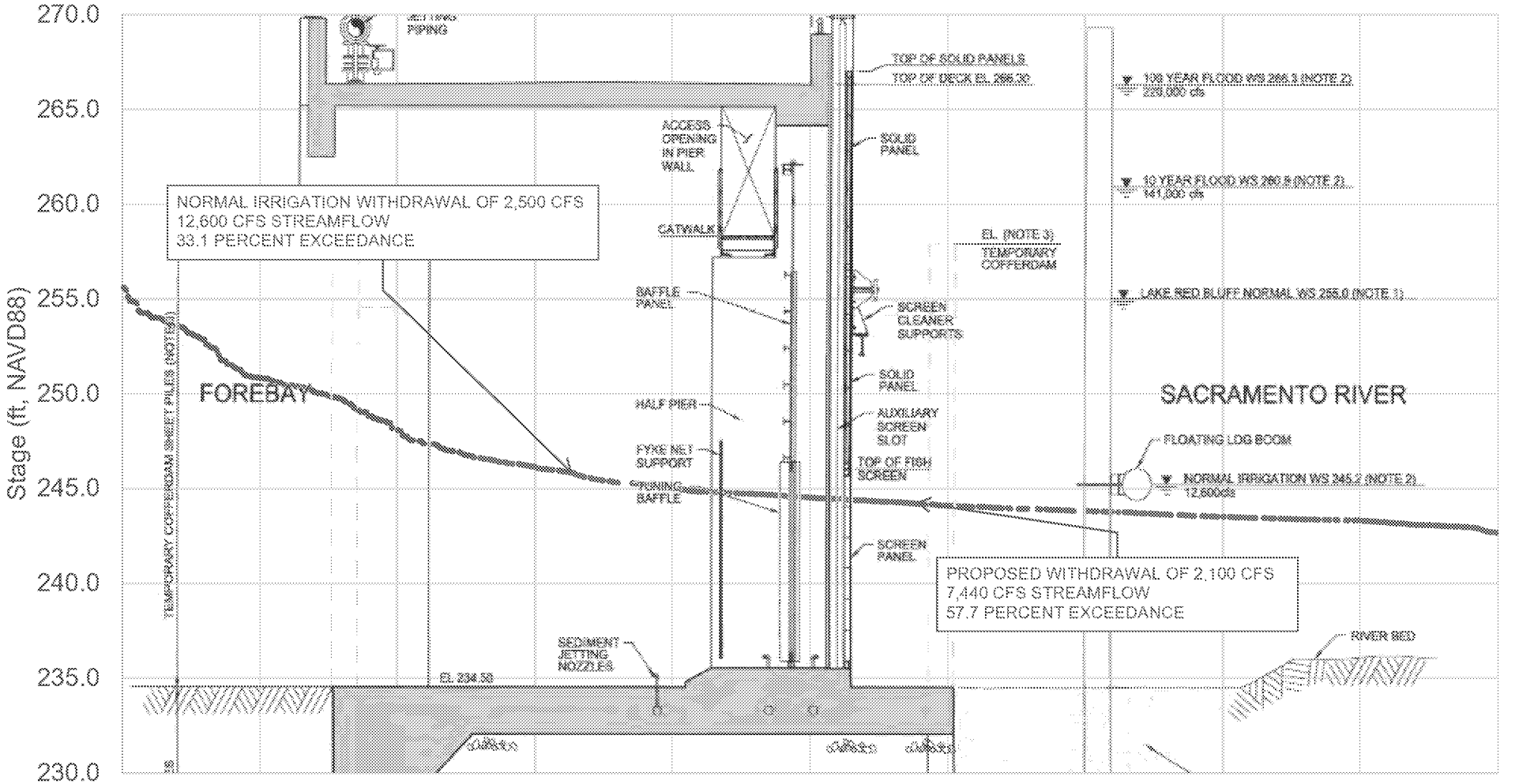
(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

Stage Frequency Curve - February
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



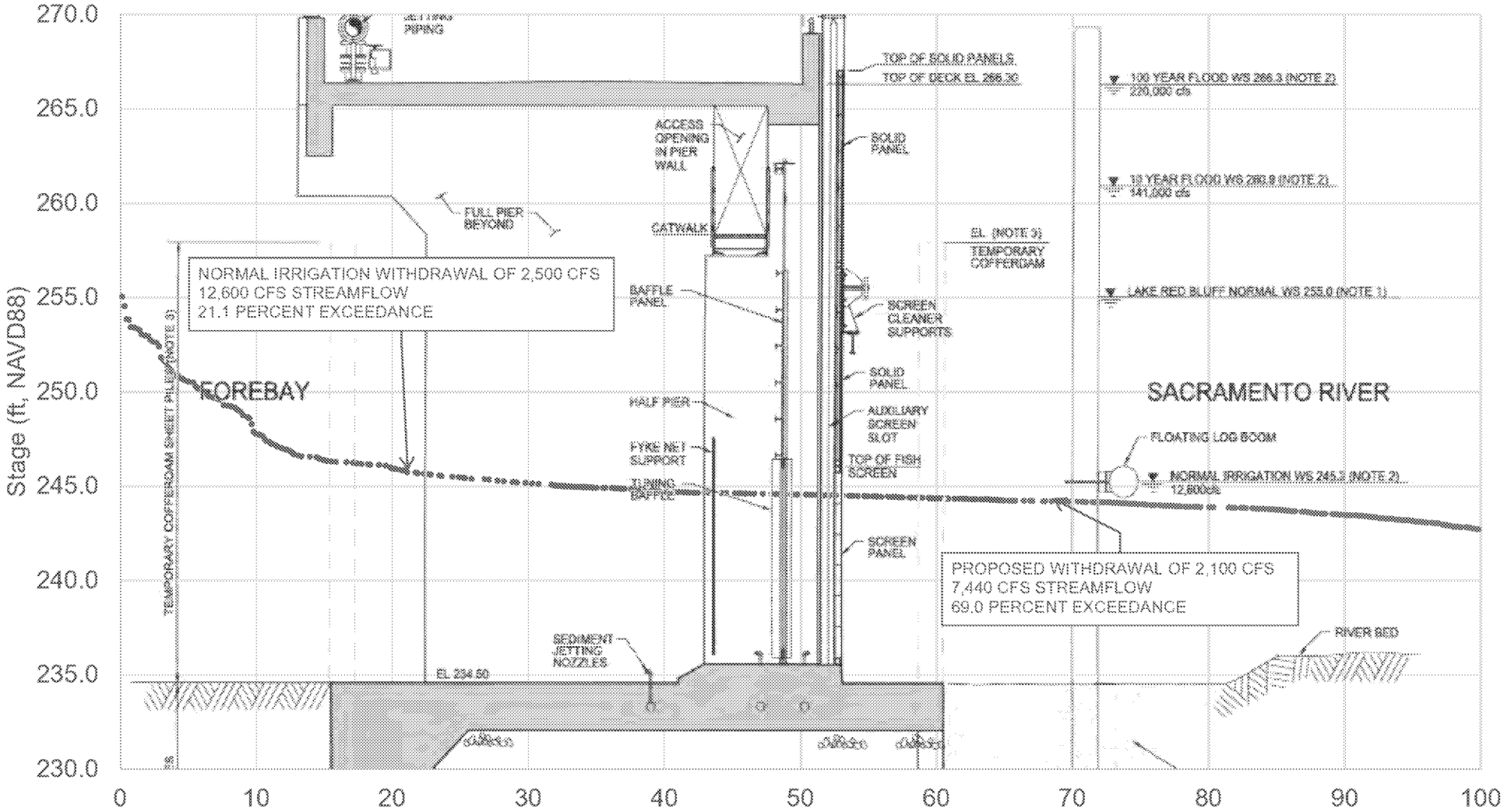
(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

Stage Frequency Curve - March
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

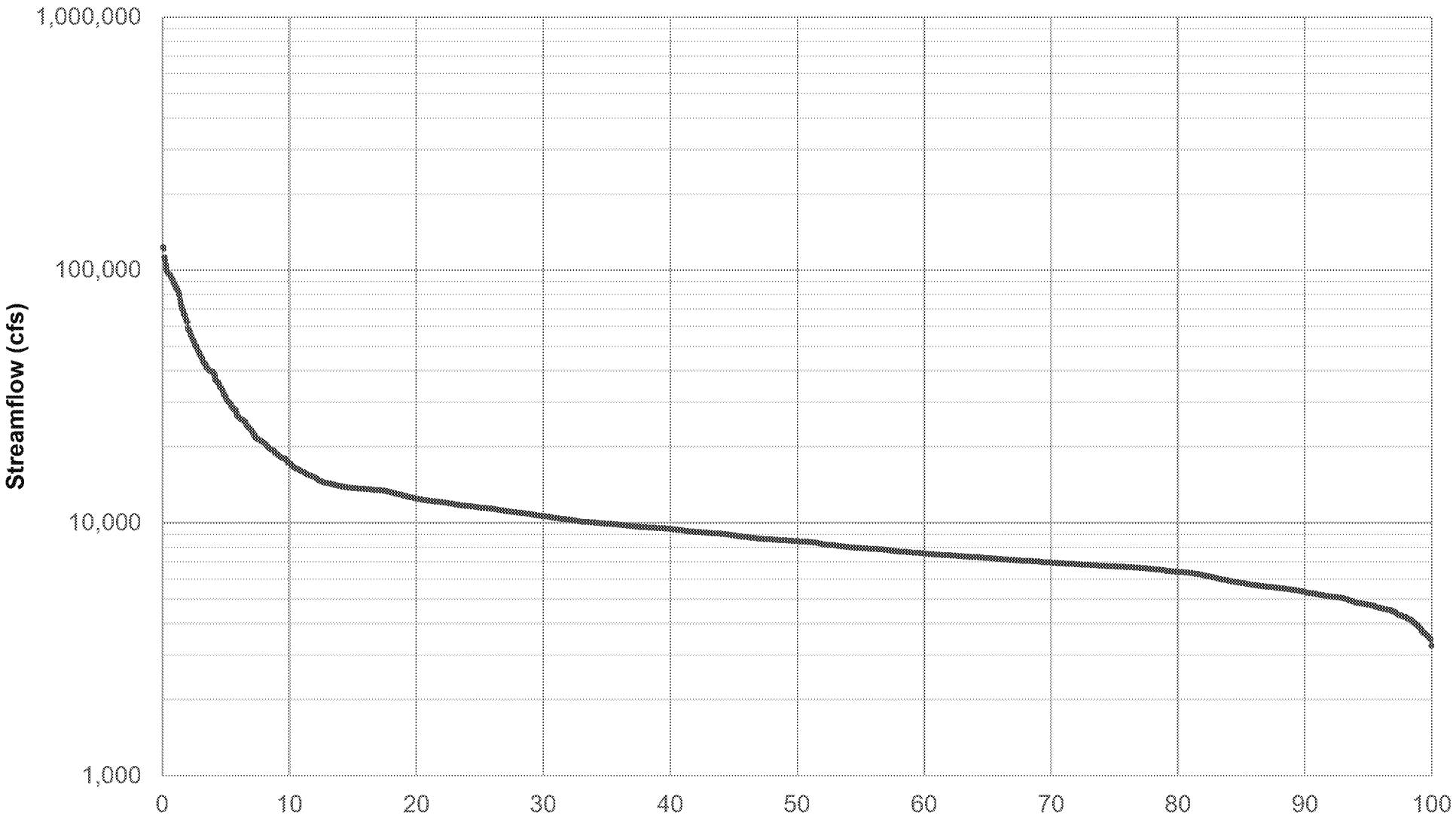
Stage Frequency Curve - April
Sacramento River at Red Bluff Diversion Dam (U/S Work Point)



(USGS Gage 11377100 Sacramento River above Bend Bridge near Red Bluff, CA; Average Daily Data from 1998 to 2019)

Attachment 2 – GCID Hamilton City

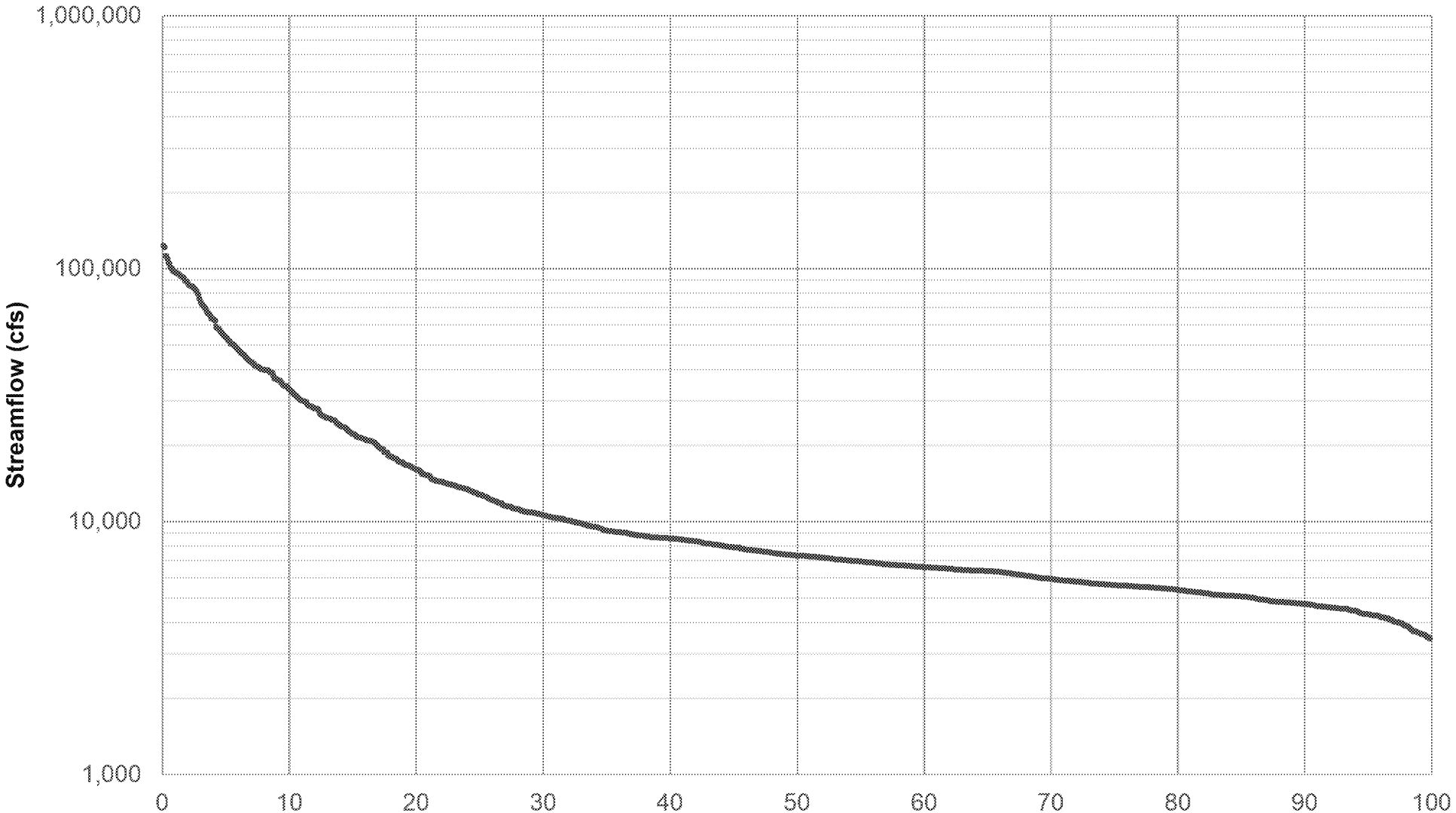
Flow-Duration Curve - Annual
Sacramento River Upstream from Oxbow



(GCID Average Daily Data from 1/1/2011 to 12/31/2018)

8/2/2019

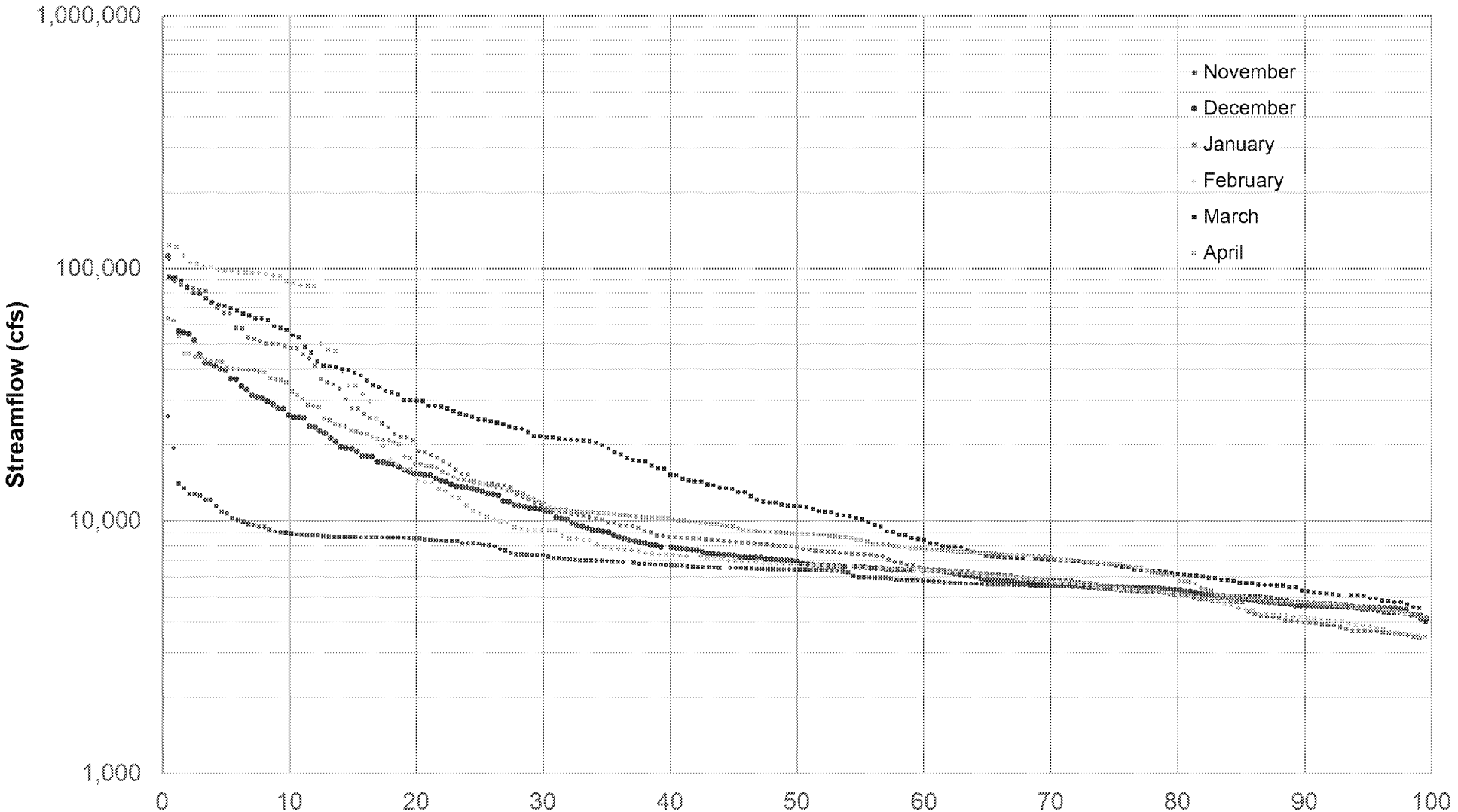
Flow-Duration Curve - November-April
Sacramento River Upstream from GCID Diversion



(GCID Average Daily Data from 1/1/2011 to 12/31/2018)

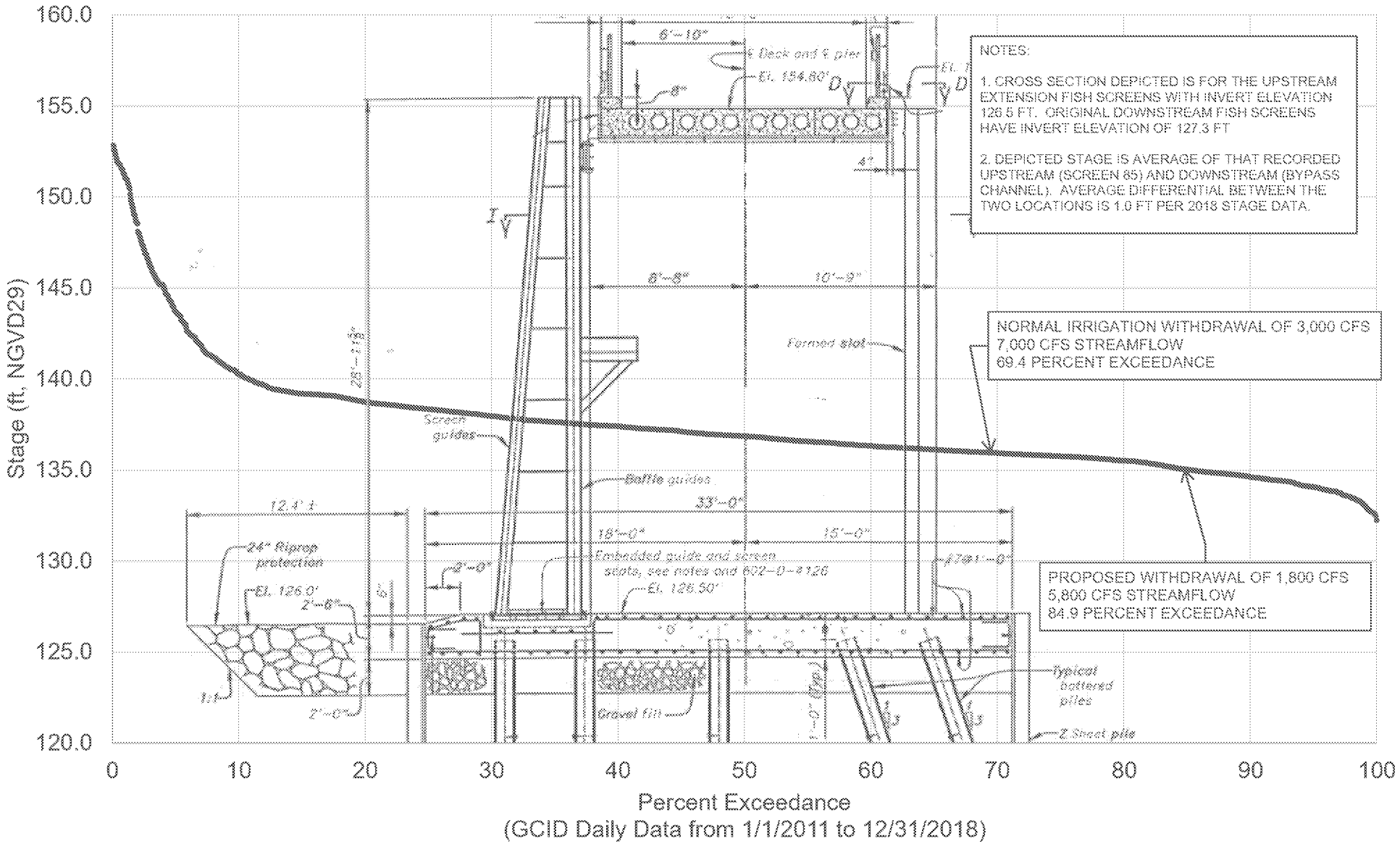
11/14/2019

Monthly Flow-Duration Curves - November-April
Sacramento River Upstream from GCID Diversion



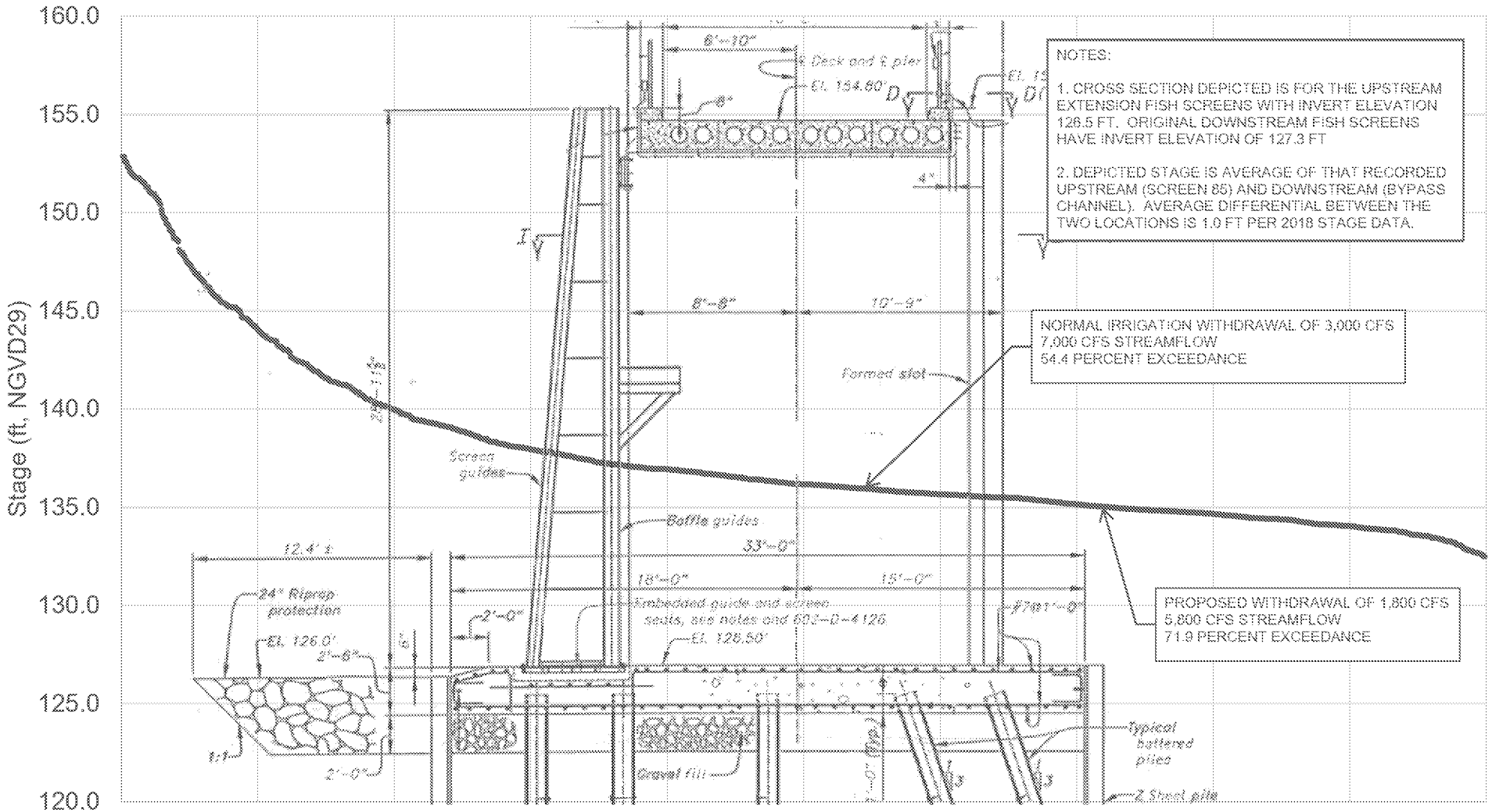
11/14/2019

Stage Frequency Curve - Annual
Sacramento River at GCID Diversion Fish Screens



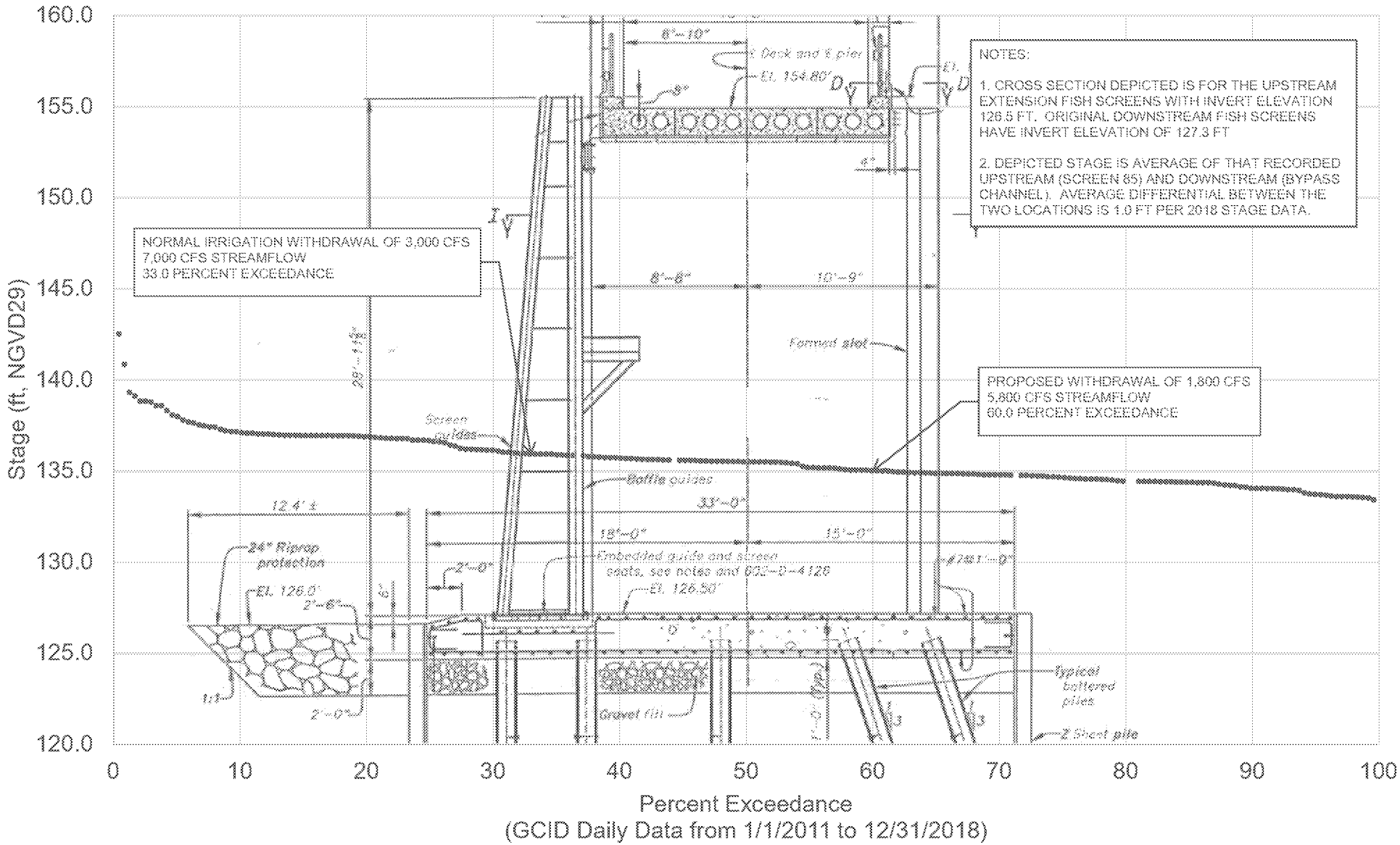
Draft_0002084

Stage Frequency Curve - November-April
Sacramento River at GCID Diversion Fish Screens



Draft_0002085

Stage Frequency Curve - November
Sacramento River at GCID Diversion Fish Screens



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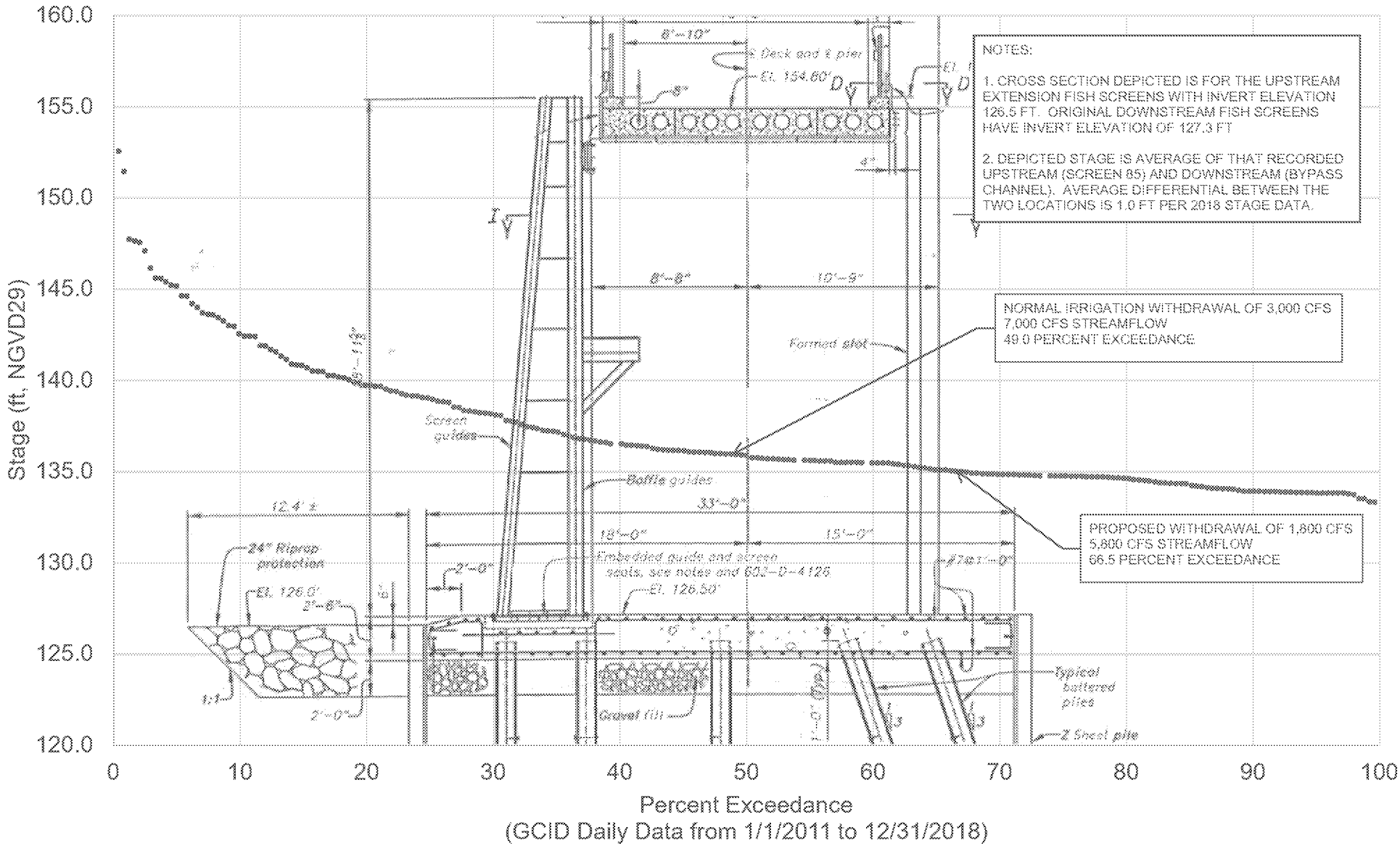
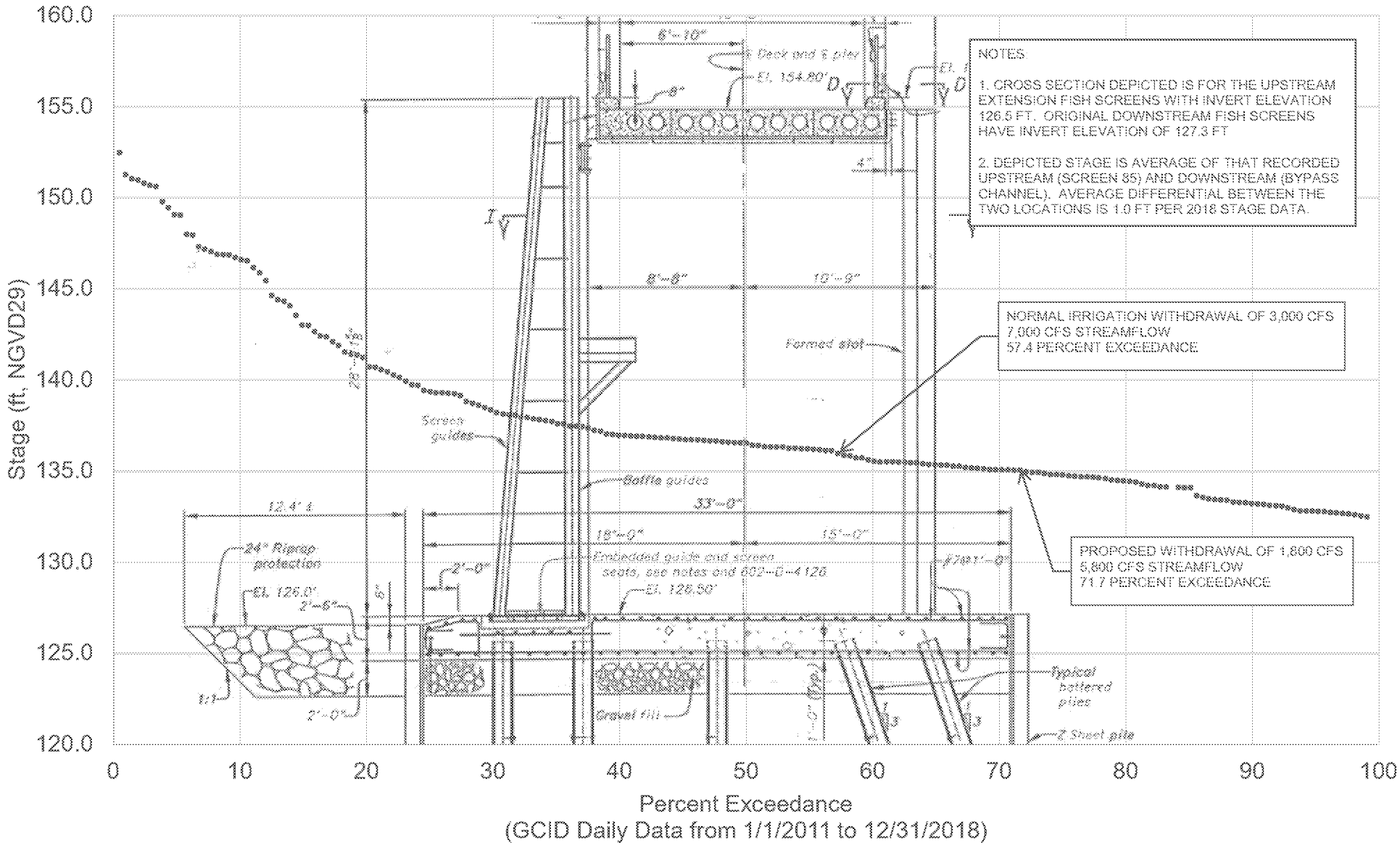
Stage Frequency Curve - December
Sacramento River at GCID Diversion Fish Screens

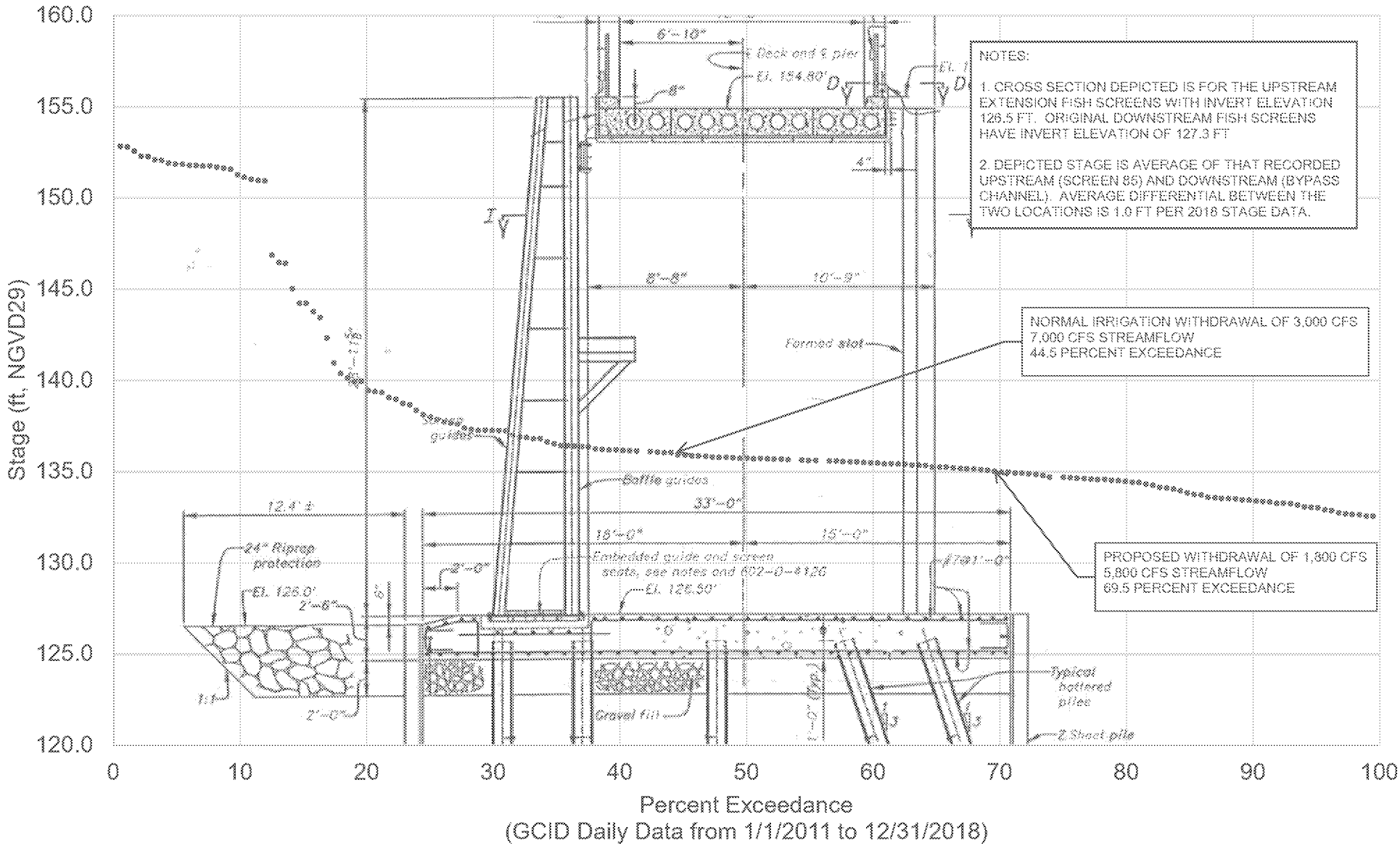


Draft_0002087

Stage Frequency Curve - January
Sacramento River at GCID Diversion Fish Screens



Stage Frequency Curve - February
Sacramento River at GCID Diversion Fish Screens



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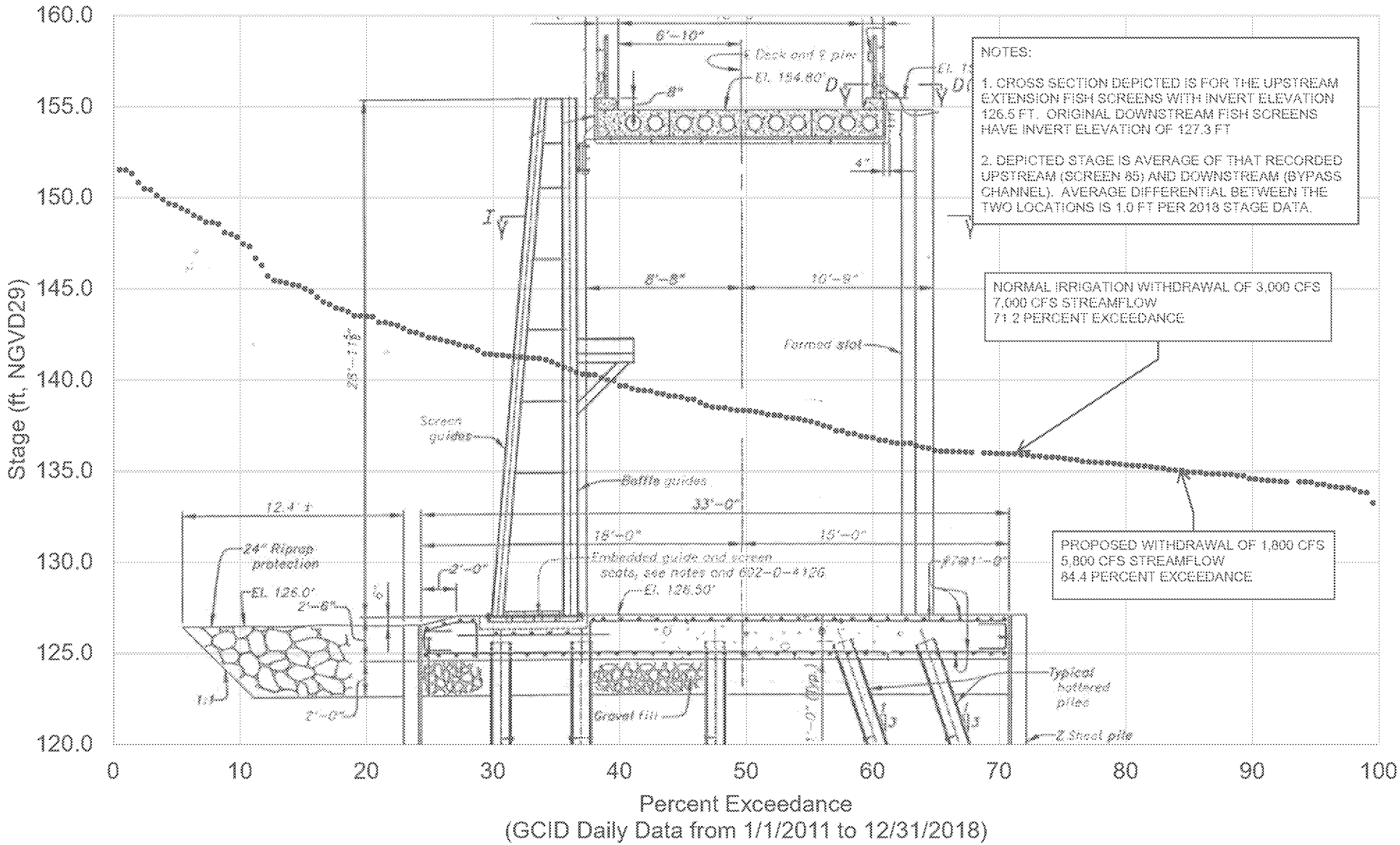
Stage Frequency Curve - March
Sacramento River at GCID Diversion Fish Screens



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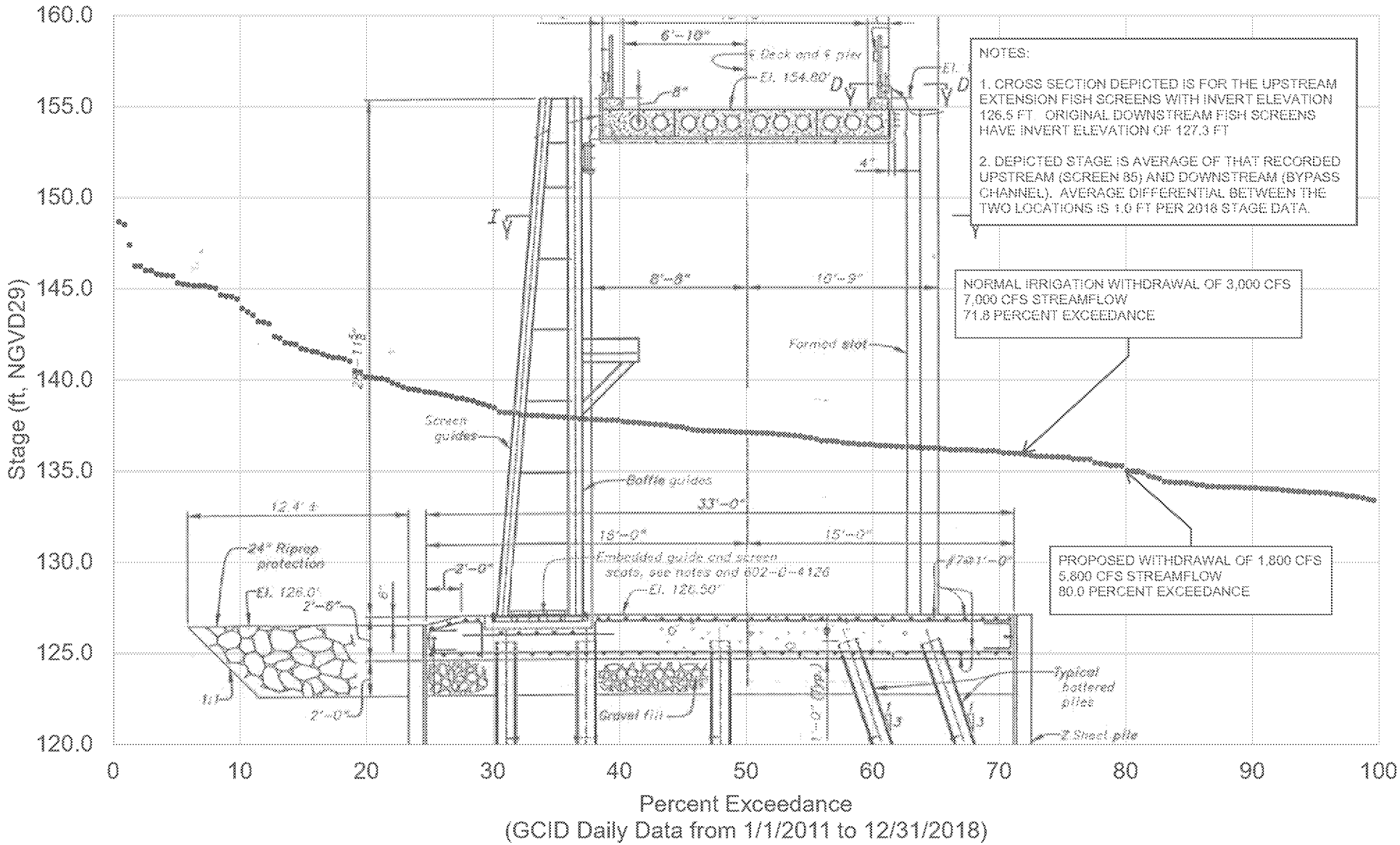
Stage Frequency Curve - April
Sacramento River at GCID Diversion Fish Screens



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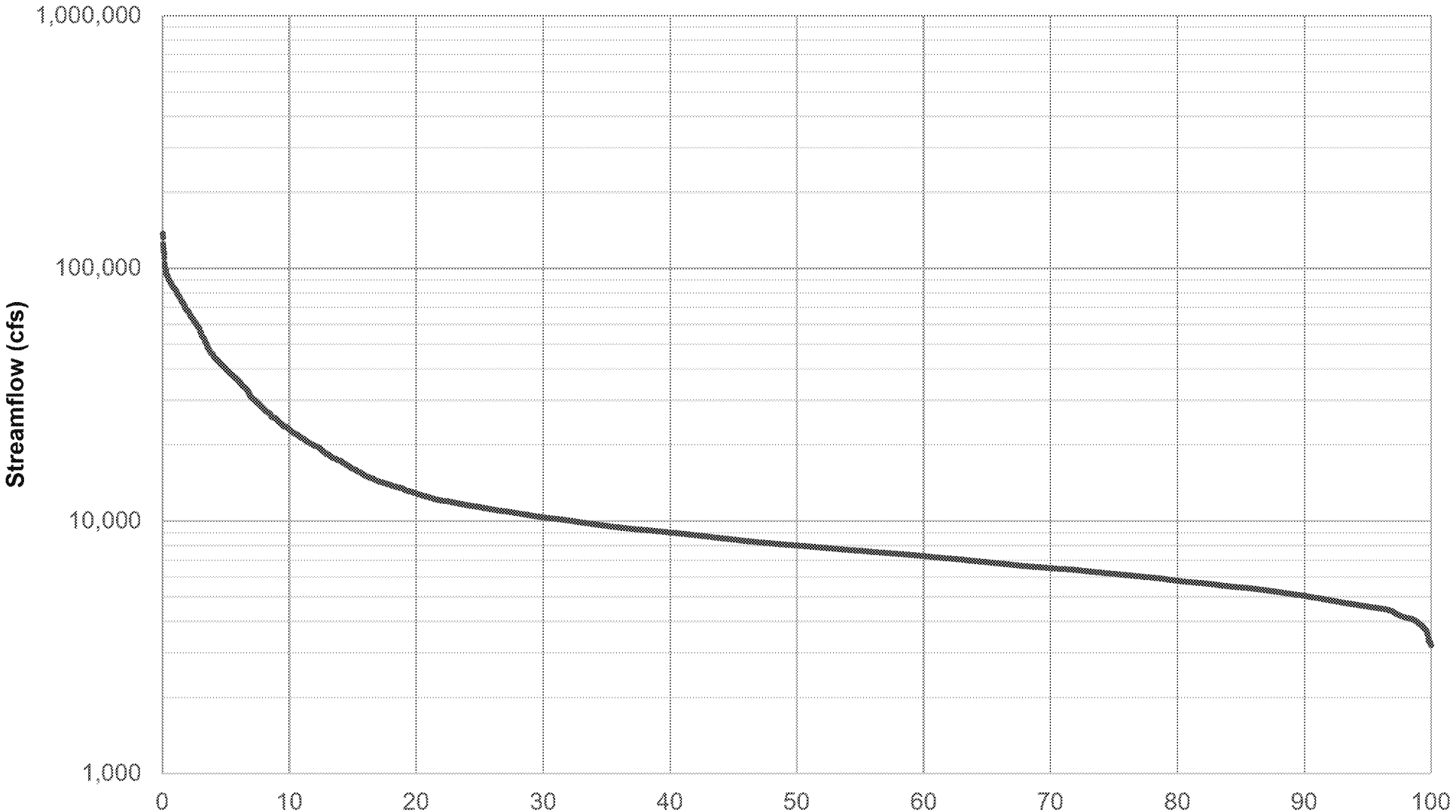
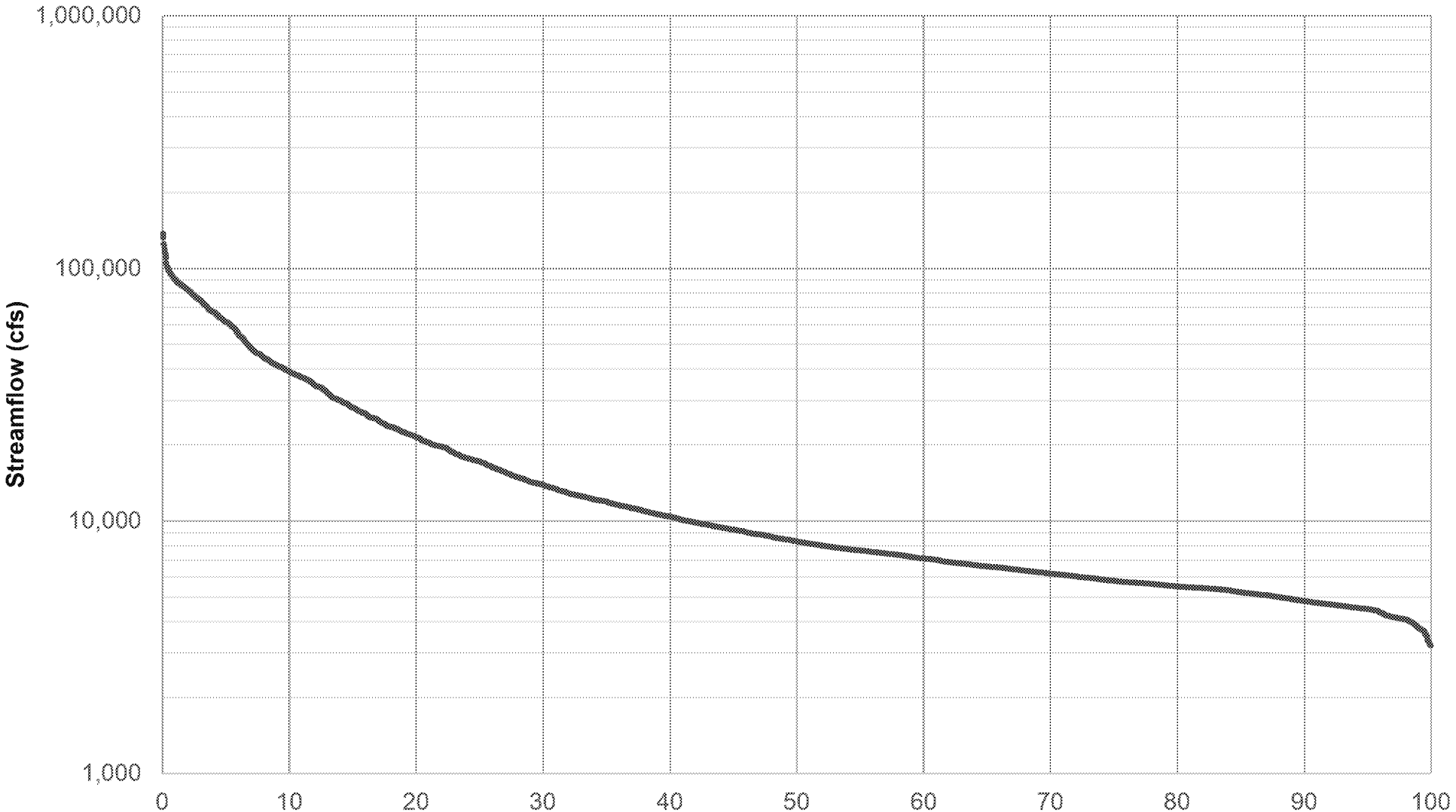
Attachment 3 – Delevan

Flow-Duration Curve - Annual
CA DWR Station ID: BTC; Sacramento River at Butte City



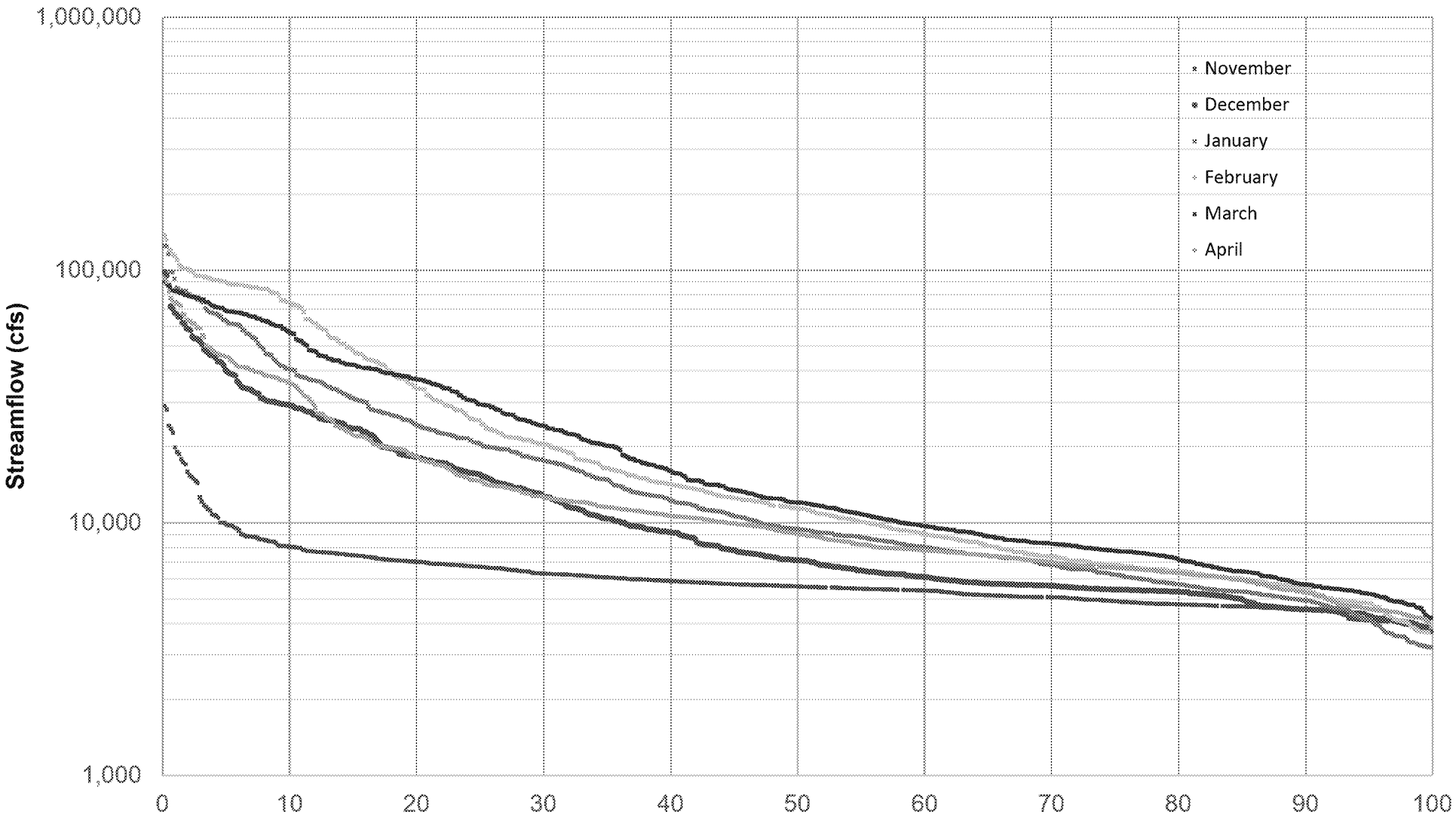
3/25/2020

Flow-Duration Curve - November-April
CA DWR Station ID: BTC; Sacramento River at Butte City



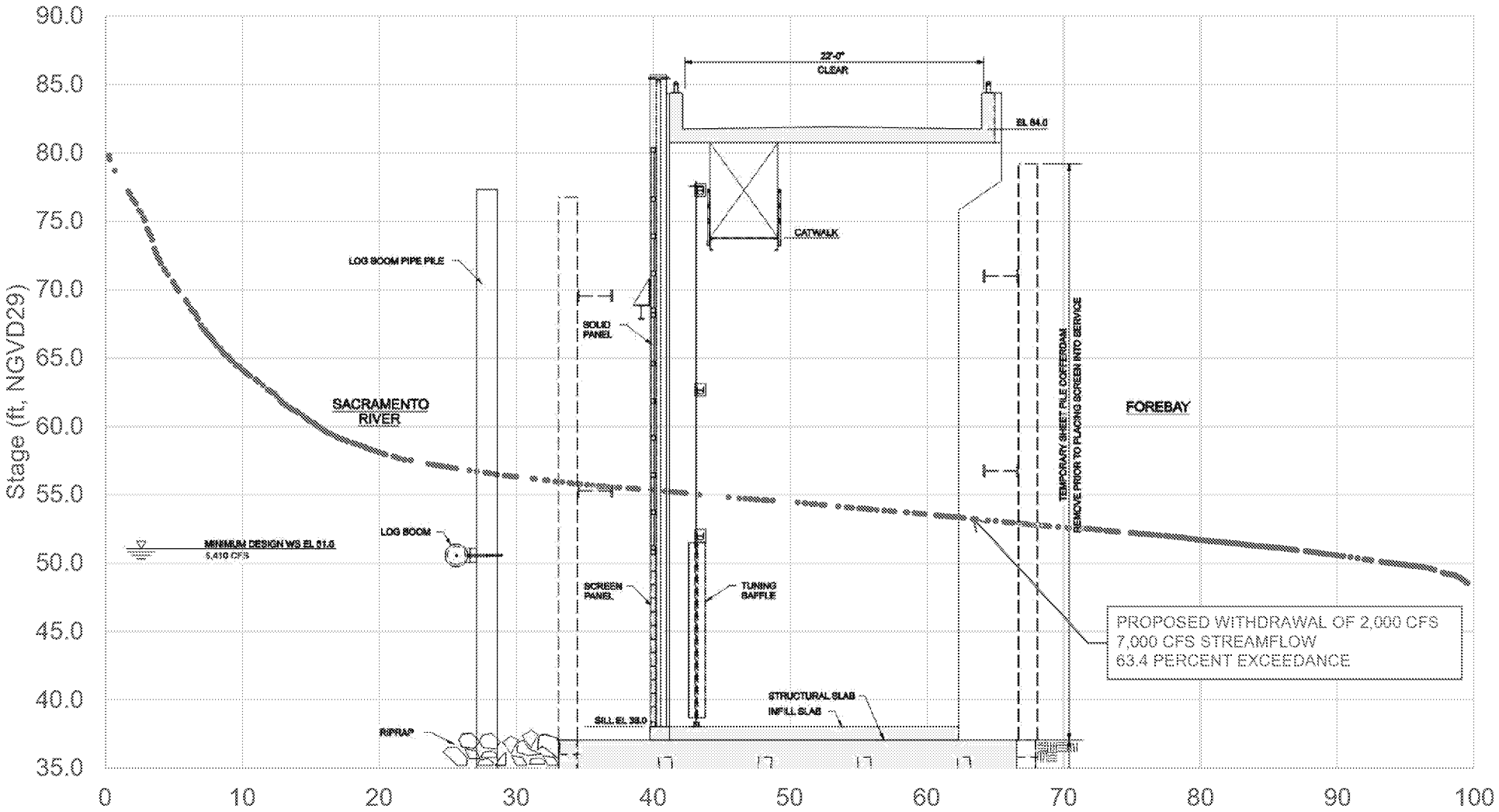
11/14/2019

Monthly Flow-Duration Curves - November-April
CA DWR Station ID: BTC; Sacramento River at Butte City



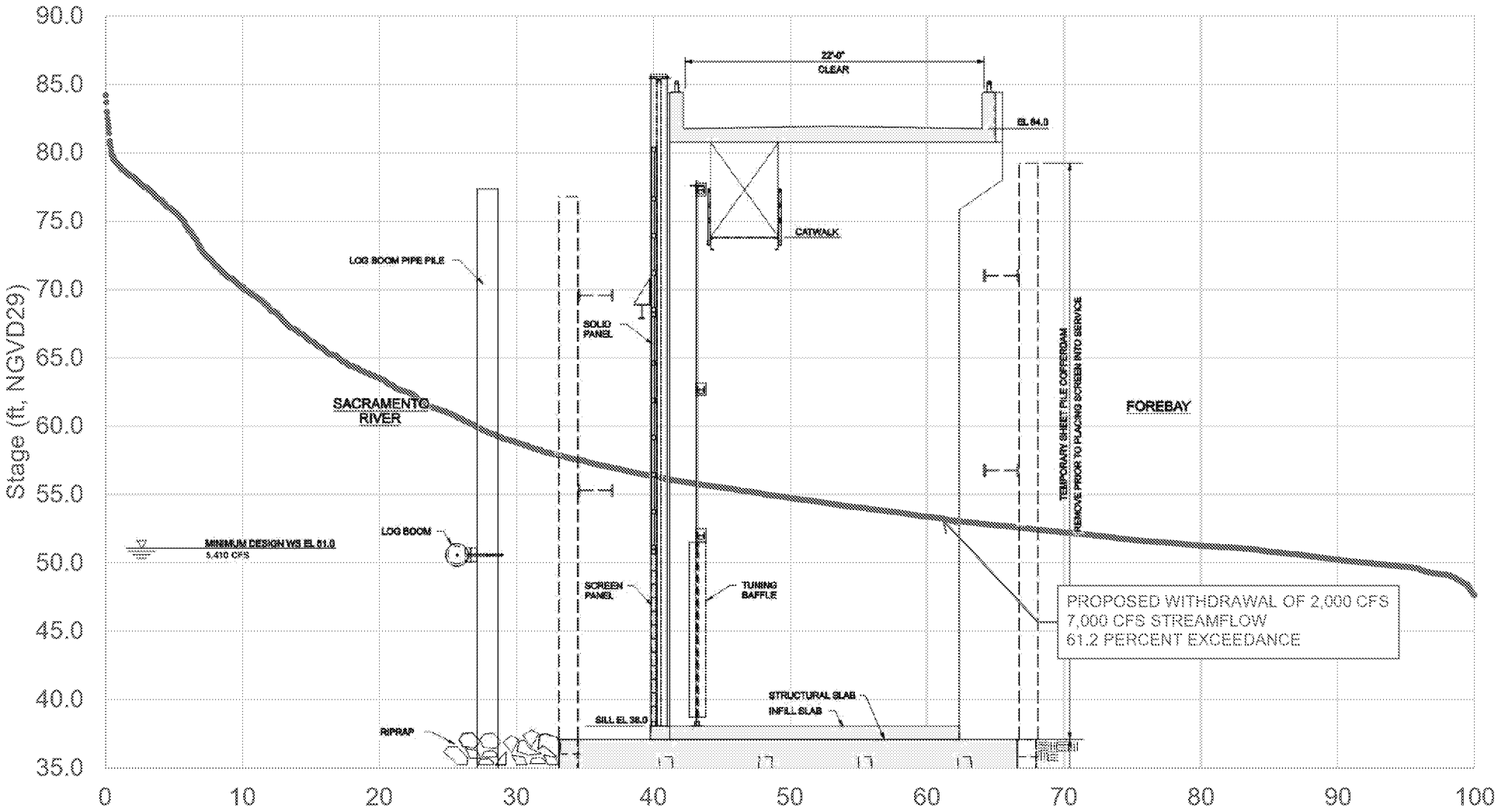
11/14/2019

Stage Frequency Curve - Annual
Sacramento River at Butte City, CA



(CA Dept of Water Resources Station ID BTC: SACRAMENTO RIVER AT BUTTE CITY;
Average Daily Data from January 1998 - April 2019)

Stage Frequency Curve - November-April
Sacramento River at Butte City, CA



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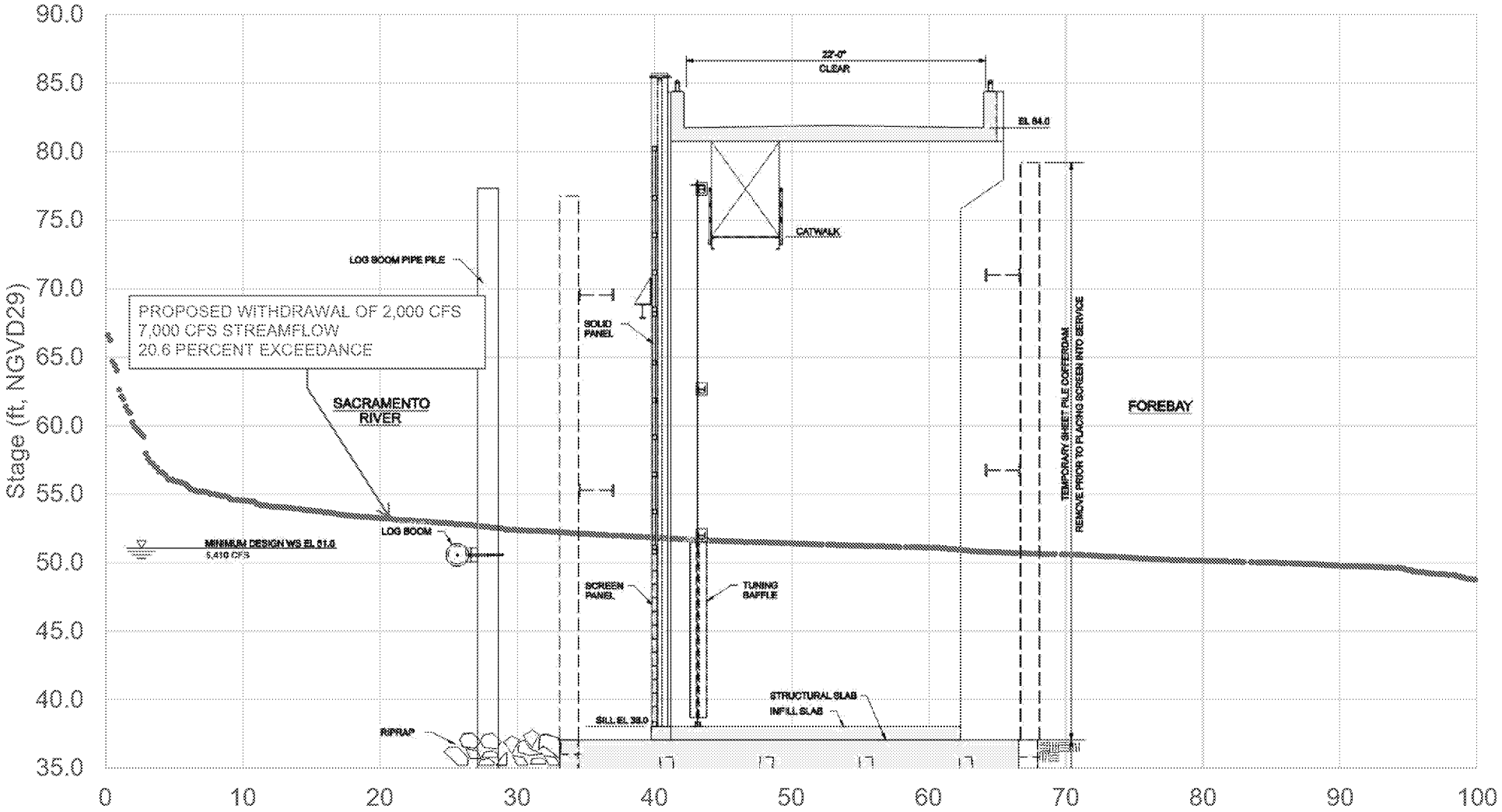
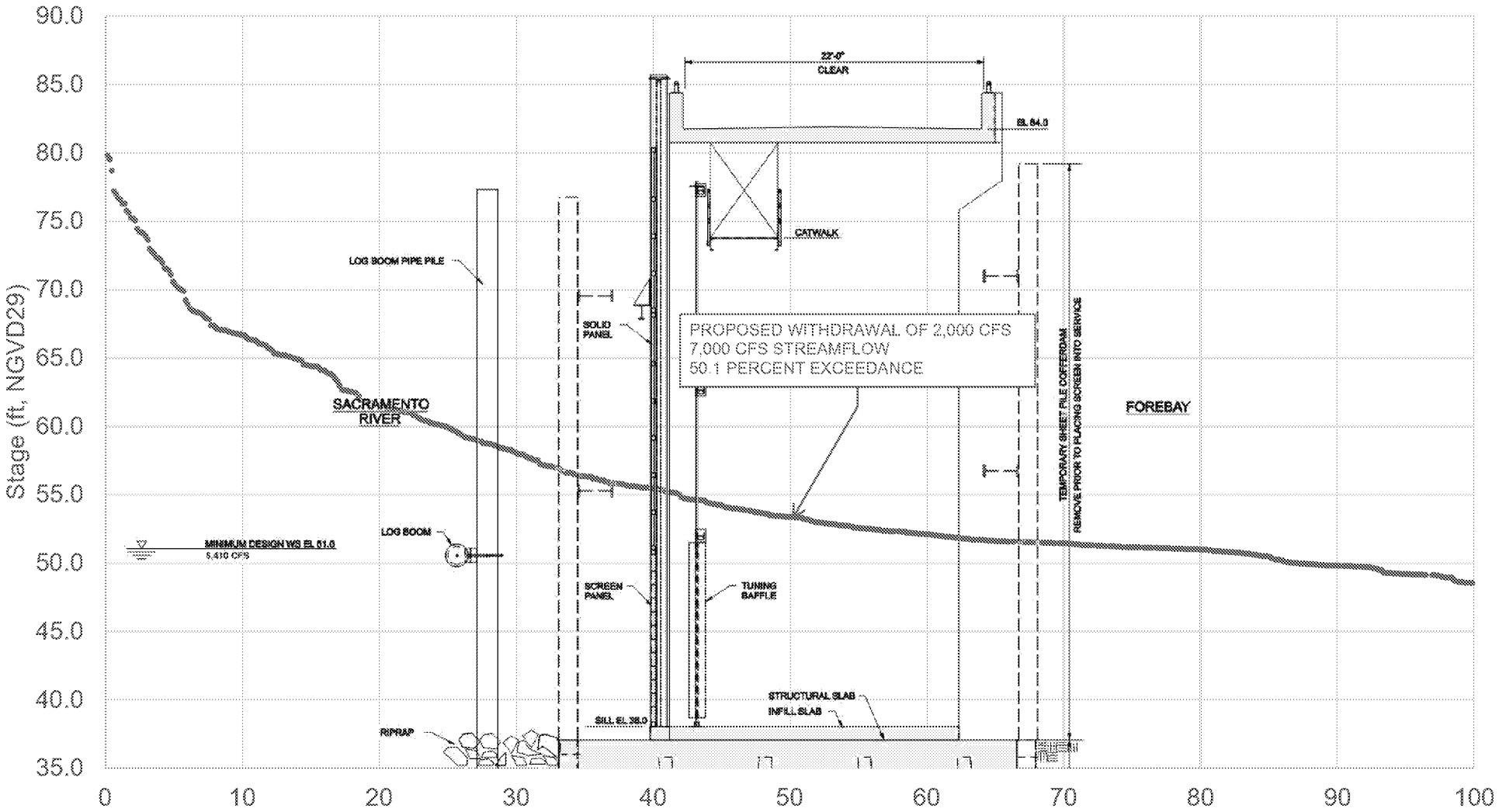
Average Daily Data from January 1998 - April 2019)

Stage Frequency Curve - November
Sacramento River at Butte City, CA



(CA Dept of Water Resources Station ID BTC: SACRAMENTO RIVER AT BUTTE CITY;
Average Daily Data from January 1998 - April 2019)

Stage Frequency Curve - December
Sacramento River at Butte City, CA



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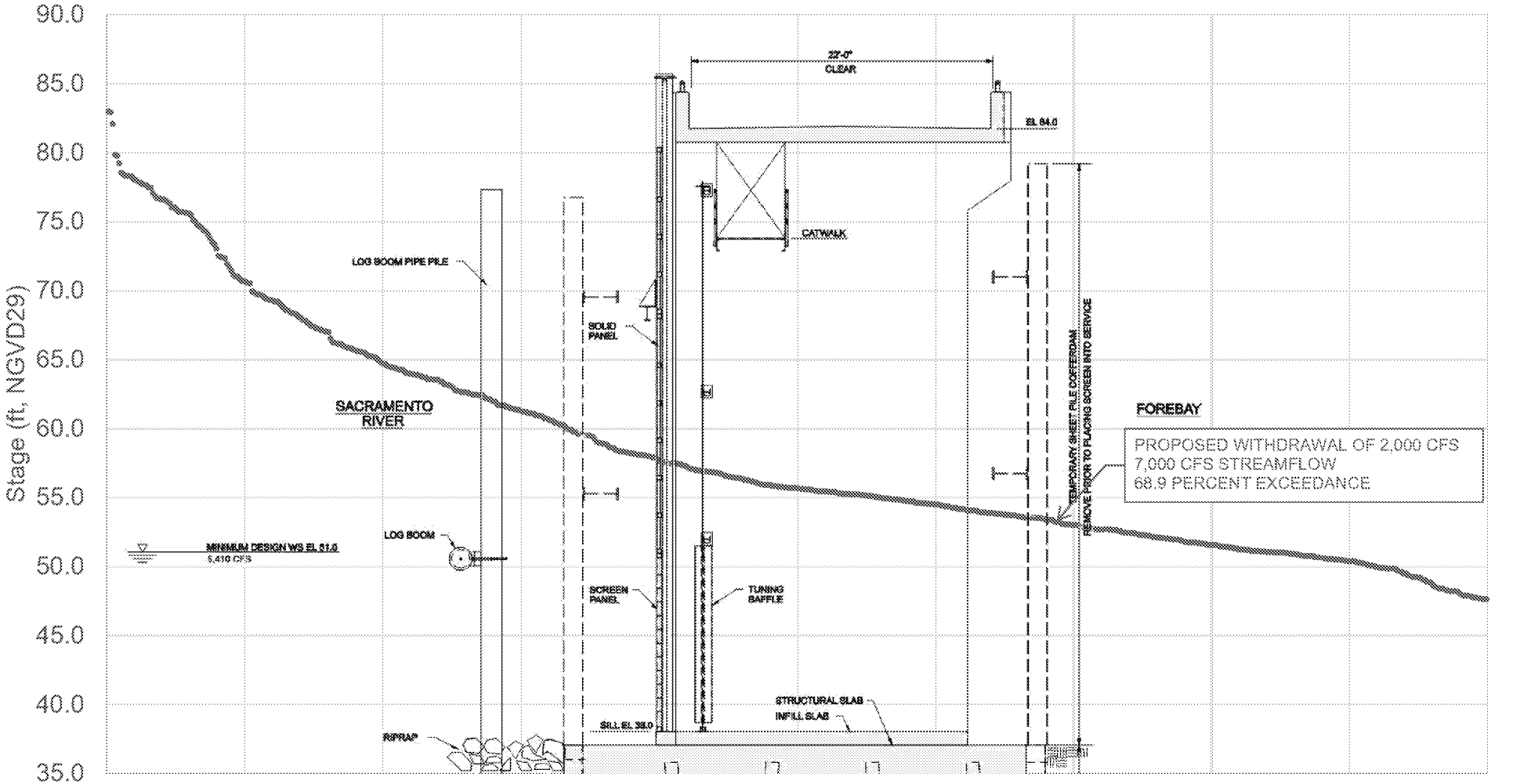
Stage Frequency Curve - January
Sacramento River at Butte City, CA



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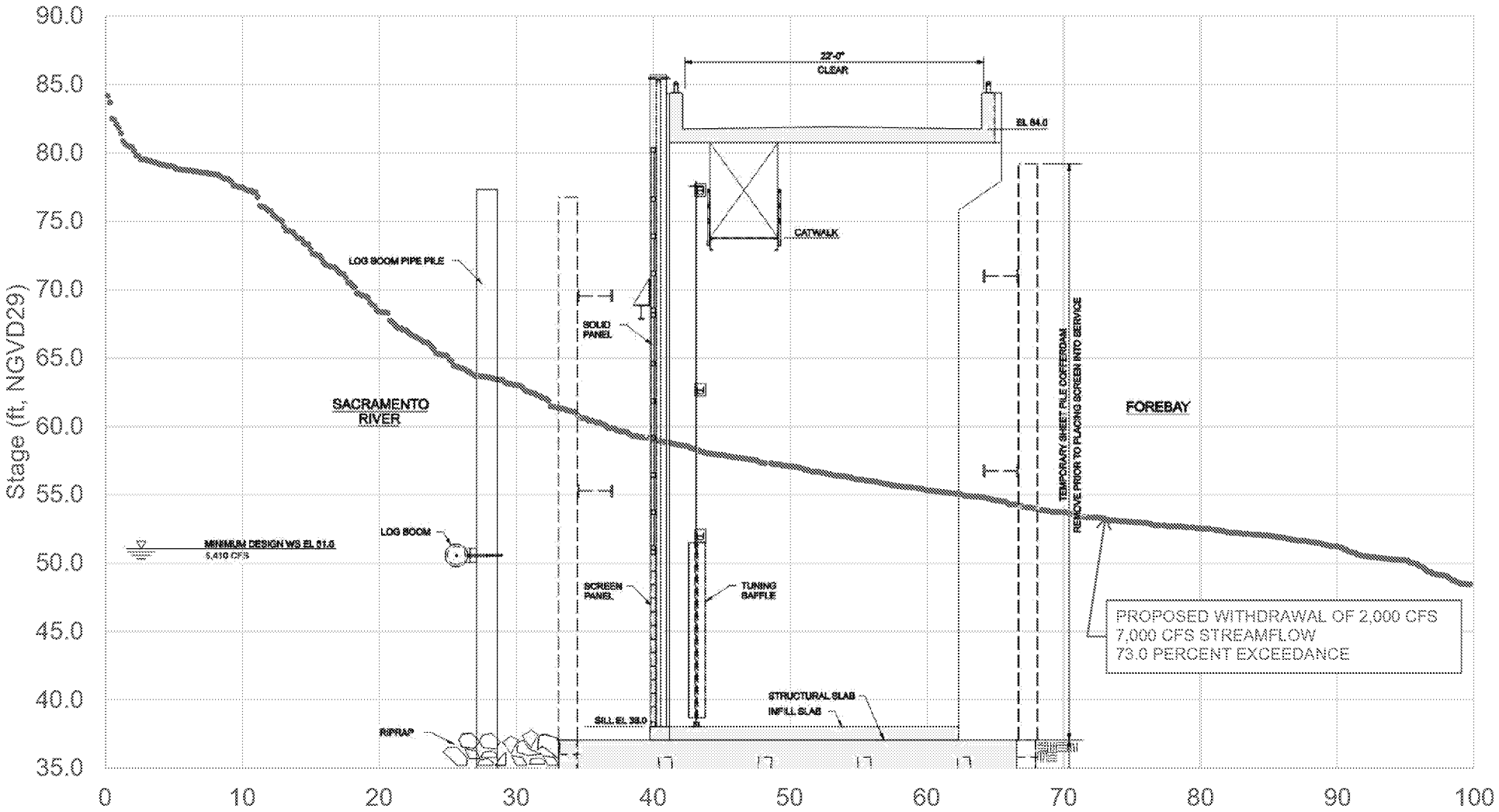
Average Daily Data from January 1998 - April 2019)

Stage Frequency Curve - February
Sacramento River at Butte City, CA



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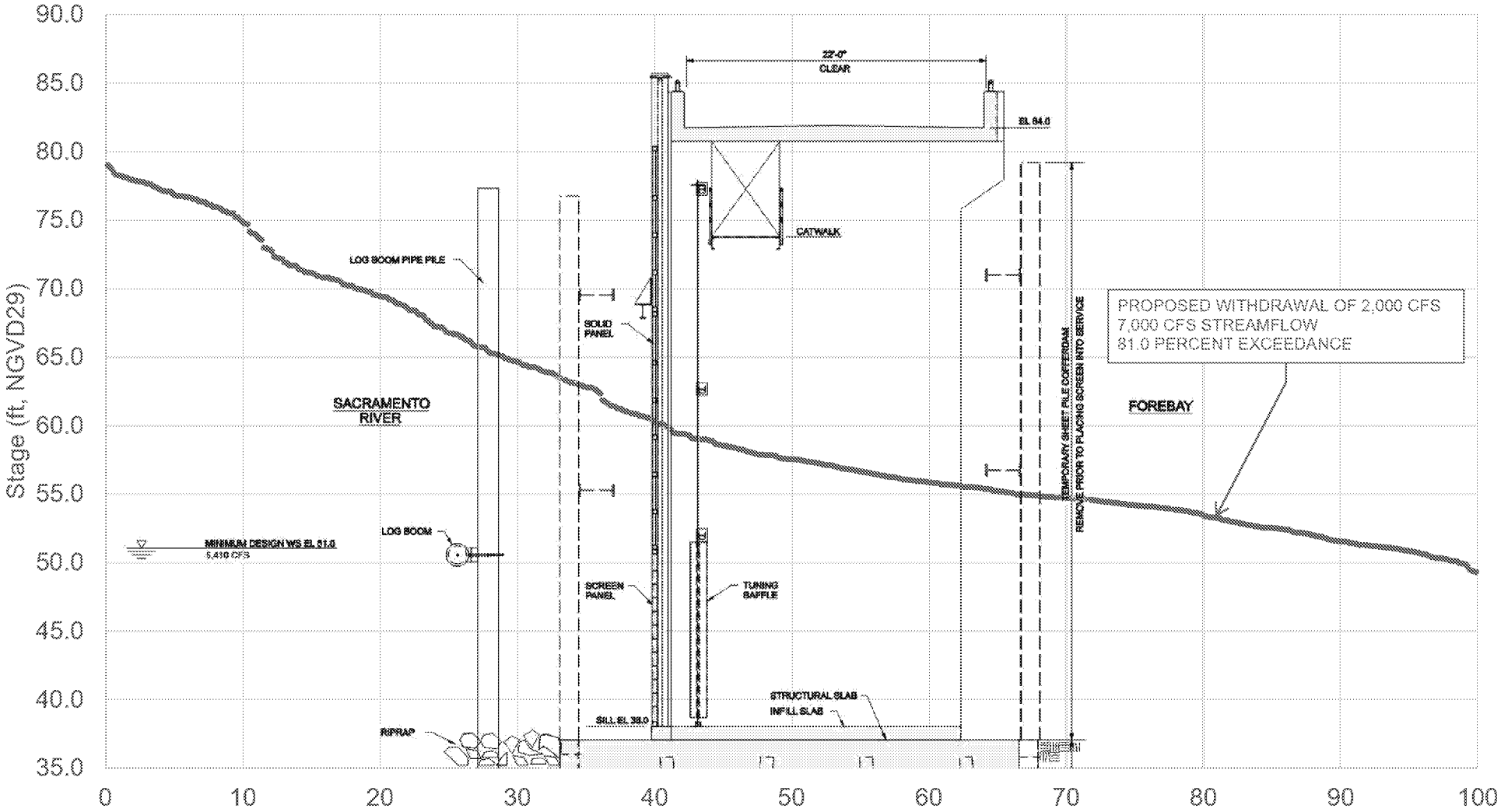
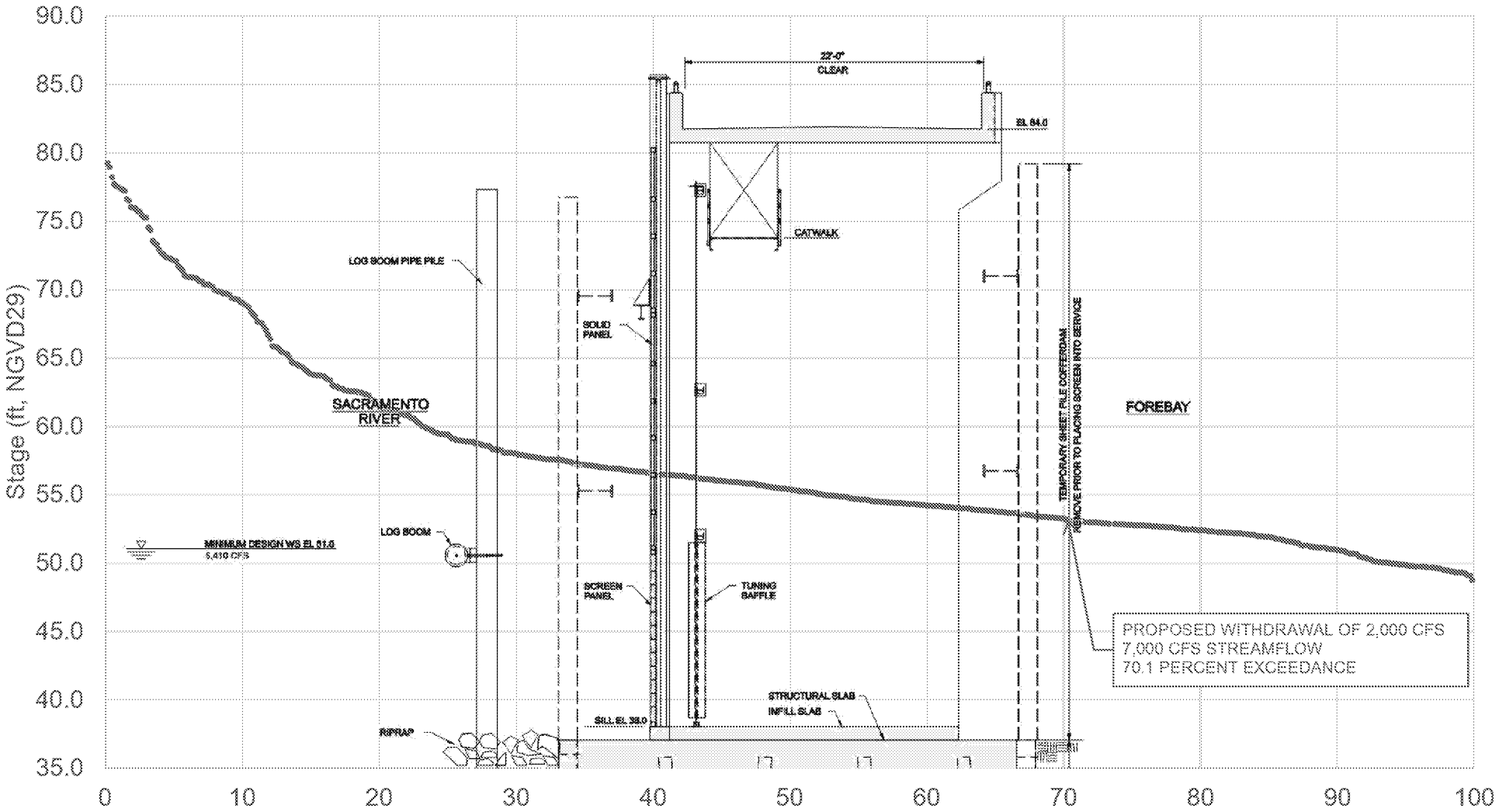
Stage Frequency Curve - March
Sacramento River at Butte City, CA



(CA Dept of Water Resources Station ID BTC: SACRAMENTO RIVER AT BUTTE CITY;
Average Daily Data from January 1998 - April 2019)

Stage Frequency Curve - April
Sacramento River at Butte City, CA



(CA Dept of Water Resources Station ID BTC: SACRAMENTO RIVER AT BUTTE CITY;
Average Daily Data from January 1998 - April 2019)

Agenda Item 2.3
Federal Legislative/Government Affairs Priorities

Sites Reservoir Committee
May 21, 2020

Sites

Agenda Item 2.3 - Federal Legislative/Government Affairs Priorities

Staff has been working with the Authority Ad Hoc Legislative & Outreach Committee to identify near-term (2020) Federal legislative and government affairs priorities

- Ensure that legislative/government affairs activities better align with key project milestones, overall project schedule and available resources
- Responsive to the recommendations outlined in the Organizational Assessment to prepare an analysis and staff recommendation on federal funding pursuits

Effort focused on identifying near-team priorities associated with Federal Operational Participation and Federal Funding

Any adjustment to the priorities would be brought back to the Reservoir Committee and Authority Board before being incorporated and updates will be project on significant progress

A similar effort is planned to identify our State Legislative/Government Affairs priorities

Sites

Agenda Item 2.3 - Federal Legislative/Government Affairs Priorities

Federal Operational Participation Priorities

- Final completion of Reclamation's Feasibility Report and Secretarial determination of feasibility by December 31, 2020
  - Reconcile the alternative included in the Feasibility Report with the Authority's VP7 alternative
  - Finalize level of federal participation/investment in the project
- Pursue development of a CVP Coordination Operations Plan – with term sheet where parties agree on the key provisions by July 2021
- Coordination with Reclamation on the development of the Authority's Water Rights Application – submittal of the Authority water rights application by June 2022
- Continuing partnership with Reclamation as the NEPA lead agency in developing the Environmental Impact Statement (EIS)
  - Completion of recirculated Draft EIS no later that July 2021 in coordination with the Authority's EIR
  - Completion of the Record of Decision by May 2022

Sites

Agenda Item 2.3 - Federal Legislative/Government Affairs Priorities

Federal Funding

- WIFA
  - Begin groundwork for the submittal of a $1.1 billion WIFIA loan application by June 2021
  - Continue to track the development of the RIFIA program and the Army Corp of Engineers WIFIA program and pursue funding if available
- WIIN ACT
  - Secure the $6 million appropriated to the project in the 2019 budget deal and finalize the Federal Financial Assistance Agreement to access the funds
  - Pursue and secure FY2021 WIIN Act funding (current budget cycle) and begin groundwork for a FY2022 WIIN Act Request for preconstruction activities
  - Begin groundwork for a WINN Act construction funding request – pending Reclamation's investment decision
- Federal Stimulus & Other Funding
  - Support development and secure funding from potential COVID19 related infrastructure stimulus package that align with early project work
  - Track and pursue opportunities for appropriations/grants for related project facilities – roads/bridges, flood control, rural broadband, infrastructure planning, etc.

Sites

Agenda Item 2.3 - Federal Legislative/Government Affairs Priorities

Other Administrative Priorities

- Permitting
  - Support consultation with federal agencies in securing federal permits – UFFWS Biological Opinion, NMFS Biological Opinion, National Historic Preservation Act Section 106 Programmatic Agreement
- Public Outreach & Communications
  - Support Reclamation in the public affairs staff with the roll-out of the Feasibility Report
  - Coordinate and support Reclamation on any public outreach/involvement activities associated with a recirculated EIS
  - Coordinate and support Reclamation with outreach and engagement with tribes and other stakeholder groups
- Real Estate
  - Coordination with appropriate federal agencies to secure access to federal lands for the purposes of conducting environmental, engineering, and geotechnical field studies identified in the work plan

Sites

Questions

Sites

From: Williams, Nicole [Nicole.Williams@icf.com]
Sent: 5/21/2020 8:57:25 AM
To: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
CC: Briard, Monique [Monique.Briard@icf.com]; Alicia Forsythe [aforsythe@sitesproject.org]; Linda Fisher (linda.fisher@hdrinc.com) [linda.fisher@hdrinc.com]
Subject: RE: WISP application

Helpful. Thank you Laurie.

Cheers, Nicole

NICOLE L. WILLIAMS
Senior Environmental Planner
ICF
o 916.231.9614
icf.com

From: Laurie Warner Herson <laurie.warner.herson@phenixenv.com>
Sent: Thursday, May 21, 2020 8:56 AM
To: Williams, Nicole <Nicole.Williams@icf.com>
Cc: Briard, Monique <Monique.Briard@icf.com>; Alicia Forsythe <aforsythe@sitesproject.org>; Linda Fisher (linda.fisher@hdrinc.com) <linda.fisher@hdrinc.com>
Subject: WISP application

Hi Nicole,

I assume ICF has copies but I have made the pdf files for the WISP application easier to find on SharePoint: https://sitesreservoirproject.sharepoint.com/:f:/r/EnvPlanning/Background%20Documents/WISP?csf=1&web=1&e=Z2t2wz

I've also attached copies of the flood control and recreation benefits attachments to this email. Flood damage reduction will need to be reevaluated for the new alternatives to determine differences. Regarding recreation, the Authority may need to consider elimination of one of the recreation areas (maybe Peninsula Hills) with Alternative 2, based on reservoir size and relative costs. I think it could be a topic at the next PD meeting. During the meeting yesterday Jeff sent me a copy of the Recreation Appendix from Reclamation's feasibility report. It is here: https://sitesreservoirproject.sharepoint.com/:w:/r/EnvPlanning/Background%20Documents/2020%20Reclamation%20Feasibility/AppendixE_Recreation.docx?d=w0f734ac5d4e041a98d09afa81038d4c6&csf=1&web=1&e=rsqslA

It will be interesting to see what feedback we get from the team next week.

Thanks,

Laurie

Laurie Warner Herson
Principal/Owner

Phenix

Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/21/2020 3:02:26 PM
To: Alicia Forsythe [aforsythe@sitesproject.org]; Kevin Spesert [kspesert@sitesproject.org]
Subject: Cultural Resources - Approach to meet CEQA requirements

Hi Ali,

We will be having a meeting soon with ICF to discuss how to prepare the CEQA cultural resources analysis for the EIR/EIS with limited access. In discussions with Kevin regarding this meeting and potential access/ROE, we thought it would be good to have an internal discussion with you before we meet with ICF.

As you know, ICF's EIR/EIS work plan includes the following:

Extensive cultural research and field surveys will be conducted to address data gaps (see memo for more details); therefore, chapter will require extensive updating

- New research and data collection
- Complete archaeological resources identification (boundary verification, current condition) and prepare testing plans for evaluation for previously identified archaeological resources
- Conduct archaeological and built resources surveys of unsurveyed project areas to identify and evaluate all cultural resources in the new project area.
- Conduct sensitivity analysis for buried sites
- Bring previous resource evaluations up to current standards, potentially including re-classification of resources

Legal defensibility is key, in an ideal world we would be able to update prior surveys and revisit known archaeological sites as well as doing targeted recon of new areas. However, this project is not unlike other large-scale projects where access is restricted and I would like to encourage ICF to use a similar approach. There is CEQA case law regarding deferral of the identification of historic properties but there are also accepted approaches, including assumed significance that minimizes invasive activities such as archaeological testing. This is a CEQA defensibility issue vs. Section 106 – under which a Programmatic Agreement will be appropriate.

Kevin is out next week but has offered to have a quick call with us when you are available. The meeting with ICF has been pushed to the first week of June due to Kevin's schedule so we have some time for the internal discussion. Let me know what you think and whether there is an window when you would be available to discuss this next week.

Thanks,

Laurie

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

From: Jerry Brown [jbrown@sitesproject.org]
Sent: 5/26/2020 8:22:17 AM
To: Marcia Kivett [MKivett@sitesproject.org]
Subject: FW: Enviro water accounting

???? Please handle.

On 5/26/20, 8:04 AM, "Thad Bettner" <tbettner@gcid.net> wrote:

Sounds good, are we scheduled yet?

Thaddeus L Bettner PE, General Manager
Glenn-Colusa Irrigation District
PO Box 150
Willows, CA 95988
530.934.8881 (office)
530.588.3450 (cell)

-----Original Message-----
From: Jerry Brown [mailto:jbrown@sitesproject.org]
Sent: Sunday, May 24, 2020 5:55 PM
To: 'Fritz Durst'; Thad Bettner
Subject: Re: Enviro water accounting

FYI - I was able to find some historical information that I'd like to talk about with you at our next chairs mtg. I think the material illustrates the complexities of evaluating "environmental water use" over time. It also highlights some things that will matter to our project that we will need to address. I think sitting down with the PPIC folks would be useful, but before we do that I want to talk to you both about this. I need to understand the historical Sac Valley water user perspective.

On 5/22/20, 2:44 PM, "Jerry Brown" <jbrown@sitesproject.org> wrote:

Hi all - I'm not aware of any "unbiased" report cards on past environmental water deliveries, but I do believe the state of the sensitive species has been degrading for multiple reasons. The system is too complex and variable to discern what's the single cause of the degradation. Some wish to believe there is really only one perpetrator and that's exports, which I personally disagree with. It's the easiest knob to turn but does not always have the biggest impact or produce the desired results.

I believe what makes Sites different for the environment is that it is an asset with flexibility. Assuming Sites accepts the Prop 1 money, O&M for the environmental benefit will be CDFW's charge. My view is that the Sites asset needs to be managed in coordination with all of the other efforts underway to achieve optimum results (ie VAs, water transfers, floodplain restorations, river habitat improvements, other P1 storage project env benefits, etc). If we can cooperatively govern and manage these assets with CDFW, I'm confident we can achieve better results than in the past. In the model of the past, CDFW did not own anything which left them with the regulatory hammer as the only means to meet their goals.

As a sidenote, Water users have a serious interest in making all of the storage projects successful for the environment because the public that voted for Prop 1 expect results and if we fail the public will not give us more money that we need for more improvements. I do not buy the argument that the public has short memories. Believe me, they wil be reminded of past failures and it will be a black eye for any water user wanting public money.

David and I are in the process of setting up an NCWA Managers Group in early June to create a framework for a management and governance structure that would be suitable from a water users perspective. The next steps after that are to engage with NGO's that signaled a willingness to explore this possibility. The BHAG would be to present a jointly supported framework to CDFW by the end of the year and this could be incorporated into a Sites operating permit as the P1 required contract with the state.

Jerry

On 5/20/20, 9:48 PM, "David Guy" <dguy@norcalwater.org> wrote:

Fritz and all - good evening. I am attaching a document Todd pulled together with the various bird organizations that describes the refuge needs. As you recall from the evening at River Garden Farms with the various NGOs, we all presented the freshwater ecosystem budget elements for the Sacramento Valley, including the attached document Todd presented that evening on the Pacific Flyway. There are many reasons these organizations have little faith in securing environmental water supplies (including they

have to retain a cause to fundraise around). This is difficult to capture in an email, but would be worth a more detailed call to get everyone's different insights if you all think this would be helpful. This is truly an area that we are and will continue to help them and Sites, with both the $900M and the Prop 1 contracting mechanism, is a great opportunity. I look forward to all your thoughts.....

David J. Guy
President
Northern California Water Association
(916) 442-8333

-----Original Message-----
From: Fritz Durst <fritz.durst@gmail.com>
Sent: Wednesday, May 20, 2020 8:33 PM
To: David Guy <dguy@norcalwater.org>; Thad Bettner <tbettner@gcid.net>; Lewis Bair <LBair@rd108.org>
Cc: Jerry Brown <jbrown@sitesproject.org>
Subject: Enviro water accounting

Gents:

Jerry and I have had several informational calls with wildlife groups informing them of the most recent changes in the Sites project.

There has been a re-occuring concern that the environmental water from WSIP will not be delivered. They have all sited water allocations for the environment that were never delivered by the BOR and believe that our proposed water will be just the same. My question to you is: What has been promised/mandated and what has been delivered? Jerry and I are trying hard to convince folks that this time will be different, but they believe the track record indicates the opposite will happen.

I'm fairly naive as to all of the court cases and promises and to the actual deliveries. I'd like to "clear the air" about this matter and if they have been given empty promises then we need to figure out how to build assurances into our contract with CDFW for Sites water. Do we ask a somewhat neutral body such as PPIC to investigate the matter? If they indicate empty promises then we can use Sites as an example of a new way forward and spring-board from the issue.

I know you guys get to hear the belly-aching from both sides of the matter and I hope that you can set me straight as I continue to try and highlight the environmental benefits of the project.

Thanks,
Fritz

From: Laurie Warner Herson [laurie.warner.herson@phenixenv.com]
Sent: 5/26/2020 3:32:00 PM
To: Jerry Brown [jbrown@sitesproject.org]
CC: Alicia Forsythe [aforsythe@sitesproject.org]
Subject: FW: Sites Draft Environmental Feasibility Summary Report
Attachments: ENV-REP-Environmental Feasibility Summary Report Draft_5_11_2020.docx

Hi Jerry,

Attached is the draft report that I sent to Reclamation – Ali provided QA/QC review before the draft went to Ryan. We sent it as a draft since we had not seen any of the revised chapters of the Feasibility Report and wanted Reclamation input and the ability, if possible, to make this report consistent with the Feasibility Report.

Thanks,

Laurie

From: Laurie Warner Herson
Sent: Monday, May 11, 2020 2:29 PM
To: Davis, Ryan A <rdavis@usbr.gov>
Cc: Heydinger, Erin (Erin.Heydinger@hdrinc.com) <Erin.Heydinger@hdrinc.com>
Subject: Sites Draft Environmental Feasibility Summary Report

Hi Ryan,

I have attached our draft Environmental Feasibility Summary Report for your review. We are waiting to finalize the report based on your input. It is basically a summary of the EIR/EIS process through last fall, before the Authority started the Value Planning process.

Let me know if you have any questions and/or comments.

Thank you,

Laurie

Laurie Warner Herson
Principal/Owner

Phenix
Environmental Planning

916.201.3935
laurie.warner.herson@phenixenv.com
State of California Small Business (#1796182)
Supplier Clearinghouse Women Business Enterprise (#16000323)

http://phenixenv.com/

Sites
Program Management Team

Sites Reservoir Project Environmental Feasibility Summary Report

Interim Progress Report on the EIR/EIS

May 2020

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Contents

Tables

Figures

Executive Summary

The Sites Project Authority (Authority) is pursuing development of the Sites Reservoir Project (Project), an up to 1.8 million acre feet (MAF), above-ground surface storage reservoir offstream of the Sacramento River. The Project, originally known and referenced as the North-of-Delta Offstream Storage (NODOS) Project, is located in Colusa and Glenn counties, north of the town of Maxwell, California. In addition to providing other important water storage and operational benefits, the Project is being proposed to greatly increase the reliability of water supplies for environmental, agricultural and urban uses. To date, Congress has appropriated approximately $10 million in Water Infrastructure Improvements for the Nation (WIIN) Act funding to the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) for Sites Reservoir/NODOS.

The Authority and Reclamation have prepared the Sites Reservoir Project Draft Environmental Impact Report/Environmental Impact Statement, hereafter referred to as the Draft EIR/EIR, to address the potential environmental effects of the proposed Project. The Draft EIR/EIS was prepared in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Reclamation has also prepared the Draft North-of-the-Delta Offstream Storage Investigation Feasibility Report. Both were released for public comment in August 2017. The Draft Feasibility Report and the Draft EIR/EIS will be used by the Department of the Interior and the United States Congress to determine the Federal interest in the Project.

This report is intended to provide a summary of progress to date on the EIR/EIS and support Reclamation in the process of determining the Project's environmental feasibility. Although the CEQA/NEPA process is ongoing and minor changes to project facilities may necessitate further study, this report identifies the substantive comments received on the Draft EIR/EIS and the approach to responding to those comments.

Efforts to complete the joint EIR/EIS for the Project are ongoing. Initial review has indicated that all of the comments on the Draft EIR/EIS can be responded to within the context of a Final EIR/EIS. Responses to comments drafted so far demonstrate adequacy of the Draft EIR/EIS impact analyses and findings. Ongoing meetings with regulatory agencies including the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, and other stakeholders will facilitate the completion of an EIR/EIS that can support future permit approvals and ensure adequate opportunity for stakeholder input.

1. Introduction

The Sites Project Authority (Authority) is pursuing development of the Sites Reservoir Project (Project), an up to 1.8 million acre feet (MAF), above-ground surface storage reservoir offstream of the Sacramento River. The Project, originally known and also referenced as the North-of-Delta Offstream Storage (NODOS) Project, is located in Colusa and Glenn counties, approximately 10 miles west of the town of Maxwell, California. In addition to providing other important water storage and operational benefits, the Project is being proposed to greatly increase the reliability of water supplies for environmental, agricultural and urban uses. To date, Congress has appropriated approximately $10 million in Water Infrastructure Improvements for the Nation (WIIN) Act funding to the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) for Sites Reservoir.

The Authority and Reclamation have prepared the *Sites Reservoir Project Draft Environmental Impact Report (EIR) / Environmental Impact Statement (EIS)*[1], hereafter referred to as the Draft EIR/EIS (Sites Project Authority and Reclamation 2017), to address the potential environmental effects of the proposed Project. The Draft EIR/EIS was prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Reclamation has also prepared the *Draft North-of-the-Delta Offstream Storage Investigation Feasibility Report*[2] (Draft Feasibility Report). Both were released for public comment in August 2017. Reclamation's Feasibility Report and the Draft EIR/EIS will be used by the Department of the Interior and the United States Congress to determine the Federal interest in the Project.

1.1 Purpose of this Report

This report is intended to provide a summary of progress to date on the EIR/EIS and support Reclamation in the process of determining the Project's environmental feasibility. Although the CEQA/NEPA process is ongoing and minor changes to project facilities may necessitate further study, this report identifies the substantive comments received on the Draft EIR/EIS and the approach to responding to those comments.

The following sections rely primarily on information provided in the Draft EIR/EIS and the Draft Feasibility Report. This report also provides a summary of comments received during the public review of the Draft EIR/EIS and the approach to responding to those comments.

1.2 Background

Multiple alternatives related to offstream storage reservoirs located north of the Sacramento-San Joaquin Delta (Delta) have been developed and evaluated since 1930 in studies completed by the California Department of Water Resources (DWR) and local agencies. The range of alternatives previously evaluated included reservoirs that have been constructed (e.g., Black Butte Reservoir on Stony Creek) and numerous reservoirs that have not been constructed, including the following:

- Sites Reservoir (Stone Corral and Funks creeks)
  - 1957 DWR Bulletin No. 3 (referred to as Golden Gate Reservoir)
  - 1964 DWR Bulletin No. 9 (several small reservoirs on Stone Corral and Funks creeks)
- Newville Reservoir (North Fork Stony Creek)
  - 1957 DWR Bulletin No. 3 (referred to as Golden Gate Reservoir)

[1] Available at: https://sitesproject.org/resources/environmental-review/draft-environmental-impact-report-environmental-impact-statement/
[2] Available at: https://sitesproject.org/resources/feasibilty-report/

- 1978 DWR Bulletin No. 76

- Colusa Reservoir (Willow, Logan, Hunters, Funks, and Stone Corral creeks)
  - 1978 DWR Bulletin No. 76
- Glenn Reservoir (Stony Creek)
  - 1978 DWR Bulletin No. 76
- Dippingvat and Schoenfield Reservoirs (on Red Bank Creek)
  - 1957 DWR Bulletin No. 3 (referred to as Golden Gate Reservoir)
- Paskenta Reservoir (Thomes Creek)
  - 1957 DWR Bulletin No. 3 (referred to as Golden Gate Reservoir)
- Dutch Gulch Reservoir (Cottonwood Creek)
  - 1978 DWR Bulletin No. 76
- Tehama Reservoir (Cottonwood Creek)
  - 1978 DWR Bulletin No. 76

As currently proposed, the Sites Reservoir project is a joint investigation between the Authority and Reclamation. Originally known as the North-of-Delta Offstream Storage (NODOS) investigation, the Project is one of five surface water storage studies recommended in the 2000 CALFED Bay-Delta Program, Programmatic Record of Decision[3] (ROD). The CALFED EIR/EIS evaluated potential offstream surface water storage projects that could increase surface water storage capacity in the Sacramento River Basin as one of several actions to improve water supply reliability, renewable power integration, Delta water quality, and critical fish populations within the Bay-Delta watersheds.

The CALFED Program began in 1995 after several federal, State, and local agencies signed the Bay-Delta Framework Agreement in December 1994. The CALFED Program initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin valleys as part of a long-term comprehensive plan to restore the ecological health and improve water management to protect beneficial uses in the Delta and the Delta watershed. The CALFED Program identified the need for up to 3.0 MAF of additional surface water and/or groundwater storage in the Sacramento Valley, 2.0 MAF additional surface water and/or groundwater storage in or near the Delta, and 0.5 MAF surface water storage and 0.5 MAF groundwater storage in the San Joaquin Valley to meet environmental and water supply needs.

During preparation of the CALFED EIR/EIS, the CALFED Program initially identified 52 potential surface storage locations and retained 12 reservoir locations statewide for further study. The screening criteria indicated a preference for offstream over onstream surface water storage to avoid redirected impacts on aquatic species in the primary tributaries of the Delta. A summary of the CALFED Program Inventory of Potential Surface Water Storage Sites and the results of the screening of the range of alternatives to define those alternatives evaluated in detail in the CALFED EIR/EIS are presented in the Draft EIR/EIS (Appendix 2A, Development of Alternatives).

Following the CALFED ROD, DWR and Reclamation initiated development of an EIR/EIS and continued to analyze potential locations for a reservoir on the western side of the Sacramento Valley as part of a DWR Surface Water Storage Investigation[4]. Alternatives previously considered for new surface water reservoirs on the western side of the Sacramento Valley and alternatives identified during the 2001–2002 EIR/EIS scoping

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[3] Available at: https://www.ccwater.com/DocumentCenter/View/3213/CALFED-Programmatic-ROD--Aug-28-2000?bidId=
[4] Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/RMS/2016/12_Surface_Storage_CALFED_July2016.pdf

process (the 2001-2002 Scoping Report is included as Appendix 36B of the Draft EIR/EIS) were considered. As described in Appendix 2A of the Draft EIR/IS, an initial screening process was conducted for the west Sacramento Valley reservoir alternatives evaluated in detail in the Surface Water Storage Investigations reports. The results of the analysis identified the following four alternatives:

- Red Bank Alternative (Dippingvat and Schoenfield Reservoir)
- Newville Reservoir Alternative
- Colusa Reservoir Alternative
- Sites Reservoir Alternative (Project)

The four west Sacramento Valley reservoir alternatives listed above (Red Bank, Newville, Colusa, and Sites reservoirs) were compared to screening criteria in a three-step screening process based on legal considerations under CEQA and NEPA, including the ability to meet the project objectives and purpose and need statement, avoid or reduce adverse effects, and/or provide benefits. The result of this screening process was the selection of the Sites Reservoir location as the alternative most able to meet the project objectives and purpose and need while minimizing impacts and providing the greatest potential benefits.

Additionally, a variety of water sources (and associated conveyance options) including diversions from the Colusa Basin Drain, the Sacramento River, and local tributaries including Stony Creek were also evaluated. Potential conveyance systems from these sources to the proposed Sites Reservoir included the existing and/or enlarged Tehama-Colusa and Glenn-Colusa Irrigation District (GCID) Main canals, and/or a new conveyance facility from the Sacramento River near Moulton Weir and/or from the Colusa Basin Drain to the existing Funks Reservoir on the Tehama-Colusa Canal. Conveyance from Stony Creek Canyon was also considered. All conveyance alternatives required enlargement of the existing Funks Reservoir to provide adequate storage capacity for pumping of water into Sites Reservoir and hydropower generation.

2. Proposed Project

The Sites Reservoir Project, as currently analyzed in the Draft EIR/EIS, would consist of a new offstream surface storage reservoir (Sites Reservoir) of up to 1.8 MAF with two main dams, up to nine saddle dams, and up to five recreation areas. The Sites Reservoir would be filled by the existing Tehama-Colusa Canal Authority (TCCA) and GCID Sacramento River diversions/canals (included in all alternatives) and a proposed new inlet/outlet structure and pipeline (included in the majority of alternatives). The pipeline would allow the diversion of excess Sacramento River flows for most alternatives and the discharge of water under all alternatives. Water conveyance between the reservoir and the canals and pipeline would be facilitated by two new regulating reservoirs. Pumping/generating plants would also be included as part of most alternatives. A new overhead power line would connect the pumping/generating plants and their associated electrical switchyards to an existing overhead power line in the Sites Reservoir Project area. New roads would be constructed to provide access to the proposed Sites Reservoir Project facilities, a new bridge would be constructed to provide access over the proposed reservoir, and some existing roads would be relocated or improved. The Sites Reservoir Project would require modifications to the Tehama-Colusa Canal and Funks Reservoir.

Project facilities would primarily be located in Colusa and Glenn counties, approximately 10 miles west of the town of Maxwell, California (see Figure 1); however, proposed minor modifications within the existing diversion facility would also need to occur at the existing Red Bluff Pumping Plant in Tehama County, California (see Figure 2). A more complete description of the Sites Reservoir Project can be found in Draft EIR/EIS Chapter 3, Description of the Sites Reservoir Project Alternatives, and is outlined below.

2.1 Alternatives Included the Draft EIR/EIS and Feasibility Report

Multiple alternatives related to north-of-the-Delta offstream storage reservoirs have been developed and evaluated since 1930 in numerous studies completed by DWR and local agencies, as described above. The range of alternatives for the Project was developed through the consideration of reservoir alternatives accounting for:

- The completion of previous analyses (including the CALFED EIR/EIS and Integrated Surface Storage Investigation studies);
- Comments received during the scoping process for the Draft EIR/EIS; and,
- Screening the range of feasible alternatives by comparing them with the Project objectives and purpose and need statement and evaluating those alternatives that have the potential to avoid or substantially lessen one or more of the Project's significant impacts.

Four surface water reservoir size and conveyance options (in addition to a "sub-alternative" that would not include power generation at the Delevan release structure) were retained for detailed review in the EIR/EIS. All alternatives would include a Sites Reservoir that would be filled using existing Sacramento River diversion facilities and a proposed Delevan Pipeline on the Sacramento River to allow for release of flows into the Sacramento River. All but one alternative would also use the proposed Delevan Pipeline to divert Sacramento River water. The Project would divert and store water appropriated by the Authority pursuant to State law within the Sacramento River watershed when available. This water could then be released for beneficial uses to meet Project objectives in compliance with various operating agreements, relevant permits, and approvals.

The proposed operations vary between Alternatives A, B, C, C1, and those included in Alternative D. The final operations of the Project are intended to be flexible and expected to vary from year to year in response to compliance with permit conditions and the needs of the California water supply system to provide high-quality water to enhance the environment, the economy, and quality of life for Californians. The specific operational parameters included in the Draft EIR/EIS were identified to support/evaluate the upper bound of potential impacts. The operations evaluated for Alternative D were based on operations included in the application to the California Water Commission for the Water Storage Investment Program (WSIP). The operations included in that application were specifically selected to respond to the requirements of that program and its evaluation criteria.

Associated facilities for all alternatives would be similar but would vary in location and size as further described in Chapter 3 of the Draft EIR/EIS and as outlined below:

- Alternative A – 1.3-MAF Sites Reservoir with Delevan Pipeline. Alternative A would include a 1.3 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing Tehama-Colusa and GCID Main canals, and a new Delevan Pipeline (2,000-cubic-foot-per-second [cfs] diversion/1,500-cfs release). This alternative would also include new hydropower facilities.
- Alternative B – 1.8-MAF Sites Reservoir with Release-only Delevan Pipeline. Alternative B would include a 1.8-MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing Tehama-Colusa and GCID Main canals, and a new release-only Delevan Pipeline (1,500-cfs release). This alternative would also include new hydropower facilities.
- Alternative C – 1.8-MAF Sites Reservoir with Delevan Pipeline (and Subalternative C1). Alternative C would include a 1.8 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing Tehama-Colusa and GCID Main canals, and a new Delevan Pipeline (2,000 cfs diversion/1,500-cfs release). This alternative would also include new hydropower facilities. Subalternative C1 is identical to Alternative C, except that it would not include any hydropower-generating facilities.

- Alternative D – 1.8-MAF Sites Reservoir with Delevan Pipeline. Alternative D would include a 1.8 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing Tehama-Colusa and GCID Main canals, and a new Delevan Pipeline (2,000-cfs diversion/1,500-cfs release). This alternative would include more Sites Reservoir water supply designated for Sacramento Valley agricultural water users than the other alternatives, alternative road relocations to the other alternatives, and an alternate alignment of a proposed overhead power line. This alternative would also include new hydropower facilities.

Key Project features include:

- Sites Reservoir Complex: Sites Reservoir Inundation Area, Golden Gate Dam, Sites Dam, Saddle Dams, Recreation Areas, South Bridge and Roads, Sites Pumping/Generating Plant and Electrical Switchyard, Sites Reservoir Inlet/Outlet Structure and associated facilities, and Maintenance Yard
- Holthouse Reservoir Complex: Holthouse Reservoir and Dam, breached existing Funks Dam, existing Funks Reservoir Dredging, Holthouse Spillway and Stilling Basin, Tehama-Colusa Canal Discharge Dissipater, Tehama-Colusa Canal Bypass Pipeline, and Holthouse to Tehama-Colusa Canal Pipeline
- Terminal Regulating Reservoir (TRR) Complex: GCID Main Canal Modifications, GCID Main Canal Connection, TRR, TRR Pumping/Generating Plant and Electrical Switchyard, and TRR Pipeline and Road
- Overhead Power Lines and Substations: Substations, Electrical Connections for Sites, TRR and Delevan Pumping/Generating Plants
- Delevan Pipeline Complex: Delevan Pipeline Intake/Discharge Facilities, Forebay, Pumping/Generating Plant, Electrical Switchyard, Maintenance and Electrical Buildings, Delevan Pipeline
- Project Buffer: Total land acquired for the Project beyond the facility footprints, out to the nearest existing parcel boundaries; applies to Sites Reservoir Complex, Holthouse Reservoir Complex, TRR Complex, and Delevan Complex (excluding the pipelines)

Table 1 provides a summary list of proposed Project facilities for each action alternative. Key features are also illustrated in Figure 3.

2.1.1 Environmental Commitments Included as Part of the Project

The following standardized environmental measures, plans, protocols, and best management practices would be incorporated into any alternative for construction as well as operations/maintenance activities, as appropriate:

- Worker Environmental Awareness Program
- Environmental Site Assessment
- Construction Management Procedures
- Fire Safety and Suppression
- Construction Equipment, Truck, and Traffic Management
- Storm Water Pollution Prevention Plan, Erosion Control, Management, and Dewatering
- Compliance with the Requirements of Regional Water Quality Control Board Order No. 5-00-175
- Spill Prevention and Hazardous Materials Management
- Mosquito and Vector Control
- Groundwater/Dewatering Water Supply

- Visual/Aesthetic Design, Construction, and Operation Practices
- Emergency Action Plans (e.g., Sites Dam, Golden Gate Dam, Saddle Dams)

In addition, the Authority and Reclamation will coordinate during planning, engineering, design and construction, operation, and maintenance phases of the Project with applicable resource agencies.

3. Reclamation Feasibility Report

According to the Reclamation Manual Directive and Standards, feasibility studies support the formulation and evaluation of a range of alternative plans to meet established planning objectives and lead to the selection of a recommended plan or a recommendation to take no action, specifically:

> "A feasibility study requires detailed investigations, including collection and development of study-specific data, and communication and collaboration with the stakeholders to systematically formulate and evaluate a reasonable range of alternative solutions in order to recommend a plan to Congress for authorization and implementation."

The Draft Feasibility Study evaluates new offstream surface water storage north of the Delta. The investigation was developed consistent with the requirements of Section 4007 of the Water Infrastructure Improvements for the Nation [WIIN] Act (Public Law [P.L.] 114-612 [2016]). Section 4007 of the WIIN Act authorizes the Secretary of the Interior (Secretary) to participate in both federally owned (4007(b)) and state-led (4007(c)) storage projects. Pursuant to Section 4007(c)(2)(C) of the WIIN Act, the Secretary must find that a proportionate share of the project benefits are Federal benefits.

> "This Feasibility Report evaluates and proposes Federal Central Valley Project (CVP) Operational Flexibility and Coldwater for Anadromous Fish as Federal benefits and project purposes eligible for non-reimbursable Federal funding. Flood Damage Reduction and Recreation are Federal benefits cost-shared with the State. Incremental Level 4 refuge Water Supply and Delta Ecosystem are State-funded benefits. This investigation was developed consistent with the requirements of Section 4007 of the WIIN Act (P.L. 114-612 [2016]) and the 1983 United States Water Resources Council (WRC) Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs). This Feasibility Report was completed by the United States Department of the Interior, Bureau of Reclamation (Reclamation), the Sites Project Authority (Authority), and the California Department of Water Resources (DWR), in coordination with cooperating agencies, other resource agencies, Native American tribes, stakeholders, and the public."

The Congress granted initial study authorization in 2003 under Public Law (P.L.) 108-7, which states:

> "The Secretary of the Interior, in carrying out CALFED-related activities, may undertake feasibility studies for Sites Reservoir, Los Vaqueros Reservoir Enlargement, and Upper San Joaquin Storage projects. These storage studies should be pursued along with ongoing environmental and other projects in a balanced manner."

According to the Draft Feasibility Report, the alternatives:

> "…were formulated to achieve the primary objectives, as described below, and evaluated to assess their effectiveness in achieving these objectives. The alternatives are not formulated to maximize the secondary objectives, but opportunities to achieve them were included in the alternatives and evaluated.
>
> **Improve Water Supply (Primary Objective)**
>
> NODOS could provide increased water supply and improve the reliability of water deliveries for municipal, industrial, and agricultural uses, especially during drought conditions.

Provide CVP Operational Flexibility (Primary Objective)

The Project would provide additional water to relieve some of the existing operational constraints in the CVP system, and meet obligations under Federal law (including regulations). Utilization of operational flexibility would enhance the CVP's ability to meet CVP demands in an ever-changing environment. This would include providing environmental benefits to anadromous fish, refuges, and water quality, as well as restoration of CVP deliveries that have been lost due to regulatory changes. Releases for operational flexibility would improve CVP benefits.

Provide Incremental Level 4 Refuge Water Supply (Primary Objective)

NODOS could provide additional water that is needed to meet the Incremental Level 4 refuge water supply demands established in the Central Valley Project Improvement Act (P.L. 102-575, Title 34).

Improve the Survival of Anadromous Fish (Primary Objective)

NODOS could benefit anadromous fish (including endangered winter-run Chinook salmon) and other aquatic species by facilitating cooperative operations of existing reservoirs to improve temperatures and flows in the Sacramento, Feather, and American Rivers. Conserving higher storage levels in CVP reservoirs to be used for operational flexibility provides a distinct opportunity for benefits through preserving coldwater pools, and improves downstream water temperature management in below normal, dry, and critical water years.

Enhance Delta Ecosystem (Primary Objective)

NODOS could enhance the Delta ecosystem by providing water to convey food resources from the floodplain to the Delta, thereby improving the foodchain and quality of the Delta's estuarine habitat for use by Delta smelt and other species.

Provide Sustainable Hydropower Generation (Secondary Objective)

Equipping a NODOS reservoir with pumped storage capability supports the integration of other forms of renewable energy (e.g., wind and solar) into the power grid."

As stated in the Draft Feasibility Report:

- All alternatives (A, B, C, and D) would require cooperative operations with existing CVP and State Water Project (SWP) facilities to achieve the estimated physical improvements and monetized benefits. All alternatives were developed on the premise that there will be no negative impacts to the CVP, SWP, or their contractors. Avoiding these impacts includes, but is not limited to, no negative operational, financial, or compliance impacts to the CVP and SWP.
- All alternatives would provide water for water supply, Incremental Level 4 refuge water supply, and Delta environmental water quality. Each alternative also includes coldwater pool improvements and augmentation of flows to support fish migration through exchanges of Sites Reservoir water for water in existing reservoirs.
- Alternatives A, B, and C have similar operations that maximize deliveries to South Coast municipal and industrial (M&I) users and dedicate significant releases to the Delta for water quality improvements. Alternative D operations reduce deliveries to South Coast M&I users and releases for Delta water quality, but provide more water for coldwater pool improvements and distribute water deliveries more equally between Northern and Southern California.
- Reclamation has assumed that all alternatives would be locally-led projects, with the Authority leading the development, construction, and operations for the new facilities. The Tehama-Colusa Canal and Holthouse Reservoir (an expansion of the existing Funks Reservoir) would remain as part of the CVP system. Contracts would be required to store or convey water in Federal facilities (water would be

stored in CVP reservoirs for anadromous fish benefits). A similar agreement would be required for storage in SWP facilities. Principles of Operation would need to be established between Reclamation, DWR, and the Authority to implement the alternatives as described.

Studies to support the determination of technical, environmental, economic and financial feasibility are ongoing. While Alternative D was initially identified in the Draft Feasibility Report as the locally preferred project[5] ongoing refinement of project design and operational considerations may result in some modifications to the locally preferred project. It is anticipated at this time that Reclamation will finalize the Feasibility Report in late 2020; findings will likely be updated though a post-feasibility process.

4. Draft EIR/EIS

Reclamation, as the NEPA lead agency, and the Authority, as CEQA lead agency, have prepared a Draft EIR/EIS to address the potential effects of the proposed Project. The Draft EIR/EIS, released in August 2017, describes the environmental effects of the No-Action Alternative and four action alternatives and identifies feasible mitigation measures to avoid or minimize most of the project's environmental effects. However, based on the analysis in the Draft EIR/EIS, the Project would result in significant unavoidable adverse environmental effects to terrestrial biological resources (Golden Eagle), paleontological resources, land use, air quality, and greenhouse gases. The Project would also result in growth inducement.

4.1 Scoping

As noted above, the Project was formerly known as the NODOS Project. A Notice of Intent (NOI) to prepare an EIS under NEPA was published in the Federal Register (Volume 66, Number 218) on November 9, 2001. An initial Notice of Preparation (NOP) to prepare an EIR for the NODOS Project was issued by DWR, as the CEQA lead agency at that time, on November 5, 2001. After the formal scoping period concluded on February 8, 2002. Reclamation and DWR jointly completed the North-of-the-Delta Offstream Storage Investigation Scoping Report, included as Appendix 36B in the Draft EIR/EIS. The scoping report provided an overview of the written and verbal comments during initial scoping. The report summarized the public concerns, evaluated the magnitude of the concerns, and provided decision makers information on the suggested range of alternatives to be considered in the analyses and the EIR/EIS.

Since the original scoping in 2002, the Authority assumed the role of the CEQA lead agency in lieu of DWR and will be responsible for constructing, operating, and maintaining the Project. Due to this change in lead agency, the Authority issued a Supplemental NOP on February 2, 2017.

In compliance with NEPA and CEQA, Reclamation, DWR, and the Authority notified interested parties of the scoping periods and public scoping meetings through electronic and postal mailings, and through publication of the NOP and NOI. In November 2001, public notifications were also made through direct mailings to local landowners in and near the Sites and Newville reservoir alternative sites, and by advertisements in four local newspapers prior to the public meetings. In addition, a news release was placed on the DWR and Reclamation website home pages.

In January 2002, DWR and Reclamation conducted three scoping meetings (one meeting each in Sacramento, Maxwell, and Fresno, California) to seek public input and comments prior to the preparation of the EIR/EIS. In addition, DWR and Reclamation held a scoping meeting with the Native American tribes in Williams, California. At the scoping meetings and during the scoping comment period, the public was invited to submit written comments regarding the scope, content, and format of the environmental document by mail, fax, or email to representatives at DWR and Reclamation.

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[5] In a letter dated June 25, 2018, the Sites Project Authority requested that Reclamation "use Alternative D as the basis for implementing the project and for identifying the federal interest" and identified Alterative D as the Locally Preferred Project.

The Authority subsequently conducted two scoping meetings in February 2017 (one meeting in Sacramento and one meeting in Maxwell, California) to seek agency and public input and comments prior to the preparation of the EIR/EIS. At the scoping meetings and during the scoping comment period, the public was invited to submit written comments regarding the scope, content, and format of the environmental document by mail, fax, or email to representatives at the Authority.

In addition to the original Scoping Report, a Supplemental Scoping Report, prepared following the scoping meetings conducted in 2017, is included in the EIR/EIS as Appendix 36A. The Draft EIR/EIS analysis took into consideration all comments received during the original scoping period in 2001/2002 as well as the supplemental scoping period of February 2, 2017 through March 2, 2017, including public testimony received during meetings held during this timeframe.

4.2 Approach to the Analysis

The Draft EIR/EIS describes the Project, a feasible range of alternatives, environmental setting, along with potential direct and indirect impacts that could result from implementation of each of the Projects alternatives, and identifies mitigation measures to avoid and/or minimize potentially significant impacts, as applicable. Three study areas were developed to evaluate potential Project impacts: the Extended, Secondary, and Primary study areas, which are summarized in the Draft EIR/EIS and provided below.

Extended Study Area

The Extended Study Area, consisting of the CVP and SWP service areas, is the largest and most diverse of the three study areas in terms of size, geography, land use, and habitat conditions. It is anticipated to experience minor effects with respect to changed operations and conditions, given no construction will occur in this area. As described in the various resource area chapters, impacts in this area would be limited to generally minor reservoir-level fluctuations and changes in releases across the CVP and SWP system. As such, it has been described and evaluated in the resource chapters of this document (Chapters 6 through 31) at the lowest levels of detail. Changes in conditions at the CVP and SWP facilities located south of the Delta (including the San Luis Reservoir) are considered within the Extended Study Area. Changes within the CVP and SWP service areas, resulting only from changes in CVP and/or SWP water deliveries, are also considered within the Extended Study Area. The CVP and SWP service areas included in the Extended Study Area are shown on Figure 1-3 in Chapter 1 Introduction.

Secondary Study Area

The Secondary Study Area is smaller than the Extended Study Area and consists of the majority of CVP and SWP facilities that could be affected by potential operations associated with certain Project alternatives; this study area has been described and evaluated in the resource chapters in more detail than for the Extended Study Area. The Secondary Study Area consists of the geographical area with CVP and SWP facilities located north of the Delta and in the Delta, and the streams downstream of the CVP and SWP reservoirs that could experience water surface elevation fluctuations or stream flow changes. Those facilities are located within the following 18 counties: Alameda, Butte, Colusa, Contra Costa, Del Norte, El Dorado, Glenn, Humboldt, Placer, Sacramento, Santa Clara, Shasta, Solano, Sutter, Tehama, Trinity, Yolo, and Yuba. Operational changes could occur as a result of the coordinated and integrated operation of the Project's facilities with those State and federal projects located on the American River, Trinity River, Clear Creek, Sacramento River, Sutter Bypass, Yolo Bypass, Feather River, and the Delta. The Secondary Study Area is shown on Figure 1-5 in Chapter 1 Introduction.

Primary Study Area

The Primary Study Area is the focus of the resource evaluations in this EIR/EIS. The Primary Study Area includes the areas within Glenn and Colusa counties where short-term and long-term direct and

indirect effects from constructing, operating, and/or maintaining proposed Project facilities may occur. This study area includes the footprints of the proposed Sites Reservoir inundation area and other proposed facilities (e.g., dams, intakes/discharge facilities, pipelines, overhead power lines, pumping/generating plants, recreation areas, road relocation areas, borrow areas, and associated facilities). It also includes the construction disturbance areas, i.e., the footprint of each proposed facility plus the area around each facility that would be disturbed over the short-term by Project-related construction activities, vehicles, and equipment. The Primary Study Area also includes the land parcels that surround those Project facilities; these parcels would be purchased but not developed for the Project and are referred to as the "Project Buffer." Facilities associated with Alternatives A, B, C, C1, and D are shown on Figure 1-6A, Figure 1-6B, Figure 1-6C, Figure 1-6C1, and Figure 1-6D, respectively, in Chapter 1 Introduction.

Existing Conditions/No Project/No Action Condition

Existing conditions and the future No Project/No Action alternatives were assumed to be similar in the Primary Study Area, given the generally rural nature of the area, and limited potential for growth and development in Glenn and Colusa counties within the 2030 study period used for this EIR/EIS, as further described in Chapter 2 Alternatives Analysis. As a result, within the Primary Study Area, it is anticipated that the No Project/No Action Alternative would not entail material changes in conditions as compared to the existing conditions baseline.

With respect to the Secondary and Extended study areas, the effects of the proposed action alternatives would be primarily related to changes to available water supplies in the Secondary and Extended Study Areas; the Project's cooperative operations with other existing large reservoirs in the Sacramento watershed; and the resultant potential impacts and benefits to biological resources, land use, recreation, socioeconomic conditions, and other resource areas. DWR has projected future water demands through 2030 conditions that assume the vast majority of CVP and SWP water contractors would use their total contract amounts, and that most senior water rights users also would fully use most of their water rights. This increased demand, in addition to the projects currently under construction and those that have received approvals and permits at the time of preparation of the EIR/EIS, would constitute the Existing Conditions/No Project/No Action Condition. As described in Chapter 2 Alternatives Analysis, the primary difference in these projected water demands would be in the Sacramento Valley; and, as of the time of preparation of this EIR/EIS, the water demands have expanded to the levels projected to be achieved on or before 2030.

Accordingly, existing conditions and the No Project/No Action alternatives are assumed in the Draft EIR/EIS to be the same and are referred to as the "Existing Conditions/No Project/No Action Condition," which is further discussed in the Draft EIR/EIS in Chapter 2, Alternatives Analysis.

Projects considered in the cumulative impacts analysis included other relevant multi-region projects and actions; water supply, water quality, and hydropower projects and actions in the vicinity of the proposed Project facilities and/or potentially affected by CVP and SWP operations; and ecosystem improvement projects and actions in the vicinity of the proposed Project facilities and/or potentially affected by CVP and SWP operations. Potential impacts associated with climate change are addressed separately in Chapter 25, Climate Change and Greenhouse Gas Emissions, of the Draft EIR/EIS.

4.3 Impacts and Mitigation

Based on the Draft EIR/EIS analysis, the Project action alternatives would affect environmental resources in all three study areas to varying degrees, with most impacts potentially occurring in the Primary Study Area. Anticipated impacts would vary from construction-related effects that would be less than significant or would be reduced to less-than-significant levels through mitigation to those that would remain significant and unavoidable despite proposed mitigation measures. In addition, many effects of the Project would be beneficial, particularly related to improved water supply reliability in drier years and potential ecosystem

benefits. The Draft EIR/EIS found that implementation of the Project would not result in a cumulatively considerable incremental contribution to an overall significant cumulative adverse effect.

Table 2 summarizes the impacts by environmental resource type for each Project action alternative and identified proposed mitigation measure (as applicable), and the level of significance of the impact after implementation of mitigation.

4.3.1 Significant and Unavoidable Impacts

As shown in Table 2 and discussed in the Draft EIR/EIS, the proposed Project action alternatives would likely result in the following potentially significant and unavoidable direct and indirect impacts.

Terrestrial Biological Resources (Golden Eagle)

Construction and filling of the proposed Sites Reservoir Inundation Area, as well as construction of the proposed Recreation Areas, would result in the permanent loss of foraging and nesting habitat for the golden eagle. Although implementation of compensatory mitigation including land preservation and/or acquisition is proposed, these measures would not reduce this loss of habitat to less-than-significant levels.

Paleontological Resources

Construction of the proposed Project facilities could affect paleontological resources. Mitigation measures would reduce the impacts, but not to a less-than-significant level if such resources are encountered during construction.

Cultural Resources (Historical and Tribal Resources, Human Remains)

Construction of the proposed Project facilities would affect built historical, archaeological and tribal resources, as well as human remains associated with a designated cemetery and adjacent areas. If these resources and/or areas are determined to be eligible for listing in the California Register of Historical Resources or National Register of Historic Places, mitigation measures would not reduce the impact to less-than-significant levels.

Land Use (Community of Sites and Existing Land Uses)

Construction and filling of the proposed Sites Reservoir Inundation Area would result in the physical division and loss of the community of Sites, resulting in a significant and unavoidable impact. Construction of the proposed Project facilities would result in conversion of Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural use, resulting in significant and unavoidable impacts. Implementation of mitigation measures would not reduce these impacts to less-than-significant levels.

Air Quality (PM10, ROG, and NOx)

Construction activities associated with all proposed Primary Study Area Project facilities, as well as activities (such as use of roads, recreation, electricity generation and consumption, and sediment dredging) associated with the long-term operation and maintenance of the Project, would result in significant and unavoidable emissions of particulate matter less than 10 microns in diameter (PM10), reactive organic gas (ROG), and nitrogen oxide (NOx).

Climate Change and Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions estimated for construction, operation, and maintenance of the Project when compared to applicable county standards would contribute to a cumulatively considerable effect that would be significant and unavoidable.

Growth-inducing Impacts

Implementation of the Project would improve water supply reliability for agricultural, urban, and environmental uses; provide more options for water management; increase recreational opportunities; and increase temporary and permanent employment opportunities. Although it is not anticipated that the water made available from the Project would result in a direct increase in population or employment, the potential exists for the quantity of water made available by the Project to result in secondary effects of growth consistent with local general plans and regional growth projections in an agency's respective service area.

These significant and unavoidable environmental effects were common to all of the alternatives analyzed in the Draft EIR/EIS due to the magnitude of construction activities and future reservoir-related inundation of environmental resources. There were changes in the level of effects for some alternatives depending on construction and operation of the Delevan Intake, including:

- Impact Fish-1c: Hydrostatic Pressure Waves, Noise, and Vibration – Delevan Facilities.
- Impact Fish-1d: Predation Risk – Delevan Facilities.
- Impact Fish-1e: Stranding, Impingement, and Entrainment – Delevan Facilities.
- Impact Fish 1f: Modification of Pulse Flows and Entrainment during Diversions at the Delevan Facilities.

However, the Draft EIR/EIS concluded that these effects were less than significant after implementation of mitigation.

4.3.2 Areas of Controversy/Issues to Be Resolved

The Draft EIR/EIS identified the following areas of controversy and issues to be resolved:

- Impacts on Project Area Property Owners: Project development would require the demolition of existing structures, acquisition of private property, and relocation of displaced parties. These actions concern property owners within the Primary Study Area.
- Impacts on Aquatic Biological Resources: Project operations would change the flow patterns and the amounts of unregulated water in the Sacramento River. These changes, and the uncertainty of future regulatory constraints on both regulated and unregulated flows in the Sacramento River, are a concern within the Secondary Study Area.
- Impacts on Tribal Resources: Project development would affect burials, and potentially other sensitive tribal resources, and could be viewed by some as controversial.
- Impacts on Terrestrial Biological Resources: Golden eagles have been identified as foraging within the proposed Sites Reservoir Inundation Area and nesting within the proposed recreation areas. The U.S. Fish and Wildlife Service (USFWS) has expressed concern about the potential loss of nesting and foraging habitat for golden eagles, which are protected by the Bald and Golden Eagle Protection Act.

5. Draft EIR/EIS Public Circulation and Comments

A Notice of Availability of the Draft EIR/EIS and notice of public meetings was published in the Federal Register on August 18, 2017. The Authority, as the CEQA lead agency, also issued a Notice of Availability (NOA) on August 14 and provided a summary of the project, identification of significant environmental effects and information on where to obtain the Draft EIR/EIS, how to provide comments and the location, time and dates for public meetings.

Electronic CD copies of the Draft EIR/EIS were made available upon request from the Authority. The Draft EIR/EIS was also made accessible online. For those lacking computer access, copies of the Draft EIR/EIS were made available at the folllowing locations:

1. Sites Project Authority, 122 Old Highway 99 West, Maxwell, CA 95955.
2. Bureau of Reclamation, Regional Library, 2800 Cottage Way, Sacramento, CA 95825.
3. Sacramento Public Library, Central Branch, 828 I Street, Sacramento, CA 95814.
4. Colusa County Free Library, Main Branch, 738 Market Street, Colusa, CA 95932.
5. Glenn County Public Library, Willows Branch, 201 N. Lassen Street, Willows, CA 95988.
6. Tehama County Library, Red Bluff Branch, 645 Madison Street, Red Bluff, CA 96080.

Two following public meetings were held to receive oral and/or written comments regarding environmental effects:

- Tuesday, September 26, 2017, 6:00 p.m. to 8:00 p.m., Maxwell, CA.
- Thursday, September 28, 2017, 1:00 p.m. to 3:00 p.m., Sacramento, CA.

The Draft EIR/EIS was initially made available for public review from August 14, 2017 to November 13, 2017. This review period was ultimately extended to January 15, 2018 to accommodate additional public review and comments.

5.1 Comments Received on the Draft EIR/EIS

During the public review period, 137 comment letters were received in various forms including email, public meeting transcripts, public meeting comment cards, letters, and a petition. Commenter affiliation and the number of commenters is provided below.

Commenter Affiliation	Number of commenters
Tribal	3
Federal	3
State	6
Local/Regional Agencies	12
Non-Government Organizations (NGO)*	10
Individuals**	103
TOTAL COMMENT LETTERS/E-MAILS/PETITION	**137**

*Some NGO letters included comments from multiple NGOs
** Includes individual petition on Change.com containing 1001 signees as of 2/8/18

A brief summary of comments received during the public review period are presented below in the context of the commenter's affiliation.

Tribal Comments

Letters were received from three tribal affiliations: Colusa Indian Community Council, California Indian Water Commission, and the Winnemem Wintu tribe. Substantive comments are outlined below:

- Colusa Indian Community Council
  - Indian Trust Assets (ITAs) need to be identified and potential impacts addressed, including Tribal water demands
  - Burial grounds within reservoir footprint and Sacramento River diversion
- California Indian Water Commission
  - Requests extension for review
  - ITA discussion inadequate
  - Ecocultural effects not analyzed
  - Support of the No Action Alternative
- Winnemem Wintu
- A signatory to comments from the Pacific Coast Federation of Fisherman's Association (see below)

Federal Agencies

Letters were received from the Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and Western Area Power Administration (WAPA). Primary areas of concern include:

- Final operational approach (including bypass flows and weirs) – *NOAA (NMFS), EPA and WAPA*
- Water quality – *EPA and NMFS*
- Fish screens – *NMFS*
- Wetlands – *EPA*
- Power benefits methodology – *WAPA*

In addition, the U.S. Fish and Wildlife Service notified the Authority they will be providing comments through their Fish and Wildlife Coordination Act report, which has not yet been completed.

State Agencies

Letters were received from California Department of Fish and Wildlife (CDFW), State Water Resources Control Board, Delta Stewardship Council, Cal FIRE, Caltrans, and the Department of Conservation. Primary areas of concern include:

- Proposed diversions/bypass flows and impacts to fisheries; need to consider additional alternatives
- Water quality, both Sacramento River and reservoir temperatures
- Terrestrial biological species impacts
- Delta aquatic species impacts
- Enforceable mitigation measures need more detail
- Avoidance of additional run-off to state roads and highways
- Fire suppression and access due to wildfire risk
- First responders and required communications
- Conversion of agricultural lands and need for conservation easements

Local / Regional Agencies

Letters were received from the following local agencies: Colusa Board of Supervisors; Maxwell Fire Protection District; Kanawha Fire Protection District; County of Humboldt Board of Supervisors; Northern California Power Agency; Woodland-Davis Clean Water Agency (WDCWA); Sacramento Municipal Utility District (SMUD); Metropolitan Water District of Southern California (MWD); and Contra Costa Water District (CCWD). Primary local agency concerns/comments included:

- Fire potential during construction and access
- Recreational use and implications to county operations
- Land use impacts
- Impacts to CVP power customers
- Electrical transmission interconnections
- Potential Trinity River impacts
- Potential impacts to CCWD water supply quality
- Support of the Project

Non-Governmental Organizations (NGOs)

Letters were received from the following NGOs: Natural Resources Defense Council and others including Defenders of Wildlife, Bay Institute, Center for Biological Diversity, Pacific Coast Federation of Fishermen's Association; Pacific Coast Federation of Fishermen's Association, Institute for Fisheries Resources, Save California Salmon, Winnemem Wintu Tribe, and San Francisco Baykeeper; AquAlliance; Friends of the River; Sierra Club; Save California Salmon (1,000+ individuals). Primary NGO concerns/comments included:

- Range of alternatives – include decrease in diversions
- Baseline assumptions – need to include future and/or very recent actions (e.g. Shasta storage, Yolo Bypass weir)
- Climate change should be part of baseline
- Outdated modeling approach
- Operational impact to fisheries
- Impacts to terrestrial species
- Impacts to cultural resources
- Impacts to the Trinity River and the Delta
- Additional cumulative impacts

Individuals

Letters and/or e-mails were received from approximately 100 individuals, in addition to 1000+ individuals who signed a petition. Comments included:

- Property owner concerns including grazing and general access
- Petition focuses surplus water availability and protections for fish (including Trinity River) and flows
- Water quality impacts
- Range of alternatives

- Aquatic and terrestrial resources impacts
- Location of powerlines
- Impacts to public roads
- Cultural resources impacts
- Delta outflows
- Additional conservation is necessary

Since the original comment period, additional letters have been received, including letters from the Delta Stewardship Council, Karuk Tribe, and Friends of the River. All letters with comments on the Draft EIR/EIS, including those received after the public comment period ended, are being addressed in the ongoing EIR/EIS process.

5.2 Response to Comments Approach

With the addition of letters received after the public comment period, a total of 141 letters and/or emails have been received. Many letters include multiple comments and have resulted in over 800 individual comments on the Draft EIR/EIS. The comments were sorted and categorized, and the following primary concerns were identified:

- Additional analysis is required, primarily fishery related
- Delta flow impacts
- Terrestrial/botanical impacts
- Tribal, ITAs, cultural resources
- Climate change and sea level rise
- Economic/financial impact (including power)
- Range of alternatives
- Bypass flows and flow reductions
- Potential Sacramento River release temperature impacts
- Baseline conditions
- Yolo and Sutter bypass impacts
- Delta fishery and water quality impacts
- Reservoir water quality and releases
- Trinity River watershed impacts

The nature of the comments have allowed for thematic responses. Master comment categories have been identified for which master responses are being developed. These include:

1. General Comments – addresses non-substantive or unsubstantiated comments
2. Alternatives Development – describes compliance with NEPA and CEQA scoping requirements and the selection of alternatives
3. Alternatives Description – describes any changes in footprint and/or facilities since the Draft EIR/EIS was circulated, project operations, including any updated modeling, and project governance

4. Environmental Process – addresses the current level of design detail and identifies if/when additional future supplemental environmental review will be needed

5. Baseline and No Action/No Project – provides clarification of baseline and No Action/No Project as addressed in the Draft EIR/EIS and clarifies regulatory baseline vs modeled baseline

6. Hydrologic Modeling (CALSIM modeling) – provides clarification of prior modeling as well as any updated modeling, use of models for comparative purposes and use of sensitivity analyses, Trinity River operations and impacts, and bypass flow selection process

7. Water Quality – addresses any updated model and modeling assumptions, facility design that will mitigate water quality impacts, temperature issues (in-reservoir, release temperatures from Delevan pipeline, downstream, and cyanobacterial blooms) and specific issues such as methylmercury, salinity, and invasive fish species

8. Fish and Aquatic Resources – describes project operations and facility feature (screens) impacts on fishery conditions, impact analysis methodology, and suggested alternatives regarding fish habitat

9. Terrestrial Biological Resources – explains the relationship between the permitting efforts and the analysis in the Final EIR/EIS as it relates to wildlife, botany, and wetlands, floodplain inundations/geomorphology as it relates to riparian/terrestrial species, proposed operations to improve bypass habitat conditions and minimize diversion timing impacts

10. Indian Trust Assets – summarizes analysis done on ITAs including tribal outreach efforts and continued coordination and further defines mitigation measures identified in the Draft EIR/EIS

11. Cumulative Analysis – describes how cumulative projects were chosen and clarifies how climate change was modeled

12. Power and Economics – summarizes current study efforts regarding power and timeline for the studies

In addition to developing these thematic, master responses, all substantive comments on the Draft EIR/EIS would be individually addressed and cross-referenced to master responses, as appropriate.

Revisions will also be made to the text of the EIR/EIS and appendices. The following provides a preliminary list of the revisions and updated information that will be included in the EIR/EIS in order to clarify and strengthen the environmental analysis.

Description of Alternatives

- The description of the range of alternatives considered and the alternatives screening process will be augmented by creating a new appendix
- The description of alternatives will be reframed to identify: project-level elements, primarily associated with construction and operations; or program-level elements that will be further defined later, such as recreational components, future dam safety monitoring requirements, transportation and construction management plans
- A number of comments will be addressed by adding a reservoir management plan in the alternatives description, including:
    - Interactions between reservoir operations and surrounding landowners related to grazing
    - Maintenance of infrastructure, including reservoir facilities, but also fencing or other ancillary facilities around the reservoir
    - Management of harmful algal blooms

- The alternatives description will expand on the types of use and management of recreational areas
- Comments related to operation of alternatives will be addressed through:
    - Clarification of operational responsibility of the project
    - Description of how operators will integrate operation of Sites Reservoir with operation of the CVP and SWP
    - Clarification of how increasing deliveries to wildlife refuges will be prioritized. Requests for quantification of these potential deliveries

Operations and Modeling

- EIR/EIS revisions will include a discussion of how and why different operational scenarios were screened for further consideration
- Changes that have been made to the operational scenario since 2017 to coordinate with regulatory agencies, including NMFS, USFWS and CDFW and to respond to changes in the regulatory baseline will be described within the text and appendices
- Concerns raised regarding protections for the Trinity and Klamath Rivers, including Trinity Reservoir carryover storage, North Coast Basin Plan temperature objectives, winter flows, and Humboldt County's 50TAF water contract will be addressed by clarifying the relationship between the Trinity Record of Decision and the alternatives (i.e., the alternatives cannot supersede the Trinity ROD and no water would come from the Trinity River)

Existing Conditions/Baseline and the Future No Project/No Action Alternatives

- The baseline will be updated to include more recent data for key environmental resources
- More specific information from the draft biological assessment, including information for species based on more recent studies, will be included
- Baseline model results for key resources will be updated to consider changes in regulatory requirements
- The Future No Project/No Action will be updated to consider recent water-related actions, such as the 2020 ROD and Biological Opinions for the Reinitiation of Consultation on the Coordinated Long-Term Modified Operations of the Central Valley Project and State Water Project[6]
- Due to baseline updates in the hydrologic model, revisions to the EIR/EIS text and appendices will:
    - Provide an overview of modeling tools, analytical methods, and applications
    - Characterize information flow among models and the general application and use of output for resource evaluations

Other Revisions

- An update on the Endangered Species Act Section 7 consultation process will be provided and will clarify that it need not be completed prior to the release of a Draft EIR/EIS
- Additional description of the water rights that will apply to the project and the water rights process will be provided and will clarify that the water rights proceeding does not need to occur prior to the release of the Draft EIR/EIS
- The discussion of the CDFW incidental take permit (ITP) process will clarify that the ITP process need not be completed prior to the release of a Draft EIR/EIS

[6] https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=39181

These revisions to the EIR/EIS will clarify issues and concerns raised during the public comment period but are not anticipated to change the environmental impact findings of the Draft EIR/EIS. It should also be noted that preliminary review and initial draft responses to comments have indicated that all of the comments on the Draft EIR/EIS can be responded to within the context of a Final EIR/EIS and so far demonstrate adequacy of Draft EIR/EIS impact analyses and findings.

If the Project is significantly modified during design or new adverse environmental impacts are identified, there are procedures in both the NEPA and CEQA regulations and guidelines to address such changes to a project. NEPA (40 C.F.R. § 1502.9(c) provides for the supplementation of a Draft EIS if there are:

- Substantial changes in the proposed action that are relevant to environmental concerns, or
- Significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts

Similarly, as the CEQA lead agency, the Authority would consider whether recirculation of the Draft EIR is a more appropriate approach to completion of the CEQA process if the changes to the project result in substantial new information, as defined in CEQA Guidelines Section 15088.5(a).

6. Stakeholder Outreach

As noted previously, public meetings and outreach have been undertaken by Reclamation and the Authority as part of the EIR/EIS scoping process and during the public review period for the Draft EIR/EIS. Additional outreach has been ongoing. The following sections address some of the additional outreach that has occurred to date.

6.1 Response to Regulatory Agency Concerns

Reclamation and the Authority have held numerous meetings with USFWS and NMFS and with USFWS staff at the Delevan Refuge to address the biological resource issues associated with implementation of the Project and to discuss future permit applications and requirements. Two joint meetings or workshops have also been held recently with NMFS, USFWS and CDFW.

In May 2019 the Authority initiated a series of meetings with CDFW to address concerns raised in CDFW comments on the Draft EIR/EIS as well as to discuss future permit requirements. Over 40 meetings were held between the Authority and CDFW regulatory staff and/or management to address operational considerations and commitments as well as CEQA concerns.

Coordination with all regulatory agencies is ongoing and will continue throughout the EIR/EIS and permitting processes.

6.2 Tribal Outreach

Initial NEPA and CEQA scoping in 2001/2002 identified the following tribes that could be affected by implementation of the Project: Cachil Dehe Band of Wintun Indians; Cortina Indian Rancheria of Wintun Indians; Grindstone Indian Rancheria of Wintun-Wailaki; Paskenta Band of Nomlaki Indians; Round Valley Indian Tribe of Round Valley; Wintun Tribe in Redding; and Yocha Dehe Wintun Nation. As outlined in the Draft EIR/EIS, representatives of the Project have met with interested tribes at various times since 2002.

The Authority, as the project's CEQA lead agency, is also consulting with Native American tribes pursuant to PRC 21080.3.1. The Authority sent Project notification letters on February 10, 2017 to the following Tribes:

- Cachil Dehe Band of Wintun Indians
- Cortina Indian Rancheria of Wintun Indians

- Grindstone Indian Rancheria of Wintun-Wailaki
- Yocha Dehe Wintun Nation
- Paskenta Band of Nomlaki Indians
- Mechoopda Indian Tribe
- Estom Yumeka Maidu Tribe of the Enterprise Rancheria.

The Colusa Indian Community Council/Cachil Dehe Band of Wintun Indians requested consultation, and the Authority first met with tribal representatives on July 12, 2017. Separately, the Yocha Dehe Wintun Nation contacted Authority staff on May 19, 2017 requesting project information, which the Authority provided on June 22, 2017. More recently, in February 2019, the Authority notified the Cachil Dehe, Cortina Indian Rancheria of Wintun Indians, and Yocha Dehe about proposed limited geotechnical investigations to support the feasibility study. Cachil Dehe and Yocha Dehe both requested consultation and the Authority followed up with meetings in March and May 2019, respectively. In June 2019, Reclamation also invited the seven tribes listed above to consult on the geotechnical studies.

Reclamation and the Authority will continue to consult with any of the above-listed tribes throughout the course of Project design and construction, and potentially during Project operations.

6.3 Other Stakeholders

Sites Authority staff have participated in meetings with several NGOs and local agencies to address questions and concerns raised during the CEQA/NEPA process. In addition, the Authority has conducted regular meetings with local landowners having interest in the project. These outreach efforts will continue throughout the planning phase of the Project.

7. Summary and Conclusions

The environmental effects of the project are evaluated in the Sites Reservoir Draft EIR/EIS (Reclamation and Authority 2017). An environmentally preferred alternative that is consistent with NEPA requirements will be identified in the Final EIR/EIS. Constructing Sites Reservoir would affect environmental resources in the Primary, Secondary, and Extended Study Areas. Beneficial effects correspond to the following resource areas: water management, agricultural resources, fisheries and aquatic resources, socioeconomics, power and energy, and recreation. Some adverse effects would be temporary, construction-related effects that would be reduced to less-than-significant levels through mitigation. Other adverse effects would be permanent, including effects on terrestrial wildlife, land use, air quality, GHGs, and cultural resources. The Draft EIR/EIS evaluates the representative environmental effects, and the proposed mitigation measures are presented in Appendix 1A of the EIR/EIS, and included in Table 2. As part of the project planning process, Reclamation and the Authority will incorporate environmental commitments and Best Management Practices (BMPs) to avoid or minimize potential project impacts. The ROD will not be completed until pre-construction permits and approvals have been acquired.

The evaluation of environmental feasibility is an ongoing process that will incorporate public comment on the Draft EIR/EIS into the Final EIR/EIS.

Ongoing meetings with regulatory agencies, such as USFWS, NMFS and CDFW, will facilitate the completion of an EIR/EIS that can support future permit approvals. Meetings with Tribes and other stakeholders will also continue to ensure adequate opportunity for public input.

Table 1: Draft EIR/EIS Project Features

Project Features/Facilities[a]	Alternative A	Alternative B	Alternative C	Alternative C_1	Alternative D
Sites Reservoir Complex					
Sites Reservoir Inundation Area	1.3-MAF capacity (12,400 acres)	1.8-MAF capacity (14,200 acres)	Same as B	Same as B	Same as B
Golden Gate Dam, Sites Dam, Saddle Dams	9 dams (Golden Gate Dam; Sites Dam; Saddle Dams 1, 3, 5, 6, 8a, 8b, 10)	11 dams (Golden Gate Dam; Sites Dam; Saddle Dams 1, 2, 3, 4, 5, 6, 7, 8, 9)	Same as B	Same as B	Same as B
Borrow Areas[b]	Approximately 920 acres in inundation area; 200 acres northeast and east of the inundation area	Same as A	Same as A	Same as A	Same as A
Sites Reservoir Inlet/Outlet Structure and Associated Facilities	Multi-level valve tower and gate shaft; 4,000-foot-long tunnel; 220-foot-high structure; four 32-foot-diameter intake openings at seven levels; trash racks and fish screens; bridge; 15,200-cfs emergency release outlet capacity	Same as A but taller structure (260 feet); intake opening at nine levels	Same as B	Same as B	Same as B
Sites Pumping/ Generating Plant and Electrical Switchyard	5,900-cfs pumping capacity; 5,100-cfs generating capacity; 4-acre switchyard with overhead power line tower, at pumping/generating plant	3,900-cfs pumping capacity; 5,100-cfs generating capacity	Same as A	5,900-cfs pumping capacity; (no generation)	Same as A
South Bridge and Roads	Temporary construction roads, several access roads to new facilities, and new roads to replace those currently in the inundation area; South Bridge to provide access between Maxwell and Ladoga	Same as A but slight difference related to access for Saddle Dam 10 for A	Same as B	Same as B	Same as B but with a road to provide access to the community of Leesville; some southern roads not needed
Recreation Areas[c]	Saddle Dam, Stone Corral, Antelope Island, Lurline Headwaters, Peninsula Hills	Same as A	Same as A	Same as A	Stone Corral, Peninsula Hills, boat ramp day use area

Project Features/Facilities[a]	Alternative A	Alternative B	Alternative C	Alternative C_1	Alternative D
Field Office Maintenance Yard	Administration, maintenance buildings, asphalt batch plant (possible temporary location), and parking (also serves Holthouse Reservoir and TRR)	Same as A	Same as A	Same as A	Same as A
Holthouse Reservoir Complex					
Holthouse Reservoir	6,250-acre-foot active storage capacity	Same as A	Same as A	No Holthouse Reservoir; modifications to existing Funks Reservoir; 3,372-acre-foot capacity	Same as A
Holthouse Spillway and Stilling Basin and Spillway Bridge	15,200-cfs capacity	Same as A	Same as A	Existing Funks Reservoir 15,200-cfs gated spillway	Same as A
WAPA Transmission Line Relocation	8 transmission line towers moved to the west	Same as A	Same as A	None	Same as A
Sites Pumping/Generating Plant Approach Channel	6,300 feet long	Same as A	Same as A	Same as A	Same as A
Tehama-Colusa Canal Construction Bypass Pipeline/Operation and Maintenance Siphon to Tehama-Colusa Canal	12-foot-diameter approximate 2,600-foot-long siphon pipeline would divert Tehama-Colusa Canal water around Holthouse Reservoir during construction; during operation, water would pass to the canal downstream of the reservoir without pumping	Same as A	Same as A	Same as A; could be used for re-routing water from Tehama-Colusa Canal during maintenance of Funks Reservoir	Same as A
Additional Pump at the Red Bluff Pumping Plant (Secondary Study Area)	Install two additional 250-cfs-capacity pumps	Same as A	Same as A	Same as A	Same as A

Project Features/Facilities[a]	Alternative A	Alternative B	Alternative C	Alternative C_1	Alternative D
Terminal Regulating Reservoir Complex					
Terminal Regulating Reservoir	2,000-acre-foot capacity; 200 acres; approximately 4,000-foot-long, 60-inch-diameter underground outlet pipe to Funks Creek	Same as A	Same as A	Same as A	1,200-acre-foot capacity; 150 acres; only a minimal drain would be required because of proximity of TRR to Funks Creek
TRR Pumping/ Generating Plant and Electrical Switchyard	1,800-cfs pumping capacity; 900-cfs generating capacity; 4-acre electrical switchyard	Same as A	Same as A	1,800-cfs pumping (no generation)	Same as A
GCID Main Canal Connection to TRR	GCID Main Canal energy dissipation bay/check structure; TRR inlet channel and inlet control structure	Same as A	Same as A	Same as A	Similar to A, however approach would be smaller
TRR Pipeline and TRR Pipeline Road	1,800-cfs pumped capacity; 900-cfs gravity flow capacity; 2.5-mile road	Same as A	Same as A	Same capacity as A; longer TRR Pipeline for delivering GCID Main Canal flows from TRR to modified Funks, and slightly longer TRR Pipeline Road	Same as A
GCID Main Canal Modifications	New headgate and canal lining	Same as A	Same as A	Same as A	Refurbished existing gates; canal lining immediately upstream and downstream of the TRR
Delevan Complex					
Delevan Pipeline Intake/Discharge Facilities	250-foot-long by 80-foot-wide facilities building with multiple stories; four 500-cfs-capacity pumping/generating units; two 750-cfs turbines	Smaller structure required for discharge-only facilities	Same as A	Same as A	Same as A
Flat Plate Fish Screen Structure and Forebay	560-foot-long structure; 13-foot-high by 15-foot-wide flat plate screens (32 total); 2,000-cfs capacity; forebay would be constructed between fish screen and pump turbine station	Fish screen and forebay not necessary for discharge-only facility; would include a spillway with fish barrier racks and energy dissipation valves	Same as A	Same as A	Same as A

Project Features/Facilities[a]	Alternative A	Alternative B	Alternative C	Alternative C_1	Alternative D
Pumping/ Generating Plant	2,000-cfs pumping capacity; 1,500-cfs generating capacity	No pumping/generating plant (release only); discharge only; 1,500-cfs gravity release flow; energy dissipation valve and structure to minimize river release energy	Same as A	2,000-cfs pumping capacity (no generation)	Same as A
Electrical Switchyard	4-breaker ring bus with poles 15 to 60 feet tall	No switchyard needed	Same as A	Same as A	Same as A
Maintenance and Electrical Buildings	Mechanical control building; electrical building; (each approximately 5,000 square feet)	Not needed for B	Same as A	Same as A	Same as A
Delevan Pipeline	East-west alignment from Delevan Pipeline Intake/Discharge Facilities to Holthouse Reservoir; 2,000-cfs-capacity pumping and 1,500-cfs-capacity release	Same alignment as A No pumping; 1,500-cfs-capacity release	Same as A	Same as A	50 to 150 feet south of alignment for A, B, C, and C_1; same capacity as A
Overhead Power Lines and Substations					
Substations	Stepdown power from the existing WAPA 230-kV and PG&E 230-kV lines near Funks/Holthouse Reservoir; up to 6 acres, including multiple electrical components and related structures, concrete pad, transmission tower, fencing	Same as A	Same as A	Same as A	In addition to substation near Funks/Holthouse Reservoir identified in other alternatives, would include substation to stepdown power from existing WAPA 230-kV lines approximately 1 mile southwest of Colusa, north of Highway 20; up to 6 acres; similar facilities as A
Electrical Connection for Sites Pumping/ Generating Plant	New 1- to 4-mile-long 230-kV or 115-kV overhead power line from the proposed substation west to Sites Pumping/Generating Plant	Same as A	Same as A	Same as A	Same as A

Project Features/Facilities[a]	Alternative A	Alternative B	Alternative C	Alternative C_1	Alternative D
Electrical Connection for TRR Pumping/ Generating Plant	New 230-kV or 115-kV overhead power line from the proposed substation, east to TRR Pumping/Generating Plant	Same as A	Same as A	Same as A	Same as A
Electrical Connection for Delevan Pumping/Generating Plant	New 230-kV or 115-kV overhead power line from the proposed Sites Substation, east to Delevan Pumping/Generating Plant	Local service from existing PG&E lines near SR 45 (no new west to east lines to the Sacramento River needed for Delevan discharge-only facility)	Same as A	Same as A	New 115-kV overhead power line along SR 45 from the proposed substation west of Colusa to the Delevan Pumping/Generating Plant; line will cross SR 45
Project Buffer					
	Total land acquired for the Project beyond the facility footprints, out to the nearest existing parcel boundaries[d]; applies to Sites Reservoir Complex, Holthouse Reservoir Complex, TRR Complex, Delevan Complex (excluding the pipelines)	Same as A	Same as A	Same as A	Same as A

Table 2: Draft EIR/EIS Impacts and Mitigation

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
Aquatic Biological Resources						
Impact Fish-1: A Substantial Adverse Effect (Either Directly, through Habitat Modifications, by Interfering with the Movement of Native Fish Species, or by Impeding the Use of Native Fish Nursery/Rearing Sites) on Any Fish Species of Management Concern, Including Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW, NMFS, or USFWS						
Fish-1a: Aquatic Habitat Modification – Stone Corral and Funks Creeks	**Fish-1a**: Implement Habitat Restoration Actions– Stone Corral and Funks Creeks	LS	LS	LS	LS	LS
Fish-1b: Aquatic Habitat Modification – Sacramento River	**Fish-1b**: Implement Habitat Restoration Actions– Sacramento River	LS	LS	LS	LS	LS
Fish-1c: Hydrostatic Pressure Waves, Noise, and Vibration – Delevan Facilities	**Fish-1c**: Perform In-water Pile Driving July through September during Daylight Hours – Sacramento River	LS	LS	LS	LS	LS
Fish-1d: Predation Risk – Delevan Facilities	**Fish-1d**: Design Fish Screen in Compliance with NMFS and CDFW Criteria – Sacramento River	LS	LS	LS	LS	LS
Fish-1e: Stranding, Impingement, and Entrainment – Delevan Facilities	**Fish-1e**: Prepare and Implement a Fish Salvage and Rescue Plan – Sacramento River	LS	LS	LS	LS	LS
	Fish-1f: Sites Reservoir Diversion Restrictions for Pulse Flow Protection and Entrainment Minimization	LS	LS	LS	LS	LS
Fish-1f: Modification of Pulse Flows and Entrainment during Diversions at the Delevan Facilities	**Fish-1f**: Sites Reservoir Diversion Restrictions for Pulse Flow Protection and Entrainment Minimization	LS	LS	LS	LS	LS
Botanical Resources						
Impact Bot-1: A Substantial Adverse Effect, Including Conversion to Non-native Vegetation, on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, Regulations, or by CDFW or USFWS, or Any Native Plant Community Known to Be Rare, Unusual, or Becoming Uncommon in the Biogeographic Region of the Project						
Bot-1a: Loss of Vegetation Community	**Bot-1a**: Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
Bot-1b: Annual Grassland (of Higher Botanical Value)	**Bot-1a:** Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
	Bot-1b: Conduct Watershed Hydrological Studies	LS	LS	LS	LS	LS

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
Bot-1c: Blue Oak Woodland (Includes Savanna and Woodland with Chaparral Understory)	**Bot-1a:** Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
Bot-1d: Riparian Vegetation	**Bot-1a:** Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
Bot-1e: Valley Oak Woodland	**Bot-1a:** Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
Bot-1f: Alkaline Wetland	**Bot-1a:** Implement Compensatory Mitigation Measures for Vegetation Community Impacts in Coordination with USFWS, CDFW, CNPS, and USACE	LS	LS	LS	LS	LS
	Bot-1b: Conduct Groundwater Hydrological Studies	LS	LS	LS	LS	LS
Impact Bot-2: A Substantial Adverse Effect, Either Directly or through Habitat Modifications, on Any Species Identified As a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS						
Bot-2a: Fed/1B-A Special-status Plant Species: CNPS List 1B and State- or Federally Listed Species	**Bot-2:** Conduct Pre-construction Surveys for Special-status Plants; if Found, Compensate According to USFWS, CDFW, and CNPS Guidelines	LS	LS	LS	LS	LS
Bot-2b: Special-status Plant Species	**Bot-1b:** Conduct Groundwater Hydrological Studies	LS	LS	LS	LS	LS
Impact Bot-3: An Increase in the Potential for Invasion and Spread of Noxious Weeds						
	Bot-3a: Implement Preventive Actions by Following Weed Control BMPs; Minimize Exposed Ground; Reduce Weed Seed by Removal of Onsite and Offsite Weeds	LS	LS	LS	LS	LS
	Bot-3b: Implement Avoidance Measures in Areas Adjacent to the Delevan National Wildlife Refuge	LS	LS	LS	LS	LS
Impact Bot-4: Indirect Impacts to Native Plants from Human Disturbance						
	Bot-2: Conduct Pre-construction Surveys for Special-status Plants; if Found, Compensate According to USFWS, CDFW, and CNPS Guidelines	LS	LS	LS	LS	LS
Terrestrial Biological Resources						
Impact Wild-1: Substantial Adverse Effect, Including Alteration of Habitat Suitability, on Any Wildlife Habitat, Especially Riparian Habitat or Other Sensitive Natural Communities Identified in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS						

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
	Wild-1a: Confirm Species/Habitat Presence through Appropriately Timed Surveys Per Protocols Identified in Coordination with USFWS and CDFW	LS	LS	LS	LS	LS
	Wild-1b: Identify and Implement a Combination of Habitat Protection, Enhancement, Restoration, or Conservation Easement Measures, in Consultation with USFWS, CDFW, and USACE	LS	LS	LS	LS	LS
Impact Wild-2: A Substantial Adverse Effect, Including Mortality, Either Directly or through Habitat Modifications, on Any Species Identified As a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations, or by CDFW or USFWS						
Wild-2a: Nesting Birds and Roosting Bats	**Wild-2a**: Prepare and Implement a Bird and Bat Conservation Strategy	LS	LS	LS	LS	LS
Wild-2b: Bald Eagle	**Wild-2b**: Obtain Permit for Bald Eagle Nest Tree Removal, Remove Nest Tree Outside of Breeding Season, and Create Suitable Habitat	SU	SU	SU	SU	SU
Wild-2c: Bank Swallow	**Wild-2c**: Implement Protective Actions to Prevent Bank Swallows from Nesting in the Cut Banks of Project Construction Trenches	LS	LS	LS	LS	LS
Wild-2d: Giant Garter Snake	**Wild-2d**: Conduct Pre-construction Surveys for Giant Garter Snakes and Implement Protective Actions; Conduct Project Construction Activity Between May 1 and October 1 in Giant Garter Snake Habitat; Compensate for Temporary Disturbance of Habitat According to USFWS Guidelines	LS	LS	LS	LS	LS
Wild-2e: Golden Eagle	**Wild-2e**: Implement Avoidance and Minimization Measures at Historical or Active Golden Eagle Nest Sites. Conduct Satellite Telemetry Studies Pre- and Post-construction to Determine Territory Size. Prepare a Golden Eagle Protection and Monitoring Plan/Conservation Plan as Applicable. Mitigate for Loss of Annual Grassland Foraging Habitat	LS	LS	LS	LS	LS
Wild-2f: Ringtail	**Wild-2f**: Implement Protective Actions to Minimize Impacts to the Ringtail, and Restore Connectivity of the Riparian Corridor	LS	LS	LS	LS	LS
Wild 2g: Valley Elderberry Longhorn Beetle	**Wild-2g**: Implement Protective Actions to Avoid or Minimize Impacts to Elderberry Plants. Where Avoidance Is Not Possible, Transplant or Replace Plants, According to USFWS Guidelines	LS	LS	LS	LS	LS
Wild-2h: Western Burrowing Owl	**Wild-2h:** Conduct Pre-construction Surveys for Western Burrowing Owls; If Owls Are Found, Implement Protective Actions	LS	LS	LS	LS	LS

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
Wild-2i: Western Pond Turtle	**Wild-2i**: Conduct Pre-construction Surveys and Provide a Biological Monitor during Project Construction for the Western Pond Turtle; if Found, Turtles Shall Be Captured and Relocated by a Qualified Biologist	LS	LS	LS	LS	LS
Wild-2j: Western Yellow-billed Cuckoo	**Wild-2j**: Conduct Pre-construction Surveys for the Western Yellow-billed Cuckoo and Schedule Construction Activities to Avoid Impacts to Nest Sites	LS	LS	LS	LS	LS
Impact Wild-3: Substantial Interference with Movement of Native Resident or Migratory Wildlife Species, or with Established Native Resident or Migratory Wildlife Corridors, or Impede Use of Native Wildlife Nursery Sites						
	Wild-3a: During Project Construction, Backfill Trenches within 72 Hours of Pipeline Installation and Provide an Escape Ramp for Trapped Wildlife	LS	LS	LS	LS	LS
	Wild-3b: Construct Overhead Power Lines and Associated Equipment Following Suggested Practices for Avian Protection on Power Lines	LS	LS	LS	LS	LS
	Wild-3c: Restore Riparian Habitat Connectivity	LS	LS	LS	LS	LS
Wetlands and Other Waters						
Impact Wet-1: A Permanent Change in the Use, Quality (Extent in Acres or Miles) of "Other Waters of the U.S." (Including, but Not Limited to, Lakes, Rivers, Streams Tributary to Navigable Rivers, Natural Ponds, Canals, or Ditches) That Are Determined by the USACE to Be Jurisdictional, through Direct Removal, Filling, Obstruction, Hydrological Interruption, or Other Means						
Wet-1a: Streams	**Wet-1a**: Implement Compensatory Mitigation Measures for Streams Pursuant to USACE and State Determination within the Watershed in Which the Impacts Occur	LS	LS	LS	LS	LS
Wet-1b: Canals	**Wet-1b**: Reroute Drainage Ditches and Canals to Ensure Continued Hydrological Connection, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination	LS	LS	LS	LS	LS
Wet-1c: Ponds	**Wet-1c**: Restore Pond to Original Condition, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination within the Same Hydrologic Unit in Which the Pond Occurs	LS	LS	LS	LS	LS
Impact Wet-2: A Permanent Adverse Effect to Federally Protected Wetlands (As Defined by Section 404 of the Clean Water Act [Including, But Not Limited to, Marsh, Vernal Pool, Coastal]) through Direct Removal, Filling, Hydrological Interruption, Discharge of Pollutants, or Other Means						

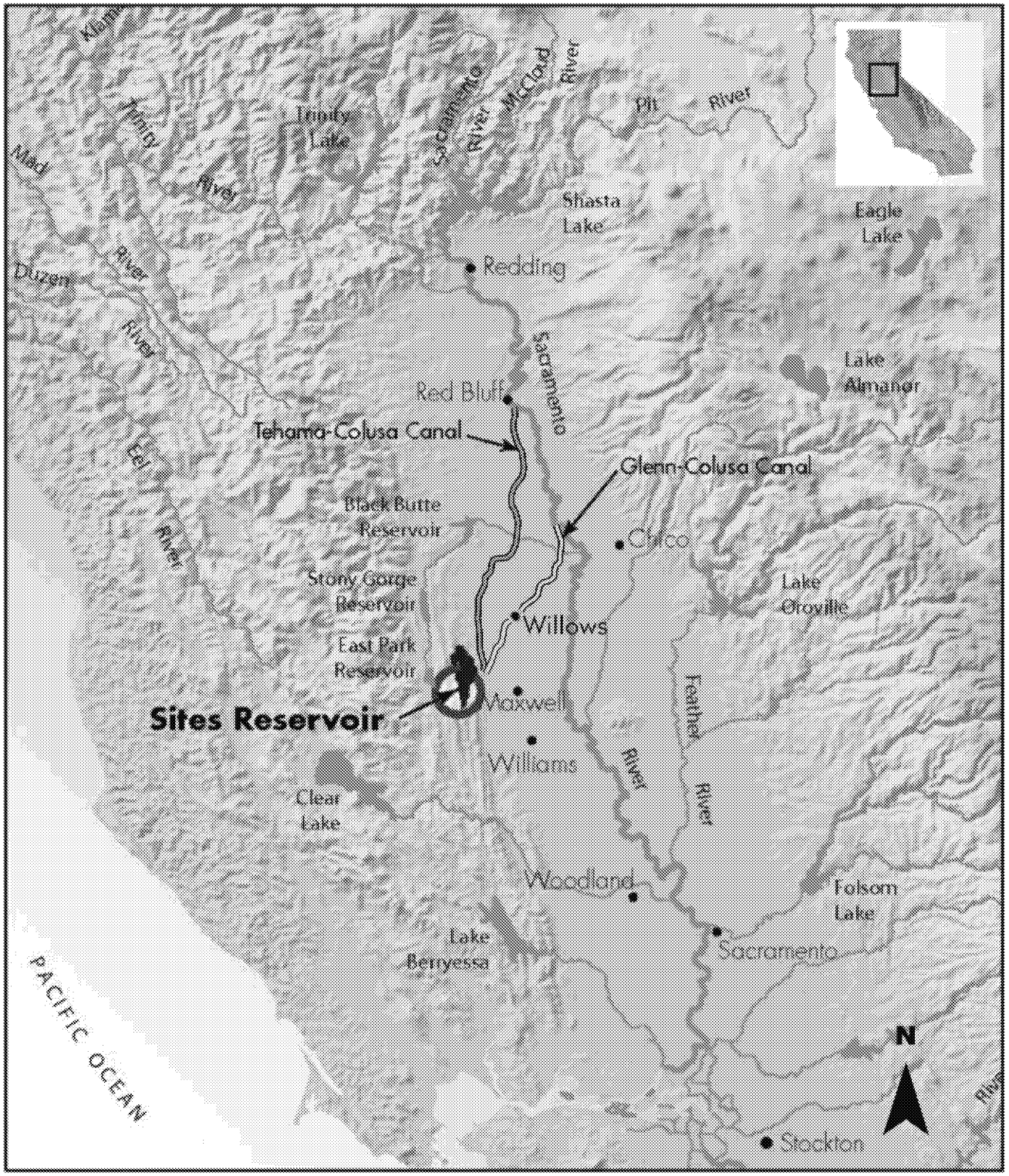
Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
Wet-2a: Seasonal Wetlands	**Wet-2a:** Conserve, Enhance, Restore, or Create Seasonal Wetlands, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination within the Watershed in Which the Impacts Occur	LS	LS	LS	LS	LS
Wet-2b: Alkaline Wetlands	**Wet-2b**: Conserve, Enhance, Restore, or Create Alkaline Wetlands, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination within the Watershed in Which the Impacts Occur	LS	LS	LS	LS	LS
Wet-2c: Vernal Pools	**Wet-2c**: Conserve, Enhance, Restore, or Create Vernal Pools Equivalent to the Type of Vernal Pools Adversely Impacted, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination	LS	LS	LS	LS	LS
Wet-2d: Emergent Wetlands	**Wet-2d**: Conserve, Enhance, Restore, or Create Emergent Wetlands, or Implement Other Compensatory Mitigation Measures Pursuant to USACE Determination within the Watershed in Which the Impacts Occur	LS	LS	LS	LS	LS
Wet-2e: Riparian Wetlands	**Wet-2e**: Conserve, Enhance, Restore, or Create Comparable Riparian Wetlands in the Inner Coast Range Foothills, or Implement Other Compensatory Mitigation Measures Pursuant to CDFW Determination	LS	LS	LS	LS	LS
Paleontology						
Impact Paleo-1: **Project Construction, Operation, and Maintenance Effects on Paleontological Resources**						
	Paleo-1a: Retain a Qualified Paleontological Resource Specialist prior to the Start of Construction	SU	SU	SU	SU	SU
	Paleo-1b: Consultation with the Paleontological Resource Specialist prior to and during Project Construction	SU	SU	SU	SU	SU
	Paleo-1c: Prepare and Implement a Paleontological Resources Monitoring and Mitigation Plan	SU	SU	SU	SU	SU
	Paleo-1d: Conduct Paleontological Resources Awareness Training	SU	SU	SU	SU	SU
	Paleo-1e: Conduct Monitoring during Project Construction and Prepare Monthly Reports	SU	SU	SU	SU	SU

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
	Paleo-1f: Ensure Implementation of the Paleontological Resources Monitoring and Mitigation Plan	SU	SU	SU	SU	SU
Cultural/Tribal Cultural Resources						
Impact Cul-1: A Substantial Adverse Change in the Significance of an Archaeological Resource						
	Cul-1a: Avoid Impacts to Historical Resources/Historic Properties	LS	LS	LS	LS	LS
	Cul-1b: Conduct Archaeological Data Recovery	LS	LS	LS	LS	LS
	Cul-1c: Conduct Archaeological Construction Monitoring	LS	LS	LS	LS	LS
	Cul-1d: Immediately Halt Construction if Cultural Resources Are Discovered and Implement a Post-review Discovery Plan	LS	LS	LS	LS	LS
	Cul-1e: Protection of Archaeological Sites by Capping	LS	LS	LS	LS	LS
Impact Cul-2: A Substantial Adverse Change in the Significance of a Historical Resource of the Built Environment						
	Cul-1a: Avoid Impacts to Historical Resources/Historic Properties	SU	SU	SU	SU	SU
	Cul-2a: Follow the Secretary of the Interior's Standards for the Treatment of Historical Resources/Historic Properties	SU	SU	SU	SU	SU
	Cul-2b: Record Built Environment Resources	SU	SU	SU	SU	SU
Impact Cul-3: Disturb a Traditional Cultural Property or a Tribal Cultural Resource as Defined in PCR Section 21074						
	Cul-1a: Avoid Impacts to Historical Resources/Historic Properties	SU	SU	SU	SU	SU
	Cul-3: Consult with Affected Communities regarding How to Mitigate for Impacts on TCPs/TCRs	SU	SU	SU	SU	SU
Impact Cul-4: Disturb Human Remains, Including Those Interred Outside of Dedicated Cemeteries						
	Cul-1a: Avoid Impacts to Historical Resources/Historic Properties	SU	SU	SU	SU	SU
	Cul-4a: Relocation of Dedicated or Known Cemeteries	SU	SU	SU	SU	SU
	Cul-4b: Immediately Halt Construction if Human Remains Are Discovered and Implement a Burial Treatment Plan	SU	SU	SU	SU	SU
Land Use						

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
Impact Land-2: Conflict with an Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect						
	Land-2: Work with Glenn and Colusa Counties to Modify or Amend Counties General Plans and/or Zoning Ordinances to Bring Lands into Consistency with the Project Land Uses	SU	SU	SU	SU	SU
Impact Land-7: Permanent Conflict with Existing Zoning for Agricultural Use, and/or the Permanent Conversion of Lands that Have a Williamson Act Contract						
	Land-7a: Acquire Lands through Eminent Domain or Work with Land Owners to Acquire Properties and Pay Any Cancellation Fees Associated with Removing Lands from Williamson Act Contracts	LS	LS	LS	LS	LS
	Land-7b: For Land Permanently Acquired Other Than by Eminent Domain, Seek County Approvals to Rescind Williamson Act Contracts and Enter in Open Space Contracts or Open Space Easements	LS	LS	LS	LS	LS
Air Quality						
Impact Air Qual-1: Conflict with an Applicable Air Quality Plan, Contribute Substantially to *an* Air Quality Violation, and/or Result in a Cumulatively Considerable Net Increase of Nonattainment Pollutants						
Emissions of PM_{10}	**Air Qual-1a**: Develop and Implement a Fugitive Dust Control Plan	SU	SU	SU	SU	SU
Emissions of NO_x, PM_{10}, and ROG	**Air Qual-1b**: Implement Measures to Reduce Equipment and Vehicle Exhaust Emissions	SU	SU	SU	SU	SU
Emissions of SO_x, CO, and $PM_{2.5}$	**Air Qual-1b**: Implement Measures to Reduce Equipment and Vehicle Exhaust Emissions	LS	LS	LS	LS	LS
25. Greenhouse Gas						
Impact GHG-1: Generation of Cumulative GHG Emissions						
	BMP 1: Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project.	SU	SU	SU	SU	SU
	BMP 2: Evaluate the feasibility and efficacy of performing onsite material hauling with trucks equipped with on-road engines.	SU	SU	SU	SU	SU

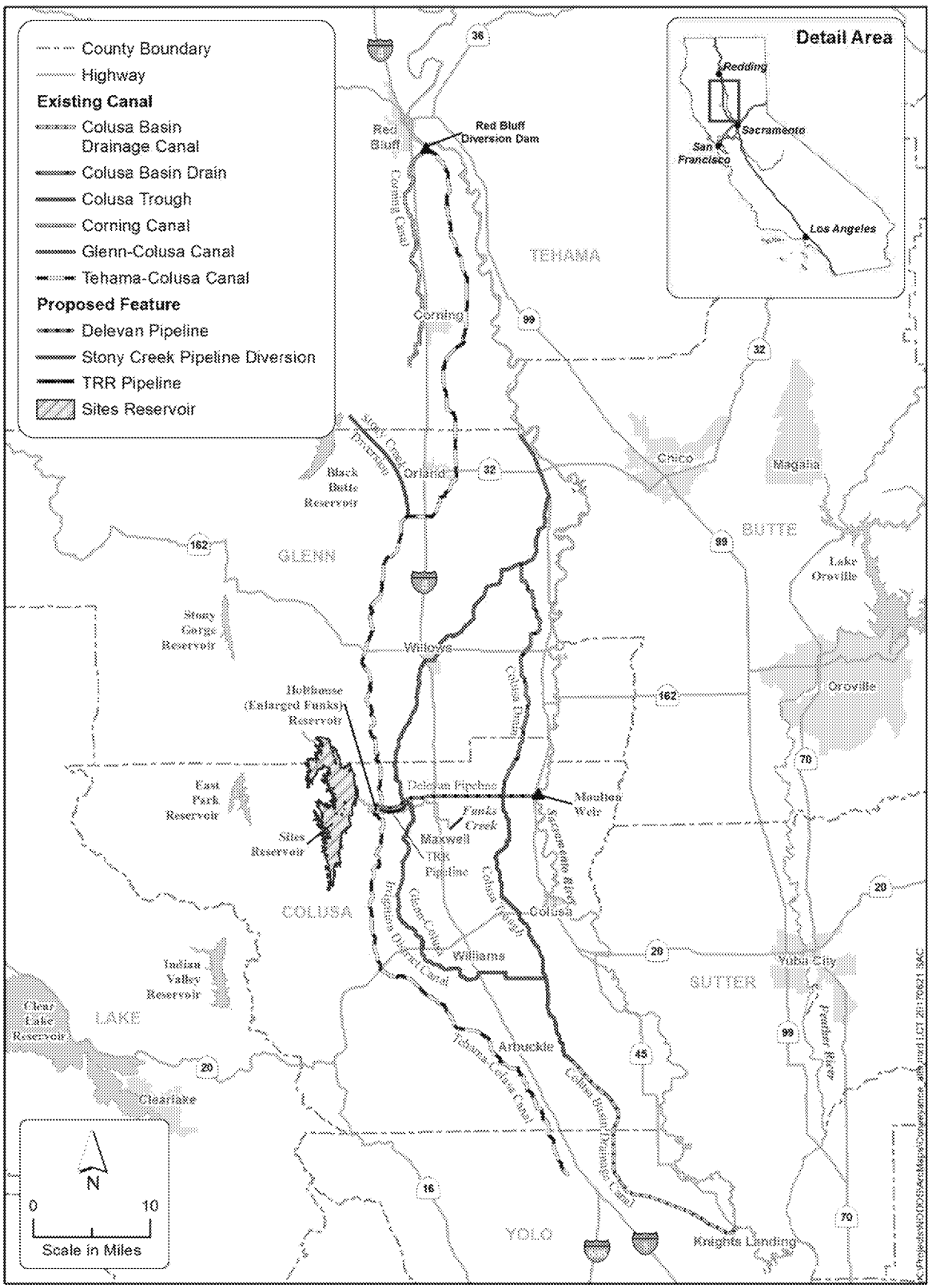
Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
	BMP 3: Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels such as propane or solar to power generators to the maximum extent feasible.	SU	SU	SU	SU	SU
	BMP 4: Evaluate the feasibility and efficacy of producing concrete onsite and specify that batch plants be set up onsite or as close to the site as possible.	SU	SU	SU	SU	SU
	BMP 5: Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing, while preserving all required performance characteristics.	SU	SU	SU	SU	SU
	BMP 6: Limit deliveries of materials and equipment to the site to off-peak traffic congestion hours.	SU	SU	SU	SU	SU
	BMP 7: Minimize idling time by requiring that equipment be shut down after 5 minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.	SU	SU	SU	SU	SU
	BMP 8: Maintain construction equipment in proper working condition and perform preventative maintenance. Required maintenance includes compliance with manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of engine and emissions systems in proper operating condition. Maintenance schedules will be detailed in an Air Quality Control Plan prior to commencement of construction.	SU	SU	SU	SU	SU

Significant Impact	Mitigation Measure	Level of Significance after Mitigation for each Alternative				
		A	B	C	C_1	D
	BMP 9: Implement tire inflation program on job site to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives onsite and every 2 weeks for equipment that remains onsite. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program will be documented in an Air Quality Management Plan prior to commencement of construction.	SU	SU	SU	SU	SU
	BMP 10: Develop a project-specific ride share program to encourage carpools, shuttle vans, and transit passes, and secure bicycle parking for construction worker commutes.	SU	SU	SU	SU	SU
	BMP 11: Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.	SU	SU	SU	SU	SU
	BMP 12: For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty Class 7 or Class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay[a] certified truck will be used to the maximum extent feasible.	SU	SU	SU	SU	SU
	BMP 13: Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.	SU	SU	SU	SU	SU
	BMP 14: Develop a project-specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste.	SU	SU	SU	SU	SU
	BMP 15: Evaluate the feasibility of restricting material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution, minimize, to the extent possible, uses of public roadways that would increase traffic congestion.	SU	SU	SU	SU	SU



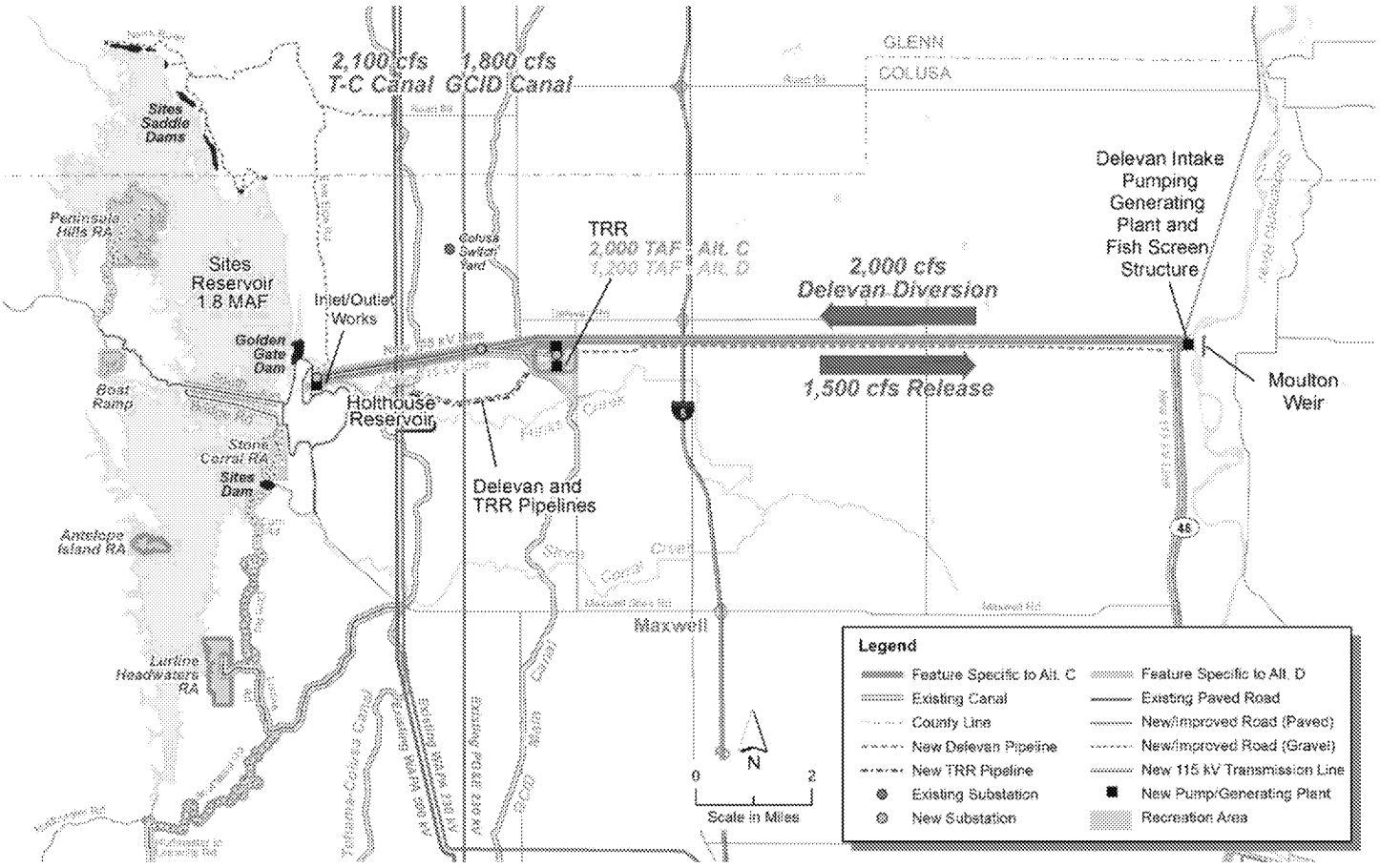
Source: Reclamation 2017

Figure 1: Project Location



Source: Reclamation 2017

Figure 2: Existing Facilities



Source: Reclamation 2017

Figure 3: Proposed Project Facilities

CDFW 2020 Strategy Session #2
Meeting Agenda

Sites Reservoir Project

Date: May 20, 2020

Location: WebEx
Call in : 408-418-9388, access code: 961 415 679

Time: 2:30 pm – 4:00 pm

Purpose: Discuss and develop 2020 CDFW ITP approach

Invitees:

Ali Forsythe, Sites Authority	Rob Tull, Jacobs	Monique Briard, ICF
John Spranza, HDR	Chris Fitzer, ESA	Jim Lecky, ICF
Erin Heydinger, HDR		

Agenda:

Discussion Topic	Topic Leader	Est Time
1. Review of Action Items	John	5 min
2. Update on Recent CDFW Meetings a. Meeting context and goals	Ali	10 min
3. Review/Discuss Strategy Table	All	30 min
4. Discuss Strategy/Next steps	All	30 min
5. Review New Action Items	John	5 min

Action Item		Owner	Deadline	Notes
1	Ali to discuss deal vs. analysis approach with Jerry and get direction	Ali	6/5/20	
2	Discuss potential creation of a Sites BON for staff to use in negotiations	Ali	6/10/20	
3	Refine tax table for backward iteration of fishery effects and then determine the yield and engineering inputs needed to incorporate into the BON	Tull/Lecky	TBD	This is likely several Action Items and needs to be discussed
4	Review/revise upstream diversion criteria for DS benefit protections	Lecky	After AI 1 is complete	

	and NDOI, Freeport and OMR requirements from ITP			

Notes

1. No real diversion criteria at Ham City and Red Bluff
2. Need to identify what a reasonably foreseeable project is:
    - Tisdale Notch is in process (NOP) but spring rearing flows are just conceptual wish list
    - Identify methodology to differentiate and analyze an actual project from a conceptual one
3. Travel time from Shasta to Delta needs to be incorporated into the project analysis as conditions at diversions can be very different from downstream conditions.
    - Shasta to Delta is about 5-6 days
    - Hamilton to KL is 3-ish days
    - Shasta to Keswick is about 1 day
    - By the time the flood peak hits the Delta the conditions at the diversions would be 3-4 days in the past
        - Tax table was an approach to address that.
    - Flow protections at the diversions could be used and that would propagate those protections or benefits for fish downstream
    - Can there be a correlation from 44.5K NDOI back to conditions at the diversions to account for time of travel and allow real-time operations?
        - The daily model could do the backward iteration
4. Criteria at diversion facilities that includes the backward iteration would need to be chosen with the downstream criteria in mind.
    a. Would be analyzed to see the effect of that criteria (negative and beneficial)
    b. Adjust criteria at diversion to minimize/maximize effect
    c. Mitigate the residual impacts
5. Members are not in total agreement on CDFW approach (deal or analysis) and that needs to be addressed in Res Com and Board
    a. AI: Ali to discuss with Jerry and get direction
6. Res Com and Board could provide the equivalent to a Basis of Negotiation (BON) that would define the range of acceptable criteria that sites staff can negotiate to without further approval from RC or Board.
    a. AI: Refine tax table to backward iteration of fishery effects and then determine the yield and engineering inputs needed to incorporate into the BON
7. May need to rely on a CDFW policy decision for our proposed permit criteria
    a. Optimize project and acknowledge impacts and benefits
    b. Compare to the CDFW scenarios
    c. Define the yield and cost requirements in the BON
    d. Educate CDFW about the rational for upstream protections and how they relate to downstream benefits and effects to areas they are concerned with (ITP)
    e. Elevate to CDFW MGT to make a decision (accept, reject or conditionally accept with revision) based on benefits and effects not staff-proposed downstream criteria.
8. Will need to campaign with NGOs that highlight the benefits and objectives of the project
    a. Temperature relief for winter run
    b. Back to back dry years
    c. Coldwater pool
    d. Protect hydrograph, etc.

EIR/EIS Appendices Agenda

Sites Program Management Team

Date: May 29, 2020

Location: Call In: 1-510-338-9438; Access code: 126 584 6979
WebEx Link included in Outlook Invitation

Time: 1:00 PM to 2:30 PM

Leader:	Sites Integration/ICF	**Recorder:**	Sites Integration

Purpose: Review select appendices to ensure common understanding of content/timing

Attendees:

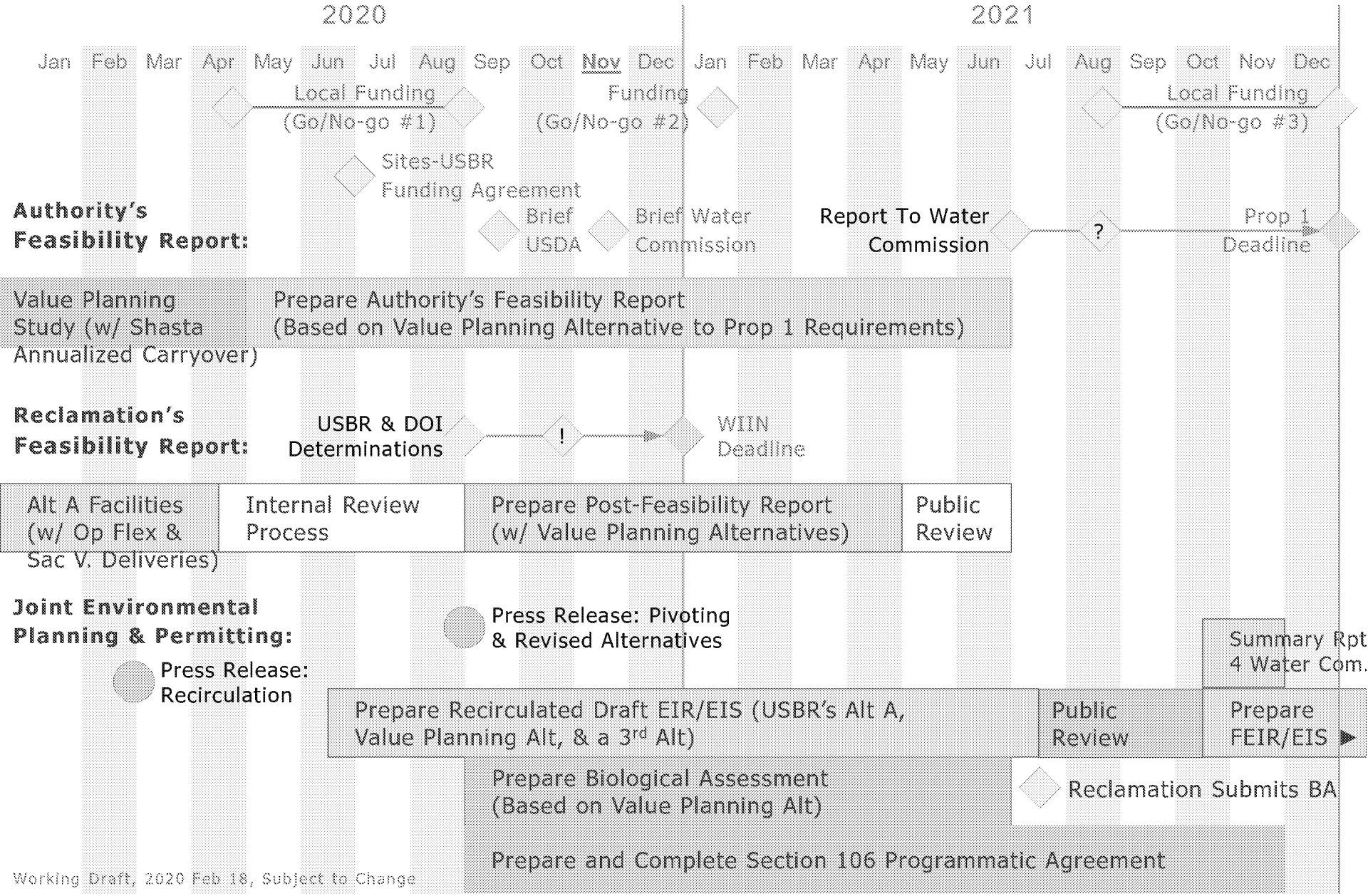
Jelica Arsenijevic, Sites Integration
Monique Briard, ICF
Linda Fisher, Sites Integration
Ali Forsythe, Sites Authority
Erin Heydinger, Sites Integration
Henry Luu, Sites Integration
John Spranza, Sites Integration
Laurie Warner Herson, Sites Integration
Ellen Unsworth, ICF
Nicole Williams, ICF

Agenda:

Discussion Topic	**Topic Leader**	**Time Allotted**
1. Introductions – Roll Call/Purpose of Meeting	Laurie	5 min
2. Purpose of EIR/EIS & Appendices Content a. Refer to Table 5-1 in ICF Draft Work Plan (April 2020)	Nicole/Laurie/Monique/John	10 min
3. Construction Related Appendices a. Content: Cover all alternatives b. Timing: September/October 2020 c. Appendices: i. New Construction Appendix describing means/methods/assumptions ii. 24A, Methodology for Air Quality and GHG Emissions Calculations iii. New Transportation Appendix	Nicole/Ellen/ Henry/Erin	20 min
4. Water Quality and Hydrology Related Appendices a. Content: Cover all alternatives b. Timing: between 11/9/20 and 1/8/21 c. Appendices (2017 EIR/EIS numbering and titles are used here): i. Reservoir & Colusa Basin Drain – Water Quality and hydrology, flooding, and sedimentation (or included in update of existing Sedimentation and River Hydraulics Model appendix) ii. 6A, Surface Water Resources Modeling of Alternatives (include reservoir elevations compared to existing reservoir boat ramps iii. 6B, Water Resources System Modeling iv. 6B1, Project Operations v. 6B2, River Operations	Nicole/Erin/John 20 min	

	vi. 6B3, Delta Operations vii. 6B4, Regional Deliveries viii. 7E, River Temperature Modeling ix. 7F, Sites Reservoir Discharge Temperature Modeling x. 10A, Groundwater Modeling Results xi. 11A, Groundwater Study Results xii. 34A, Growth-Inducing Considerations for Municipal and Industrial Water Users (expected March 2021) xiii. 25A Climate Change and Sea Level Rises Sensitivity Analysis (expected March 2021) xiv. 31B CVP-SWP Power Modeling		
5.	Economic Appendices a. Expectations & Content	Nicole/Sites Integration Team	10 mins
6.	Wildlife/Vegetation Appendices a. Content: cover all alternatives, consistent with BA/ITP information b. Timing	Nicole/Monique/ John	10 mins
7.	Appendices to Potentially Eliminate a. 6D, Sensitivity Model using Latest CalSIM II Model – could "bridging" simulations be included in Appendix 6A? b. 12D, Temperature Index Value Selection Rational c. 12M, Sturgeon Analysis	Nicole/John	10 mins
8.	Next Steps a. Focused meetings with service providers	All	5 min

Sites Project Authority & Bureau of Reclamation Feasibility & Environmental Processes



Working Draft, 2020 Feb 18, Subject to Change

Draft_0002161

EIR/EIS Biweekly Mtg Agenda

Sites Program Management Team

Date: June 1, 2020 **Location:** WebEx Link included in Outlook Invitation

Time: 7:30 AM to 8:30 AM

Leader:	Sites Integration	**Recorder:**	Sites Integration

Purpose: Biweekly check in on EIR/EIS status and info needs, coordination of upcoming meetings

Attendees:

Monique Briard, ICF
Ali Forsythe, Sites EPP
Laurie Warner Herson, Sites Integration
Linda Fisher, Sites Integration
Nicole Williams, ICF

Agenda:

Discussion Topic	Topic Leader	Time Allotted
1. Roll Call - additions to agenda, if any	Laurie	2 min
2. Planning for June Ad Hoc Committee Meeting a. Date of meeting b. Objectives i. Need to finalize based on input ii. Confirm need to develop context before mtg c. Alternatives i. Need to finalize based on input ii. Status of conceptual graphic for Alternatives 1and 2 iii. Any communications with the county about the road? iv. Will the Ad Hoc EPP Work Group recommend a preferred alternative and if so, what information is needed ? d. Work Plan i. Prepare summary, what level of detail is needed?	Linda/all	12 min
3. Reclamation a. Status of Reclamation's role b. Align Reclamation review cycle with schedule	Ali/Laurie Nicole/Linda	8 min
4. Work Plan a. Status b. Outstanding Items i. Policy call on benefits and having them contained in a separate/non-contradictory document to the EIR for the purposes of the CWC [Laurie – to follow up re: Authority's Feasibility Report to address benefits] ii. Combining individual elements of alternatives or not (i.e., the alternatives stand by themselves) – analysis of options	Nicole	10 min
5. Annotated Outline a. Status and thoughts on accommodating delay b. Needs i. Reclamation confirmation of page limit waiver	Nicole/Monique	10 min

	ii. Confirmation of alternatives and more defined role for Reclamation in those alternatives iii. other must haves for annotated outline (e.g., Separate NEPA findings and mitigation measures?)		
6.	Project Description a. Detailed AQ tables b. Operations needs c. Schedule appendices meetings for Fish and Wildlife	Nicole/Laurie	10 min
7.	Budget and Tasks	Monique/Laurie	5 min
8.	Action Items	Laurie	3 min